



Volume I Final Program Environmental Impact Statement/ Environmental Impact Report (EIS/EIR)

San Diego Creek Watershed Special Area Management Plan/ Watershed Streambed Alteration Agreement Process (SAMP/WSAA Process)



Prepared by: U.S. Army Corps of Engineers, Los Angeles District, Regulatory Division

> California Department of Fish and Game, Habitat Conservation South Coast Region San Diego, California

> > State Clearinghouse #2001081007

December 2008

VOLUME I – FINAL REPORT

SAN DIEGO CREEK WATERSHED SPECIAL AREA MANAGEMENT PLAN/ WATERSHED STREAMBED ALTERATION AGREEMENT PROCESS (SAMP/WSAA PROCESS)

PROGRAM ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT (EIS/EIR)

Prepared for

U.S. Army Corps of Engineers, Los Angeles District, Regulatory Division

California Department of Fish and Game, Habitat Conservation, South Coast Region

State Clearinghouse # 2001081007

December 2008

Final Prepared by

U.S. Army Corps of Engineers, Los Angeles District, Regulatory Division 915 Wilshire Boulevard Los Angeles, California 90017 (213) 452-3296 Fax: (213) 452-4196

Draft Prepared by



URS Corporation 2020 East First Street, Suite 400 Santa Ana, CA 92705 (714) 835-6886 Fax: (714) 433-7701

TABLE OF CONTENTS

SECT	ION		PAGE
LIST (OF FIG	JRES	IX
LIST (OF TAE	LES	X
PREF.	ACE		XII
EXEC	UTIVE	SUMMARY	
	ES.1	PROJECT PURPOSE	
	ES.2	SAMP TENETS	
	ES.3	PROJECT DESCRIPTION FOR SAMP/WSAA	A PROCESSES-2
	ES.4	ALTERNATIVES TO THE PROPOSED SAMP/	WSAA PROCESSES-8
	ES.5	OVERVIEW OF PROGRAMMATIC IMPACT A	NALYSISES-9
	ES.6	PROGRAMMATIC CUMULATIVE IMPACT AN	JALYSISES-11
	ES.7	GROWTH-INDUCING IMPACTS	ES- <u>2</u> 4 <u>27</u>
	ES.8	IMPACTS OF ALTERNATIVES	
	ES.9	ENVIRONMENTALLY PREFERABLE AND EN	VIRONMENTALLY SUPERIOR
	EC 10	ALTERNATIVE	$ES - \frac{2730}{2720}$
	ES.10	LATENDED LIGES OF THIS ELS/ELD	D4(B)(1) GUIDELINESES -2720
	ES.11	INTENDED USES OF THIS EIS/EIK	ES- <u>2+<u>30</u></u>
1.0	INTRO	DUCTION	
	1.1	BACKGROUND ON SAMP PROGRAM/WSA	A PROCESS1-1
	1.2	PURPOSE AND NEED	
		1.2.1 Project Need	
		1.2.2 Project Purpose	
		1.2.2.1 Objectives	
		1.2.3 EIS/EIR Purpose	
	1.3	ORGANIZATION OF THE EIS/EIR	
	1.4	AUTHORITY FOR FEDERAL AND STATE LE	AD AGENCIES 1-8
		1.4.1 Corps Authority	
		1.4.2 Department Authority	
		1.4.3 Joint Environmental Review Proc	ess
	15	1.4.4 Involved Agencies and Participati	ng ApplicantsI-11
	1.5	1.5.1 Close Water A at	
		1.5.1 Clean Water Acl	$\frac{1}{1}$
		1.5.2 California Folter-Cologne Water	Quality Act
		1.5.4 California Wetlands Conservation	1 18
		1.5.5 Eederal Endangered Species Act (FORCY
		1.5.6 California Endangered Species Act	1-10
		1.5.0 Camorina Endangered Species A	1-1)
2.0	PROP	OSED SAMP/WSAA PROCESS AND AI	LTERNATIVES 2-1
	2.1	OVERVIEW OF THE PROPOSED SAMP AND	WSAA PROCESS
		2.1.1 SAMP Analytical Framework	
		2.1.2 Permitting Processes, Including N	litigation Framework
		2.1.3 Strategic Mitigation Plan	
		2.1.4 Mitigation Coordination Program	

		2.1.5	SAMP Implementation	2- 83 90
		2.1.6	Beneficial Effects of The Proposed SAMP Permitting/WSAA Process I	n
			Comparison To The Current Permitting/Agreement Process	2- 85<u>93</u>
	2.2	ALTER	RNATIVES TO THE PROPOSED SAMP/WSAA PROCESS	2- 91<u>99</u>
		2.2.1	No Project (Existing Case-By-Case Permitting) – Alternative 1	2- 92 100
		2.2.2	Complete Avoidance (No Permits Issued) – Alternative 2	2- 93<u>101</u>
		2.2.3	Avoidance Except For Bridges And Utility Lines (Limited Permitting)	_
			Alternative 3	2- 9 4 <u>102</u>
		2.2.4	General Plan Build-Out without Avoidance (Full Permitting) –	
			Alternative 4	2- 94<u>102</u>
		2.2.5	Off-Site Alternatives	2- 95<u>103</u>
3.0	BASE	ELINE C	CONDITIONS	
	3.1	AQUA	TIC, WETLAND AND RIPARIAN HABITATS	
		3.1.1	Planning Level Delineation of Riparian Ecosystems	
		3.1.2	Landscape Level Functional Assessment	
		3.1.3	Habitat Integrity	
	3.2	Biolo	GICAL RESOURCES INCLUDING THREATENED AND ENDANGERED SPECIES A	AND
		MIGRA	ATION CORRIDORS	
		3.2.1	Topographical Relief and Vegetation Communities	
		3.2.2	Biological Reserves, Designated Wilderness, and Mitigation Areas	
		3.2.3	Existing Upland Vegetation Communities	
		3.2.4	Threatened and Endangered Wildlife Species	
		3.2.5	Threatened and Endangered Plant Resources	
		3.2.6	Critical Habitat	
		3.2.7	Wildlife Movement Corridors	
	3.3	HYDR	OLOGY, EROSION AND SEDIMENTATION	
		3.3.1	Hydrologic Conditions	
		3.3.2	Erosion and Sedimentation	
	2.4	3.3.3	Hydrologic Integrity	
	3.4	WAIE.	R QUALITY	
		5.4.1 2.4.2	Surface water Quality	
		5.4.2 2.4.2	NDDES Storm Water Dermits, Drainage Area Management Dian and L	
		5.4.5	Implementation Plans	2 70
		311	General NPDES Permit/Waste Discharge Requirements for Short-Term	
		<i>J</i> .т.т	Groundwater Discharges and De Minimus Wastewater Discharges	3_71
		345	General Discharge Prohibition	3-72
		346	Antidegradation Policy	3-72
		3.4.7	Groundwater Quality	
		3.4.8	Water Ouality Integrity	
	3.5	OTHER	R RESOURCES AND ISSUES	
		3.5.1	Agricultural Resources	
		3.5.2	Air Quality	
		3.5.3	Cultural Resources	
		3.5.4	Floodplain Values	3- 84 85
		3.5.5	Geology/Soils	
		3.5.6	Land Use	3- 87<u>88</u>

		3.5.7 Noise	3- 93 94
		3.5.8 Public Health and Safety	3- 9 495
		3.5.9 Recreation	3- <u>98</u> 99
		3.5.10 Socioeconomics	. 3- 103 104
		3.5.11 Transportation/Circulation	. 3- 105 108
		3.5.12 Visual Resources	. 3- <u>108</u> 111
		3.5.13 Water Supply and Conservation	. 3- <u>109</u> 112
4 0	PROC	GRAMMATIC IMPACT ASSESSMENT OF SAMP/WSAA PROCESS AND	
T. U	REGL	ILATED ACTIVITIES	4-1
	11200		
	4.1		
		4.1.1 Defining Significance Thresholds	
		4.1.2 Direct versus Indirect Impacts	
		4.1.3 CEQA Mitigation versus SAMP/WSAA Process Mitigation	
	4.2	AQUATIC, WETLAND, AND RIPARIAN HABITATS	
		4.2.1 Significance Thresholds	
		4.2.2 Programmatic Impact Analysis - Overview	
		4.2.3 Programmatic Impact Analysis- Proposed Regulated Activities	
	4.3	BIOLOGICAL RESOURCES INCLUDING THREATENED AND ENDANGERED SPECIES	4-25
		4.3.1 Significance Thresholds	4-25
		4.3.2 Impacts	4-26
	4.4	HYDROLOGY, EROSION, AND SEDIMENTATION	4-39
		4.4.1 Significance Thresholds	4-39
		4.4.2 Impacts	4-40
	4.5	WATER QUALITY	4-52
		4.5.1 Significance Thresholds	4-52
		4.5.2 Impacts	4-53
	4.6	OTHER RESOURCES AND ISSUES	4-70
		4.6.1 Agricultural Resources	4-70
		4.6.2 Air Quality	4-72
		4.6.3 Cultural Resources	
		4.6.4 Floodplain Values	4-81
		4.6.5 Geology/Soils	4-81
		4.6.6 Land Use	4-83
		4.6.7 Noise	4-86
		4.6.8 Public Health and Safety	4-88
		4.6.9 Recreation	4-90
		4.6.10 Socioeconomics	4-93
		4.6.11 Transportation/Circulation	4-94
		4.6.12 Visual Resources	
		4.6.13 Water Supply and Conservation	
5.0	EVAI	LUATION OF ALTERNATIVES	
	5.1	NEPA AND CEOA REOUIREMENTS	
	5.2	PROGRAMMATIC ASSESSMENT OF ALTERNATIVES	
		5.2.1 Aquatic, Riparian and Wetland Habitats	
		5.2.1.1 Alternative 1: No Project Alternative	
		5.2.1.2 Alternative 2: Complete Avoidance	
		1	·····• •

		5.2.1.3	Alternative 3: Avoidance Except for Bridges and Utility Lines	5-5
		5.2.1.4	Alternative 4: General Plan Build-out without Avoidance	5-7
	5.2.2	Biologic	al Resources Including Threatened and Endangered Species	5-8
		5.2.2.1	Alternative 1: No Project Alternative	5-8
		5.2.2.2	Alternative 2: Complete Avoidance	5-11
		5.2.2.3	Alternative 3: Avoidance Except for Bridges and Utility Lines	5-12
		5.2.2.4	Alternative 4: General Plan Build-out without Avoidance	5-13
	5.2.3	Hydrolo	gy, Erosion and Sedimentation	5-14
		5.2.3.1	Alternative 1: No Project Alternative	5-14
		5.2.3.2	Alternative 2: Complete Avoidance	5-15
		5.2.3.3	Alternative 3: Avoidance Except for Bridges and Utility Lines	5-16
		5.2.3.4	Alternative 4: General Plan Build-out without Avoidance	5-17
	5.2.4	Water Q	Quality	5-18
		5.2.4.1	Alternative 1: No Project Alternative	5-18
		5.2.4.2	Alternative 2: Complete Avoidance	5-19
		5.2.4.3	Alternative 3: Avoidance Except for Bridges and Utility Lines	5-20
		5.2.4.4	Alternative 4: General Plan Build-out without Avoidance	5-21
	5.2.5	Other Re	esources	5-22
		5.2.5.1	Agricultural Resources	5-22
		5.2.5.2	Air Quality	5-24
		5.2.5.3	Cultural Resources	5-26
		5.2.5.4	Flood Hazards and Floodplain Values	5-28
		5.2.5.5	Geology/Soils	5-28
		5.2.5.6	Land Use	5-31
		5.2.5.7	Noise	5-32
		5.2.5.8	Public Health and Safety	5-34
		5.2.5.9	Recreation	5-36
		5.2.5.10	Socioeconomics	5-38
		5.2.5.11	Transportation/Circulation	5-39
		5.2.5.12	Visual Resources	5-41
		5.2.5.13	Water Supply and Conservation	5-43
5.3	COMPA	ARISON OF	F ALTERNATIVES	5-45
5.4	Envir	ONMENTA	ALLY SUPERIOR ALTERNATIVE AND LEAST ENVIRONMENTALLY	
	SUPER	IOR ALTE	RNATIVE AND LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE	
	ALTER	NATIVE		5-47
CUMU	JLATI	/E EFFE	CTS	6-1
61	REGUI	ATORY B	ACKGROUND	6-1
6.2	APPRO	ACHTO('IIMIII ATIVE IMPACT ANALYSIS	01 6-1
6.3	PROGR		с Сими атіve Імраст Анаі vsis	0 1 6 - 2
0.5	631		Wetland and Rinarian Habitats	0 2 6-2
	632	Riologic	al Resources, Including Threatened and Endangered Species	0 2 6-4
	633	Hydrolo	by Frosion and Sedimentation	0 1 6-6
	634	Water O	biality	0 0
	635	Other To	onic Areas	
	0.5.5	6351	Agricultural Resources	
		6352	Air Onality	ر_ی 6_م
		6353	Cultural Resources	6_10
		0.5.5.5		0-10

6.0

		6.3.5.4 Floodplain Values		0
		6.3.5.5 Geology and Soils		1
		6.3.5.6 Land Use		1
		6.3.5.7 Noise		1
		6.3.5.8 Public Health & Safety		2
		6.3.5.9 Recreation		2
		6.3.5.10 Socioeconomics		2
		6.3.5.11 Transportation/Circulation		2
		6.3.5.12 Visual Resources		3
		6.3.5.13 Water Supply and Conservation		3
7.0	GRO	WTH INDUCING IMPACTS		l
	7.1	CEOA AND NEPA REOUIREMENTS		1
	7.2	POTENTIAL GROWTH-INDUCING EFFECTS		1
8.0	ОТН	FR FEDERAL AND STATE IMPACT CONSIDER	ATIONS 8-1	1
0.0	0111		0-1	
	8.1	SHORT TERM USES VERSUS LONG TERM PRODUCTI	VITY	l
	8.2	IRRETRIEVABLE OR IRREVERSIBLE COMMITMENT OF	F RESOURCES 8-1	1
	8.3	ENVIRONMENTAL JUSTICE IMPACTS		2
		8.3.1 Federal Environmental Justice Requiremen	ts	2
		8.3.2 State Environmental Justice Requirements.		2
		8.3.3 Study Area Demographics		3
		8.3.4 Low Income Composition		3
		8.3.5 Impacts		ł
	8.4	FLOODPLAIN EXECUTIVE ORDER		ł
	8.5	WETLAND EXECUTIVE ORDER – NO NET LOSS		5
	8.6	INVASIVE SPECIES EXECUTIVE ORDER		7
	8.7	EFFECTS OF SAMP COORDINATED PERMITTING PRO	OCEDURES ON FUTURE	~
		APPLICANTS		3
		8.7.1 Revocation of Selected Nationwide Genera	l Permits)
		8.7.2 Permitting Outcomes Before and After the	SAMP 8-11	l
		8.7.3 Effects of Implementing the RGP		2
		8.7.4 Effects of Implementing the LOP Procedur	es	2
		8.7.5 Effects of Department's WSAA Process as	Part of the SAMP's Coordinated	4
		Permitting Processes		+ 1
		8.7.6 Effects of Implementing the SAMP Mitigat	14 tion Framework 8-14	+ 5
		8.7.7 Summary		,
9.0	CON	ISISTENCY WITH FEDERAL AND STATE LAWS	AND REGULATIONS9-1	l
	9.1	Federal Laws		Ĺ
		9.1.1 Endangered Species Act		l
		9.1.2 Section 401 of the Clean Water Act		<u>1</u>
		9.1.3 Impaired Waters and Total Maximum Dail	y Loads	5
		9.1.4 Rivers and Harbors Act		5
		9.1.5 Clean Air Act		<u>5</u>
		9.1.6 National Historic Preservation Act		1
		9.1.7 Coastal Zone Management Act)
		9.1.8 Magnuson-Stevens Fishery Conservation a	nd Management Act)

	9.2	 STATE LAWS	9-9 <u>11</u> 9-9 <u>11</u> 9- 10<u>12</u> 9-10<u>12</u>
10.0	CONS	ISTENCY WITH REGIONAL AND LOCAL PLANS	10-1
	10.1	NATURAL COMMUNITY CONSERVATION PLAN / HABITAT CONSERVATION PLAN 10.1.1 Background	
	10.2	10.1.2 Relation to the proposed SAMP/WSAA Process	10-2
	10.2	10.2.1 Background	
		10.2.2 Relation to the proposed SAMP/WSAA Process	10-4
	10.3	COUNTY OF ORANGE GENERAL PLAN	10-5
		10.3.1 Land Use Element	10-5
	10.4	ORANCE COUNTY TRANSPORTATION AUTHORITY MASTER PLAN OF ARTERIAL	
		HIGHWAYS	
	10.5	SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS	10-9
	10.6	UNIVERSITY OF CALIFORNIA, INVINE LONG PANCE DEVELOPMENT DI AN (LICI	10-10
	10.7	UNIVERSITY OF CALIFORNIA, IRVINE LONG RANGE DEVELOPMENT PLAN (UCI I RDP)	10-13
	10.8	OTHER MUNICIPAL GENERAL PLANS	10-13
	10.0	10.8.1 City of Santa Ana	10-15
		10.8.2 City of Tustin	10-15
		10.8.3 City of Newport Beach	10-16
		10.8.4 City of Orange	10-16
		10.8.5 City of Lake Forest	10-17
		10.8.6 City of Laguna Hills	10-17
		10.8.7 City of Laguna Woods	10-18
11.0	LIST	OF PREPARERS	11-1
12.0	LIST	OF CONSULTING AGENCIES AND PARTICIPANTS	
13.0	ACRO	DNYMS AND GLOSSARY	
	13.1 13.2	ACRONYMS GLOSSARY	
14.0	REFE	RENCES	

VOLUME II – TECHNICAL APPENDICES

APPENDIX A-1 NOTICE OF INTENT TO PREPARE A JOINT DRAFT EIS/EIR FOR THE SAN DIEGO CREEK WATERSHED SAMP/MSAA

<u>APPENDIX A-2 NOTICE OF PREPARATION OF A DRAFT EIS/EIR FOR THE SAN DIEGO</u> <u>CREEK WATERSHED SAMP/MSAA</u>

APPENDIX B-1 PLANNING LEVEL DELINEATION (PLD)

- <u>APPENDIX B-2 LANDSCAPE LEVEL FUNCTIONAL ASSESSMENT (LLFA)</u> <u>(ASSESSMENT OF RIPARIAN ECOSYSTEM INTEGRITY IN THE SAN DIEGO</u> <u>CREEK WATERSHED)</u>
- APPENDIX B-3 SAN DIEGO CREEK WATERSHED RIPARIAN ECOSYSTEM RESTORATION PLAN: SITE SELECTION AND GENERAL DESIGN CRITERIA
- APPENDIX C-1 CORPS SPECIAL PUBLIC NOTICE ON THE PROPOSED LETTER OF PERMISSION FOR THE SAN DIEGO CREEK WATERSHED
- <u>APPENDIX D CALIFORNIA DEPARTMENT OF FISH AND GAME, LEVELS 1 3</u> <u>STREAMBED ALTERATION AGREEMENT TEMPLATES AND STREAMBED</u> <u>ALTERATION AGREEMENT TEMPLATES MASTER CONDITIONS LIST FOR THE</u> <u>SAN DIEGO CREEK WATERSHED</u>
- <u>APPENDIX E COMPLIANCE WITH THE CLEAN WATER ACT SECTION 404(B)(1)</u> <u>GUIDELINES</u>

APPENDIX F - PROCEEDINGS FROM PUBLIC MEETING HELD ON APRIL 1, 2008

VOLUME III – RESPONSE TO COMMENTS AND ERRATA

LIST (OF REVISED FIGURESII			
LIST (LIST OF TABLES III			
TABL	E OF CONTENTS FOR VOLUMES I AND II (WITHOUT PAGE NUMBERS IV			
1.0	INTRODUCTION1-1			
2.0	LIST OF RESPONDENTS			
<u>3.0</u>	COMMENTS RECEIVED AND RESPONSES TO COMMENTS			
	3.1 Responses to Comments from Federal Agencies			
	3.2 Responses to Comments from State Agencies			
	3.3 Responses to Comments from Special Districts and Regional Governments			
	3.4 Responses to Comments from Local Governments			
	3.5 Responses to Comments from Individuals/Organizations			
4.0	CLARIFICATIONS AND REVISIONS			
	4.1 Section 1: Introduction			
	4.2 Section 2: Project Descriptions			
	4.3 Section 3: Baseline Conditions			
	4.4 Section 4: Programmatic Impact Analysis of SAMP/WSAA Process and Regulated			
	Activities			
	4.5 Section 8: Other Federal and State Impact Considerations			
	4.6 Section 9: Consistency with Federal and State Laws			
	4.7 Section 10: Consistency with Regional and Local Plans			

Draft-Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

	4.8 Section 13: Acronyms and Glossary	<u> 1-59</u>
	4.9 Section 14: References	<u>1-63</u>
	4.10 APPENDIX C-1: CORPS SPECIAL PUBLIC NOTICE ON THE PROPOSED LETTER OF PERMISSION FOR THE SAN DIEGO CREEK WATERSHED	<u>1-64</u>
	4.11 APPENDIX C-2: CORPS SPECIAL PUBLIC NOTICE ON THE PROPOSED REGIONAL GENERAL PERMIT FOR THE SAN DIEGO CREEK WATERSHED	<u>1-65</u>
	<u>4.12 CALIFORNIA DEPARTMENT OF FISH AND GAME LEVELS 1 – 3</u> <u>STREAMBED ALTERATION AGREEMENT TEMPLATES AND STREAMBED</u>	
	<u>ALTERATION AGREEMENT TEMPLATES MASTER CONDITIONS LIST FOR THE</u> SAN DIEGO CREEK WATERSHED	<u>1-66</u>
<u>5.0</u>	LIST OF PREPARERS (FOR VOLUME III – EVALUATION OF AND RESPONSE TO COMMENTS/ FRRATA ONLY)	5-1
<u>6.0</u>	LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE NOTICE OF AVAILABILITY FOR THE DRAFT EIS/EIR WERE SENT	6-1
7.0	CITED REFERENCES FOR VOLUME III	7-1
APPE	NDIX F – PROCEEDINGS FROM PUBLIC MEETING HELD ON APRIL 1, 2008	A-1

LIST OF FIGURES

		PAGE
Figure 1-1a.	San Diego Creek Watershed Boundary Baseline Map	
Figure 1-1b.	San Diego Creek Watershed Boundary	
Figure 2-1.	Overview of San Diego Creek Watershed SAMP	
Figure 2-2.	Aquatic Resource Integrity Areas (Northern Area)	2-10
Figure 2-3.	Aquatic Resource Integrity Areas (Southern Area)	
Figure 2-4.	Relationship between the SAMP Aquatic Resource Integrity Areas and the Central-Costal NCCP Subregional Reserve System Planning Areas	
Figure 2-5.	Flow Diagram for Corps SAMP Permit Process for San Diego Creek Watershed	1
Figure 2-6.	Flow Diagram for Department's WSAA Process for San Diego Creek Watershe	d 2-41 <u>44</u>
Figure 2-7.	Prospective Restoration Areas Connecting Aquatic Resources in the Orange County Central-Coastal NCCP Subregional Reserve System.	2- 56 63
Figure 2-8.	Prospective Restoration Sites within Existing Open Space	2- 60 67
Figure 2-9.	Prospective Restoration Sites Connecting High/Medium Integrity Resource Reaches	2- <u>62</u> 69
Figure 2-10.	Prospective Restoration Sites with Species of Endangered, Threatened, or Speci	al
D : 0.11	Concern Status.	2- 64<u>71</u>
Figure 2-11.	Remaining Prospective Restoration Sites.	2- 68<u>75</u>
Figure 2-12.	Prospective Enhancement Sites.	2- 71<u>78</u>
Figure 3 <u>-</u> 1a.	Results of the Planning Level Delineation, Northern Portion of the Watershed	3- <u>86</u>
Figure 3-1b.	Results of the Planning Level Delineation, Southern Portion of the Watershed	3- <u>97</u>
Figure 3-2.	Cross-Sectional Profile of a Representative Riparian Ecosystem	3- <u>1513</u>
Figure <u>3-</u> 3a.	Illustration of a Riparian Reach and Local Drainage Basin	3- <u>1816</u>
Figure <u>3-</u> 3b.	Illustration of a Drainage Basin	3- 19<u>17</u>
Figure 3-4.	Spatial Distribution of Ecosystem Integrity Scores, Habitat	3- 21<u>19</u>
Figure 3-5.	Topographic Relief Zones of the Watershed	3- 2 4 <u>22</u>
Figure 3-6.	Existing Open Space, Reserves, and Special Linkage Areas	3- 26 24
Figure 3-7.	Potential Wildlife Movement Corridors	3-44 <u>42</u>
Figure 3-8.	Landforms	3- <u>4644</u>
Figure 3-9.	Drainage Channels	3-47 <u>45</u>
Figure 3-10.	Historic Watershed Hydrography	3-4 <u>947</u>
Figure 3-11.	San Diego Creek Sediment and Streamflow Discharge versus Rainfall, San Dieg Creek at Campus Drive, 1999 – 2006	go 3- 58<u>56</u>
Figure 3-12.	Spatial Distribution of Ecosystem Integrity Scores, Hydrology	3- 61<u>59</u>
Figure 3-13.	Spatial Distribution of Ecosystem Integrity Scores, Water Quality	3- 77 75
Figure 3-14.	Soils Map	3- <u>88</u> 87
Figure 3-15.	Aerial Map of Watershed Showing Developed/Developing and Remaining Undeveloped Areas	3- 89 87
Figure 3-16.	Regional Recreational Resources within the Watershed	3- 102 101
Figure 3-17	Orange County Master Plan of Arterial Highways (MPAH)	3- <u>108</u> 109
-0		<u></u>

LIST OF TABLES

	PAGE
Table ES-1.	Summary of Impacts and Mitigation Measures for Proposed SAMP/WSAA
	Process
Table ES-2.	Comparison of Alternatives to the Proposed SAMP/WSAA ProcessES-2528
Table 2-1.	Regulated Activities Anticipated During the SAMP Formulation Process
Table 2-2.	Comparison between Corps Current and Proposed SAMP Permitting Processes within the San Diego Creek Watershed
Table 2-3.	Proposed General Conditions for San Diego Creek Watershed Letter of Permission
Table 2-4.	Proposed General Conditions for San Diego Creek Watershed Regional General Permit
Table 2-5.	Riparian Areas in which Certain Activities may be Ineligible for Permitting Under LOP Procedures Or The WSAA Process
Table 2-6.	Comparisons between Current SAA/MSAA and Proposed WSAA Process Elements for Department SAAS Within The San Diego Creek Watershed
Table 2-7.	Summary List of San Diego Creek Watershed SAA Templates Master Conditions. 2-4448
Table 2-8.	Details of Prospective Restoration Sites Connecting Aquatic Resources Located In the Orange County Central-Coastal NCCP Subregional Reserve System
Table 2-9.	Details of Prospective Restoration Sites in Upland Open Space Areas
Table 2-10.	Details of Prospective Restoration Sites Connecting High/Medium Integrity Resource Reaches
Table 2-11.	Details of Prospective Restoration Sites with Endangered or Threatened Species Habitat
Table 2-12.	Details of the Remaining Prospective Restoration Sites
Table 2-13.	Details of Prospective Enhancement Sites
Table 2-14.	Recommendations for Long-Term Management of Compensatory Mitigation
T 11 A 1 F	Sites and Protection of Aquatic Resource Integrity Areas
Table 2-15.	Comparison of Current and Proposed Permitting Processes
Table 2-16.	Comparisons between Corps Current and Proposed SAMP Permitting Program In Terms of Processing Times
Table 2-17.	Key Characteristics of SAMP/WSAA Process and Alternatives
Table 3-1.	Aquatic Resource Types Identified by Lichvar et al. (2000)
Table 3-2.	Riparian Habitats as Identified by the PLD (Lichvar et al. 2000)
Table 3-3.	Major Vegetation Distribution Patterns by Zones
Table 3- 5 4.	Summary of Ecosystem Integrity Scores – All Drainages Combined
Table 3- <u>65</u> .	Permanent Impacts and Compensatory Mitigation for Wetlands and Non-Wetland Waters of the U.S. Permitted Between 9/1/2000 and 7/31/2007
Table 3-7 <u>6</u> .	Upland Habitat Types in the Watershed Based on the NCCP GIS Database
Table 3- <u>87</u> .	Previously Detected or Potentially Occurring Threatened or Endangered Wildlife Species within the San Diego Creek Watershed

Table 3- <u>98</u> .	Previously Detected or Potentially Occurring Threatened or Endangered Plant Species within the San Diego Creek Watershed
Table 3- 10 9.	Drainage Channels of the San Diego Creek Watershed
Table 3- 11<u>10</u>.	Flow Characteristics of San Diego Creek
Table 3- 12<u>11</u>.	Characteristics of Foothill Retarding Basins
Table 3- 13<u>12</u>.	Present or Potential Beneficial Uses of San Diego Creek and Upper Newport Bay. 3-6260
Table 3- 1 4 <u>13</u> .	Present or Potential Beneficial Uses of Other Water Bodies in the San Diego Creek Watershed
Table 3- 15<u>14</u>.	Water Quality Objectives and CTR Standards Applicable to Surface Water
Table 3- 16<u>15</u>.	Water Quality Objectives Applicable to Groundwater
Table 3-17 <u>16</u> .	San Diego Creek and Upper Newport Bay Water Quality Monitoring Data
Table 3- <u>1817</u> .	TMDLs Applicable to Newport Bay and San Diego Creek
Table 3- 19 18.	State and Federal Ambient Air Quality Standards
Table 3- 2019(<u>a)</u> OCP-2004 Population
Table 3-2019(b-d) 2004 RTP Population Forecast
Table 3- <u>2120</u> .	OCP-2004 Dwelling Units
Table 3- <u>2221</u> .	Adopted Regional Housing Needs Assessment Construction Need1
Table 3- 23 22.	OCP-2004 Employment
Table 3-2423.	Major Arterial Roadways in Watershed
Table 4-1.	Comparison of Corps 404(b)(1) Guidelines and CEQA Appendix G
Table 4-2.	Comparison of Corps 404(b)(1) Guidelines and CEQA Appendix G 4-26
Table 4-3.	Comparison of Corps 404(b)(1) Guidelines and CEQA Appendix G
Table 4- <u>54</u> .	Comparison of Corps 404(b)(1) Guidelines and CEQA Appendix G
Table 4- <u>65</u> .	Consistency of Proposed RGP with Existing Water Quality Policies/Regulations 4-54
Table 4-7 <u>6</u> .	Consistency of Proposed LOP with Existing Water Quality Policies/Regulations 4-56
Table 4- <u>87</u> .	Consistency of Proposed WSAA Process with Existing Water Quality Policies/Regulation
Table 4- <u>98</u> .	SCAQMD Air Quality Significance Thresholds
Table 4- 10 9.	Acreage of Aquatic Resource Integrity Areas by Municipal Jurisdiction
Table 5-1.	Comparison of Alternatives to the Proposed SAMP/WSAA Process
Table 8 .3_ 1.	Race and Ethnicity - 2000
Table 8 .3_ 2.	Household Income 1999
Table 10-1.	Consistency of SAMP Tenets with Relevant Policies of Municipal General Plans 10-19

PREFACE

In accordance with the National Environmental Policy Act (NEPA) (Council on Environmental Quality (CEQ) Regulations Section 1503.4) and California Environmental Quality Act (CEQA) (14 C.C.R. Section 15132), the United States Army Corps of Engineers (Corps), as the lead Federal Agency, and the California Department of Fish and Game (Department), as the lead State Agency, have prepared a Final Program Environmental Impact Statement/ Environmental Impact Report (Program EIS/EIR) for the San Diego Creek Watershed Special Area Management Plan/Watershed Streambed Alteration Agreement Process (SAMP/WSAA Process). Volume I is the Final Program EIS/EIR and revisions made to the Draft in response to the public review process are shown in strikeout and underline font. Volume II is the Technical Appendices to the Program EIS/EIR and changes made since the Draft are shown in strikeout and underline font. The Corps and the Department's Evaluation of and Response to Comments/Errata document represents Volume III of the Final Program EIS/EIR.

As described in Volume III, all comment letters and e-mail correspondence received on the draft Program EIS/EIR are included in the Evaluation of and Response to Comments/Errata document. The Corps and Department's evaluation of and responses to comments are provided in Section 3 of Volume III. As necessary to address the comments, revisions to the Program EIS/EIR have been made and are compiled together in Section 4 of Volume III and reflected in Volumes I and II of the Final Program EIS/EIR, as appropriate. Together, Volumes I, II, and III of the Final Program EIS/EIR constitute the environmental documentation for the SAMP/WSAA Process.

The SAMP document itself is separate from the Program EIS/EIR and is considered somewhat of a "living document." The Corps revised the SAMP as necessary in response to comments received on the Draft Program EIS/EIR and published the revised version concurrently with the Final Program EIS/EIR.

Volumes I and II of the Final Program EIS/EIR are available on CD or electronically. Volume III of the Final Program EIS/EIR is available on CD or electronically and a limited number of bound copies are available upon request. The SAMP is available on CD or electronically, and a limited number of bound copies are available upon request.

EXECUTIVE SUMMARY

ES.1 PROJECT PURPOSE

The primary purpose of the Special Area Management Plan (SAMP) and Watershed Streambed Alteration Agreement Process (WSAA Process) is to improve the U.S. Army Corps of Engineers, Los Angeles District Regulatory Division (Corps) and the California Department of Fish and Game, Habitat Conservation, South Coast Region (Department) capacity for making permitting decisions in the San Diego Creek Watershed (Watershed) using an approach that balances aquatic resource protection with reasonable economic development and infrastructure needs. The underlying goal of the SAMP is to support riparian ecosystem conservation and management by comprehensively assessing the Watershed's aquatic resources and developing a strategic and coordinated regulatory approach (permitting and mitigation). This approach prioritizes avoidance of impacts to higher integrity aquatic resources and envisions targeted enhancement and restoration activities related to regulatory actions that will maintain and improve the Watershed's aquatic resource functions and values over the long term. It is believed that these goals can be achieved through the cooperative efforts on the part of the Corps, the Department, local government, state and federal resource agencies, local landowners, and other stakeholders, including the interested public.

ES.2 SAMP TENETS

The SAMP tenets, listed below, are overarching, guiding principles for the Watershed based on the knowledge of the Watershed's resources obtained through baseline assessments. The Corps and Department identified these important scientific elements that, if adhered to, would ensure the goals and objectives of the SAMP are met. The tenets provide a method of evaluating potential impacts and inform the Corps and the Department in their efforts to achieve the respective goals of the Clean Water Act (CWA) (i.e., of protecting the biological, chemical, and physical integrity of waters of the U.S.) and the California Department of Fish and Game Code (FGC) (i.e., to avoid impacts to fish and wildlife that use the State's lakes, rivers and streams).

- No Net Loss of Acreage and Functions of Waters of the U.S.;
- Maintain/Restore Hydrologic, Water Quality, and Habitat Integrity;
- Protect Headwaters Areas;
- Maintain/Protect/Restore Diverse and Continuous Riparian Corridors;
- Maintain or Restore Floodplain Connection;
- Maintain and/or Restore Sediment and Transport Equilibrium;
- Maintain Adequate Buffers for the Protected Riparian Corridors; and
- Protect Riparian Areas and Associated Habitats Supporting Federally- and State-Listed, Sensitive Species and their Habitat.

ES.3 PROJECT DESCRIPTION FOR SAMP/WSAA PROCESS

The San Diego Creek Watershed SAMP formulation process was initiated in 1998 with state and federal agencies, in coordination with local land owners/managers with known and future regulated activities in the Watershed. The result of the SAMP formulation process is a plan, which includes the following four elements:

- SAMP Analytical Framework;
- Watershed-specific permitting process for the Corps CWA Section 404 program and the addition of a Department WSAA Process in accordance with FGC Section 1600 *et seq*, and a corresponding mitigation framework for the Watershed;
- Strategic Mitigation Plan; and
- Mitigation Coordination Program.

The first component of this SAMP, the Analytical Framework, is based on a landscape level functional assessment (LLFA) of the Watershed's riparian ecosystem. The LLFA ranked the functional integrity of aquatic resources in the Watershed in terms of habitat, hydrology and water quality. High ranking aquatic resources were identified as aquatic resource integrity areas, subject to greater regulatory scrutiny and efforts for impact avoidance. From this ranking process and coordination with SAMP Participating Applicants (discussed below), an impact avoidance and minimization plan was developed. The Corps, with the Department developed the Analytical Framework as a decision-making tool for evaluating regulated activities that would affect aquatic resources in the Watershed.

The second element of the SAMP, the Watershed-specific permit process, entails modifications to permitting procedures to provide the Corps and the Department with Watershed-based and resource-based permitting protocols. This regulatory component of the SAMP also includes a mitigation framework for temporary and permanent impacts that includes no net loss in acreage and functional integrity of aquatic resources.

Related is the third element of the SAMP, a Strategic Mitigation Plan. This plan is based on a riparian ecosystem restoration plan for the Watershed that identifies prioritized restoration sites for the Watershed to be utilized in conjunction with the mitigation framework, to enhance the overall ecosystem function of the Watershed.

The fourth element, the Mitigation Coordination Program focuses on developing and implementing a coordinated approach among local landowners/managers and stakeholders to long-term aquatic resource management within the Watershed.

The SAMP, comprised of these four elements, is detailed in the Corps report entitled *Special Area Management Plan for the San Diego Creek Watershed* (Corps, 2008). These SAMP elements are the proposed action/proposed project for this Program EIS/EIR.

URS

Involved Agencies and Participating Applicants

The following state and federal resource agencies have been involved in development of the SAMP/WSAA Process:

- Corps, Regulatory Division of the Los Angeles District (Federal Lead Agency);
- Department Habitat Conservation Unit, South Coast Region (State Lead Agency);
- California Regional Water Quality Control Board, Santa Ana Region 8 (State Responsible Agency);
- U.S Fish and Wildlife Service (USFWS) (Federal Cooperating Agency); and
- U.S. Environmental Protection Agency (U.S. EPA), Region IX (Federal Cooperating Agency).

On several occasions in 2001 and 2002, the Corps contacted public and private entities (potential applicants) with known development projects and infrastructure/maintenance activities within the Watershed to seek their participation in the SAMP/WSAA Process. The Irvine Company, Irvine Ranch Water District, Orange County Flood Control District, and the City of Irvine chose to participate in the SAMP/WSAA Process for future projects and activities subject to permitting under Section 404 of the federal CWA and Section 1600 *et seq.* of the FGC. These entities are referred to as the Participating Applicants. The County of Orange Resources Development and Management Department (formerly Public Facilities and Resources Department) and County of Orange Integrated Waste Management Department were coordinating agencies.

Since the Participating Applicants were able to provide project information at a sufficiently detailed level to bring forward for pre-application planning purposes, the Corps and the Department were able to work with the Participating Applicants to examine projects and activities and help identify ways to achieve conformance with the SAMP Analytical Framework and impact avoidance and minimization plan.

This EIS/EIR does not evaluate the specific projects of Participating Applicants that may be permitted under the SAMP/WSAA Process because some of these projects have been permitted under the existing permit program and others are or will be undergoing separate environmental review and permit processing by the local lead agencies. Nonetheless, this EIS/EIR programmatically evaluates seven categories of regulated activities that could be permitted under the SAMP/WSAA Process, including regulated activities for which the Participating Applicants may seek Corps/Department permit approval.

Summary of Permitting Process Modifications and Mitigation Framework

The second major component of the SAMP is the Watershed-specific permitting process. The Corps and Department propose to establish an alternate permitting/agreement process pursuant to their respective authorities under the CWA Section 404 and FGC Section 1600 *et seq.* that reflects the Watershed- and resource-based Analytical Framework. Thus, the Corps and the Department's watershed-specific permitting procedures and mitigation policies will now differentiate among aquatic resources based on their water quality, habitat, and hydrologic integrity and functional role in the Watershed. The focus of the Corps and the Department's new Watershed-specific permitting program is to provide the appropriate level of review of proposed regulated activities in consideration of aquatic resource integrity within the Watershed. The SAMP Analytical Framework, which has allowed the Corps and Department to identify

aquatic resource integrity areas and major stream systems that merit closer consideration, will improve the agencies' capacity to make informed management decisions within the agencies' authorities (i.e., permitting decisions, including mitigation). This approach has been translated into the proposed regulatory permitting modifications described herein.

Corps Watershed-Specific Permitting Process

The proposed modifications to the Corps permitting process for the Watershed include:

- Change the availability of selected nationwide permits (NWPs) for use in the Watershed;
- Establish new Letter of Permission (LOP) procedures for the Watershed; and
- Establish a new maintenance regional general permit (RGP) for the Watershed.

Effectively, the LOP procedures and RGP would replace some NWPs and provide a permitting mechanism with shortened permit processing times, as compared with a Standard Individual Permit (SIP), for eligible regulated activities that are consistent with the SAMP Analytical Framework.

Authorizations under LOP procedures would be based on conformity with the following criteria. <u>Within aquatic resource integrity areas only, LOP procedures would be available</u> for temporary impacts, or minor, permanent impacts up to 0.1 acre of waters of the U.S. associated with selected activities, excluding capital improvement flood control projects, as mentioned below. For impacts to waters of the U.S. <u>outside of aquatic resource integrity areas</u> the LOP would be available for applicants who can demonstrate impact avoidance and minimization was achieved to the extent practicable and resulting changes in low integrity areas would only have a minor effect on Watershed integrity. Activities resulting in stream channelization/storm drain conversion for five major stream systems in aquatic resource integrity areas including Borrego Canyon, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek and Serrano Creek, or those activities which would substantially alter a compensatory mitigation site are ineligible for LOP procedures. The LOPs would also require compliance with a set of general conditions to further reduce potential project effects.

Qualifying routine maintenance activities would be authorized under a new maintenance RGP, that would authorize discharges of dredged and fill materials only <u>outside aquatic resource integrity areas</u>, resulting in temporary impacts up to 0.5 acres of which only 0.1 acre may be vegetated with native riparian and/or wetland vegetation. This RGP would also require compliance with a set of general conditions to further reduce potential project effects.

Alternatively, activities regulated by the Corps under Section 404 and ineligible for a NWP, an LOP, or RGP, would be required to undergo evaluation through the existing SIP process.

This revised process also includes a mitigation framework specific for the Watershed that includes compensatory mitigation ratios for temporary and permanent impacts to ensure no net loss in acres and functional integrity of aquatic resources.

Department's Watershed-Specific Permitting Process

The Department's proposed alternate streambed alteration agreement (SAA) strategy for the Watershed is the WSAA Process. The process consists of three functional habitat quality-based SAA templates (Levels 1, 2 and 3) and a SAA Templates Master Conditions List. The Level 1 template SAAs apply to proposed activities that would alter aquatic resources <u>outside aquatic resource integrity areas</u> that are not mainstem streams. The Level 2 template SAAs apply to activities that would alter <u>mainstem stream reaches outside aquatic resource integrity areas</u>. The Level 3 template SAAs cover certain types of activities <u>within</u> <u>aquatic resource integrity areas</u>. Each template contains a specific list of conditions that the project applicant would agree to implement to help avoid, minimize, and mitigate any substantial or potentially significant effects that the activity could have on rivers, streams and lakes, and associated fish and wildlife resources. The inclusion of a SAA Templates Master Conditions List allows the Department to modify the three SAA template conditions for future use according to specific project needs while still maintaining a high degree of efficiency and resource protection. Similar to the Corps LOP procedures, qualification for a template SAA (or MSAA tiered off this Program EIS/EIR) would be based on compliance with specified criteria, including consistency with the SAMP. All other regulated activities ineligible for the WSAA Process template SAAs would require a standard SAA or master SAA.

For consistency with the Corps proposed LOP procedures, the Department has established the same mitigation requirements including compensatory mitigation ratios for temporary and permanent impacts, but has additional compensatory mitigation for oak, walnut, and sycamore woodland impacts.

Benefits of the Modified Permitting Processes

The proposed permitting changes reflect more front-end analysis of the Watershed's aquatic resources and consideration of how regulated activities may affect those resources. As a result, the proposed changes would allow the Corps and the Department to target staff review and evaluation time towards regulated activities and projects with greater potential to adversely impact the overall integrity of aquatic resources in the Watershed. Conversely, projects and regulated activities with minor impacts that affect low integrity aquatic resources would undergo more efficient permitting procedures. These areas that failed to meet the criteria of aquatic resource integrity areas represent aquatic resources with low hydrologic, water quality, and habitat integrity; little habitat value for threatened and/or endangered species; and low wildlife connectivity value. Regardless of their decreased integrity, the permanent loss of lower value resources would need to be compensated for under the SAMP mitigation framework.

The Corps and the Department have agreed to increase coordination with the other resource agencies over their corresponding related regulatory programs when reviewing future permit applications. Mechanisms for increased interagency coordination are included in the proposed permitting procedures.

In issuing any future permits to applicants, the Corps would, to the extent permissible, rely on and would utilize this Program EIS/EIR prepared in conjunction with the SAMP as the National Environmental Policy Act (NEPA) program environmental document for such permits and approvals. Likewise, the Department would, to the extent permissible, rely on the EIS/EIR prepared in conjunction with SAMP as appropriate California Environmental Quality Act (CEQA) program documentation for any approvals regarding potential impacts to Department jurisdiction along with any project specific CEQA

documentation. Use of this Program EIS/EIR would help reduce staff time and workload needed to process permits for some projects.

Anticipated Regulated Activities under the Proposed SAMP/WSAA Process

Future anticipated activities in the Watershed that are regulated by the Corps and the Department under CWA and FGC (i.e., require the discharge of dredged or fill material into waters of the U.S. or that affect the bed, bank, or channel of a stream or lake) would be subject to the SAMP Permitting Program/WSAA Process. The following categories of regulated activities are fully described and analyzed programmatically in this EIS/EIR:

- Utility Lines;
- Flood Control Facilities;
- Road Crossings including Bridges and Culverts;
- Land Development for Residential, Commercial, Industrial, Institutional and Recreational Facilities;
- Storm Water Treatment and Management Facilities;
- Habitat Restoration and Enhancement Projects; and
- Fire Abatement and Vegetation Fuel Management Activities.

Strategic Mitigation Plan

The Strategic Mitigation Plan, the third SAMP element, is a tool the Corps and the Department would use in concert with the Watershed-specific permitting procedures to improve the long-term sustainability of the Watershed's aquatic resources. The plan would guide mitigation efforts (i.e., avoidance, minimization, and compensation of unavoidable impacts) to realize the maximum functional benefit to the aquatic resources within the Watershed. Restoration, creation, and enhancement efforts would be directed to occur in areas with moderate or low integrity resources to help increase their functional integrity. The methodology for identifying Watershed-appropriate riparian ecosystem restoration opportunities is provided by in U.S. Army Engineering Research and Development Center (ERDC) supplemental study to the SAMP, the Riparian Ecosystem Restoration Plan. This restoration plan was based upon an evaluation of factors such as the "restoration potential" of specific riparian reaches, a site's geomorphic setting, and the "level of effort" necessary to restore specific stream reaches.

Specific criteria were applied to produce a nested hierarchy of restoration opportunities in the Watershed. The criteria, which are consistent with the SAMP Tenets, allowed the agencies to strategically prioritize restoration sites for potential implementation as compensatory mitigation sites to attain the greatest functional improvement for a standardized estimation of effort required. The Strategic Mitigation Plan includes the results of the prioritization process presented in a series of figures and corresponding tables.

The Corps and the Department prepared an extensive suite of guidelines and measures for aquatic resource management to help with long-term maintenance of restoration sites and help ensure the long-term sustainability and protection of aquatic resource integrity areas of the Watershed.

The primary means of implementing the Strategic Mitigation Plan would be through adherence to the SAMP mitigation framework, as required through issuance of RGPs, LOPs and WSAAs Process for individual projects. Management of the aquatic resource integrity areas to promote the maintenance and restoration of aquatic resource integrity would be supported by the regulatory process and is one of the principal benefits of the SAMP. Compensatory mitigation in the form(s) of preservation, creation, restoration, and/or enhancement activities would be required to offset permanent and temporal impacts to aquatic resources.

Furthermore, to facilitate broader scale conservation efforts through compensatory mitigation, the Corps and the Department anticipate the establishment of a third-party mitigation opportunity such as a mitigation bank and/or an ILF (Corps only) mitigation program. Such efforts would assist in addressing the long-term management needs of mitigation lands.

The Strategic Mitigation Plan, along with the identification of the aquatic resource integrity areas, has been designed in cooperation with, and to the satisfaction of, the Corps and the Department to avoid any conflicts with the other ecosystem reserve and restoration efforts, including the Orange County Central/Coastal Natural Community Conservation Plan (NCCP), and to accommodate the proposed riparian corridor(s) of the proposed Orange County Great Park.

Mitigation Coordination Program

The Mitigation Coordination Program is intended to guide implementation of the Strategic Mitigation Plan and to support long-term restoration and conservation goals and management strategies for the Watershed's aquatic resource integrity areas. The program is organized into two tiers:

Tier One: Priority Activities:

- Coordinate aquatic resource restoration efforts with other landowners/land managers;
- Coordinate long-term adaptive management, monitoring and maintenance efforts;
- Implement the Strategic Mitigation Plan; and
- Solicit Sponsor(s) of a Third-party Mitigation Program and/or Mitigation Bank.

Tier Two: Secondary Activities

- Work with existing Watershed stakeholder groups to integrate with existing watershed management and aquatic resource conservation efforts in the Watershed;
- Facilitate the sharing and use amongst the various watershed managers of scientific and other technical data available on the aquatic environment; and
- Facilitate aquatic ecosystem restoration and enhancement activities unrelated to regulatory programs or compensatory mitigation.

This strategy recognizes that a cooperative effort on the part of the Watershed stakeholders would be required to ensure long-term conservation of high value resources since watershed-wide aquatic resource conservation extends well beyond the scope or jurisdiction of one agency or land owner/manager. The Corps conceptual model for a management structure entails the following:

• Coordination Committee; and

• Mitigation Coordination Program Administrator, Third-Party Mitigation Program or Mitigation Bank Program Sponsor.

ES.4 ALTERNATIVES TO THE PROPOSED SAMP/WSAA PROCESS

Each of the alternatives addressed in this EIS/EIR are variations of permitting processes and include alternatives that are specifically required under state and federal law such as the No Action, Avoidance of Impacts, and Existing General Plan Alternatives. The permitting alternatives may or may not contribute to achieving the goals and purposes of the SAMP/WSAA Process program.

No Project (Existing Case-by-Case Permitting) – Alternative 1

Under the No Project Alternative, no watershed-based planning and permitting would be utilized by the Corps or the Department, which means the Corps and the Department would not use the SAMP Analytical Framework (e.g. functional integrity evaluation of the Watershed) and would not modify permitting procedures to reflect the integrity of aquatic resources. No Strategic Mitigation Plan or Mitigation Coordination Program would be implemented to allow for targeted mitigation/restoration to help improve functional integrity of the Watershed and no long-term management/monitoring of mitigation/restoration sites. Proposed actions that involve impacts to jurisdictional areas within the Watershed would continue to be considered on a case-by-case basis, as done under the current permit system which involves use of NWPs and SIPs and individual SAAs. Mitigation would continue to be implemented on a case-by-case basis without regard to overall functional integrity, and thus, produce no measurable, cumulative benefit to the Watershed.

Complete Avoidance (No Permits Issued) – Alternative 2

Under Alternative 2, Complete Avoidance, activities that would encroach on Corps or Department's jurisdictional areas would not be permitted. No watershed planning effort would be utilized by the Corps and the Department (e.g. no use of the SAMP Analytical Framework, no modified permitting procedures to reflect the integrity of aquatic resources, no Strategic Mitigation Plan or Mitigation Coordination Program). Under this alternative, development in upland areas could not occur if access required bridging of jurisdictional features since no permits would be issued for impacts to jurisdictional areas. Since no direct temporary or permanent impacts to jurisdictional areas would occur, no mitigation would be required.

At a program level, implementation of this alternative would constitute pre-decisional, upfront permit denials of all applications for regulated discharges. It is recognized that it is beyond the Corps and the Department's authority to preclude applications for permits/agreements in the Watershed.

Avoidance Except for Bridges and Utility Lines (Limited Permitting) – Alternative 3

Under Alternative 3, Avoidance Except for Bridges and Utility Lines, the Corps and the Department would issue permits (under the existing permitting system) for encroachment in jurisdictional areas for construction and maintenance of bridges and utility lines. No other dredge and fill activities would be authorized under this alternative including new land development and associated public facilities, flood control structures, and storm water treatment facilities. No watershed planning effort would be utilized by the Corps and the Department (e.g. no use of the SAMP Analytical Framework, no modified

permitting procedures to reflect the integrity of aquatic resources, no Strategic Mitigation Plan or Mitigation Coordination Program).

At a program level, implementation of this alternative would constitute pre-decisional, upfront permit denials of all applications for regulated discharges except those associated with bridges and utility lines. It is recognized that it is beyond the Corps and the Department's authority to preclude applications for permits/agreements in the Watershed.

General Plan Build-out without Avoidance (Full Permitting) – Alternative 4

Under Alternative 4, General Plan Build-out, land development would occur in accordance with the local jurisdictional general plans and zoning requirements, utilizing the existing Corps and Department permitting system (SIPs, NWPs, and standard SAAs). However, no watershed planning effort would be utilized by the Corps and the Department (e.g. no use of the SAMP Analytical Framework, no modified permitting procedures to reflect the integrity of aquatic resources, no Strategic Mitigation Plan or Mitigation Coordination Program).

From a permitting perspective, this alternative is similar to Alternative 1, Existing Case-by-Case Permitting, but it reflects the greatest level of impacts on the gradient of impacts analyzed by the Corps. It is assumed for this alternative that there would be no specified local requirements to preserve areas of riparian and aquatic resources, no conservation easements, no specified buffer zones, and no setbacks from drainages. Hence, under this alternative most drainages would be modified (e.g., channelization, bank protection) to accommodate adjacent land development associated with full build-out of the General Plan.

ES.5 OVERVIEW OF PROGRAMMATIC IMPACT ANALYSIS

The proposed SAMP Permitting/WSAA Process (RGP, LOP, WSAA Process as well as the permit general conditions and mitigation framework) is expected to result in less than significant impacts, both on an individual site level and on a cumulative watershed level since the program requires no net loss in acres and functional integrity of the Watershed's aquatic ecosystem. In fact, the proposed process would be expected to enhance aquatic ecosystem function and ultimately provide a cumulative benefit to the aquatic ecosystem of the Watershed, in the long-term, as a result of the Strategic Mitigation Plan and Mitigation Coordination Program implementation. Therefore, in comparison to the Corps and Department's existing permit programs, this modified process is expected to result in a more protective program with respect to aquatic resources in the Watershed.

Programmatic Impact Analysis of Proposed Regulated Activities

The programmatic impact analysis of the seven categories of regulated activities under the proposed SAMP/WSAA Process focuses on potential impacts to: 1) aquatic, wetland, and riparian areas; 2) biological resources including threatened and endangered species; 3) hydrology, erosion and sedimentation; and 4) water quality. Programmatic impact analyses for 13 other environmental topic areas (Corps public interest review factors) are provided as well.

The regulated activities that would be permitted under the SAMP/WSAA Process are similar to those that would otherwise be permitted on case-by-case basis under existing Corps/Department Section 404 and

Section 1600 *et seq.* programs. As such, potential impacts from these regulated activities would be expected to be similar in nature to those authorized under the existing regulatory programs. However, the SAMP Permitting Program/WSAA Process was established based on a holistic, watershed-wide evaluation of aquatic resources from which permit conditions, compensatory mitigation, and targeted restoration requirements were developed to help maintain and improve the riparian ecosystem function over the entire Watershed. Comparatively, the current permitting process is conducted on a case-by-case project basis with no special consideration for aquatic resource integrity areas and no holistic plan for compensatory mitigation. Therefore, potential impacts of regulated activities under the SAMP/WSAA Process could be similar in nature, but likely to be less detrimental to the Watershed overall, in comparison to existing permitting programs because impacts in aquatic resource integrity areas would be minimized and compensatory mitigation would be targeted to areas providing the greatest functional benefit to the Watersheds ecosystem. The compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve and enlarge key habitat areas.

All future activities in the Watershed requiring authorization from the Corps and Department would be evaluated by these agencies for their consistency (or lack thereof) with the SAMP/WSAA Process. If a proposed activity is consistent with the SAMP/WSAA Process, then it is not expected to have a significant adverse impact. With implementation of the proposed permitting program's key elements mentioned below, impacts from these activities are expected to be either (a) below a level of significance, or (b) below a level of significance after incorporation of additional site-specific mitigation measures. Otherwise, a *non-consistent* activity would proceed using the existing permitting program, which would be a Corps SIP and Department individual SAA.

The SAMP Permitting Program/WSAA Process includes the following key elements to ensure future activities authorized through the RGP, LOP, WSAA Process result in less than significant impacts to aquatic, wetland, and riparian habitats, biological resources including threatened and endangered species, hydrology and water quality:

- Identification of aquatic resource integrity areas as priority impact avoidance areas;
- LOP and RGP acreage thresholds and RGP/LOP General Conditions to minimize impacts;
- Restrictions on use of certain permitting procedures for activities inside/outside high and medium quality integrity areas;
- Priority restoration areas for maximum "functional lift" (watershed and site-specific scale); and
- Facilitation of landowner participation and other watershed stakeholder coordination to provide long-term management and monitoring of aquatic resource integrity areas and ensure their long-term sustainability.

Additional site- and project-specific mitigation measures

Site and project-specific measures may be added to any RGP, LOP, or WSAA Process if required to ensure impacts would remain below a level of significance. The Corps and Department would retain their respective discretionary authorities to augment the SAMP/WSAA Process mitigation framework requirements for any proposed project that is inconsistent with the SAMP/WSAA Process or fails to meet any of the terms and conditions of the RGP, LOP, retained NWPs, or Level 1 - 3 SAA templates. If the

project remains inconsistent with the SAMP/WSAA Process, then a SIP review process and individual SAA would be required, which would entail supplemental NEPA/CEQA review and separate CWA Section 404(b)(1) analysis.

Direct vs. Indirect Impacts

Impact discussions distinguish, where appropriate, direct versus indirect impacts of the proposed SAMP/WSAA Process. This means those direct and indirect impacts in jurisdictional areas authorized by Corps/Department through the SAMP/WSAA Process versus those indirect impacts in the greater Watershed area, occurring later in time, indirectly resulting from Corps/Department approvals and analyzed in future CEQA documents required for local agency approvals.

The findings of the programmatic impact analysis are summarized in Table ES-1.

ES.6 PROGRAMMATIC CUMULATIVE IMPACT ANALYSIS

The modified permitting program and mitigation framework of the proposed SAMP/WSAA Process are based on a watershed-wide evaluation of aquatic resources to allow for greater avoidance in aquatic resource integrity areas and targeted mitigation/restoration to enhance the Watershed ecosystem. By design, implementation of all future regulated activities in the Watershed under the proposed SAMP Permitting Program/WSAA Process would not be expected to produce significant cumulative impacts to the Watershed's aquatic, wetland and riparian habitats, biological resources including threatened and endangered species, hydrologic conditions, or water quality. The SAMP/WSAA Process is a watershed-specific permit program that allows for more informed permit decisions to avoid or minimize impacts in high quality riparian areas and a mitigation framework that allows for no net loss in acres and functional integrity (e.g. no net loss of riparian habitat acreage and aquatic ecosystem function). This approach is expected to reduce the potential for cumulative impacts overall as compared to existing case-by-case permitting. Furthermore, the restoration plan, as specified in the Strategic Mitigation Plan, is designed to improve functional integrity in low and medium quality riparian areas, so that in the long-term, the Watershed's riparian ecosystem is maintained and enhanced. Therefore, the SAMP/WSAA Process would ultimately produce a cumulative benefit to the Watershed's aquatic ecosystem.

Other environmental topic areas generally cover non-jurisdictional resources in the greater Watershed area, and therefore no direct cumulative impacts would be expected. Impacts in these areas, if any, would only occur indirectly as a result of the permitted actions, primarily through land development. These impacts are considered indirect because they would occur later in time and further removed in distance (e.g. upland areas, not within the jurisdiction of the Corps or the Department).

Implementation of all regulated activities under the SAMP/WSAA Process applied to the projected activities shown in the general plans for the Watershed would not be expected to produce significant indirect cumulative impacts to most of the public interest review factors, including cultural resources, geology/soils, land use, noise, recreation, socioeconomics, visual resources, and water supply/conservation. However, potentially significant indirect cumulative impacts could occur on a more regional basis to air quality (global greenhouse gas emissions) and transportation/circulation systems.

(Section No.)	Summary of Impacts and Significance Determination	
Topic Area or Type of Activity		Mitigation Measures
(4.2) Aquatic, Wetland,	and Riparian Habitats	
Construction and Maintenance of Utility Lines	<u>Potential Impacts</u> : Grading, stockpiling, trenching, temporary stream diversion, dewatering and temporary access roads and work areas could result in temporary impacts such as species displacement, elimination of habitat, temporary disconnection of wildlife corridors, disruption of breeding from noise. Permanent impacts could include loss of habitat; reduction in refuge areas, foraging habitat and nesting/roosting areas; fragmentation impacts. <u>Significance Determination</u> : Less than significant (LTS). Impacts to aquatic, wetland, and riparian habitats from utility lines would be mitigated to less than significant through application of the SAMP/WSAA Process mitigation framework and general conditions of the RGP, LOP, and WSAA Process. The permitting and mitigation requirements established by the SAMP/WSAA Process promote increased protection of aquatic resource integrity areas, as well as a more efficient riparian ecosystem restoration program for the entire Watershed. Where aquatic resource impacts would be primarily focused in areas of low ecosystem integrity, the compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve habitat quality, including functions, in the Watershed to a greater extent than existing Corps and Department permitting programs. Additionally, requirements of other federal, state, and local regulations would help minimize impacts.	No NEPA/CEQA mitigation measures are needed because impacts are expected to be less than significant.
Construction and Maintenance of Flood Control Facilities	<u>Potential Impacts</u> : Grading, stockpiling, trenching, temporary stream diversion, dewatering and access roads, sediment removal, channel desilting, vegetation management, could result in temporary impacts such as habitat removal/disturbance; indirect impacts from erosion and sedimentation; potential increase in invasive, exotic species; reduction in species diversity from herbicide use; temporary loss in habitat functions. Long-term maintenance impacts would be similar. <u>Significance Determination</u> : LTS. See discussion under Utility Lines.	No NEPA/CEQA mitigation measures are needed.
Construction and Maintenance of Road Crossings, including	<u>Potential Impacts</u> : Grading, excavation, compacting and/or filling, vegetation clearing; temporary stream diversion, dewatering, access roads, channel desilting, paving, vegetation management and removal, could result in habitat disturbance/removal; erosion and	No NEPA/CEQA mitigation measures are needed.

Table ES-1.	Summary of Impacts	and Mitigation Measu	res for Proposed SAM	MP/WSAA Process
	v i	0	1	

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
Bridges and Culverts	 sedimentation; increased potential for invasive species; channel/bank instability; temporary loss in habitat function. Permanent impacts could include alteration of structure and function of habitat; shading impacts; changes in downstream hydrology, flood extent and timing affecting persistence of riparian plants; reduction in hydrologic and habitat connectivity of riparian reaches. <u>Significance Determination</u>: LTS. See discussion under Utility Lines. Also, no Corps LOP could be issued for flood control-related conversions of soft-bottom channels to concrete-lined, or result in the channelization of any of the five major stream systems in the Watershed. 	
Land Development for Residential, Commercial, Industrial, Institutional and Recreational Uses	<u>Potential Impacts</u> : Excavation of soil, placement of fill and access roads could result in temporary impacts such as habitat removal/disturbance; erosion and sedimentation downstream; increase in edge effects; temporal loss in habitat functions. Permanent impacts include hydromodification, sedimentation and nutrient inputs; reduction in hydrologic and habitat connectivity. <u>Significance Determination</u> : LTS. See discussion under Utility Lines.	No NEPA/CEQA mitigation measures are needed. To ensure this determination, additional permit/agreement conditions may be included during permit processing of future projects to address unique, site- specific issues on a case-by-case basis. The Corps and Department retain discretionary authority to augment the mitigation framework.
Storm Water Treatment and Management Facilities	<u>Potential Impacts</u> : Grading, trenching, temporary stream diversion, vegetation clearing; dewatering, access roads, channel desilting, vegetation and sediment management/removal could result in temporary and/or periodic impacts such as possible type changes in wetland flora; increase in monotypic wetlands; and accumulation of pollutants in wetland plants. Permanent impacts may include hydrologic alterations, as well as the loss of habitat from fill and/or dredging relating to the construction of permanent structures and new facilities. Most impacts would be minimal since most facilities would be located in upland areas. <u>Significance Determination</u> : LTS. See discussion under Utility Lines.	No NEPA/CEQA mitigation measures are needed.
Habitat Restoration and Enhancement Activities	Potential Impacts: Vegetation clearing, grading for stream meanders, installation of check dams, stream dewatering, and access roads may result in temporary loss of habitat, channel	No NEPA/CEQA mitigation measures are needed.

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
	reconfiguration, sedimentation impacts, and temporal loss of habitat function. Long-term, some permanent impacts may result from in-channel or bank structural elements to stabilize certain restoration features, however, more habitat would be made available elsewhere. No reduction in aquatic habitat acreage or function would result. The net effect, especially at priority sites with the highest functional lift per unit of effort would be a beneficial impact on aquatic, wetland and riparian resources Watershed-wide. <u>Significance Determination</u> : LTS. See discussion under Utility Lines.	
Fire Abatement and Vegetation Fuel Management Activities	<u>Potential Impacts</u> : Thinning of vegetation, clearing of brush and installation of access roads and work areas can temporarily impact wetland and riparian vegetation, but impacts would be infrequent and minor. No permanent impacts would be expected. <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for fire abatement and vegetation fuel management activities.	No NEPA/CEQA mitigation measures are needed.
(4.3) Biological Resourc	es	
Construction and Maintenance of Utility Lines	<u>Potential Impacts</u> : Construction activities could result in temporary habitat loss and temporarily displace or in some cases eliminate sensitive species. Habitat corridors could be temporarily disrupted. Noise could cause sensitive species to avoid an area and/or affect breeding and nesting. Conversion of land for utilities would reduce habitat available to sensitive species for refuge areas, foraging and nesting/roosting. Potential downstream hydromodification and the influx of exotic plant species could affect the sustainability of riparian areas used by sensitive species. <u>Significance Determination</u> : LTS. Given the aquatic resource impact restrictions and general conditions in the RGP, LOP, and WSAA Process, as well as the requirements of the NCCP, FESA and CESA, construction and maintenance of utility lines would not be expected to create significant impacts, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the Department or USFWS; nor interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. The	No NEPA/CEQA mitigation measures are needed.

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
	compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve and enlarge key habitat areas identified within the Watershed that would be most beneficial to sensitive species.	
Construction and Maintenance of Flood Control Facilities	<u>Potential Impacts</u> : The discussion under Utility Lines is applicable for flood control activities. <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for flood control activities. Also, no Corps LOP could be issued for flood control-related conversions of soft-bottom channels to concrete-lined, or result in the channelization of any of the five major stream systems in the Watershed.	No NEPA/CEQA mitigation measures are needed.
Construction and Maintenance of Road Crossings including Bridges and Culverts	<u>Potential Impacts</u> : The discussion under Utility Lines is applicable for road crossings. <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for road crossings.	No NEPA/CEQA mitigation measures are needed.
Land Development for Residential, Commercial, Industrial, Institutional and Recreational Uses	<u>Potential Impacts</u> : The discussion under Utility Lines is applicable for land development activities. Also, permanent indirect effects may include threats to wildlife from domestic pets associated with new developments; disturbance of sensitive species from human activity, increased noise, light and glare. Also downstream hydromodification from increases in runoff may result in the influx of exotic plant species that could affect the sustainability of riparian areas used by listed species. <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for land development activities.	No NEPA/CEQA mitigation measures are needed.
Storm Water Treatment and Management Facilities	<u>Potential Impacts</u> : The discussion under Utility Lines is applicable for storm water treatment and management facilities. <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for storm water treatment and management facilities.	No NEPA/CEQA mitigation measures are needed.

(Section No.) Topic Area or	Summary of Impacts and Significance Determination	Mitigation Measures
Type of Activity		
Habitat Restoration and Enhancement Activities	<u>Potential Impacts</u> : Construction activities can temporarily impact riparian and upland habitats occupied by sensitive species. No permanent impacts would be expected. These projects would produce beneficial effects by restoring habitats that could be occupied by sensitive species. <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for habitat restoration and enhancement activities.	No NEPA/CEQA mitigation measures are needed.
Fire Abatement and Vegetation Fuel Management Activities	 <u>Potential Impacts</u>: Thinning of riparian and upland vegetation can result in temporary loss of habitat for sensitive species, and noise can temporarily disturb wildlife. No permanent impacts would be expected. <u>Significance Determination</u>: LTS. The discussion under Utility Lines is applicable for fire abatement and vegetation fuel management activities. 	No NEPA/CEQA mitigation measures are needed.
(4.4) Hydrology, Erosio	n, and Sedimentation	
Construction and Maintenance of Utility Lines	 <u>Potential Impacts</u>: Construction activities can create temporary and minor changes in channel hydrology, redirection or intensification of flows toward adjacent properties, and short-term discharges of sediment during grading and excavation. Potential long-term impacts associated with new utility lines would be associated with new development and are accounted for in the land development category. <u>Significance Determination</u>: LTS. Given the aquatic resource impact restrictions and general conditions in the RGP, LOP, and WSAA Process, as well as other federal, state and local requirements, construction and maintenance of utility lines would not be expected to create significant impacts to the existing hydrologic conditions of the Watershed. Additionally, under the SAMP/WSAA Process, compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve hydrologic function overall in the Watershed in comparison to existing Corps and Department permitting programs. 	No NEPA/CEQA mitigation measures are needed since no significant hydrologic, erosion and sedimentation impacts are expected from utility line projects.

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
Construction and Maintenance of Flood Control Facilities	 <u>Potential Impacts</u>: Maintenance activities involving periodic dredging of accumulated sediments in channels, basins, outfall and intake structures, culverts etc. as well as periodic removal of vegetation may include short-term changes in hydrology and geomorphic characteristics of a channel during certain flow conditions. This can affect the rate of erosion and sedimentation, and ultimately the sediment load in the Watershed (indirect impact). Permanent impacts can include alteration to channel hydrology and/or hydraulic characteristics due to channel reconfiguration. This can affect flow rates and flow paths, potentially increasing erosion and sedimentation (indirect impact). Engineered basins can disrupt the hydrologic and /or sediment balance within a drainage system. <u>Significance Determination</u>: LTS. See discussion under Utility Lines. No Corps LOP could be issued for flood control-related conversions of soft-bottom channels to concrete-lined, or result in the channelization of any of the five major stream systems in the Watershed. Also, new or improved flood control facilities would be designed in accordance with locally approved drainage plans and with the Orange County Flood Control Design Manual or other municipal flood control design manuals to control downstream flooding and sedimentation impacts. 	No NEPA/CEQA mitigation measures are needed since no significant hydrologic, erosion and sedimentation impacts are expected.
Construction and Maintenance of Road Crossings including Bridges and Culverts	 <u>Potential Impacts</u>: Construction activities in a channel requiring stream diversion or retention of flows could temporarily increase sedimentation in retention areas and increase erosion along temporary diversion paths. Permanent impacts from a new bridge could narrow and deepen a channel resulting in localized scour, and flow and sediment back-ups in the channel. Culverts typically reduce the channel cross section which can slow upstream flows, increasing sedimentation upstream and increasing erosion potential downstream. <u>Significance Determination</u>: LTS. See discussion under Utility Lines. Also adherence to the flood control requirements of the Orange County Flood Control Design Manual or other municipal flood control design manuals would help minimize channel scour, upstream flooding, and sediment discharges in downstream channels. 	No NEPA/CEQA mitigation measures are needed.
Land Development for Residential, Commercial, Industrial,	<u>Potential Impacts</u> : Construction activities can temporarily increase erosion and sedimentation downstream. Permanent impacts could include alterations to drainages patterns and potential increases in surface runoff resulting in hydromodification to downstream channels. Hydrologic	No NEPA/CEQA mitigation measures are needed.

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
I ype of Activity Institutional and Recreational Uses.	integrity could be reduced. No floodplain encroachment or flood hazards would be expected from new land development. <u>Significance Determination</u> : LTS. See discussion under Utility Lines. Although land development may alter the existing drainage pattern of a site or area and increase the rate or amount of surface runoff, any potential significant impact to surface and groundwater hydrology would be mitigated to a level considered less than significant through the implementation of local drainage and flood control design requirements, TMDL requirements to control sediment discharges, site design BMPs required by the MS4 NPDES Permit as well as the aquatic resource impact restrictions and general conditions required in the LOP, RGP and/or WSAA Process.	
Storm Water Treatment and Management Facilities	 <u>Potential Impacts</u>: See discussion under Utility Lines. Certain facilities are sometimes lined with concrete or other armoring product or bank stabilization measures, potentially affecting channel hydrology and/or hydraulic characteristics. <u>Significance Determination</u>: LTS. The discussion under Utility Lines is applicable for storm water treatment and management facilities. 	No NEPA/CEQA mitigation measures are needed.
Habitat Restoration and Enhancement Activities	Potential Impacts: See discussion under Utility Lines. No permanent hydrological or sedimentation impacts would be expected. Significance Determination: LTS. The discussion under Utility Lines is applicable for habitat restoration and enhancement projects.	No NEPA/CEQA mitigation measures are needed.
Fire Abatement and Vegetation Fuel Management Activities	<u>Potential Impacts</u> : Thinning of vegetation could temporarily disrupt erosion and sedimentation characteristics of disturbed areas. Natural flow paths could be temporarily diverted, and minor increases in surface runoff could create temporary erosion and sedimentation into nearby riparian areas and downstream channels. No permanent impacts on hydrology and sedimentation would be expected. <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for fire abatement and vegetation fuel management activities.	No NEPA/CEQA mitigation measures are needed.

ES-18

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
(4.5) Water Quality		
Construction and Maintenance of Utility Lines	Potential Impacts: Temporary impacts from construction and maintenance activities would primarily be from uncontrolled erosion and sedimentation into local receiving waters. Other temporary impacts could include discharges of construction-related pollutants, spilled, leaked or transported via storm runoff into surface waters; and discharge of dewatered groundwater containing high levels of nitrates, phosphorus or selenium or pesticides from past agricultural activities. <u>Significance Determination</u> : LTS. Construction and maintenance of utility lines would not be expected to violate any water quality standards, waste discharge requirements, established TMDLs, or otherwise substantially degrade water quality, nor create or contribute runoff that would provide substantial additional sources of polluted runoff given the aquatic resource impact restrictions and general conditions in the RGP, LOP, and WSAA Process as well as other federal, state, and local agency regulatory programs that help control water quality. Under the SAMP/WSAA Process, the compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve water quality, including	No NEPA/CEQA mitigation measures are needed since no significant impacts to water quality are expected.
	beneficial uses, overall in the Watershed in comparison to existing Corps and Department permit programs.	
Construction and Maintenance of Flood Control Facilities	<u>Potential Impacts</u> : The discussion of temporary water quality impacts under Utility Lines is applicable for flood control facilities. Also, conversion of some or all sections of a natural drainage channel into a concrete flood control structure could adversely affect a designated beneficial use. Other effects may occur from vegetation removal affecting stream temperature, bank stability, and/or pollutant removal capacity. <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for flood	No NEPA/CEQA mitigation measures are needed.
	control facilities. Also, no Corps LOP could be issued for flood control-related conversions of soft-bottom channels to concrete-lined, or result in the channelization of any of the five major stream systems in the Watershed.	
Construction and Maintenance of Road	<u>Potential Impacts</u> : The discussion of temporary water quality impacts under Utility Lines is applicable for road crossings. Also, construction of a culvert or bridge within or over a	No NEPA/CEQA mitigation measures are needed.

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
Crossings including Bridges and Culverts	drainage course could require removal of riparian habitat and could adversely affect a designated beneficial use. Other effects on water quality could occur from vegetation removal, affecting stream temperature, bank stability, and/or pollutant removal capacity. Significance Determination: LTS. The discussion under Utility Lines is applicable for road crossings including bridges and culverts.	
Land Development for Residential, Commercial, Industrial, Institutional Recreational Uses	 <u>Potential Impacts</u>: The discussion of temporary water quality impacts under Utility Lines is applicable for land development projects. Also, land development projects would result in increases in paved surfaces that create increased volumes of runoff and additional sources of pollutants in dry weather and storm runoff, if not properly controlled. Discharges of dredged or fill material into drainage courses, could impact a designated beneficial use. <u>Significance Determination</u>: LTS. Potential significant impacts to water quality would be reduced to less than significant given the aquatic resource impact restrictions and general conditions in the RGP, LOP and WSAA Process as well as BMP requirements of other state and local agency programs that help control pre- and post-construction storm water permit and TMDL programs in the Watershed). Also, many of the areas under current development and proposed new development in the Watershed has or will participate in the NTS regional treatment program designed to help reduce pollutant loading in the Watershed and help meet the TMDLs for San Diego Creek and Newport Bay. Further, under the SAMP/WSAA Process, compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve water quality, including beneficial uses, overall in the Watershed in comparison to existing Corps and Department permit programs. 	No NEPA/CEQA mitigation measures are needed since potential significant impacts to water quality are expected to be reduced to less than significant with requirements of the SAMP/WSAA Process and other agency programs to control water quality.
Storm Water Treatment and Management Facilities	<u>Potential Impacts</u> : The discussion of temporary water quality impacts under Utility Lines is applicable for storm water management and treatment facilities. Also, maintenance involving dredging of potentially contaminated sediments could potentially release pollutants in storm water discharges if not properly controlled. Potential impacts to groundwater would be minimized by treatment control BMP siting criteria and use of clay soils or liners. These facilities are planned and designed to treat polluted runoff, thus benefiting water quality in the long-term.	No NEPA/CEQA mitigation measures are needed since no significant impacts to water quality are expected.

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
	Significance Determination: LTS. The discussion under Utility Lines is applicable for storm water management and treatment facilities. These facilities are designed to help control water quality to downstream receiving waters. Construction and maintenance of these facilities will have less than significant impacts on water quality.	
Habitat Restoration and Enhancement Activities	<u>Potential Impacts</u> : The discussion of temporary water quality impacts under Utility Lines is applicable for habitat restoration and enhancement activities. These projects would not be expected to have long-term adverse impacts on water quality as they are designed to restore and improve wetland/riparian habitat and function. They can help improve beneficial uses of the receiving water and also help filter pollutants in runoff (though not designed for this purpose). <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for habitat restoration and enhancement projects.	No NEPA/CEQA mitigation measures are needed.
Fire Abatement and Vegetation Fuel Management Activities	<u>Potential Impacts</u> : Thinning and clearing of vegetation could temporarily disrupt the erosion and sedimentation characteristics of disturbed areas. Some erosion and sedimentation into nearby riparian drainages may occur during work activities. <u>Significance Determination</u> : LTS. The discussion under Utility Lines is applicable for fire abatement and vegetative fuel management activities.	No NEPA/CEQA mitigation measures are needed.
(4.6) Other Topics		
4.6.1 Agricultural Resources	<u>Potential Impacts</u> : Land development permitted under the SAMP/WSAA Process could indirectly affect agricultural resources particularly if unique farmlands or farmland of statewide importance are converted. Development would be subject to the General Plan polices of the local lead agencies <u>Significance Determination</u> : LTS. No direct impacts. Indirect impacts would be fully	No NEPA/CEQA mitigation measures are needed.
	evaluated in project-specific CEQA documents by the local land use and subject to the local General Plan policies and zoning ordinances.	

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
	Potential Impacts: Projects permitted under the SAMP/WSAA Process could generate construction emissions (direct impact) and/or long-term mobile source emissions of criteria pollutants (indirect impact).	No CEQA/NEPA mitigation measures are needed since no significant air quality impacts are identified.
4.6.2 Air Quality	 <u>Significance Determination</u>: LTS and PSC. No significant direct impacts from individual projects are known at this time. The Corps LOP contains a condition requiring applicants to submit an air quality emission and impact analysis if a project would result in a long term or permanent source or indirect mobile source emission or if the proposed activity would result in an exceedance of the annual <i>de minimus</i> emission thresholds for any criteria air pollutant or its precursors. Additionally, future projects would be evaluated on an individual basis through a separate CEQA review process. During this time, indirect impacts from construction and mobile source emissions would be determined, and if these emissions exceed any pertinent significance criteria, feasible mitigation measures would be required to reduce impacts to a level considered less than significant. The potential for future projects to indirectly contribute to the effects of global GHG emissions may be considered cumulatively significant and unavoidable, although the potential for indirect cumulative impacts cannot be conclusively determined at this time. 	During the approval process for specific projects, local land use authorities or other regulatory agencies can require a variety of air quality mitigation measures depending on the type and extent of project-specific impacts.
4.6.3. Cultural Resources	Potential Impacts: Land disturbance from regulated activities permitted under the SAMP/WSAA Process could impact unknown cultural resources. Significance Determination: LTS. The Corps RGP and LOP conditions would ensure all requirements of National Historic Preservation Act (compliance with Section 106) are satisfied prior to any permit approval, thus reducing any potential cultural resource impacts to below a level of significance. Future (indirect) impacts or demands on cultural resources cannot be specifically determined in this programmatic document. Individual projects would undergo separate CEQA and/or NEPA review, at which time potential impacts to existing and unknown cultural resources would be determined, along with appropriate mitigation measures to reduce impacts to less than significant.	No NEPA/CEQA mitigation measures are needed. Various mitigation measures could be required by local lead agencies during project-specific CEQA review process to reduce potential cultural resources impacts to less than significant.
4.6.4 Floodplain Values	See Hydrology, Erosion, and Sedimentation (Section 4.4).	See Hydrology, Erosion, and Sedimentation (Section 4.4).
(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
--	---	---
4.6.5. Geology/Soils	 <u>Potential Impacts</u>: Erosion of soil could occur during grading and excavation required for various regulated activities. New development projects would be subject to potential seismic ground shaking, as with all development in southern California. Also, development on expansive soils could result in structural loss, if not properly designed. <u>Significance Determination</u>: LTS. Individual projects would be subject to requirements of the California Building Code to help minimize seismic and soil instability risks, and required to follow approved grading and erosion control plans, construction storm water pollution prevention plans, water quality management plans, and, if applicable, proposed conditions of the RGP, LOP, and WSAA Process that address erosion and sedimentation. Combined implementation of these various measures would reduce potential indirect impacts to less than significant levels. 	No NEPA/CEQA mitigation measures are needed. Various mitigation measures could be required by local lead agencies during a separate CEQA review process to reduce any project-specific geology/soils impacts to less than significant.
4.6.6 Land Use	 <u>Potential Impacts</u>: The SAMP/WSAA Process would not conflict with existing land use plans/polices, nor preclude implementation of local General Plans, or the NCCP/HCP for Central/Coastal Orange County. <u>Significance Determination</u>: LTS. No direct significant impacts to land use are anticipated. Future projects that would be permitted under the SAMP/WSAA Process would be subject to independent CEQA review by the local land use agency to determine potential conflicts to land use agency to minimize potential impacts to below a level of significance. 	No NEPA/CEQA mitigation measures are needed. Future project-specific mitigation measures, if needed, would be identified by the land use agency during a separate CEQA review process to minimize potential impacts.
4.6.7 Noise	<u>Potential Impacts</u> : Certain regulated activities, particularly land development, permitted under the SAMP/WSAA Process, would indirectly contribute to increases in the ambient noise environment from short-term construction activities and long-term increases in traffic. <u>Significance Determination</u> : LTS. Future projects permitted under the SAMP/WSAA Process would be evaluated in a separate CEQA review process as part of local agency project approval to determine potential for significant short-term or long-term noise impacts in the Watershed. It is expected that compliance with existing noise ordinances and project-specific mitigation measures, identified by the local lead agency, would reduce potential impacts to less than significant.	No NEPA/CEQA mitigation measures are needed. Future project-specific mitigation measures, if needed, would be identified by the land use agency during a separate CEQA review process to minimize potential impacts.

(Section No.) Topic Area or	Summary of Impacts and Significance Determination	Mitigation Measures
Type of Activity		_
4.6.8 Public Health and Safety	<u>Potential Impacts</u> : Some regulated activities that could be permitted under the SAMP/WSAA Process, such as land development, would generate increases in residential population, and increases in commercial/industrial activities. These increases could place additional demand on existing fire and police services and generate a minor increase in household hazardous waste and commercial/industrial hazardous waste in the area. Other regulated activities, such as storm water treatment and management facilities could increase vector and water safety risks, if not properly managed.	No NEPA/CEQA mitigation measures are needed. Various mitigation measures could be required by local lead agencies during a separate CEQA review process to reduce any project- specific impacts to less than significant.
	Significance Determination: LTS. Individual projects would be evaluated through a separate CEQA and/or NEPA review process to determine impacts to public health and safety. If an impact is identified as potentially significant, mitigation measures would be identified to help reduce the impact to below of a level of significance.	
4.6.9 Recreation	<u>Potential Impacts</u> : No direct impacts on proposed recreational facility development or existing recreational maintenance activities are expected since the SAMP/WSAA Process does not preclude new recreational resource development or maintenance activities in aquatic resource integrity areas. No indirect impacts to recreational facilities are anticipated, since new development that would be permitted under the SAMP/WSAA Process, would be subject to local agency park planning policies to meet any new demands for parks, trails, and other recreational facilities.	No NEPA/CEQA mitigation measures are needed. Any need mitigation measures required for future projects would be identified by the local lead agency during a separate CEQA review process
	Significance Determination: LTS. Through adherence to park and recreation strategies developed by the local land use agencies, along with adherence to the Corps RGP and LOP and the Department's SAA conditions, where required, potential direct and indirect impacts to recreation resources would be considered less than significant. Individual projects covered under the SAMP/WSAA Process would undergo separate CEQA review, at which time potential impacts would be determined, along with appropriate mitigation, as necessary to reduce impacts to less than significant.	
4.6.10 Socioeconomics	<u>Potential Impacts</u> : No direct impacts are anticipated. The Corps and Department assume local approvals (or exemptions) will be obtained prior to commencing activity. Regulated activities permitted under the SAMP/WSAA Process would be subjected to local consistency determination(s) with regards to local land use plans, county master plan of arterial highways	No CEQA/NEPA mitigation measures are needed. Any needed mitigation required for future projects would be identified by the local lead agency

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
	 (MPAH) and local agency capital improvement plans. No communities would be divided or displaced. Indirectly, projects approved under the SAMP/WSAA Process would be compatible with planned growth, providing housing opportunities, and generating income that would benefit communities in the Watershed. <u>Significance Determination</u>: LTS. Individual projects covered under the SAMP/WSAA Process would undergo separate CEQA review, at which time potential socioeconomic impacts, if any, would be determined, along with appropriate mitigation, as necessary to reduce impacts to less than significant. 	during a separate CEQA review process.
4.6.11 Transportation / Circulation	 <u>Potential Impacts</u>: Short-term construction and/or maintenance activities associated with each regulated activity permitted under the SAMP/WSAA process would generate short-term traffic impacts in localized areas. Long-term, land development projects would generate increases in local traffic and could require expansion of roads to meet local and regional circulation needs. Project-specific impacts cannot be determined in this programmatic document, but compliance with local agency requirements and project-specific mitigation measures would help minimize potential impacts. <u>Significance Determination</u>: LTS. Short-term construction and long-term traffic impacts would be evaluated in project traffic studies and separate project-specific CEQA review processes. Mitigation measures would be identified to reduce impacts to less than significant. Build-out in the Watershed could result in significant cumulative increases in traffic volumes to local streets and arterials. Traffic mitigation measures implemented through a separate CEQA process for individual projects could reduce impacts to less than significant. 	No NEPA/CEQA mitigation measures are needed. Various mitigation measures could be required by local lead agencies during a separate CEQA review process for individual projects to reduce any project-specific construction and long-term operational traffic impacts.
4.6.12 Visual Resources	Potential Impacts: Short-term construction activities would create visual impacts in the local construction zone. Long-term visual changes would occur from conversion of remaining tracts of agriculture land and former MCAS El Toro into suburban residential, commercial and open space/park uses. This could also impact some views of surrounding hills in some locations, but overall, new development and its increase in lighting and glare would be similar to existing surrounding development and in compliance with design requirements of local agencies. Significance Determination: LTS. Indirect impacts from construction activities would be short-term and mostly localized, and therefore, considered less than significant. Remaining	No NEPA/CEQA mitigation measures are needed. Various mitigation measures could be required by local lead agencies during a separate CEQA review process for individual projects to reduce any project-specific visual impacts.

(Section No.) Topic Area or Type of Activity	Summary of Impacts and Significance Determination	Mitigation Measures
	 land development would be designed in accordance with the existing suburban character of the area, and would not be expected to produce a significant visual change in the Watershed overall, though some local areas could experience significant visual impacts (both in terms of obstruction of views and change in visual character). Requirements of the SAMP/WSAA Process would protect and enhance the aquatic and riparian ecosystem in the Watershed, and would ensure that no long-term, substantial degradation of the visual character or quality of any site and its surrounding would result. Projects would be required to undergo separate CEQA review, at which time any project-specific visual and light/glare impacts would be evaluated and appropriate mitigation measures would be determined by the local lead agency to reduce impacts to less than significant. 	
4.6.13 Water Supply and Conservation	<u>Potential Impacts</u> : Regulated activities permitted under the SAMP/WSAA Process, such as land development would generate an increased demand on existing water supplies; however, specific increases could not be determined in this programmatic document. <u>Significance Determination</u> : LTS. Local and state requirements would help ensure the adequacy of the public water supply for a project has been addressed before the project is approved. Therefore, any potential water supply impact associated with a future project permitted under the SAMP/WSAA Process would be mitigated in accordance with local and state requirements to a level considered less than significant.	No NEPA/CEQA mitigation measures are needed.
Legend: LTS = less than significa PSC = potentially signifi	nt impact. cant cumulative impact.	

ES.7 GROWTH-INDUCING IMPACTS

Because the SAMP/WSAA Process would only result in an indirect inducement of growth, and due to the mostly built-out nature of the Watershed, any potential environmental impacts due to build-out (growth inducing impacts) is not considered significant. If any future project were predicted to result in significant growth inducing impacts, such a project would usually not meet the terms and conditions of the SAMP/WSAA Process and would proceed via a SIP process and individual SAA, with the preparation of a separate EIS and/or EIR.

ES.8 IMPACTS OF ALTERNATIVES

This section presents a programmatic impact assessment of each alternative organized by environmental topic area. The CEQA significance thresholds used for the proposed SAMP/WSAA Process impact analysis are applicable for the alternatives impact analysis. Future individual projects that would be permitted under the SAMP/WSAA Process would be subject to local environmental review and approval requirements.

A summary of the programmatic impact analysis findings of the SAMP alternatives is provided in Table ES-2.

Topic Area	Alternative No. 1 No Project/No Federal Action (Existing Case-by-Case Permitting)	Alternative No. 2 Complete Avoidance (No Permits Issued)	Alternative No. 3 Avoidance Except for Bridges & Utility Lines (Limited Permitting)	Alternative No. 4 General Plan Build-out Without Avoidance (Full Permitting)
Main Topic Areas				
(4.2) Aquatic, Wetland & Riparian Habitats	Greater/PSC	Similar/LTS (fewer impacts, but no coordinated restoration)	Similar/LTS (fewer impacts, but no coordinated restoration)	Greater/PSC
(4.3) Biological Resources, including Threatened & Endangered Species	Greater/LTS	Similar/LTS (fewer impacts, but no coordinated restoration)	Similar/LTS (fewer impacts, but no coordinated restoration)	Greater/PSC
(4.4) Hydrology, Erosion and Sedimentation	Greater/LTS	Greater/PS (flood hazards)	Greater/PS (flood hazards)	Greater/LTS
(4.5) Water Quality	Greater/LTS	Similar/LTS (fewer impacts, but no coordinated mitigation program)	Similar/LTS (fewer impacts, but no coordinated mitigation program)	Greater/PSC
(4.6) Other Topics				
Agricultural Resources	Similar/LTS	Similar/LTS	Similar/LTS	Greater/LTS
Air Quality	Similar/LTS	Similar/LTS	Similar/LTS	Greater/PS (indirect)
Cultural Resources	Similar/LTS	Similar/LTS	Similar/LTS	Greater/LTS
Floodplain Values	See Hydrology, Erosion and Sedimentation	See Hydrology, Erosion and Sedimentation	See Hydrology, Erosion and Sedimentation	See Hydrology, Erosion and Sedimentation
Geology/Soils	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS
Land Use	Similar/LTS	Greater/PS	Greater/PS	Similar/LTS

 Table ES-2.
 Comparison of Alternatives to the Proposed SAMP/WSAA Process

Topic Area	Alternative No. 1 No Project/No Federal Action (Existing Case-by-Case Permitting)	Alternative No. 2 Complete Avoidance (No Permits Issued)	Alternative No. 3 Avoidance Except for Bridges & Utility Lines (Limited Permitting)	Alternative No. 4 General Plan Build-out Without Avoidance (Full Permitting)
Noise	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS
Public Health	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS
Recreation	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS
Socioeconomics	Similar/LTS	Greater/LTS	Greater/LTS	Similar/LTS
Transportation	Similar/LTS	Greater/PS (full MPAH could not be built)	Similar/LTS	Similar/LTS
Visual Resources	Greater/LTS	Similar/LTS	Similar/LTS	Greater/PS (indirect; in localized areas)
Water Supply and Conservation	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS

Legend:

Less = Impact of alternative is projected to be less than impact of proposed SAMP/WSAA Process.

Similar = Impact of alternative is projected to be equivalent to impact of the proposed SAMP/WSAA Process.

Greater = Impact of alternative is projected to be greater than impact of the proposed SAMP/WSAA Process.

LTS = Less than significant impact.

PS = Potentially significant impact unless mitigation incorporated.

PSC = Potentially significant cumulative impact.

ES.9 Environmentally Preferable and Environmentally Superior Alternative

NEPA Section 1505.2(b) requires that an EIS specify the alternative or alternatives that are considered to be environmentally preferable from the range of alternatives considered. Generally, this means the alternative that causes the least damage to the biological and physical environment (CEQ, 1981). CEQA requires the identification of an environmentally superior alternative. Given the competing environmental factors of the various alternatives, the SAMP/WSAA Process is determined to be the environmentally preferable alternative/environmentally superior alternative over the long-term in comparison to all alternatives.

ES.10 COMPLIANCE WITH THE CWA SECTION 404(B)(1) GUIDELINES

The final determination of the SAMP program in complying with the Section 404(b)(1) Guidelines) will be made at the time of the Corps Record of Decision (ROD) on this Program EIS/EIR. An analysis was prepared for this Program EIS/EIR. Anticipated activities either comply with the 404(b)(1) Guidelines by compliance with the terms and conditions of the RGP or LOP procedures, or would be required to demonstrate site-specific compliance with the 404(b)(1) Guidelines as with some LOPs and all SIPs. Below is a summary of the compliance necessary for the three types of permit authorization processes in the Watershed:

- RGP- Fully complies with Guidelines, initially and subsequently.
- LOP- Programmatic compliance initially/subsequent project-specific compliance.
- SIP- No programmatic compliance/subsequent project-specific compliance (with full analysis and tiered off of this Program EIS/EIR where appropriate).

ES.11 INTENDED USES OF THIS EIS/EIR

This EIS/EIR is intended to serve as the analysis of alternatives to the issuance of the Corps LOP procedures and RGP required under the 404(b)(1) Guidelines and the environmental review required under NEPA. This evaluation for the proposed RGP and LOP procedures, as well as revocation of selected NWPs within the Watershed, includes a discussion of compliance with applicable laws, consideration of public comments, an alternatives analysis, and a general assessment of individual and cumulative impacts, including the general potential effects on each of the public interest factors specified at 33 CFR 320.4(a). This EIS/EIR also provides the required environmental documentation under CEQA for issuance of SAAs under the WSAA Process as required under Section 1600 *et seq.* of the FGC. Finally, the SAMP/WSAA Process EIS/EIR provides a platform for the tiering of future NEPA and CEQA compliance on specific actions affecting aquatic resources within the Watershed.

The SAMP is the plan that the Corps and the Department will adopt for implementation in the Watershed to inform their future decision-making processes related to their regulatory authorities pursuant to CWA Section 404 and FGC Section 1600 *et seq.*, respectively. The EIS/EIR prepared in conjunction with the SAMP, and to be adopted by the Corps and the Department, will operate as a "program" EIS and EIR pursuant to applicable provisions of the NEPA regulations (40 CFR Section 1500 *et seq.*), and the CEQA Guidelines (14 CCR Section 15000 *et seq.*). Subsequent activities will be examined by the Corps and the Department in light of the SAMP and the Program EIS/EIR to determine if additional environmental documentation is required. Project proponents and local lead CEQA agencies are encouraged to consult the SAMP and to use the Final Program EIS/EIR in determining whether a specific project properly avoids impacts to or adequately mitigates for aquatic resources.

1.0 INTRODUCTION

1.1 BACKGROUND ON SAMP PROGRAM/WSAA PROCESS

The Special Area Management Plan (SAMP) for the San Diego Creek Watershed (Watershed) and Watershed Streambed Alteration Agreement Process (WSAA Process) is a comprehensive plan for protecting and enhancing aquatic resources in the Watershed while providing for the permitting of reasonable economic development and public infrastructure/maintenance activities in accordance with local land use plans and the regional Natural Community Conservation Plan/Habitat Conservation Plan for Central/Coastal Orange County (NCCP/HCP). The SAMP/WSAA Process presents an innovative regulatory tool developed by U.S. Army Corps of Engineers Los Angeles District Regulatory Division (Corps) and the California Department of Fish and Game South Coast Region Habitat Conservation Planning (Department) to integrate a watershed approach to address anticipated regulated activities and aquatic resource conservation needs.

The San Diego Creek Watershed SAMP formulation process was initiated in 1998 with state and federal agencies, in coordination with local land owners/managers with known and future regulated activities in the Watershed. The result of the SAMP formulation process is a plan, which includes the following four elements:

- SAMP Analytical Framework;
- Watershed-specific regulatory modifications to the Corps' Clean Water Act (CWA) Section 404 permitting processes and California Fish and Game Code (FGC) Section 1600 *et seq*. Streambed Alteration Agreement process and a corresponding mitigation framework for the Watershed;
- SAMP Strategic Mitigation Plan; and
- Mitigation Coordination Program.

The first component of this SAMP is an analytical framework, which is based on technical, environmental information about the aquatic resources, primarily the riparian ecosystem, in the Watershed. The Corps, with the Department, developed the Analytical Framework as a decision making tool for evaluating regulated activities that would affect aquatic resources.

The second element of the SAMP entails modifications to permitting procedures in a manner to provide the Corps and the Department with watershed- and resource-based permitting protocols. This regulatory component of the SAMP also includes a Mitigation Framework. Related is the third element of the SAMP, a Strategic Mitigation Plan, based on a riparian ecosystem restoration plan for the Watershed, and the fourth element, the Mitigation Coordination Program. Together, the Strategic Mitigation Plan and Mitigation Coordination Program support implementation of the mitigation framework and foster a coordinated approach among landowners/managers and stakeholders to long-term aquatic resource management within the Watershed.

The SAMP, comprised of these four elements, are detailed in the Corps report entitled *Special Area Management Plan for the San Diego Creek Watershed* (Corps, 2009), referred herein as the Corps' SAMP document. These SAMP elements are the proposed project for this Program EIS/EIR and are discussed in detail in Section 2.

Figure 1-1a shows the Watershed boundary within the County of Orange. Figure 1-1b is a baseline map of the Watershed showing details such as major streams and drainages as well as municipalities within the Watershed boundaries.

1.2 PURPOSE AND NEED

1.2.1 Project Need

Under the conventional regulatory framework, proposed activities that would affect aquatic resources are reviewed by the Corps and the Department on a case-by-case basis, without a strategic assessment of the overall aquatic environment within the Watershed. This case-by-case approach does not facilitate comprehensive conservation of aquatic resources and complicates the evaluation and mitigation of cumulative impacts. Consequently, there is a need to develop a comprehensive and coordinated approach to aquatic resource protection to ensure that the functional integrity of aquatic resources throughout the Watershed is maintained. In addition, there is a continuing need to enhance degraded aquatic resources and to restore or replace such resources to offset impacts of regulated activities in the Watershed. The SAMP has provided a way to address long-term aquatic resource conservation and cumulative impact assessment more effectively than the traditional case-by-case review. The Department has participated in the formulation of the SAMP and developed a regulatory component known as the WSAA Process (formerly a Master Streambed Aleration Agreement (MSAA)) concurrently with the Corps' permitting procedures to address these issues from the perspective of the state of California.

Furthermore, the SAMP responds to the needs of potential applicants for increased transparency and predictability in the Corps and Department's evaluations of regulated activities for authorization. Since the SAMP is customized for the Watershed, it provides the Corps and Department with a common Analytical Framework and regulatory approach specific for evaluating activities that would affect aquatic resources within the Watershed.

Figure 1-1a. San Diego Creek Watershed Boundary Baseline Map

Figure 1-1b. San Diego Creek Watershed Boundary

1.2.2 Project Purpose

The primary purpose of the SAMP is to improve the Corps and Department's capacity for making permitting decisions in the Watershed using an approach that balances aquatic resource protection with reasonable economic development and infrastructure needs. The underlying goal of the SAMP is to support riparian ecosystem conservation and management by comprehensively assessing the Watershed's aquatic resources and developing a strategic and coordinated regulatory approach (permitting and mitigation). This approach prioritizes avoidance of impacts to higher integrity aquatic resources and envisions targeted enhancement and restoration activities related to regulatory actions that will maintain and improve the Watershed's aquatic resource functions and values over the long term. It is believed that these goals can be achieved through the cooperative efforts on the part of the Corps, the Department, local government, state and federal resource agencies, local landowners, and other stakeholders, including the interested public.

1.2.2.1 Objectives

The purpose of the SAMP is furthered by the following dual objectives:

- To establish a Watershed-specific permitting framework to allow the agencies to more appropriately evaluate potential impacts associated with reasonable economic development and infrastructure maintenance; and
- To develop a Strategic Mitigation Plan and coordinated mitigation program to support long-term conservation (i.e., protection and restoration) of the functions and integrity of identified aquatic resources, particularly riparian ecosystems, located within the Watershed.

The tasks identified and performed in furtherance of these SAMP objectives are examined below:

- To identify and characterize aquatic resources, in particular riparian ecosystems, located in the Watershed;
- To identify aquatic resources possessing high resource value at the watershed scale, whereby such resources are of high to medium integrity for water quality, habitat, or hydrology and they provide a suite of ecosystem functions and values such that permanent impacts to these aquatic resources may result in substantial degradation to aquatic resources in the Watershed;
- To establish an analytical framework for informing the Corps and the Department's decisionmaking process for evaluating potential regulated activities and projects that would affect aquatic resources in the Watershed;
- To inform the regulated community about the geographic location and characterization of areas in the Watershed with aquatic resources of moderate to high integrity and to provide context for the Corps and the Department's Analytical Framework and resulting regulatory procedures;
- To establish an alternate permitting process that reflects the Watershed-based and resource-based Analytical Framework;
- To develop scientifically based criteria for riparian ecosystem restoration efforts and prepare a Strategic Mitigation Plan for prioritizing permit-related compensatory mitigation projects that can inform other riparian ecosystem restoration efforts; and
- To prepare and recommend an implementation plan for establishing a Mitigation Coordination Program for aquatic resources in the key Watershed integrity areas that involves management

practices, conservation polices, and considers ongoing Watershed efforts to incorporate stewardship, advocacy, and stakeholder coordination.

1.2.3 EIS/EIR Purpose

This Program EIS/EIR is intended to serve as the analysis of alternatives to the issuance of the Corps' Letter of Permission (LOP) and Regional General Permit (RGP) required under the CWA Section 404(b)(1) Guidelines and the environmental review required under National Environmental Policy Act (NEPA) as well as the environmental review for the WSAA Process required under California Environmental Quality Act (CEQA). This document discusses the factors considered by the Corps during the issuance process for the proposed LOP and RGP. This document contains the following evaluations:

- 1 public interest review required by Corps regulations at 33 Code of Federal Regulations (CFR) 320.4(a)(1);
- 2 discussion of the environmental considerations necessary to comply with NEPA; and
- 3 impact analysis specified in Subparts C through F of the 404(b)(1) Guidelines (40 CFR Part 230).

This evaluation for the proposed RGP and LOP includes a discussion of compliance with applicable laws, consideration of public comments, an alternatives analysis, and a general assessment of individual and cumulative impacts, including the general potential effects on each of the public interest factors specified at 33 CFR 320.4(a). This EIS/EIR also provides the required environmental documentation under CEQA for issuance of Streambed Alternation Agreements under the WSAA Process as required under Section 1600 et seq. of the FGC. Finally, the EIS/EIR provides a platform for the tiering of future NEPA and CEQA compliance on specific actions affecting aquatic resources within the Watershed. <u>Furthermore, the Corps and the Department believe that the Program EIS/EIR for SAMP/WSAA Process and the SAMP document serve as a reference not only for Lead Agencies and other interested parties who evaluate projects under CEQA, but is a transparent tool to be used by project proponents when planning projects, including mitigation of project impacts.</u>

1.3 ORGANIZATION OF THE EIS/EIR

This EIS/EIR is organized as follows:

Section 1.0, Introduction, provides a background on the SAMP/WSAA Process; specifies the purpose and need of the SAMP/WSAA Process; provides an overview of the contents of this Draft EIS/EIR; presents the regulatory basis for the SAMP/WSAA Process; describes the joint environmental review process; and provides a list of the involved agencies and Participating Applicants.

Section 2.0, Proposed SAMP/WSAA Process and Alternatives, introduces details of the SAMP/WSAA Process including the objectives and planning principles and a summary of activities that would be regulated under the SAMP/WSAA Process. The section then describes development of the SAMP/WSAA Process, followed by details of the SAMP/WSAA Process elements including the SAMP Analytical Framework, Watershed-specific permit programs and mitigation framework, Strategic Mitigation Plan, and Mitigation Coordination Program. Alternatives to the SAMP/WSAA Process are also presented.

Section 3.0, Baseline Conditions, presents the existing conditions in the Watershed for each environmental topic area.

Section 4.0, is the Programmatic Impact Assessment of SAMP/WSAA Process and Regulated Activities. This section contains an environmental impact analysis of regulated activities at a programmatic level, and covers environmental topic areas listed below.

- Aquatic, Wetland and Riparian Habitats
- Biological Resources including Threatened and Endangered Species
- Hydrology, Erosion and Sedimentation
- Water Quality
- Agricultural Resources
- Air Quality
- Cultural Resources
- Floodplain Values

- Geology/Soils including Mineral Resources
- Land Use
- Noise
- Public Health and Safety
- Recreation
- Socioeconomics
- Transportation/Circulation
- Visual Resources
- Water Supply and Conservation

Section 5.0, is the Evaluation of Alternatives. This section begins with NEPA and CEQA requirements for selecting and analyzing alternatives, followed by a programmatic environmental assessment of the four proposed SAMP/WSAA Process alternatives. The section also includes a comparison of the alternatives.

Section 6.0 Cumulative Effects provides a programmatic analysis of the cumulative effects of regulated permitted under the proposed SAMP/WSAA Process, along with full build-out of the Watershed under the local general plans.

Section 7.0 Growth Inducing Impacts provides a discussion of potential growth-inducing effects of the proposed SAMP/WSAA Process in the Watershed.

Section 8.0, Other Federal and State Impact Considerations, includes NEPA and/or CEQA requirements that address short-term uses versus long-term productivity and irreversible or irretrievable commitment of resources of the proposed SAMP/WSAA Process, potential environmental justice impacts, and compliance with Floodplain Executive Order (EO), Wetland EO, and Invasive Species EO. Also, this section discusses the effects of SAMP coordinated permitting procedures on future applicants.

Section 9.0, Consistency with Federal and State Laws and Regulations, discusses the SAMP/WSAA Process' consistency with the Endangered Species Act, CWA, Rivers and Harbors Act, Clean Air Act, National Historic Preservation Act, Coastal Zone Management Act (CZMA), Mangunson-Stevens Fishery Conservation and Management Act, California Water Code, FGC, California Coastal Act, and other state policies.

Section 10.0, Consistency with Regional and Local Plans, discusses the SAMP/WSAA Process' consistency with the Orange County Central-Coastal NCCP/HCP, General Plans of local municipalities in the Watershed, the County of Orange Drainage Area Management Plan (DAMP), University of California, Irvine Long Range Development Plan, and Newport Bay Watershed Management Plan.

Sections 11.0, 12.0, 13.0 and 14.0 include list of the EIS/EIR preparers; agencies and persons contacted in the preparation of this EIS/EIR; acronyms, abbreviations and a glossary of terms used in this EIS/EIR; and references cited in this EIS/EIR, respectively.

1.4 AUTHORITY FOR FEDERAL AND STATE LEAD AGENCIES

1.4.1 Corps Authority

The Corps' mandate under the CWA is to maintain and restore the physical, chemical and biological integrity of the nation's waters. To this end, the Corps is responsible for ensuring full compliance with its own implementing regulations as well as the 404(b)(1) Guidelines (40 CFR 230] for all applicable Department of the Army Section 404 of the CWA permits. Under Section 404 of the CWA, the Corps is responsible for regulating the discharge of dredge or fill material into waters of the U.S.[33 United States Code (U.S.C.) 1344]. These discharges include return water from dredge material disposed of on the upland and generally any fill material (e.g., rock, sand, dirt) needed for land development, roadways, erosion protection, etc. The basic forms of authorization available for use by the Corps are the individual permit, letters of permission (LOPs), and nationwide general permits (NWPs). The project review and permitting associated with these regulatory functions most often occurs on a project-by-project basis.

However, recognizing the need for more comprehensive planning in Orange County to balance aquatic resource protection with economic development, in 1998 the United States House of Representatives' Committee on Public Works authorized federal monies for the Corps' Los Angeles District (LAD), Regulatory Division to initiate a SAMP in the Watershed.

The SAMP is defined by the CZMA Amendments of 1980 [16 USC 1453(17)] as a comprehensive plan to provide for natural resources protection and reasonable economic growth within the coastal zone that contains detailed and comprehensive statements of policies, standards and mechanisms to implement the SAMP. The Corps Regulatory Guidance Letter (RGL 86-10) directed the Corps to participate in the collaborative interagency planning within geographic areas of special sensitivity in coastal and non-coastal areas.

1.4.2 Department Authority

Under FGC Section 1600 *et seq.*, the Department is responsible for regulating activities that will affect any river, stream, or lake in the state and any associated riparian habitat. Specifically, FGC Section 1602 requires any person, state or local governmental agency, or public utility to notify the Department and, if necessary, obtain a SAA, before doing one or more of the following:

- substantially divert or obstruct the natural flow of any river, stream, or lake;
- substantially change the bed, channel, or bank of any river, stream, or lake;
- use any materials from the bed, channel, or bank of any river, stream, or lake; and/or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

If the Department determines the activity as described in the notification could substantially adversely affect an existing fish or wildlife resource, a SAA is required. The SAA will include measures necessary to protect the fish and wildlife resources the activity could adversely affect. The Department has developed a WSAA Process for the Watershed to coordinate with the Corps' SAMP process and establish protective features for fish and wildlife on a Watershed basis.

"The issuance of a SAA under the WSAA Process, or in general, does not authorize the take of any species protected under the Fish and Game Code, including fully protected species (FGC Sections 3511, 4700, 5050, 5515) and species listed as threatened or endangered under the California Endangered Species Act (CESA) (FGC Section 2050 *et seq.*).

1.4.3 Joint Environmental Review Process

This document has been prepared as a joint EIS/EIR due to the proposed federal and state permit actions resulting from the SAMP/WSAA Process. Under NEPA, all federal agencies must conduct NEPA review for "major federal actions significantly affecting the quality of the human environment" (42 USC Section 4332). Each federal agency has its own NEPA implementation rules that conform to 40 CFR. Under CEQA, state and local agencies must analyze the potential environmental impacts of projects that require discretionary approvals from state or local agencies. The Corps is the lead agency for the SAMP under NEPA for permit compliance under CWA Section 404 and the Department is the lead agency under the CEQA for issuance of a SAA under the FGC Section 1600 *et seq.* The Corps and the Department have worked cooperatively to prepare this joint Program EIS/EIR under NEPA and CEQA for the actions described in the SAMP/WSAA Process. The Corps and the Department have also coordinated the public noticing and hearing processes under state and federal law as discussed below.

This EIS/EIR is intended to provide decision makers, and responsible agencies with enough information on the potential range of environmental impacts to make decisions on the proposed SAMP Program/WSAA Process and the various alternatives. NEPA and CEQA require that the significant environmental impacts of a project be identified and considered in project approval, and that feasible methods or alternatives to avoid, eliminate, or reduce the identified significant adverse impacts be considered.

The NEPA scope of the EIS/EIR impact analysis follows the directives in 33 CFR 325 that require the scope of an EIS to be limited to the impacts of the specific activities requiring a 404 permit and only those portions of the project outside of waters of the U.S. over which the Corps has sufficient control and responsibility to warrant federal review. The Department's jurisdiction pursuant to FGC Section 1600 *et seq.* for the WSAA Process generally coincides with Corps jurisdiction (i.e., streams and associated riparian resources).

The draft EIS/EIR for the SAMP/WSAA Process is a program-level document that is defined in the CEQA Guidelines (Section 15168) as:

" ... an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either geographically; as logical parts in the chain of contemplated actions; in connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways."

The Program EIS/EIR can be used effectively to evaluate a Major Federal Action by an agency subject to NEPA who is "actively preparing to make a decision on one or more alternative means of accomplishing [a] goal and the effects can be meaningfully evaluated" (40 CFR Section 1500). The subject of the Corps proposal is the SAMP, the goals of which are described above (Section 1.2.2), and the Corps considers it a Federal action to adopt the SAMP as a formal plan to guide or prescribe future agency evaluation of permit or other regulatory decisions within the Watershed subject to the Corps authorization. Further, the SAMP includes the adoption of programs, such as the Strategic Mitigation Plan and Mitigation Coordination Program as a "group of concerted actions to implement a specific policy or plan" (40 CFR 1508.18). This Program EIS/EIR evaluates the proposed LOP procedures and RGP that will allow the Corps to approve of specific projects, such as construction or maintenance activities located within the Watershed that are consistent with the SAMP. Moreover, the Program EIS/EIR enables agencies to examine the overall effects of the proposed course of action (e.g. establishment of the SAMP/WSAA Process Watershed-specific permitting programs and associated Strategic Mitigation Plan and Mitigation Coordination Program), and to take steps to avoid unnecessary adverse environmental effects.

Once this Program EIS/EIR is certified and the LOP, RGP, and WSAA Process elements (i.e., Levels 1 - 3 SAA templates and Master Streambed Condition List) have been issued, the Corps and the Department will review applications for subsequent activities in light of the SAMP/WSAA Process and the Program EIS/EIR to determine if additional environmental documentation is required. Project proponents and local lead CEQA agencies will be encouraged to consult the Corps SAMP document and to use the Final Program EIS/EIR in determining whether a specific project properly avoids or mitigates impacts to aquatic resources.

Scoping Process

Throughout the EIS/EIR development process, the Corps and the Department encouraged active participation by potential applicants including the County of Orange, other local governments and agencies and landowners. The Corps has also actively informed interested citizens about the progress of the SAMP/WSAA Process via special public meetings held July 17, 2002, July 29, 2004, and January 12, 2005 as well as during some of the regularly scheduled meetings of the Newport Bay Watershed Committee. Additionally, information about the SAMP/WSAA Process has been posted on the Corps website (http://www.spl.usace.army.mil/samp/sandiegocreeksamp.htm) since 2001.

Issues raised by agencies and the public were identified through the EIS/EIR scoping process. The purpose of scoping is to identify potential environmental issues and concerns regarding the project. The scoping process for this EIS/EIR included public notification via the *Federal Register*, a newspaper ad, direct mail, and a public meeting. The Corps and the Department considered comments received during the scoping process in determining the scope of issues to be evaluated in the EIS/EIR.

In accordance with NEPA requirements, a Notice of Intent (NOI) to prepare a joint EIS/EIR was published in the *Federal Register* on July 31, 2001 Vol. 66, No. 147 (66FR39500) and was mailed directly to regulatory agencies, local jurisdictions, elected officials, public service providers, organizations, and special interest members of the public. A copy of the NOI appears in Appendix A-1 of this document.

In accordance with requirements under CEQA, a Notice of Preparation (NOP) to prepare a joint EIS/EIR was distributed on August 1, 2001 to responsible agencies, elected officials, public service providers, organizations, and other members of the public. A copy of the NOP appears in Appendix A-2 of this document.

As part of this EIS/EIR scoping process, the Corps and the Department held a public meeting on August 14, 2001. The EIS/EIR scoping process ended on August 31, 2001. The Corps and the Department received 14 letters of comment from public agencies and four letters from environmental and community groups. One comment card and an email were received from the general public. The following areas of concern were raised in the scoping meetings and NOI/NOP response letters and considered during the SAMP formulation process: potential conflicts with other Watershed studies, especially the Corps Management Feasibility Study for San Diego Creek Watershed that was being prepared in collaboration with the County of Orange (Corps, 2004); potential effect of SAMP on implementation of existing master plans, or flood control, maintenance, and planned capital improvement projects; effects on and importance of federally and state-listed species; hydrologic effects of development; Southern California Association of Governments (SCAG) projections and policies; infrastructure needs and utility functions of reservoirs, basins, and pipelines; wetland and riparian restoration, conservation, monitoring, and adaptive management, especially for wildlife habitat; expanded study area to include Newport Bay; broadened scope of analysis beyond the regulatory purview of the Department and the Corps (i.e., the aquatic environment) to include other public interest factors such as growth-related activities applicable to regional and land use planning for development activities; cumulative impacts of past Section 404 permits on the aquatic environment; protections for special aquatic sites; water quality effects and requirements of other regulatory programs.

1.4.4 Involved Agencies and Participating Applicants

The Corps and the Department coordinated with other resource agencies to develop a cohesive, Watershed-specific plan to address anticipated permitting needs and compensatory mitigation, including long-term management of aquatic resources within the Watershed. Participation in the SAMP/WSAA Process was also undertaken in coordination with several applicants throughout an intensive pre-application procedure and in consideration of public comments. <u>Participation by RWQCB, USFWS, or USEPA staff in meetings for the SAMP/WSAA Process shall not be construed to mean that these agencies share the opinions or accept the conclusions represented in the SAMP/WSAA Process. The</u>

following state and federal resource agencies have been involved in development of the SAMP/WSAA Process:

- Corps;
- Department's South Coast Region Habitat Conservation Planning Unit Branch;
- RWQCB, Santa Ana Region;
- U.S. Fish and Wildlife Service (USFWS); and
- U.S. Environmental Protection Agency (U.S. EPA <u>USEPA</u>), Region IX.

On several occasions in 2001 and 2002, the Corps contacted public and private entities (potential applicants) with known development projects and infrastructure/maintenance activities within the Watershed to seek their participation in the SAMP/WSAA Process. The Irvine Company, Irvine Ranch Water District (IRWD), the County of Orange Resources Development and Management Department (RDMD), Orange County Flood Control District (OCFCD), and the City of Irvine chose to participate in the SAMP/WSAA Process for future projects and activities subject to permitting under Section 404 of the federal CWA and Section 1600 *et seq.* of the FGC. These entities are referred to as the Participating Applicants.

This EIS/EIR does not evaluate specific projects of Participating Applicants that may be permitted under the SAMP Permitting Program/WSAA Process because some of these projects have been permitted under the existing Corps and Department permit programs, and others are or will be undergoing a separate environmental review and permit processes by the local lead agencies. Nonetheless, this EIS/EIR programmatically evaluates seven categories of regulated activities that could be permitted under the SAMP and WSAA Process, which includes regulated activities for which the Participating Applicants may seek Corps/Department permit approval.

1.5 **REGULATORY FRAMEWORK**

This section provides a summary of aquatic resource-related state and federal regulations that are applicable to the types of activities anticipated to be covered by the SAMP/WSAA Process.

1.5.1 Clean Water Act

Background – Federal Jurisdiction. The CWA is the principal federal law that addresses aquatic resources and water quality. The primary objectives of the CWA are to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," and to make all surface waters "fishable" and "swimable."

Waters of the U.S. Under Section 404 of the CWA, the Corps regulates discharges of dredged or fill material into "Waters of the United States," including wetlands. The term "Waters of the United States" is defined in 33 CFR 328.3 as:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce...;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams)....the use, degradation or destruction of which could affect interstate or foreign commerce...;

- All impoundment of waters otherwise defined as waters of the U.S. under the definition; and
- Tributaries of waters defined in the bullets above.

The Corps typically regulates as waters of the U.S. any body of water displaying an "ordinary high water mark" (OHWM). Corps jurisdiction over non-tidal waters of the U.S. extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if they are present (33 CFR 328.4). The OHWM is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area" (33 CFR 328.3). Jurisdiction typically extends upstream to the point where the OHWM is no longer perceptible.

The Corps and the U.S. EPA define wetlands as follows: "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions." In order to be considered a "jurisdictional wetland" under Section 404, an area must possess three wetland characteristics: hydrophytic *vegetation*, hydric *soils*, and wetland *hydrology*. Each characteristic has a specific set of mandatory wetland criteria that must be satisfied in order for that particular wetland characteristic to be met. Several parameters may be analyzed to determine whether the criteria are satisfied (Environmental Laboratory 1987).

Although "wetlands" are waters of the U.S., throughout this document the common convention of distinguishing between wetlands and non-wetland waters of the U.S. has been followed. The term "wetland" will refer to regulated waters of the U.S. that meet the hydrologic, hydrophytic vegetation, and hydric soils criteria outlined in the Corps' Wetlands Delineation Manual (Environmental Laboratory 1987). The term non-wetland waters of the U.S. refer to non-wetland waters regulated under Section 404 of the CWA.

Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC). The Supreme Court, in Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (January 21, 2001), determined that the CWA did not extend to isolated waters/wetlands that were determined jurisdictional solely on the basis of the "Migratory Bird Rule" of 1986. The Court ruled that merely providing habitat for migratory birds was not a sufficient connection to interstate commerce for inclusion under the CWA. Thus, some isolated wetlands, especially vernal pools, may not be regulated by the Corps. Geographical jurisdictional determinations are made by the Corps on a case-by-case basis for wetlands in which adjacency or proximity to navigable waters is in question.

Solid Waste Agency of Northern Cook County Case

In January 2001, the U.S. Supreme Court ruled (in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers; "SWANCC"*) that the "migratory bird rule" was not valid, and that Corps jurisdiction does not extend to previously regulated isolated waters, including but not limited to isolated ponds, reservoirs, and wetlands. The Court ruled that merely providing habitat for migratory birds was not a sufficient connection to interstate commerce for inclusion under the CWA. Thus, some isolated wetlands, especially vernal pools, may not be regulated by the Corps. Geographical jurisdictional determinations are made by the Corps on a case-by-case basis for wetlands in which adjacency or

proximity to navigable waters is in question. Examples of isolated waters that are affected by this ruling include: vernal pools; stock ponds, lakes (without outlets); playa lakes; and desert washes that are not tributary to navigable or interstate waters or to other jurisdictional waters.

Rapanos Case

On June 19, 2006, the U.S. Supreme Court issued the complex "Rapanos" decision, a consolidation of two cases: John A. Rapanos, et ux., et al., Petitioners 04-1034 v. United States; and June Carabell et al., Petitioners 04-1384 v. United States Army Corps of Engineers et al. This consolidated case brought into question the Corps' jurisdiction over intermittent and ephemeral streams and their adjacent wetlands. The complex ruling stated that, in order to assert jurisdiction over certain waters, the Corps would need to provide evidence of a "significant nexus" between a given wetland and/or an associated tributary to a navigable water. The Justices issued five separate opinions with no single opinion commanding a majority of the Court. The judgments in the original two cases were vacated and remanded to the 6th Circuit for further proceedings consistent with the Rapanos decision.

On June 5, 2007 the Corps and the USEPA issued joint guidance to their field offices about how to determine CWA jurisdiction in waters of the U.S. In addition, the Corps issued an "Instructional Guidebook" to guide practitioners in the completion of Jurisdictional Determinations. In accordance with the Rapanos guidance, the agencies will continue to assert jurisdiction over traditional navigable waters (TNWs) and all wetlands adjacent to TNWs. Jurisdiction may be asserted over waters of the U.S., including wetlands, which are not a TNW by meeting either of the following two standards: (1) classification as a relatively permanent water (RPW) (e.g. flows seasonally, for 3 months or more), or (2) a "significant nexus" finding. The classes of water body that are subject to CWA jurisdiction only if a significant nexus is demonstrated include: non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but do not directly abut a relatively permanent, non-navigable tributary (RPW). A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW.

Permitting. The current Section 404 program handles permits on a case-by-case and site-by-site basis. There is no coordinated process seeking to plan impacts and mitigation using methods designed to improve the integrity of the Watershed. The current program allows applicants to receive approvals through the NWP process, which does not allow for public review or agency coordination (except for projects that may affect threatened and endangered species). Many different types of activities may be authorized under the NWP process. Project locations may be located within the Watershed's highest quality habitat, and off-site alternatives are rarely practicable. Even with the Corps' Mitigation Guidelines (April 19, 2004) and the Corps Los Angeles District (LAD) Regional Conditions, mitigation sites are located in a rather random manner, and protection relies on the establishment of conservation easements.

Compliance with Section 404(b)(1) Guidelines

The Corps is required to comply with the Section 404(b)(1) Guidelines for any discharge of dredged or fill materials into waters of the U.S. The Section 404(b)(1) Guidelines apply to all actions related to discharge of fill materials into waters of the U.S. ranging from individual actions with small impacts to

the aquatic environment to large actions such as a SAMP. Per the 404(b)(1) Guidelines (40 CFR Section 230), a permit may be issued for the Least Environmentally Damaging Practicable Alternative (LEDPA).

There are several components involved in compliance with the Section 404(b)(1) Guidelines, which involve:

- Adequate analysis of alternatives (40 CFR 230.10(a));
- Prohibitions for discharge (40 CFR 230.10(b));
- Findings of significant degradation (40 CFR 230.10(c)); and
- Minimization of potential adverse impacts (40 CFR 230.10(d)).

The Section 404(b)(1) Guidelines apply solely to Corps' operating procedures and are not applicable to the Department's regulations

Compliance with Water Quality Standards. The CWA also requires states to adopt water quality standards for water bodies subject to review and approval by the U.S. EPA. In California, the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) set water quality standards in California, via the California Porter-Cologne Water Quality Act (see also Section 1.5.2 following). Water quality standards consist of designated beneficial uses for a particular water body, along with water quality criteria necessary to support these uses (40 CFR §131.3[i]). Designated beneficial uses describe the appropriate uses of that water body, such as water contact recreation, commercial or sport fishing, wildlife habitat, agricultural supply, groundwater recharge, and municipal water supply. Water quality criteria are established for in-stream conditions expressed either as numeric limits or as narrative statements, and represent the quality of water that support a particular use. The water quality standards for the Watershed are established by the Santa Ana RWQCB and are documented in the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan).

National Pollutant Discharge Elimination System (NPDES). Direct discharges of pollutants from point sources into waters of the U.S. are not allowed, except in accordance with the permitting program of the CWA, NPDES (33 U.S.C. §1342. (p)). The SWRCB and RWQCBs implement and administer the NPDES program in the California. Pursuant to the NPDES program, permits have been issued that apply to storm water discharges from large municipal separate storm sewer systems (MS4), specific industrial activities, and construction activities of one acre or greater. Such discharges are viewed as point source discharges. The Santa Ana RWQCB has issued an NPDES permit to the County of Orange and the cities within the northern and central portion of Orange County (includes the Watershed) regulating discharges from their MS4s. Permitting of storm water discharges under NPDES is discussed in greater detail in Section 3.4, Water Quality.

NPDES permits require water quality-based limitations for pollutants that may cause or contribute to an exceedance of a state water quality standard (40 CFR § 122.44). NPDES permits may establish enforceable effluent limitations on discharges, require monitoring of discharges, designate reporting requirements, or require the discharger to implement best management practices (BMPs). BMPs are activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the U.S. BMPs may be used in addition to numeric effluent limitations, or, in some cases, in lieu of numeric effluent limitations (40 CFR § 122.44(k).

CWA Section 303(d). Where water quality standards are not being achieved, Section 303(d) of the CWA requires identifying and listing that water body as "impaired." A water body can be listed for one or more impairments. Once a water body has been included on a 303(d) list of impaired water bodies, a Total Maximum Daily Load (TMDL) for the pollutant causing the impairment must be developed for that water body. A TMDL is the allowable amount of a pollutant (total pollutant load) that can be discharged from all sources, both point and non-point, and still ensure that water quality standards are achieved (e.g., water quality objectives are met and beneficial uses are protected). The TMDL must also include a margin of safety. TMDLs are established by RWQCBs under the Porter-Cologne Act (Cal. Water Code §§ 13000 et seq.) when they are amended to the Basin Plans. Once established, the TMDL is allocated as "waste load allocations" to point source dischargers and as "load allocations" to non-point source dischargers. Established TMDLs applicable to the Watershed are discussed in Section 3.4, Water Quality.

CWA Section 401. In accordance with Section 401 of the CWA, an applicant for a Section 404 permit to discharge dredged or fill material into waters of the U.S. must obtain certification from the RWQCB (or in certain instances from the SWRCB) stating that the proposed fill would not violate water quality standards and criteria specified in the Basin Plan. A request for certification of Waste Discharge Requirements (WDRs) is submitted to the RWQCB at the same time that an application for a Section 404 permit is filed with the Corps. The RWQCB has 60 days to review the application and act on it. Because no Corps permit is valid under the CWA unless "certified" by the state, the RWQCB may effectively veto or add conditions to any Corps permit through the 401 certification process.

In cases where a 401 certification does not apply (e.g., when activities are not subject to a Section 404 permit because the discharge of dredged or fill material does not occur within waters of the U.S.¹), the Porter-Cologne Water Quality Control Act requirements for waste discharges to waters of the State² must still be satisfied. Previously, the RWQCB could issue waivers of WDRs for discharges outside of Corps jurisdiction. However, these waivers expired January 1, 2003. In May 2004, the SWRCB issued Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdictions (Order No. 2004-0004-DWQ) to regulate some activities for which WDRs were previously waived (in particular non-federal waters, per the "SWANCC" decision by the U.S. Supreme Court³). Discharges that exceed the thresholds of Order No. 2004-0004-DWQ (or, as subsequently updated) will require separate, individual waste discharge requirements or a waiver thereof. Activities eligible for these General WDRs include actions not subject

¹ Waters of the U.S. refers to federally regulated rivers, creeks, streams and lakes, bordered by an ordinary high water mark, and extending to the headwaters. Also, includes adjacent wetlands (See 33 CFR § 328.3(b); 40 CFR § 230.3(s)). Waters of the U.S. are regulated by the Corps.

² Waters of the State includes any surface or groundwater, including saline waters, within the boundaries of the state (California Water Code § 13050(e)). This is a broad definition used by the RWQCB and includes drainage features outside the Corps and Department jurisdiction. The Department regulates impacts to the bed, channel, or bank of any river, stream, or lake; any such river stream or lake would be a waters of the State (See FGC Section 1600 *et seq.*), but a subset under the broader definition used by the RWQCB.

³ 531 U.S. 159 (2001). The Court found that the Corps could not rely on the presence of migratory birds to find a federal connection to an otherwise isolated, non-navigable water, and therefore, limited the Corps jurisdiction over non-navigable, isolated waters.

to a 404 permit and 401 water quality certification, and based on the following size criteria applied to either temporary or permanent impacts to waters of the State:

- Excavation and/or fill activities that impact less than 0.2 acres of waters of the State;
- Linear excavation and/or fill affecting drainage features and shorelines cannot impact more than 400 linear feet of waters of the State; and
- Dredging activities that do not exceed 50 cubic yards within waters of the State.

The size criteria apply to complete projects and cannot be used to authorize "piecemealing" of larger discharges. In regulating recurring discharges (e.g., routine maintenance of sedimentation basins, forebays or similar waters), these criteria apply for each discharge episode. Based on these size criteria and several other eligibility requirements, the discharges that may be covered under these General WDRs would generally include those for bridge construction, land development, detention basins, disposal of dredge material, bank stabilization, revetment, channelization and other similar activities.

For compliance under these General WDRs, the discharger must submit and implement a mitigation plan that demonstrates the discharge will sequentially avoid, minimize and compensate for adverse impacts to the beneficial uses of affected water bodies. Compensatory mitigation for unavoidable permanent impacts to wetlands or headwaters must ensure "no net loss" of area (acreage), functions and beneficial use values by providing appropriate compensatory mitigation including creation, restoration or (in exceptional cases) preservation.

1.5.2 California Porter-Cologne Water Quality Act

California's Porter-Cologne Water Quality Control Act established the SWRCB and the nine RWQCBs. Each RWQCB is required to adopt a Basin Plan that describes the existing water quality conditions and problems in the region, establishes beneficial uses of the surface waters and groundwaters in the region (Receiving Waters) along with water quality objectives to protect the beneficial uses of the Receiving Waters. The Watershed is within the jurisdiction of the Santa Ana RWQCB and is subject to the provisions of the Santa Ana RWQCB's Basin Plan, which identifies water quality objectives and beneficial uses for waters within the RWQCB's jurisdiction. The water quality objectives and beneficial uses for surface waters and groundwater of the Watershed as specified in the Basin Plan are discussed in Section 3.4, Water Quality.

1.5.3 California Fish and Game Code

"*Streambed Alteration Agreements.* As described in Section 1.4.2, under FGC Section 1600 *et seq.*, the Department has jurisdiction over (i.e., regulates) activities that will affect the natural flow of, or the bed, channel, or bank of a river, stream, or lake in the state, including perennial, intermittent, and ephemeral rivers and streams. Hence, FGC Section 1602 requires any person, state or local governmental agency, or public utility to notify the Department before conducting such an activity and requires the Department to issue a SAA for the activity if the Department determines the activity could substantially adversely affect an existing fish and wildlife resource. "Fish and wildlife resources" include wild fish, mollusks, crustaceans, invertebrates, or amphibians, including any part, spawn, or ova thereof (FGC Section 45); birds, mammals and reptiles not raised in captivity (FGC Section 1800); and habitat necessary for biologically sustainable populations of those species (FGC Section 1802).

"*Wetlands Protection.* The Department does not have direct regulatory authority over activities that could affect wetlands. However, if an activity is subject to FGC Section 1600 *et seq.* or CESA could have an adverse impact on a wetland, the measures the Department includes in a SAA (under FGC Section 1600 *et seq.*) or permit (under CESA) generally will serve to protect the wetland or compensate for any loss. Also, as the trustee agency for the state's fish and wildlife resources, the Department consults with lead and responsible agencies under CEQA and NEPA and comments on projects that could affect wetlands consistent with the California Wetlands Conservation Policy described below

1.5.4 California Wetlands Conservation Policy

The California Wetlands Conservation Policy of 1993 created an interagency task force headed by the State Resources Agency and California Environmental Protection Agency (Cal-EPA) to: (1) ensure no overall net loss, and a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values; (2) reduce procedural complexity in the administration of state and federal wetlands conservation programs; and (3) encourage partnerships that make restoration, landowner incentives, and cooperative planning the primary focus of wetlands conservation. This resolution directed the Department to prepare and submit to the legislature a plan identifying means to protect existing wetlands and restore former wetlands. This includes identification of sufficient potential wetlands sites to increase the amount of wetlands in California, and a program for the public and private acquisition of such lands. While the resolution does not have the force and effect of law, the Department and other California state agencies frequently point to it as an expression of state policy.

1.5.5 Federal Endangered Species Act (ESA)

The federal ESA of 1973 (16 USC 1531 *et seq.*) is administered by the USFWS, and by the National Marine Fisheries Service (NMFS) in areas where marine habitats exist. Section 7 of the ESA requires federal agencies to use their authorities to conserve threatened and endangered species. It also directs federal agencies to consult with USFWS (and/or NMFS) if any action they authorize, fund, or carry out "may affect" in either a beneficial or adverse manner, any species that is listed or proposed for listing, or any designated or proposed critical habitat. For example, if the issuance of a CWA Section 404 permit by the Corps for a private development project may affect any listed species, the Corps must consult with USFWS on the effects of the issuance of that permit. Species that are candidates for listing by the USFWS may also be addressed during federal interagency coordination. Section 7 also provides a mechanism for 'incidental take,' for actions that may affect a listed species, but which do not jeopardize its continued existence or destroy or adversely modify critical habitat.

Section 9 of the ESA prohibits 'take' (i.e., harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capture, or collecting, or the attempt to engage in any such conduct) of threatened and endangered species. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering.

Under Section 10 of the ESA, non-federal entities can apply for a permit excepting them from the "take" prohibition for scientific purposes to aid the species recovery, or for "incidental take," when the project or activity does not involve a federal action and the take is incidental to, and not the purpose of, an otherwise lawful activity.

1.5.6 California Endangered Species Act (CESA)

The CESA (FGC Sections 2050, *et seq.*) is administered by the Department, and generally parallels the federal ESA. CESA prohibits the "taking" of listed species, except as otherwise provided in State law. Unlike its federal counterpart, CESA applies the take prohibitions to species petitioned for listing (state candidates) during the one-year listing review period. "Take" is defined as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" a protected species. Under Section 2081 of the FGC, the Department may authorize the take of a State endangered, threatened, or candidate species if the take is incidental to an otherwise lawful activity and any impacts to the species are minimized and fully mitigated.

A State lead agency (the agency that has principal responsibility for carrying out or approving a project) is required to consult with the Department to ensure that any action it undertakes is not likely to jeopardize the continued existence of any State endangered, threatened, or candidate species or result in adverse modification of essential habitat. A lead agency may also determine that species listed or proposed as threatened or endangered under the federal ESA warrant special review and consideration in CEQA documents. CEQA Guidelines Section 15380(d) allows a lead agency to consider a species as a "de-facto" threatened or endangered species if information can be presented showing the species would qualify for listing. This can apply to proposed, candidate, or any other species not actually listed by the Department or USFWS as rare, threatened, or endangered.

The Natural Community Conservation Planning Act was added to CESA in 1991 (FGC Sections 2800-2840), and provides for voluntary cooperation among the Department, landowners, and other interested parties to develop natural community conservation plans which provide for early coordination of efforts to protect listed species or species that are not yet listed. The primary purpose of the Act is to preserve species and their habitats, while allowing reasonable and appropriate development to occur on affected lands.









Approximate City Boundary

San Diego Creek Watershed



2.0 PROPOSED SAMP/WSAA PROCESS AND ALTERNATIVES

2.1 OVERVIEW OF THE PROPOSED SAMP AND WSAA PROCESS

This SAMP is comprised of the following four components:

- Analytical Framework;
- Watershed-specific Permitting Processes including mitigation framework;
- Strategic Mitigation Plan; and
- Mitigation Coordination Program.

The first component of this SAMP is an Analytical Framework, which is based on technical information about aquatic resources, primarily the riparian ecosystem, in the Watershed. The Corps, along with the Department, developed the Analytical Framework as a decisionmaking tool for evaluating regulated activities that would affect aquatic resources. The second SAMP component is a modified permitting process, including the Department's WSAA Process that is watershed- and resource-based and derived from the Analytical Framework. This regulatory component of the SAMP also includes a mitigation framework. Related is the third component of the SAMP, a Strategic Mitigation Plan, which is based on a Watershed riparian ecosystem restoration plan. The fourth component is the Mitigation Coordination Program to help implement and coordinate long-term management of aquatic resources under the Strategic Mitigation Plan. Together, the Strategic Mitigation Plan and Mitigation Coordination Program support implementation of the mitigation framework and foster a coordinated approach among local landowners/managers and stakeholders to aquatic resource management within the Watershed.

These four SAMP components are discussed in detail in the Corps *Special Area Management Plan for the San Diego Creek Watershed* (Corps, 2008) referred hereafter as the Corps SAMP document, and summarized in this EIS/EIR in Sections 2.1.1 through 2.1.4. Figure 2-1 provides an overview of the SAMP that illustrates how the four components are integrated and lists the main elements involved in each component.

2.1.1 SAMP Analytical Framework

The SAMP Analytical Framework includes scientifically based methodologies for the identification and characterization of aquatic resources in the Watershed; an evaluation of aquatic resources in consideration of proposed and reasonably foreseeable activities in the Watershed that would impact aquatic resources, and an impact avoidance and minimization plan sensitive to aquatic resources. This Analytical Framework has and will continue to be used to inform the Corps and the Department in their impact evaluations of regulated activities in the Watershed.

The following sections summarize two key scientific studies of the Analytical Framework. These include two comprehensive landscape-level analyses of existing aquatic resources within the Watershed that the Corps conducted and subsequently adopted: 1) a Planning Level Delineation (PLD); and 2) a Landscape Level Functional Assessment (LLFA). The results of these studies were used to identify SAMP Tenets which are scientifically based conservation principles that guided the Corps and the Department in formulating the SAMP.

2.1.1.1 Planning Level Delineation

A PLD of aquatic resources, including a geospatial analysis, was conducted throughout the Watershed utilizing expertise from the Corps Cold Regions Research and Engineering Laboratory (CRREL) (Lichvar, 2000). The PLD involved extensive fieldwork and the use of aerial photography to identify aquatic resources (probable jurisdictional waters of the U.S., including lakes, streams and wetlands¹) at the landscape level (not at site-specific level). The PLD is applicable for watershed-based planning and evaluation purposes, but is not intended to replace the need for or role of a site-specific delineation. The PLD is provided in Appendix B-1 and described in more detail in Section 3.1 of this document.

Figure 2-1. Overview of San Diego Creek Watershed SAMP



¹ Includes both Corps and Department's probable jurisdictional areas. Mapped riparian corridor is lateral extent of Department's probable jurisdiction; Corps jurisdiction is likely a subset of this extent.

21.1.2 Landscape Level Functional Assessment

A LLFA was conducted utilizing expertise from the Corps Engineering Research and Development Center (ERDC) to characterize the functional integrity of the Watershed aquatic resources (Smith, 2000). For the SAMP, the Corps and the Department focused primarily on riparian ecosystems.² Three metrics were identified to represent riparian ecosystem integrity: 1) hydrologic, 2) water quality, and 3) habitat. Based on extensive fieldwork, the various riparian reaches within a drainage basin were assigned numerical ratings that categorized areas as high, medium or low quality integrity for hydrology, water quality and habitat.

The LLFA is a relatively new multi-scale based method of evaluating the condition of a watershed at the landscape level, and does not reflect detailed, site-level information at the watershed's present condition. The landscape level nature of resources performed for this SAMP baseline represent a snapshot of the Watershed at the time the SAMP was initiated. The assessment supplements the routine evaluations conducted by the Corps and the Department as part of their standard operating procedures. The LLFA for the Watershed is provided in Appendix B-2. Section 3.1 describes the LLFA in greater detail and provides the map depicting habitat integrity ratings for existing conditions. Hydrologic and water quality integrity rating maps are provided in Sections 3.3.3 and 3.4.8 respectively.

After completion of the PLD and LLFA, the Corps and the Department conducted field inspections to verify the findings of the PLD and LLFA.

2.1.1.3 SAMP Tenets

The SAMP Tenets are overarching, guiding principles for the Watershed based on the knowledge of the Watershed's resources obtained through the baseline assessments. The Corps and Department identified these important scientific elements which, if adhered to, would ensure the goals and objectives of the SAMP (outlined in Section 1.2.1.1) are met. The SAMP Tenets go beyond the standards and criteria that are expressly contained in the Corps and the Department's standard operating procedures. The SAMP Tenets provide a method of evaluating potential impacts and inform the Corps and the Department in their efforts to achieve the respective goals of the CWA (i.e., of protecting the biological, chemical, and physical integrity of waters of the U.S.) and the FGC (i.e., to avoid impacts to fish and wildlife that use the State's lakes, rivers and streams). The SAMP Tenets are listed below and include a discussion of the relationship between the functional assessment and the tenets.

(a) No Net Loss of Acreage and Functions of Waters of the U.S.

Federal and state policy calls for no net loss of wetland acreage and functions. Because the SAMP focuses on riparian ecosystems within the Watershed, which encompass both the Corps and the Department's jurisdictions, the no net loss policy is interpreted here in a manner that is ecologically comprehensive in that it addresses functional riparian ecosystems as well as wetlands. Unique to the SAMP is the consideration given to the correlation between activities and land cover within a riparian

² Since water is the primary limiting ecological factor in the Southwestern U.S, riparian corridors are important resources in the landscape. Therefore, by their very nature, riparian systems are capable of supporting a diverse number of species within the landscape. Riparian corridors provide foraging, cover, and nesting/breeding habitat for fish and wildlife. They are conduits for many aquatic, riparian, and upland species, and are important elements of aquatic resource conservation.

reach and its local drainage basin, and the resulting effects in the riparian portion of the reach and downstream areas. Thus, for the SAMP, the evaluation of no net loss applies to riparian areas (or GIS polygons) within the Watershed, as mapped for the PLD. Riparian areas include, but are not limited to, streams and creeks (per USGS topographical maps) that were mapped as lines in the PLD. The goal of no net loss can be accomplished through the application of a hierarchical process of avoidance and minimization of impacts, and compensatory mitigation, a procedure common to any Section 404 action and often referred to as the "mitigation sequence" required by the 404(b)(1) Guidelines (40 CFR 230.10).

(b) Maintain/Restore Hydrologic, Water Quality, and Habitat Integrity

Riparian ecosystems with high hydrologic integrity exhibit the range of frequency, magnitude, and temporal distribution of stream discharge, and surface and subsurface interaction between the stream channel, floodplain, and terraces that historically characterized riparian ecosystems in the region (Smith, 2000). Water quality integrity was defined as exhibiting a range of loading in the pollutant categories of nutrients, pesticides, hydrocarbons, and sediments that are similar to those that historically characterized riparian ecosystems in the region. Riparian ecosystems with habitat integrity exhibit the quality and quantity of habitat necessary to support and maintain a balanced, integrated, adaptive biological system having the full range of characterized riparian ecosystems in the region. In managing the aquatic resources in a watershed, the goal is to maintain the integrity of these systems and to restore the integrity of these resources wherever possible. Management of these aquatic resources should strive to conserve and restore riparian corridors with high hydrologic, water quality, and habitat integrity. This tenet strongly correlates with other parameters such as the floodplain connectivity, riparian corridor continuity, and sediment regime because riparian reaches that would rate high for riparian ecosystem integrity would also rate high for these other parameters.

(c) Protect Headwaters Areas

The conventional definition of headwaters is the most upstream segments of the main channel of a stream. For the purposes of the SAMP, the Corps and the Department have defined the term more narrowly, whereby headwater areas are local drainages (of a particular reach) with tributaries consisting of first order streams discharging to second order streams.

Although the headwater areas may not contain riparian vegetation (e.g., ephemeral drainages), headwater streams contribute many important functions, related to biogeochemical processes, including the maintenance of sediment transport and water quality. Protection of the particular tributaries flowing into a riparian reach would allow for the maintenance and/or restoration of riparian ecosystem integrity at the reach, sub-basin, and watershed scales. If left unprotected, impacts to headwater areas that flow into a particular reach of high integrity may lead to the eventual degradation of that reach. In addition, conserving and/or restoring undeveloped drainages that connect core areas of upland habitat would maintain important habitat linkages at the landscape scale.

(d) Maintain/Protect/Restore Diverse and Continuous Riparian Corridors

Riparian corridors have greater value if they are continuous with respect to having an unbroken, canopycovered corridor of trees and associated understory species. Unlike other habitat communities whose diversity is not compromised by natural gaps and patches of habitat, a riparian corridor's continuous nature enhances diversity and ecological functions related to movement corridors.

If established, the following measures would facilitate the protection and/or restoration of corridors:

- Permanent impacts (direct and indirect impacts) to corridors are avoided to the maximum extent feasible.
- Road crossings are sufficiently sized to allow native, riparian vegetation to establish and persist under the structure, and allow for faunal movement along the corridor.
- Biological buffers are established adjacent to all riparian corridors and unvegetated drainages.
- Upstream activities are completed in such a way as not to degrade downstream corridors by compromising habitat, water quality, and hydrologic integrity.
- Areas with corridor breaks are considered for restoration, except in some localized areas where such activities may limit the persistence, recovery, or dispersal of a listed or sensitive species.
- Maintaining continuous riparian corridors also allows for the hydrologic connectivity within a given network of conservation areas, which is important for aquatic organisms and for maintaining the hydrologic and water quality integrity of the Watershed.

(e) Maintain or Restore Floodplain Connection

High integrity riparian reaches have active floodplains that flood on a regular basis. This overbank flooding is vital for maintaining sediment regimes and allowing for native habitat, including the recruitment of riparian plant species. It also allows interchange of biotic materials and nutrients between the active floodplain and the active channel, allowing for transport of detritus and nutrients to downstream areas and maintaining ecosystem processes.

(f) Maintain and/or Restore Sediment and Transport Equilibrium

High integrity reaches have functioning sediment regimes that balance erosional and depositional processes appropriate for that particular landscape position. Riparian habitat quality is often proportional to the quality of the sediment regime. Appropriate depositional processes allow the recruitment of new riparian vegetation. Excessive erosional processes remove riparian vegetation and lead to channel instability. There are many places in the subwatersheds with degraded sediment regimes that have the potential to be restored, as identified through the Watershed Riparian Ecosystem Restoration Plan: Site Selection and General Design Criteria (restoration plan) (Smith and Klimas, 2004).

(g) Maintain Adequate Buffer for the Protected Riparian Corridors

Buffers are necessary to maintain various functions of riparian systems because "edge effects" from adjacent activities may lead to the degradation of a particular riparian area over time. Adequate buffers ensure that the riparian ecosystems would be sustainable over time. The type of adjacent land use is important, as buffer requirements may be different if the adjacent land use is residential versus open space, for example.

The scientific literature has shown the effects of various buffer widths on endpoints such as general water quality, specific water quality parameters such as temperature and sediment, effects to benthic macroinvertebrates, and effects to wildlife to name a few examples. Ensuring buffers are as follows may facilitate the protection and restoration of riparian areas:

- Kept free of activities and pollutants that reduce the buffer's ecological functions;
- Established to contain adequate width to reduce the negative interactions between adjacent land uses and ecological functions. Buffers may range from 15 meters 100 meters, depending on site-specific situations and function; buffers are typically measured from the top of the bank landward, unless otherwise stated;
- Included as mitigation, in addition to the area of wetland and/or riparian habitat; and
- Considered on a case-by-case basis, focusing on the connections between riparian communities and adjacent upland core resources, in order to maintain the interactions between communities, and to assure long-term conservation of riparian and upland species dependent on riparian areas for foraging or breeding, and/or for riparian species that utilize the transitional and adjacent uplands during their life cycles.

For the SAMP, consideration was given to site constraints and intended function of the buffers. Generally, based on a review of the scientific literature, as described in the Corps SAMP document (Corps, 2008) the following three different buffer widths will serve as a guide:

- For general water quality concerns pertaining to nonpoint source runoff, a 15-meter vegetated buffer should minimize effects from overland flow of sediment and other pollutants.
- For effects to sensitive aquatic species such as benthic macroinvertebrates, a 30-meter vegetated buffer should protect aquatic ecosystem processes A 30-meter vegetated buffer would be unnecessary in areas expected to be without sensitive benthic macroinvertebrates, such as ephemeral streams.
- For effects to wildlife, a 100-meter buffer should protect a large number of species from the indirect effects of noise, sound, and pollution. Although less sensitive species may be better adapted to areas without such extensive buffers, certain sensitive and/or larger wildlife species that use riparian corridors may need wider buffers. The wildlife management literature typically uses a 100-meter buffer to protect general wildlife concerns.
- (h) Protect Riparian Areas and Associated Habitats Supporting Federally and State-Listed, Sensitive Species and their Habitat

Impacts to riparian reaches known to support wildlife with special status as federally and state-listed species and species of special concern should be avoided. For example, if a particular sensitive species uses upland habitats for foraging, dispersal, over-wintering, etc., adequate connectivity for the utilization of the upland habitat should be maintained. Occupied and potential occupied habitats of listed and

sensitive species should be provided buffers from adjacent land-uses and activities. Upstream and tributary areas should be modified only to avoid adverse effects to the abiotic and biotic factors supporting the species habitat, as well as temporal and stochastic events (e.g., seasonal flooding).

Several species, including the state and federally endangered least Bell's vireo and southwestern willow flycatcher, and the State species of special concern, the southwestern pond turtle, are dependent on riparian ecosystems for their survival. Buffer widths may vary according to specific species, activities, and on-site minimization measures. For example, buffers were considered as follows for the following species:

- Least Bell's vireo maintain a buffer around the riparian vegetation polygons within which point data exist for this species.
- Southwestern willow flycatcher maintain a buffer around the riparian vegetation polygons for which sufficient point data exist for this species, as well as around areas (polygons) of mature riparian vegetation suitable for this species (e.g., mature riparian woodland) whether sufficient occurrence data exist.
- Southwestern pond turtle limit the activities to occur in a drainage basin of a reach within which there are occurrence data for this species.

2.1.1.4 Identification of Aquatic Resource Integrity Areas

This section explains the process by which the Corps and the Department identified aquatic resource integrity areas, which are the focus of the SAMP Analytical Framework that informs the Corps and the Department's management of aquatic resources in the Watershed. Aquatic resources with moderate to high integrity (water quality, hydrologic, or habitat), and/or those that provide functions important for the sustainability of the Watershed's riparian ecosystem, and their upland areas of influence (or local drainage basins) are referred to herein as aquatic resource integrity areas³. The term "Upland Areas of Influence" in this context is defined in Section 13, Acronyms, Abbreviations and Glossary.

Identification Criteria

The Corps and the Department developed a set of watershed-specific criteria to help identify the aquatic resource integrity areas. These criteria were based on the goals and objectives of the SAMP for aquatic resource protection identified in the SAMP Tenets. Aquatic resource integrity areas were identified by applying the criteria to different themes in a GIS program. Integrity-based criteria refer to scores given aquatic resources characterized in the LLFA (Smith, 2000). Selected criteria (1, 2, 4, 5, and 6) were used to identify areas as having greater conservation value when considered in the watershed context. Other criteria (3, 7, and 8) were used to identify areas where their protection was not expected to improve the overall integrity of aquatic resources, as evaluated in a watershed context. The criteria used are listed

³ For purposes of understanding and evaluating the existing and potential stressors upon aquatic resources, the watershed-based methodologies used for the SAMP acknowledged the relationship between the aquatic resources and their upland areas of influence; as such, the Corps assessment methodologies incorporated certain indicators of integrity at the local drainage and drainage basin scales. Due to their indirect contribution to the integrity of the receiving aquatic resources, associated terrestrial habitats within these local drainages and drainage basins were considered an integral part of a whole system. Therefore, aquatic resources and their respective upland areas of influence constitute the aquatic resource integrity areas.
below. Detailed discussions of the criteria are provided in the Corps SAMP document (Corps, 2008) and the Corps LLFA (Smith, 2000) (Appendix B-2).

- Criterion 1 Protect Local Drainages of Riparian Reaches with a Medium to High Level of Hydrologic, Water Quality, and Habitat Integrity
- Criterion 2 Protect Headwater Local Drainage Basins
- Criterion 3 Remove Areas with a Land Use/Land Cover Designation of "Developed with 15% Impervious Surfaces"
- Criterion 4 Protect Aquatic Resources and Associated Upland Habitat Currently
- Criterion 5 Protect Aquatic Resources Designated As Critical Habitat
- Criterion 6 Enhance Ecosystem Functions of Currently Protected NCCP Reserve System and other Public Open Spaces
- Criterion 7 Designated Buffer in Agricultural Land Use Areas
- Criterion 8 Exclusion of Disconnected Reaches in Agricultural Areas

2.1.1.5 Formulation of a SAMP Impact Avoidance and Minimization Plan

By applying the resource identification and assessment methods (PLD and LLFA) described in Sections 2.1.1.1 and 2.1.1.2, respectively, and by considering the anticipated needs of the regulated community, the Corps and the Department were able to formulate an impact avoidance and minimization plan. The plan, which is an element of the SAMP Analytical Framework, endeavors to maximize the avoidance and minimization of impacts to sensitive aquatic resources as required by the 404(b)(1) Guidelines, at the watershed scale. The Corps and the Department targeted the aquatic resource integrity areas as the foundation of the impact avoidance and minimization plan. These aquatic resource integrity areas for the Watershed are shown in Figure 2-2 (northern portion of the Watershed) and Figure 2-3 (southern portion of the Watershed). Important aspects of formulating the impact avoidance and minimization plan were the coordinated (Pre-Application) planning process with the SAMP Participating Applicants and the public participation component as discussed in the following subsections.

Coordinated SAMP (Pre-Application) Planning Process

In formulating the SAMP impact avoidance and minimization plan, the Corps and the Department convened a series of pre-application meetings, beginning in 2001 (after the EIS/EIR scoping period). Those attending the pre-application meetings included coordinating resource agencies and the Participating Applicants who wanted specific projects or activities intensively evaluated in the context of the SAMP. The Corps and the Department evaluated a suite of reasonably foreseeable activities that would be regulated under CWA Section 404 and FGC Section 1600 *et seq.*, including known projects and activities brought forward by the Participating Applicants.

This multi-year coordinated planning effort between the lead and cooperating resource agencies and the Participating Applicants involved extensive review of proposed projects. This resulted in subsequent project modification by the Participating Applicants to demonstrate adherence to the 404(b)(1) Guidelines by incorporating avoidance and minimization measures during the pre-application stage. This coordinated planning process resulted in the impact avoidance and minimization plan for development, whereby aquatic resource integrity areas were identified for potential areas for conservation management, and development footprints were redrawn to avoid impacting them. Other areas were identified for

restoration opportunities to increase the functional integrity of a particular riparian reach, which upon restoration and management would be considered aquatic resource integrity areas.

In addition to the specific criteria for identifying aquatic resource integrity areas, other issues were given consideration in the coordinated planning process for identifying an impact avoidance and minimization plan. Selected portions of local drainage basins associated with previously permitted, but unbuilt development projects were eliminated as aquatic resource integrity areas. Furthermore, based on the iterative pre-application review process, in the cases where medium to higher value aquatic resources and associated local drainage basins were located within areas planned for development projects, the resource agencies requested project modifications from the project proponent to avoid impacts in specific areas. These project modifications included decreasing the footprint of planned development and reducing post-development surface runoff into aquatic resources.

Public Participation

The public has had an important role in providing input to the SAMP formulation process. In addition to the public scoping meeting (August, 2001), the Corps and Department held a public workshop (July, 2002) and a public informational meeting (January, 2005) to continue to engage the public in the process. Corps and Department representatives attended the Newport Bay Watershed Management Committee intermittently to keep the known stakeholders apprised of the SAMP progress. The public comments received to date were considered during the SAMP formulation process and such ongoing feedback is reflected in the proposed SAMP.

A formal public review and comment period, including a public hearing on this Draft EIS/EIR will afford the public another opportunity to provide substantive comments on the SAMP. The Corps will use comments received in its decision-making process, in accordance with NEPA (40 CFR § 1506.6) and CWA regulations. The Department will evaluate comments in accordance with the CEQA requirements and the FGC.

Results of the SAMP Formulation Process

The SAMP impact avoidance and minimization plan depicts at a landscape level the aquatic resource integrity areas identified by the Corps and Department, and through application of the criteria (Section 2.1.1.4), the LLFA evaluation process, coordinated planning with the Participating Applicants and public participation described previously. The aquatic resource integrity areas are shown in Figures 2-2 and 2-3. The Corps and the Department caution that the configuration of the aquatic resource integrity areas could change as a result of further public review and the EIS/EIR process⁴.

⁴ The data used to develop these figures, represent the results of a landscape-level and reach-level characterizations of aquatic resources prepared in 2000 and were subsequently verified. However, the Corps and the Department caution that the Watershed is dynamic, not static. These data are for SAMP planning and evaluations purposes, and as such are not intended to replace site-level biological and physical assessments and jurisdictional delineations.

Figure 2-2. Aquatic Resource Integrity Areas (Northern Area)

Figure 2-3. Aquatic Resource Integrity Areas (Southern Area)

The aquatic resource integrity areas encompass the vast majority of aquatic resources within the Watershed. Of the 2,552 acres of aquatic resources, about $1,644 \ 1.648$ acres ($64\% \ 65\%$), were identified as aquatic resource integrity areas. In considering riparian habitat only, $1,076 \ 1.080$ acres (65%) of the total 1,666 acres of riparian habitat delineated in the Watershed are identified within aquatic resource integrity areas. Of the 570 acres of high quality riparian habitat, about 511 acres (89%) are within identified aquatic resource integrity areas. Of the 959 acres of high and medium quality riparian habitat, about 780 acres (81%) are within aquatic resource integrity areas. Section 3.1 of this document includes detailed breakdowns of the various aquatic resource types of high and medium integrity within each subwatershed.

The Orange County Central-Coastal Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) Reserve System currently provides protection to 639 acres of aquatic resources, including 613 acres of riparian habitat. Using the SAMP Analytical Framework, the Corps and the Department identified an additional $\frac{1,025}{1,029}$ acres of aquatic resources, including $\frac{480}{484}$ acres of riparian habitat, as aquatic resource integrity areas.

In addition to the identification of aquatic resource integrity areas, the Corps and the Department consider the major stream systems, including Serrano Creek, Borrego Canyon Wash, San Diego Creek, Peters Canyon Wash, and Hicks Canyon Wash, important aquatic resources in the network of aquatic resources within the Watershed. In light of the types and extent to which these major stream systems provide water quality, hydrologic, and potential habitat and connectivity functions and values within the Watershed, the Corps and the Department believe these major stream systems merit special consideration in the management of the Watershed's aquatic resources. Consequently, the Corps and the Department have incorporated these considerations into the SAMP Analytical Framework, and in the proposed modifications to implement the respective regulatory programs.

Beyond the subwatershed unit, it is helpful to look at the SAMP aquatic resource integrity areas in terms the NCCP/HCP Reserve, the former Marine Corps Air Station (MCAS) El Toro, and the City of Irvine. Of the 17,133 17,137 acres of aquatic resources and their contributing upland areas of influence identified as aquatic resource integrity areas, 12,408 acres (72%) fall within the boundaries of the NCCP Reserve System (See Figure 2-4). Most of the aquatic resources, including ephemeral streams and riparian habitat found within the NCCP/HCP Reserve System, are captured as high quality resources within the aquatic resource integrity areas. For instance, 521 acres (67%) of the high and medium integrity riparian habitat identified as part of the aquatic resource integrity areas are located within the NCCP/HCP Reserve System. Table 2-1 in Section 2.3.2 of the Corps SAMP document (2008) contains a detailed breakdown of aquatic resource integrity areas in comparison to NCCP/HCP Reserve areas.

Yet, high and medium quality aquatic resources, including riparian habitat, identified as aquatic resource integrity areas extend beyond the boundaries of the NCCP Reserve System. [Note: The NCCP/HCP Planning Area extends beyond the boundaries of the aquatic resource integrity areas and the Watershed]. Overall, the aquatic resource integrity areas encompass 1,025 1,029 acres of aquatic resources that are located outside the NCCP/HCP Reserve System boundaries; as such, these resources are under various management authorities with variable conservation priorities.

Figure 2-4. Relationship between the SAMP Aquatic Resource Integrity Areas and the Central-Costal NCCP Subregional Reserve System Planning Areas The identification of aquatic resource integrity areas target an additional 259 acres of high and medium integrity riparian habitat for improved resource management. Other aquatic resources are located in non-NCCP designated open space areas, including the City of Irvine's Open Space Preserve, and UCI's San Joaquin Freshwater Marsh Preserve. Of the Watershed's aquatic resources that failed to satisfy the criteria for identification as aquatic resource integrity areas, some are within the NCCP/HCP Reserve System and other open space areas, and thus, are afforded some level of management already.

The former Marine Corps Air Station El Toro (MCAS El Toro) also falls within the Watershed and provides important connectivity opportunities within the Watershed. Because of its location at the base of the Loma de Santiago foothills, the development of MCAS El Toro could impede the connection of resources identified in the upstream reaches of the Watershed from those downstream. The SAMP analysis identified 6,820 acres of aquatic resources and their contributing upland areas as aquatic resource integrity areas in the portions of the Watershed north of the MCAS El Toro, including 561 acres of aquatic resources. South of MCAS El Toro, there are 10,313 10,317 acres identified as aquatic resource integrity areas, including 1,084 1,088 acres of aquatic resource habitats. Of the 561 acres of aquatic resources in the north and 1,084 1,088 acres in the south, 30 and 16 acres, respectively, are ephemeral streams.

North of MCAS El Toro, considerable overlap exists between the aquatic resource integrity areas and the NCCP Reserve, with 467 acres, or 83% of this subset located within the NCCP Reserve System. In contrast, south of MCAS El Toro, less protection by the NCCP Reserve is afforded aquatic resources, whereby 152 acres or 14% of the aquatic resources overlap with the NCCP Reserve.

2.1.1.6 The Corps and the Department's Authorities and SAMP Aquatic Resource Integrity Areas

The identification of selected aquatic resources and their contributing uplands as aquatic resource integrity areas has no independent legal effect. It does not confer upon the Corps or the Department any additional regulatory authority beyond that which the agencies exercise under their respective enabling statutes. The identification of aquatic resource integrity areas provides a foundation for the permitting framework as well as the mitigation framework, which are both within the agencies' purviews. Management of aquatic resources within the integrity areas through the regulatory process is one of the principal benefits of the proposed SAMP and WSAA Process. The SAMP allows the agencies to make decisions about aquatic resources within the Watershed in a strategic, holistic way, rather than on a project-by-project basis. Apart from the Corps and the Department regulatory authorities over jurisdictional areas and activities and requirements for compensatory mitigation projects, the management of aquatic resources integrity areas will rely on voluntary efforts.

As previously described, the proposed SAMP represents a comprehensive approach to aquatic resource conservation that integrates both the regulatory and land use planning processes so that they can become mutually beneficial. The SAMP does this by enabling the regulatory process to integrate more broadly with and support preservation, restoration, enhancement, and management of aquatic resources in the Watershed, and vice versa.

2.1.2 Permitting Processes, including Mitigation Framework

The second major component of the SAMP is the watershed-specific permitting process. The Corps and Department propose to change the way in which their existing, conventional permitting procedures under CWA Section 404 and FGC Section 1600 *et seq.* respectively, are applied in the Watershed. These changes originated from the SAMP Analytical Framework described in Section 2.1.1. Thus, the Corps and the Department's watershed-specific permitting procedures and mitigation policies will now differentiate among aquatic resources based on their water quality, habitat, and hydrologic integrity and functional role in the Watershed. The focus of both the Corps and the Department's new watershed-specific permitting process is to provide the appropriate level of review of regulated activities affecting aquatic resources within the Watershed. The SAMP Analytical Framework, which has allowed the Corps and Department to identify aquatic resources integrity areas and major stream systems that merit closer consideration, will improve the agencies' capacity to make informed management decisions within the agencies (i.e., permitting decisions, including mitigation). This approach has been translated to the proposed changes to the regulatory permitting procedures described herein.

The proposed modifications to the Corps permitting process for the Watershed are summarized as follows and described in greater detail in subsection 2.1.2.3:

- Change the availability of selected Nationwide Permits (NWPs) for use in the Watershed;
- Establish new Letter of Permission (LOP) procedures for the Watershed; and
- Establish a new Regional General Permit (RGP) for the Watershed.

The Department proposes to augment the existing SAA process with a proposed WSAA Process for use in the Watershed for qualifying activities.

The proposed permitting procedural changes reflect extensive front-end analysis of the Watershed's aquatic resources and consideration of how regulated activities may affect those resources. As a result, the proposed changes to the regulatory program procedures will allow the Corps and the Department to target staff review and evaluation time towards regulated activities and projects with greater potential to result in adverse impacts to the overall integrity of aquatic resources in the Watershed. Conversely, projects and regulated activities with minor impacts that affect low integrity aquatic resources would undergo modified permitting procedures to improve efficiency. Areas that failed to meet the criteria of aquatic resource integrity areas represent aquatic resources with low hydrologic, water quality, and habitat integrity; little habitat value for threatened and/or endangered species; and or wildlife connectivity value. Regardless of their decreased value, under the SAMP mitigation framework even the permanent loss of lower value resources would require compensatory mitigation for unavoidable impacts.

An additional outcome of the SAMP formulation process is agreement between the Corps and the Department to increase coordination with the other resource agencies over their corresponding related regulatory programs when reviewing future permit applications. Mechanisms for increased interagency coordination are included in the proposed permitting procedures.

In issuing any future permits, agreements, or other regulatory approvals to applicants, the Corps shall, to the extent permissible, rely on and shall utilize this EIS/EIR prepared in conjunction with the SAMP as

the NEPA program environmental document for such permits and approvals. Likewise, the Department shall, to the extent permissible, rely on the EIS/EIR prepared in conjunction with the SAMP as appropriate CEQA program documentation for any approvals regarding potential impacts to Department jurisdiction along with any project specific CEQA documentation.

2.1.2.1 Anticipated Regulated Activities

Future actions in the Watershed that are activities regulated by the Corps and the Department under CWA Section 404 and FGC Section 1600 *et seq.* (i.e., require the discharge of dredged or fill material into waters of the U.S., or activities that obstruct or divert the flow, or change the bed, channel, or bank of any river, stream or lake in the state, respectively) would be subject to the SAMP/WSAA Process. Based on the types of regulated activities previously authorized and the SAMP scoping process, the following categories of activities are addressed in the proposed modifications to the Corps and Department's permitting processes and evaluated at a program level in this EIS/EIR.

Utility Lines

Utility lines such as for water, electricity and natural gas must often cross one or more jurisdictional waters as part of the utility distribution system. Utility lines are sometimes attached to bridges, if available and feasible, but often, the lines are trenched and placed underground. Periodic maintenance is required for repair and/or replacement of damaged lines. Activities required for the construction and maintenance of utility lines in watercourses may include excavation for outfall and intake structures, boring, trenching, backfill, and/or bedding. One less intrusive alternative to trenching or excavating for underground utility installation is directional boring. Directional boring is the process of precision drilling beneath existing obstructions such as roads, landscaping, rivers, buildings, etc. The greatest advantage of directional boring is the benefit of installing underground utilities without disturbing the surface landscape, thereby reducing disturbance to the natural environment.

Flood Control Facilities

Drainage and flood control facilities including flood control channels, outfalls, culverts, retention/detention basins and sediment basins are located within or near jurisdictional waters. As the infrastructure component of a broader flood management⁵ program, flood control facilities are designed and constructed in accordance with applicable hydrologic design standards to prevent loss of life and reduce property damage caused by floods. Construction of permanent flood control structures generally requires soil excavation, removal, compaction, and sometimes concrete-lining and or placement of bank stabilization measures in channels. Maintenance typically involves periodic dredging of accumulated sediments in channels and basins as well as periodic removal of vegetation to restore the original basin and channel design capacity and configuration. Dredged material is typically placed in upland areas and proper sediments in outfall and intake structures, culverts and other structural features of the conveyance system to maintain design capacity.

⁵ The term "flood management" refers to an integrated approach undertaken to reduce flood risks and may include floodplain management, planning and investments in flood projects, and improved management of infrastructure that balances public safety and environmental protection. Related are stormwater quality and drainage management efforts. Some flood management activities are regulated by the Corps and/or the Department, while others (in non-jurisdictional areas) are not.

Road Crossings including Bridges and Culverts

Construction of bridges and culverts across jurisdictional waters can be necessary to meet local and regional circulation needs associated with continual development of the Watershed and to address deficiencies in the existing circulation system. Bridges may span the watercourse or be constructed with one or more piers depending on bridge length. Construction activities would include placement of temporary cofferdams boring, dredging, and fills for construction and access. Permanent features within or adjacent to the channel would include abutments, foundation seals, and piers. Impacts would be both temporary and permanent.

Land Development for Residential, Commercial, Industrial, Institutional and Recreational Facilities

Future activities in the Watershed will include land development for residential, commercial, industrial, institutional, and recreational uses. Construction may include building foundations, building pads and attendant features that are necessary for the use and maintenance of structures such as local roads, parking lots, driveways, garages, yards, playgrounds, playing fields, and golf courses, utilities and storm water management systems. Residential developments include multiple and single unit developments. Commercial developments include retail stores, industrial facilities, restaurants, business parks, and shopping centers. Institutional developments include schools, fire stations, government office buildings, judicial buildings, public works buildings, libraries, hospitals, places of worship, and sanitary landfill facilities.

Storm Water Treatment and Management Facilities

Stormwater treatment and management facilities that would be regulated under a Corps or Department permit would include features that could occur in jurisdictional areas such as constructed treatment wetlands, water quality treatment basins and infiltration trenches. These facilities are designed to capture degraded runoff in natural or improved drainage courses for treatment and subsequent return to surface water or infiltration to groundwater. These facilities are expected to have beneficial effects on downstream water quality.

Habitat Restoration and Enhancement Projects

Habitat restoration and enhancement projects are typically located in jurisdictional areas to fulfill their functions in restoring and/or improving wetland/riparian habitat to increase wildlife habitat and hydrologic functions and values.

Fire Abatement and Vegetation Fuel Management Activities in Jurisdictional Areas

Management of vegetation for the purposes of fire abatement usually involves upland plant communities composed of coastal sage scrub or chaparral. Where ephemeral drainages are interspersed within such communities, or where a riparian zone is adjacent to such habitat, vegetation management activities may temporarily impact wetland and riparian habitat. This activity may include vegetation removal, thinning of vegetation, as well as temporary access roads and staging areas. In many cases, as the Corps does not regulate removal of vegetation with hand tools, this activity may not be a Corps-jurisdictional activity; the activity would then be solely under the jurisdiction of the Department.

A summary of the seven regulated activities is provided in Table 2-1.

No.	Title of Category	Specific Projects or Activities Anticipated in the Watershed
		[Regulated when such activities occur in jurisdictional areas]
1	Utility Lines Construction and/or maintenance of new and existing facilities	Pipelines, conduits, cables, siphons, utility poles, and towers associated with conveyance of water, gas, wastewater, sewage, electricity, and electronic data. Includes pump stations, and lift stations. Includes temporary stream diversion and dewatering operations for construction and maintenance purposes; and temporary construction access roads and work areas.
2	Flood Control Facilities Construction and/or maintenance of new and existing facilities	Engineered channels (earthen, partially lined, or fully lined), bank protection, storm drain outlets, grade stabilizers, trash racks, pump stations, and basins (detention, retention, or debris). Includes construction and/or maintenance of associated access roads, fences, and right of way; vegetation management and removal; channel and basin desilting; maintenance of ramps, intakes and outlets, and embankments at basins; and temporary stream diversion and dewatering operations for construction and maintenance purposes.
3	Road Crossings including Bridges and Culverts Construction and/or maintenance of new and existing road crossings	At-grade splash crossings, box culverts, pipe culverts, and bridges. Maintenance includes inspection, vegetation management, channel desilting, structural repair, and replacement. Includes temporary stream diversion and dewatering operations for construction and maintenance purposes; and temporary construction access roads and work areas. Also includes vegetation clearing, grading, excavation, compacting, and/or filling for the purposes constructing and maintaining an engineered road across a jurisdictional wetland or riparian area outside of drainages under either the Department or Corps jurisdiction.
4	Land Development for Residential Commercial, Industrial, Institutional and Recreational Facilities Construction and/or maintenance of new and existing land development and recreational facilities	Vegetation clearing, grading, excavation, compacting, and/or filling for the purposes developing land for commercial, industrial, institutional land uses and for the purposes of constructing and maintaining a park, golf course, trail, pathway, pedestrian/equestrian bridge or boardwalk, or other recreational facility. Includes temporary stream diversion and dewatering operations for construction and maintenance purposes; and temporary construction access roads and work areas.
5	Stormwater Treatment and Management Facilities Construction and/or maintenance of existing and new facilities	Drain outlets and inlets, in-stream water quality wetlands or basins, and infiltration beds. Maintenance includes vegetation management, inspection, sediment removal, structural repair, and replacement. Includes temporary stream diversion and dewatering operations for construction and maintenance purposes; and temporary construction access roads and work areas. Does not include off-stream engineered water quality wetlands and detention basins**.
6 7	Habitat Restoration and Enhancement Projects Construction and/or maintenance of new and existing projects Fire Abatement and	Site preparation (clearing, grading, filling, excavation, compacting), vegetation removal, planting, seeding, and construction of drainage features and facilities associated with habitat restoration and enhancement. Maintenance of restored or enhanced sites by vegetation management, sediment removal, and drainage maintenance. Includes temporary stream diversion and dewatering operations for construction and maintenance purposes, and temporary construction access roads and work areas. Vegetation management required to meet local fire abatement codes. Includes temporary
	Vegetative Fuel Management Activities	construction access roads and work areas.

 Table 2-1.
 Regulated Activities* Anticipated during the SAMP Formulation Process

* Regulated activities needing regulatory permits from the Corps and/or the Department are those activities and projects that occur within drainages, wetlands, riparian corridors, and other aquatic resources under the jurisdiction of the Corps and/or the Department. In some cases, jurisdiction may only be present for one of these agencies. Activities that do not involve the discharge of fill or dredged material to "waters of the U.S." are not regulated by the Corps. The most common Corps non-regulated activity is vegetation management by herbicide treatment and/or mowing or hand clearing that does not disturb soil, sediment, or plant roots.

** Waste treatment systems designed to meet the requirements of the CWA are not waters of the U.S. (33 CFR 328.3).

This EIS/EIR programmatically evaluates impacts associated with these seven activity types under the proposed SAMP Permitting Program/WSAA Process described herein. The Corps SAMP permit program (RGP and LOP procedures) and the Department's WSAA Process provide specific conditions that an applicant must meet to ensure the regulated activity produces minimal impacts to aquatic resources of the Watershed.

2.1.2.2 Participating Applicants' Projected Activities

A subset of anticipated activities was brought forward by the Participating Applicants as planned projects and routine activities that would require future permitting from the Corps and the Department. Since the Participating Applicants were able to provide information at a sufficiently detailed level to bring forward for pre-application planning purposes, the Corps and the Department were able to work with the Participating Applicants to examine projects and activities and help identify ways to achieve conformance with the SAMP Analytical Framework and the Watershed-wide avoidance and minimization plan.

The following planned activities and projects⁶ were brought forward by the Participating Applicants for pre-application consideration during the SAMP formulation process:

- Development of City of Irvine Planning Areas (PAs) 1, 6, 18, and 39 (The Irvine Company)⁷.
 - Development for PA 1 is evaluated in the *Draft EIR for General Plan Amendment and Zone Change for PA1/PA2/PA9* (SCH #2004041080) prepared for the City of Irvine by Cotton/Bridges/Associates (March 2005);
 - Development for PA 6 is evaluated in the *Draft EIR for the Northern Sphere Annexation General Plan Amendment and Zone Change* (SCH #2001051010) prepared for the City of Irvine by the Templeton Planning Group (December 2001); and
 - Development for PAs 18 and 39 is evaluated in Draft EIR for General Plan Amendment and Zone Change for PA 18, 33 (Lot 39), 34 and 39 (SCH #20050811099) prepared for the City of Irvine by William Halligan, The Planning Center (June 2006).

⁶ Other anticipated activities or planned projects were brought to the attention of the Corps and the Department during the SAMP formulation process. These included future County of Orange road (e.g., MPAH facilities), park and landfill capital improvement and maintenance projects, but either had insufficient level of detail to initiate the pre-application process, or else the pre-application process had not advanced to a stage for meaningful discussion when the impact avoidance and minimization plan was being developed.

⁷ PAs 1, 6, and 18 received permit authorizations from the Corps and the Department for the proposed projects (or phases thereof) prior to the finalization of the SAMP and the SAMP permitting processes. PA 39 has an application pending review. The Irvine Company redesigned the three permitted projects to demonstrate conformance with the SAMP Analytical Framework, the SAMP impact avoidance and minimization plan, and in a manner such that the projects would likely have been eligible for permitting under the Corps LOP procedures and the Department's WSAA Process if such permitting processes had been in place.

- Development of the Orange County Great Park (City of Irvine)⁸. Detailed project description information and environmental evaluation of this project is contained in the *Draft EIR for the Orange County Great Park* (SCH #2002101020) prepared for the City of Irvine by Cotton/Bridges/Associates (February 2003);
- Construction and maintenance of the Natural Treatment System (NTS) (Irvine Ranch Water District). This project is evaluated in the *Revised Draft Environmental Impact Report for San Diego Creek Watershed Natural Treatment System* (SCH #2002021120) prepared for the Irvine Ranch Water District by BonTerra Consulting (January 2004);
- Maintenance of flood control facilities within the Watershed (Orange County Flood Control District);
- Water and sewer system construction and maintenance within the Watershed (Irvine Ranch Water District); and
- Extensions of Bake Parkway and Lake Forest Drive (The Irvine Company)⁹. These road extensions are described in Draft Environmental Impact Report for Village 34 General Plan Amendment and Zone Change (SCH # 85120404) prepared for the City of Irvine by The Planning Center (January 1987).

2.1.2.3 Corps Watershed-Specific Permitting Process

The proposed modifications to the Corps permitting process for the Watershed are summarized as follows and described in greater detail in the following subsections:

- Change the availability of selected NWPs for use in the Watershed;
- Establish new LOP procedures for the Watershed; and
- Establish a new maintenance RGP for the Watershed.

Effectively, the LOP procedures and RGP would replace some NWPs and provide a permitting mechanism with shortened permit processing times, as compared with a Standard Individual Permit (SIP), for eligible regulated activities that are consistent with the SAMP Analytical Framework. Authorizations under LOP procedures would be based on conformity with criteria outlined herein and in the forthcoming Special Public Notice published separately (Appendix C-1). Qualifying routine maintenance activities would be authorized under a new maintenance RGP as specified in the Corps forthcoming Special Public Notice (Appendix C-2). Alternatively, activities regulated by the Corps under Section 404 and ineligible for a NWP, an LOP, or RGP, would be required to undergo evaluation through a SIP process.

A summary of the differences between the Corps existing and proposed permitting processes for the San Diego Creek Watershed is provided in Table 2-2. Figure 2-5 is a flow diagram depicting the Corps proposed SAMP permitting procedures applicable to the San Diego Creek Watershed.

⁸ In relation to the Great Park, the Heritage Fields Project was subsequently identified as a proposed project and the Corps and the Department participated in pre-application meetings with the proponents subsequent to the SAMP formulation stages. The Corps and Department conducted detailed evaluations of the proposed projects and alternatives under a SIP and SAA, respectively, and has subsequently granted the required permit/agreement.

⁹ The Corps and the Department received applications for a SIP and SAA, respectively for the Lake Forest drive Extension Project and the Bake Parkway Extension. The Corps conducted a detailed evaluation of the proposed projects and alternatives under the context of the SAMP Analytical Framework and subsequently permitted the projects.

	CURRENT SYSTEM		PROPOSED SYSTEM					
Permit Program	NWPs	SIPs	NWPs	RGP	LOPs			SIPs
Applicable Use Areas	All areas	All areas	All areas	Outside aquatic resource integrity areas	Outside aquatic resource integrity areas	In major stream systems ¹ outside aquatic resource integrity areas	Inside aquatic resource integrity areas	All areas
Eligible Regulated Activities	Specified for each NWP: NWP 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50	All regulated activities ineligible for NWPs	Specified for each retained NWP: NWP 1, 2, 4, 5, 6, 8, 9, 10, 11, 15, 20, 22, 23, 24, 28, 30, 32, 34, 35, 36, 37, 38, 45, 47, 48	Anticipated maintenanc e activities ²	Anticipated activities ³	Anticipated activities ³ ; No stream channelizati on or stream replacement with pipes	Anticipated activities ³ ; No stream channelization or stream replacement with pipes	All regulated activities ineligible for other permitting procedures
Permanent Impacts to Waters of the U.S. Authorized	Generally ≤ 0.5 acre	No limit ⁴	Generally ≤ 0.5 acre	None	No limit⁵	No limit⁵	≤ 0.1 acre	No limit ⁴
Temporary Impacts to Waters of the U.S. Authorized	No limit	No limit	No limit	\leq 0.5 acre	No limit⁵	No limit⁵	No limit ⁵	No limit
Review Time	\leq 45 days	approx. 120 days	\leq 45 days	\leq 15 days	\leq 45 days	\leq 45 days	\leq 45 days	approx. 120 days

Table 2-2.Comparison between Corps current and proposed SAMP permitting processes
within the San Diego Creek Watershed.

Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

	CURRENT SYSTEM		PROPOSED SYSTEM					
Permit Program	NWPs	SIPs	NWPs	RGP	LOPs			SIPs
Pre- Application Coordination	Preferred	Preferred	Preferred	Preferred	Required ⁶	Required ⁶	Required ⁶	Preferred
Inter-Agency Review	Generally >0.5 acre	None	None	None	All actions	All actions	All actions	All actions

1 Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek

2 Anticipated maintenance activities ineligible for NWP may be eligible for RGP: Utility Lines (maintenance of new and existing facilities); Flood Control Facilities (maintenance of new and existing facilities); Road Crossings including Bridges and Culverts (maintenance of new and existing crossings); Land Development for Residential, Commercial, Industrial, Institutional and Recreational Facilities (maintenance of new and existing land development and recreational facilities); Storm Water Treatment and Management Facilities (maintenance of new and existing facilities); Habitat Restoration and Enhancement Projects (maintenance of new and existing projects).

3 Anticipated activities ineligible for NWP or RGP may be eligible for LOP procedures: Utility Lines (construction and/or maintenance of new and existing facilities); Flood Control Facilities Maintenance (construction and/or maintenance of new and existing facilities); Road Crossings including Bridges and Culverts (construction and/or maintenance of new and existing crossings); Land Development for Residential, Commercial, Industrial, Institutional and Recreational Facilities (construction and/or maintenance of new and existing land development and recreational facilities); Storm Water Treatment and Management Facilities (construction and/or maintenance of new and existing projects); and Fire Abatement and Vegetative Fuel Management Activities

4 In evaluating projects under the SIP process, the Corps would need to assure project compliance with the 404(b)(1) Guidelines. Except as provided for by CWA Section 404(b)(2), no discharge of dredged or fill material would be permitted by the Corps if the effects of the discharge, considered either individually or cumulatively, would contribute to the substantial degradation or impairment of waters of the U.S. (40 CFR Part 230).

5 Provided the project is in full compliance with the LOP procedures.

6 For >0.1 acre of permanent impacts to waters of the U.S. or >0.25 acre of temporary impacts to waters of the U.S. with native riparian and/or wetland vegetation.





¹ Five streams: Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek

Revocation of Specific Nationwide General Permits

Many NWPs have a threshold of 0.5 acre of permanent impacts. Under the current permitting framework, projects with impacts to greater than 0.5 acre of waters of the U.S. must undergo processing as a SIP. Projects with impacts to 0.5 acre or less of waters of the U.S. would undergo processing as a NWP. The NWP threshold is applied regardless of the type or condition of aquatic resources involved.

In consideration of the SAMP Analytical Framework, the Corps has concluded that indiscriminate application of NWPs may provide an inappropriate level of protection to aquatic resources in the Watershed. For instance, in areas where riparian ecosystems have been identified as strategic for the overall condition of the Watershed (i.e. within aquatic resource integrity areas), the Corps believes the NWP procedures provide an insufficient level of review for those projects proposing to impact higher quality aquatic resources. Within the aquatic resource integrity areas, the aquatic resources possess a moderate to high level of hydrologic, water quality, and habitat integrity with important strategic value in a landscape context with respect to endangered aquatic species habitat and riparian movement corridors. The NWP thresholds do not provide the public the appropriate amount of permit review in light of the condition of the aquatic resources in question. The Corps contends that additional public or agency review and input are needed to ensure the higher quality aquatic resources receive the appropriate amount of review and regulatory attention.

In other areas, where riparian condition is poor, the thresholds required by the NWP program can result in delays and uncertainty for projects proposing impacts to greater than 0.5 acre of these lower quality aquatic resources. Specifically, the Corps believes that aquatic resources with a low level of hydrologic, water quality, and habitat integrity, and with little strategic value in the landscape context, do not warrant a full SIP review. For these types of proposed impacts, the required SIP procedures (i.e., a public notice and environmental assessment) tend to elicit little input from the public and other resource agencies, or provide minimal additional insight on aquatic resource conditions beyond what was obtained by the formal assessment methods used for the SAMP. In light of the degraded condition of the aquatic resources outside aquatic resource integrity areas, the Corps believes NWP thresholds are unnecessarily restrictive in these areas.

Therefore, the SAMP permitting process involves revocation of the use of certain NWPs within the Watershed followed by implementation of new permitting procedures for Section 404 LOPs. Additionally, an RGP would address the need for maintenance activities affecting aquatic resources outside aquatic resource integrity areas. The Corps believes these steps would strengthen aquatic resource protections in areas of the Watershed of greater integrity and functional value, as well as provide regulatory flexibility for activities affecting lower value resource areas in situations where the impacts are not substantial.

As proposed, the Corps would revoke the use of selected NWP¹⁰ authorizations within the San Diego Creek Watershed, as consistent with the Corps authority and procedures outlined in 33 CFR 330.5(c) for issuing, modifying, suspending, or revoking nationwide permits and authorizations. Specifically, the Corps Division Engineer, through his discretionary authority proposes to revoke the use of the following

¹⁰ NWPs authorized by the Corps on March 18, 2007 expire on March 18, 2012. The list of NWPs proposed for revocation in the San Diego Creek Watershed described herein reflects the 2007 NWPs.

24 NWPs: 03, 07, 12, 13, 14, 16, 17, 18, 19, 21, 25, 27, 29, 31, 33, 39, 40, 41, 42, 43, 44, 46, 49, and 50. The remaining 25 NWPs would be retained for use in the Watershed: 01, 02, 04, 05, 06, 08, 09, 10, 11, 15, 20, 22, 23, 24, 28, 30, 32, 34, 35, 36, 37, 38, 45, 47, and 48 (See Table 2-2).

Sections 2.1.6.1 and 8.7.1 of this document contain more detailed discussions and analyses of the revocation of selected NWPs for this Watershed.

LOP Procedures

Pursuant to its authority under 33 CFR § 325.2(e)(1)(ii) and in accordance with procedures outlined in 33 CFR Part 325, the Corps proposes to establish LOP procedures for regulated activities that are consistent with the purposes and goals of the SAMP. The LOP procedures would cover several categories of activities listed below. In developing the LOP procedures, the Corps evaluated several classes of activities for applicability inside and outside the aquatic resource integrity areas and in a manner to comply with the avoidance and minimization requirements of the Section 404(b)(1) Guidelines.

The LOP procedures outline a process where a decision to issue any particular permit authorization is made after coordination with federal and state fish and wildlife agencies, a public interest evaluation, and a concise environmental review that tiers from this Program EIS/EIR. A review process involving other resource agencies would insure adverse impacts are minimized to the maximum extent practicable. An integrated mitigation framework, supported by the Strategic Mitigation Plan and Mitigation Coordination Program discussed later in Sections 2.1.3 and 2.1.4 outlines appropriate compensatory mitigation for regulated activities resulting in unavoidable impacts to jurisdictional areas within the Watershed. The use of LOP procedures for the permanent discharge of dredged and/or fill materials would be based upon the integrity of the aquatic resource proposed for impact, the activity type, and the acreage of impact. Generally, LOP procedures would be restricted for use in authorizing regulated activities affecting the lower value aquatic resource areas (i.e., areas that failed to meet the criteria for identifying aquatic resource integrity areas). In such low integrity areas, no acreage thresholds would apply for LOP usage, because the baseline conditions of these aquatic resources are such that further changes in integrity would have a minor effect on the Watershed and would be controlled under a detailed evaluation by the resource agencies. The applicant would have to demonstrate impact avoidance and minimization were achieved to the extent practicable. Through the pre-application coordination process, the agencies would assist the applicant with fulfilling these conditions.

Regulated activities affecting the aquatic resource integrity areas may also be eligible for LOP procedures on a conditional basis. In these sensitive areas, LOPs would authorize temporary impacts for the purpose of maintaining established structures and permanent impacts up to 0.1 acre of waters of the U.S. Essentially, LOP procedures in aquatic resource integrity areas would apply only to projects with a small overall footprint, such as utility stations, small bank protection structures, a single family home and recreational trails. Additionally, in the five major stream systems (i.e., Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek), the LOP procedures would only be available for regulated activities that would not result in stream channelization or conversion of a stream to storm drain system.

Generally, the Corps would issue an LOP within 45 days of receipt of a complete application for projects that demonstrate conformance with the LOP conditions. LOP procedures would minimize delays for

projects with minor impacts to the aquatic environment, while strengthening the review process by providing a framework for increased agency coordination and review than often afforded by the existing permitting programs. The LOP procedures may apply to eligible projects that otherwise do not qualify for a NWP or RGP.

(a) Eligible Activities

Outside Aquatic Resource Integrity Areas

Outside the aquatic resource integrity areas, as shown in Figures 2-2 and 2-3, numerous activities would be eligible for the LOP procedures¹¹. The discharge of dredged or fill material into waters of the U.S. associated with the following activities would be covered by the LOP procedures:

- Public and private utilities, including construction and maintenance of utility lines;
- Public and private drainage and flood control facilities, including construction of outfall and intake structures, construction of bank stabilization structures, and maintenance of all flood control facilities;
- Public and private road crossings including bridges and culverts that may involve lengthening, widening, and maintenance;
- Public and private land development, including residential, commercial, industrial, institutional, and recreational uses;
- Storm water treatment and management facilities including construction and/or maintenance of new and existing facilities;
- Habitat restoration and enhancement projects, including wetland restoration and creation; and
- Fire abatement and vegetative fuel management¹².

However, otherwise permissible activities could not be permitted under an LOP if they would substantially alter a compensatory mitigation site or involve flood-control related conversions of softbottom channels to concrete-lined channels or channelization of the major stream systems such as Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek. Such activities would require a Corps SIP.

Inside Aquatic Resource Integrity Areas

Some activities affecting jurisdictional resources within aquatic resource integrity areas would still be eligible for LOPs. Regulated activities with minor, permanent impacts up to 0.1 acre of waters of the U.S., except capital improvement flood control projects excluded above, would be eligible for LOP procedures. In addition, covered under the LOP procedures, is the discharge of dredged or fill material into waters of the U.S. associated with the following activities:

• Maintenance and repair of public and private utilities, including utility lines;

¹¹ Many of the activities otherwise eligible under the suspended NWPs would also be eligible for LOPs if they are consistent with the SAMP; this determination would be made by the Corps during the pre-application consultation.

¹² This activity may include vegetation removal, thinning of vegetation, as well as temporary access roads and staging areas. In many cases, as the Corps does not regulate removal of vegetation with hand tools, this activity may not be a Corps-jurisdictional activity; the activity would then be solely under the jurisdiction of the Department.

- Maintenance and repair of public and private drainage and flood control facilities, including outfall and intake structures, bank stabilization structures, flood control channels (consistent with an established Corps-approved maintenance baseline), and flood control basins (consistent with an established Corps-approved maintenance baseline), and landfill concrete channels and sedimentation basins (consistent with an established maintenance baseline);
- Maintenance and repair of public and private road crossings including bridges and culverts;
- Maintenance of storm water treatment and management facilities;
- Habitat restoration and enhancement projects, including wetland restoration and creation; and
- Fire abatement and vegetative fuel management activities.

Activities that are ineligible for the LOP process may still be evaluated for a permit through the SIP process.

(b) Pre-Application Coordination for LOPs

Participating Applicants have undergone extensive pre-project review by the Corps, the Department, USFWS, EPA, and the Santa Ana RWQCB for several projects and activities to avoid and minimize impacts to the aquatic ecosystem to the maximum extent practicable. These applicants have satisfied some of the proposed requirements for eligibility under the LOP procedures, such as extensive pre-project coordination with the resource agencies and implementation of project modifications to comply with the Section 404(b)(1) Guidelines through avoidance and impact minimization measures. Additional pre-application coordination is not required of those Participating Applicants for projects that already have satisfied this requirement through extensive pre-application coordination during the SAMP formulation process.

Future projects proposed by other applicants or for other activities would need to undergo a commensurate level of scrutiny and review to be eligible for LOPs. The pre-application coordination procedures are summarized as follows:

- 1. Pre-application coordination is required for projects with permanent losses of waters of the U.S. greater than 0.1 acre or for projects with temporary impacts greater than 0.25 acre of waters of the U.S. containing native wetland and/or riparian vegetation.
- 2. For projects permanently impacting 0.1 acre or less of waters of the U.S. and temporarily impacting 0.25 acre or less waters of the U.S. containing native wetland and/or riparian vegetation, pre-application coordination is not required; the applicant only needs to submit an application directly to the agencies.
- 3. Pre-application coordination must involve the Corps, the Department, the RWQCB, the USFWS, and the EPA.
- 4. For the pre-application meetings, the applicant may meet with the agencies separately or in small groups, consult by telephone, or schedule a pre-application meeting to be held at the Corps office. A written record of the proceedings must be provided afterwards to the Corps, documenting substantive issues discussed, agency recommendations, and any pertinent conclusions.

5. In preparation for the pre-application meeting, the applicant must provide required information to the agencies at least two weeks prior to the meeting. The specific required information is provided in Section 3.3.2(c) of the Corps SAMP document (Corps, 2008).

The Corps would make an initial determination that the project may qualify for the LOP procedures based on a preliminary determination that the project meets the 404(b)(1) Guidelines, that the project is consistent with the SAMP, and that standard individual permit processing with Public Notice review would not result in a substantive change in the proposed project or compensatory mitigation. If the Corps makes an initial determination that the project may not qualify for the LOP procedures, the Corps would provide recommendations that would enable the project to qualify for the LOP procedures. The specific steps for the Corps processing of the LOP is provided in the SAMP document (Corps, 2008) Section 3.3.2(d).

(c) Consistency of Eligible Activities with the SAMP LOP Procedures

Proposed projects or activities not included in the extensive pre-application review process during SAMP formulation would need to undergo the same level of scrutiny and review to be eligible for LOPs. Applicants must demonstrate the proposed activity and compensatory mitigation are consistent with the SAMP. The consistency requirements for each of the covered activities are the same (i.e., they meet the terms and conditions of the LOP procedures).

Table 2-3 summarizes the general conditions that apply to the LOPs. A detailed summary of the LOP is provided in Appendix C-1, Corps Special Public Notice for the LOP.

Condition	Description
1. Avoidance and Minimization	The permittee must provide a written statement describing avoidance
	and minimization measures used to minimize discharges to
	jurisdictional waters at the project site to the maximum extent
	practicable.
2. Ineligible Impacts	Projects not eligible for this LOP process include projects that
	substantially alter a compensatory mitigation site and projects that
	involve the conversion of a soft-bottom channel to a concrete-lined
	channel within San Diego Creek, Peters Canyon Wash, Hicks Canyon
	Wash, Serrano Creek, and Borrego Canyon Wash. Those proposed
	projects must be evaluated using a SIP.
3. Mitigation Policy	The permit must comply with the SAMP mitigation framework,
	including the Strategic Mitigation Plan, established in conjunction with
	the proposed permitting procedures. In accordance with the Final
	Mitigation Rule (33 CFR Section 332.3(k), for an LOP that requires
	permittee-responsible mitigation, the special conditions of the LOP
	shall: (1) Identify the party responsible for providing the compensatory
	mitigation; (ii) Incorporate, by reference, the final mitigation plan
	approved by the district engineer; (iii) State the objectives,
	performance standards, and monitoring required for the compensatory
	mitigation plopect, utiless they are provided in the approved final
	or long term management provisions for the compensatory mitigation
	project unless they are specified in the approved final mitigation plan
4 Soil Freeion and Siltation Controls	Appropriate erosion and siltation controls, such as siltation or turbidity
4. Son Erosion and Sittation Controls	curtains sedimentation basins and/or hav bales or other means
	designed to minimize turbidity in the watercourse to prevent
	exceedances of background levels existing at the time of project
	implementation, shall be used and maintained in effective operating
	condition during project implementation Projects are exempted from
	implementing controls if site conditions are such that the proposed
	work would not increase turbidity levels above the background level
	existing at the time of the work. All exposed soil and other fills, as
	well as any work below the ordinary high water mark or high tide
	line, must be stabilized at the earliest practicable date to preclude
	additional damage to the project area through erosion or siltation and
	no later than November of the year the work is conducted to avoid
	erosion from storm events.
5. Equipment	If personnel would not be put into any additional potential hazard,
	heavy equipment working in or crossing wetlands must be placed on
	temporary construction mats (timber, steel, geotextile, rubber, etc.),
	or other measures must be taken to minimize soil disturbance such as
	using low pressure equipment. Temporary construction mats shall be
	removed promptly after construction.
6. Suitable Material	No discharge of dredged or fill materials in jurisdictional waters may
	consist of unsuitable materials (e.g., trash, debris, car bodies, asphalt,
	etc.) and material discharged must be free from toxic pollutants in $\frac{1}{2}$
	toxic amounts (See Section 307 of the Clean Water Act).

Table 2.3	Proposed Conoral Conditions for San Diago Creek Watershed Latter of Permission
1 able 2-3.	roposed General Conditions for San Diego Creek watersned Letter of rermission

Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

Condition	Description
7. Management of Water Flows	To the maximum extent practicable, the pre-construction course,
	condition, capacity, and location of open waters must be maintained
	for each activity, including stream channelization and storm water
	management activities, except as provided below. The activity must
	be constructed to withstand expected high flows. The activity must
	not restrict or impede the passage of normal or high flows, unless the
	primary purpose of the activity is to impound water or manage high
	flows. To the maximum extent practicable, the activity must provide
	for the retention of excess flows from the site and for the maintenance
	of surface flow rates from the site similar to pre-project conditions,
	while not increasing water flows from the project site, relocating
	water, or redirecting water flow beyond pre-project conditions unless
	it benefits the aquatic environment (e.g. stream restoration or
	relocation activities).
8. Removal of Temporary Fills	Any temporary fills must be removed in their entirety and the affected
	areas returned to their pre-existing conditions, including any native
	temperary fill is considered likely to neturally re-actablish netive
	riportary fin is considered fixery to flaturary re-establish flative
	to pre-project or pre-event conditions, the permittee will not be
	required to restore the riparian and/or wetland vegetation. However
	Exotic Species Management may be required to prevent the
	establishment of invasive exotic vegetation. (See Condition #13).
9. Preventive Measures	Measures must be adopted to prevent potential pollutants from
	entering the watercourse. Within the project area, construction
	materials and debris, including fuels, oil, and other liquid substances,
	shall be stored in a manner as to prevent any runoff from entering
	jurisdictional areas.
10. Staging of Equipment	Staging, storage, fueling, and maintenance of equipment must be
	located outside of the waters in areas where potential spilled materials
	will not be able to enter any waterway or other body of water.
11. Fencing of Project Limits	Prior to initiation of the project, the boundaries of the project's
	impact area must be delimited by the placement of temporary
	construction fencing, staking, and/or signage. Any additional
	jurisdictional acreage impacted outside of the approved project
	tootprint shall be mitigated at a 5:1 ratio. In the event that
	determined by the Corps in accordance with the SAMP mitigation
	framework and may include wetland enhancement restoration
	creation or preservation. The Permittee shall clearly mark the limits
	of the workspace with flagging or similar means to ensure mechanized
	equipment does not enter preserved waters of the U.S. and riparian
	wetland/habitat areas shown on the attached figure. Adverse impacts
	to waters of the U.S. beyond the Corps-approved construction
	footprint are not authorized. Such impacts could result in permit
	suspension and revocation, administrative, civil, or criminal penalties,
	and/or substantial, additional, compensatory mitigation requirements.

Condition	Description
12. Avoidance of Breeding Season	With regard to federally listed avian species, avoidance of breeding
	season requirements shall be those specified in the Section 7
	consultation for the LOP procedures. For all other avian species,
	initial vegetation clearing in waters of the U.S. must occur between
	September 15 and March 15, which is outside the breeding season.
	Work in waters may occur during the breeding season between March
	15 and September 15, in accordance with the Department's WSAA
	Process and a signed agreement with conditions prescribing
	procedures for grading of mitigation sites or biological surveys and
	time restrictions. if bird surveys indicate the absence of any nesting
	birds within a 50 foot radius.
13. Exotic Species Management	All giant reed (Arundo donax), salt cedar (<i>Iamarix spp.</i>), and castor
	bean (<i>Ricinus communis</i>) must be removed from the affected areas and
	ensure that the affected area remains free from these invasive, non-
	project
14 Site Inspections	The Corps shall be allowed to inspect the site at any time during and
14. She hispectons	immediately after project implementation. In addition compliance
	inspections of all mitigation sites must be allowed at any time
15. Posting of Conditions	A copy of the LOP conditions shall be included in all bid packages for
	the project and be available at the work site at all times during periods
	of work and must be presented upon request by any Corps or other
	agency personnel with a reasonable reason for making such a request.
16. Post-Project Report	Within 60 days of completion of impacts to waters, as-built drawings
	with an overlay of waters that were impacted and avoided must be
	submitted to the Corps. Post-project photographs which document
	compliance with permit conditions, must also be provided.
17. Water Quality	An individual Section 401 water quality certification must be obtained
	(see 33 CFR 330.4(c)).
18. Coastal Zone Management	An individual California state coastal zone management consistency
	concurrence must be obtained or waived where the project may affect
10. Enderson d Creating	the Coastal Zone (see 33 CFR 330.4(d)).
19. Endangered Species	(a) No activity is authorized which is likely to jeopardize the
	continued existence of a unreatened of endangered species of a
	FSA or which will destroy or adversely modify the critical
	habitat of such species Non-federal permittee shall not begin
	work on the activity until notified by the Corps that the
	requirements of the ESA have been satisfied and that the activity
	is authorized. (b) Federal agencies should follow their own
	procedures for complying with the requirements of the ESA.
	Federal permittees must provide the district engineer with the
	appropriate documentation to demonstrate compliance with those
	requirements. (c) Non-federal permittees shall notify the district
	engineer if any listed species or designated critical habitat might
	be affected or is in the vicinity of the project, or if the project is
	located in designated critical habitat, and shall not begin work
	on the activity until notified by the district engineer that the
	requirements of the ESA have been satisfied and that the activity
	is authorized. For activities that might affect Federally listed
	the pro-construction patification must include the para(a) of the
	and pre-construction nonneation must include the name(s) of the
	proposed work or that utilize the designated critical habitat that
	may be affected by the proposed work. The district engineer
	may be another by the proposed work. The district englitter

 will determine whether the proposed activity "may affect" or will have "no effect" to listed species and deignated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete preconstruction notification. In Cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps that provided notification the proposed activities will have "no effect" on listed species or critical habitat, or unil section 7 consultation with the USFWs or NMFS, the district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWs or the NMFS, both teltal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened or species and difficult web gates at <u>http://www.tuSFWS.acw/acalabad/</u> http://www.fuss.gov/carahbad/ and http://www.fuss.gov/carahbad/ and http://www.fuss.gov/carahbad/ http://	Condition	Description
 will have "no effect" to listed species and designated enrical habitat and will notify the non-Federal applicant thas identification. In cases where the non-Federal applicant has identifications. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until section 7 consultation with the USFWS or NMFS, the district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Autorization of an activity by an RGP does not autorize the "take" of a threatened or endangered species and effect under the ESA. In the absence of separate authritization of the ESA. The absence of separate authritization of the ESA. Information the to/SWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.foxe.gov/carishad/ and http://www.noaa.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect location for a specific project; (1) Removal of gaatcatcher habitat for the gamcatcher and construction work within 300 feet of suitable habitat for the gamcatcher habitat within non-Reserver areas of the Orange County Central Cosatal NCCP/HCP will follow the County of suitable habitat for the gamcatcher habitat dividing applicable conservation measures for the NCCP/HCP will follow the County words in additional project-Qastal NCCP/HCP will follow the Cou		will determine whether the proposed activity "may affect" or
 habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete preconstruction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until section 7 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMFS, the district engineer may add species-specific regional endanged species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidential take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.USFWS.gov/carabshad/ http://www.tosa.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures for the NCCP/HCP. (f) Removal of gnatcatcher habitat within non-Reserve areas of the gnatcatcher will occur outside the gnatcatcher breeding season the view within 300 feet of suitable habitat for the gnatcatcher and construction with incidentian the string matcatcher will be clearly within 300 feet of suitable habitat for the gnatcatcher here and within the clearly within 300 feet of suitable habitat for the gnatcatcher will occur outside t		will have "no effect" to listed species and designated critical
 determination within 45 days of receipt of a complete pre- construction notification. In cases where the non-Federal applicant has identified listed species or critical habitut that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitut, or until section 7 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMFS, the district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Autorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.USFWS.gov/carlabad/</u> http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and construction and Minimization Measures for the MCCP/HCP (f) Removal of gnatcatcher habitat for the gnatcatcher protection work within 300 feet of suitable habitat for the construction and Minimization fue aspecific pro		habitat and will notify the non-Federal applicant of the Corps'
 construction notification. In cases where the non-Rederal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until section 7 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMFS, the district engineer may add species-specific regional endangered species is conditions to the RGP notices to proceed. (e) Authorization of an activity by an ROP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Option with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.IUSFWS.gov/carlshad/</u> http://www.nosa.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnateatcher habitat within non-Reserve areas of the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of gnateatcher habitat within an ensing gmatcather will occur outside the gnateatcher and construction over within 300 feet of suitable habital for the gnateatcher species and addited by accur outside the part of the NCCP/HCP; (3) Removal of sui		determination within 45 days of receipt of a complete pre-
 applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until section 7 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMFS, the district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e, e., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, how lethal and no-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species at they://www.USFWS.gov/carlsbad/ http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ a		construction notification. In cases where the non-Federal
 might be affected or is in the vicinity of the project, and has so notified the Corps, has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until section 7 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMFS, he district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.USFWS.gov/carlsbad/ http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ http://www.fws.gov/carlsbad/ http://www.fw		applicant has identified listed species or critical habitat that
 notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until section 7 consultation with the USFWS or NMFS, the district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.USFWS.gowenrabad/</u> http://www.ins.gov/cralshad/ and project-specific measures may be required pursuant to a Section 7 consultation for a specific present and construction work within 300 feet of suitable habitat for the gnateatcher will occur outside the gnateatcher and construction work within 300 feet of suitable habitat for the gnateatcher induces are present. If nests are absent, work will continue. If a nest is present, the remittee shall notify the Corps, the Departneent, and the S		might be affected or is in the vicinity of the project, and has so
 Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until section 7 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMPS, the district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.fWS.gov/carlsbad/</u> http://www.fws.gov/carlsbad/ and http://ww		notified the Corps, the applicant shall not begin work until the
 "no effect" on listed species or critical habitat, or until section 7 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMFS, the district engineer may add species-specific regional endangered species conditions to the ROP notices to proceed. (e) Authorization of an activity by an ROP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the Offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.USFWS.gov/carlsbad/</u> http://www.fws.gov/carlsbad/ http://www.fws.gov/carlsbad/ and http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ and http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ http://www.iss.gov/carlsbad/ http://wwww.iss.gov/carlsbad/ 		Corps has provided notification the proposed activities will have
 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMFS, the district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.USFWS.gov/carlsbad/</u> http://www.foxa.gov/falsbad/ and http://www.foxa.gov/falsbad/ and http://www.foxa.gov/falsbad/ and http://www.foxa.gov/falsbad/ and http://www.foxa.gov/falsbad/ and http://www.loal.acpor/fabre/s.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnateatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction work within 300 feet of suitable habitat for the gnateatcher and construction work within 300 feet of suitable habitat for the gnateatcher and construction work within 300 feet of suitable habitat for the gnateatcher is present, the permitees hall notify the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnateatcher is present, the permitees hall notify the mest, a 300-foot baffer around the nest is abandoned. A biological monitor with authority to stop		"no effect" on listed species or critical habitat, or until section 7
 informal consultation with the USFWS or NMPS, the district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.USFWS.gov/carlsbad/</u> http://www.ws.gov/carlsbad/ and http://www.ws.gov/carlsbad/ and http://www.ws.gov/carlsbad/ and http://www.moaa.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable plantat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher breding season, between February 15 and Augus 15. If work is abandoned. A biological monitor with authority to stop construction of the area valide during the breeding season. A qualified biologist will perform protocol survey in the area to determine whether any nesting gnatcatcher's represent. If nests are abaent, work will construction of the location of the nest, a 300-foot buffer around the nest is spresent, tork will be clearly demarcated, and the area avoided u		consultation has been completed. (d) As a result of formal or
 engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of spearate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the Offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.USFWS.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.noaa.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable construction with the corposed the parteent and ending the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatcher; and the area voided until the est is aband.ond. A biological monitor with authority to stop construction will be present onsite during the area to determine whether any nesting gnatcatcher's in the area to determine whether any nesting gnatcatcher'; (3) Removal of suitable habitat for the location of the gnatcatcher will be clearly demarcated, and the area avoided until the nest is aband.ond. A biological monitor with a		informal consultation with the USFWS or NMFS, the district
 conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.USFWS.gov/carlsbad/</u> http://www.fws.gov/carlsbad/ and http://www.iows.gov/carlsbad/ and http://www.ioma.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher rand construction work within 300 feet of suitable habitat for the gnatcatcher will cocur outside the gnatcatcher breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatcher's are present. If nests are absent, work will continue. If a nest is present, the permitee shall notify the Corps, the Department, and the service of the location of the present onsite during breeding season, construction to suitable habitat for the gnatcatcher will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to me		engineer may add species-specific regional endangered species
 an activity by an RGP does not authorize the Take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS, both lethal and non-lethal "takes" of protected species are botained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.USFWS.gov/carlsbad/ http://www.uSFWS.gov/carlsbad/ and http://www.istresty.gov/carlsbad/ http://www.use.gov/carlsbad/ and http://www.istresty.gov/carlsbad/ http://www.istresty affect federally listed species; http://www.istresty.gov/carlsbad/ http://www.istresty affect federally listed species; http://www.istresty.gov/carlsbad/ http://www.istresty.affect federally listed species; http:/		conditions to the RGP notices to proceed. (e) Authorization of
 threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the Offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.USFWS.gov/carlsbad/ http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.tws.gov/carlsbad/ and http://www.dos.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central / Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher area reserve or the thereding season, between February 15 and August 15. If work is necessary within 300 feet of suitable national during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction on teme the limits of construction do not encroach into su		an activity by an RGP does not authorize the "take" of a
 the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.USFWS.gov/carlsbad/</u> http://www.fuse.gov/carlsbad/ and fuse.gov/carlsbad/ and fuse.gov/carlsbad/ and fuse.gov/carlsbad/ and fuse.gov/carlsbad/ and fuse.gov/c		threatened or endangered species as defined under the ESA. In
 rermit, a Biological Opinion with incidental take provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.USFWS.gov/carlsbad/</u>http://www.fws.gov/carlsbad/and http://www.fws.gov/carlsbad/and http://www.fws.gov/carlsbad/and		the absence of separate authorization (e.g., an ESA Section 10
 (c) from the OSF WS of the NMPS, both return and non-lefthal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.USFWS.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.noaa.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher will occur outside the gnatcatcher breeding season, between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to ideermine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable matcatcher; (3) Removal of suitable habitat for the least Bell's vice (LBV) and construction work within 300 feet of suitable habitat for 		remin, a biological Opinion with incidental take provisions,
 Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.USFWS.gov/carlsbad/ http://www.fvs.gov/carlsbad/ and http://www.fvs.gov/carlsbad/ http://wwww.fvs.gov/carlsbad/ ht		"takes" of metastad species are in violation of the ECA
 and the observed of the rest of t		lakes of projected species are in violation of the ESA.
 species and here einer habitat obcoording directly likely with the offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.USFWS.gov/carlsbad/ http://www.fws.gov/carlsbad/ and http://www.noaa.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher babitat for the gnatcatcher will occur outside the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction to ensure the limits of construction within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for the least Bell's vireo (LBV) 		species and their critical habitat can be obtained directly from
 We braces of the Construction with the former of the former of		the offices of the U.S. USEWS and NMES or their World Wide
 http://www.fws.gov/carlsbad/ and http://www.fws.gov/carlsbad/ and http://www.invs.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher reeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat for the least Bell's virce (LBV) and construction work within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's virce (LBV) and construction work within 300 feet of a nesting gnatcatcher; 		Web pages at http://www.USEWS.gov/carlshad/
 http://www.noaa.gov/fisheries.html respectively. Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher state of suitable habitat for the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction work within 300 feet of a nesting pnatcatcher; (3) Removal of suitable habitat for the least Bell's virce (LBV) and construction work within 300 feet of suitable habitat for 		http://www.fws.gov/carlsbad/ and
 Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present on the imits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for the least Bell's vireo (LBV). 		http://www.noaa.gov/fisheries.html respectively.
 Activities authorized under LOP procedures shall comply with the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central / Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat for the limits of construction do not encroach into suitable gnatcatcher habitat for the limits of construction work within 300 feet of a nesting gnatcatcher, and the area avoided until the nest is dealoned. A biological monitor with authority to stop construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		<u></u>
 the following applicable conservation measures to ensure the activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher breeding season, between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		Activities authorized under LOP procedures shall comply with
 activity will not adversely affect federally listed species; however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present on the runing breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's virce (LBV) and construction work within 300 feet of suitable habitat for 		the following applicable conservation measures to ensure the
 however, additional project-specific measures may be required pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher will occur outside the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		activity will not adversely affect federally listed species;
 pursuant to a Section 7 consultation for a specific project: (1) Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		however, additional project-specific measures may be required
 Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		pursuant to a Section 7 consultation for a specific project:
 (1) Kendval of guatacticle habitat within hol-Kesel ve aleas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher will occur outside the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		(1) Demoval of gnotostabor babitat within non Deserve areas of the
 Construction and Minimization Measures for the NCCP/HCP; (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher will occur outside the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		(1) <u>Removal of gnateatcher nabitat whill hole-Reserve areas of the</u> Orange County Central/ Coastal NCCP/HCP will follow the
 (2) Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher will occur outside the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		Construction and Minimization Measures for the NCCP/HCP
 (c) Interformed inter		(2) Removal of suitable habitat for the gnateatcher and
 gnatcatcher will occur outside the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		construction work within 300 feet of suitable habitat for the
 between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		gnatcatcher will occur outside the gnatcatcher breeding season
 within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		between February 15 and August 15. If work is necessary
 breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		within 300 feet of suitable gnatcatcher habitat during the
 surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		breeding season, a qualified biologist will perform protocol
 gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		surveys in the area to determine whether any nesting
 continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		gnatcatchers are present. If nests are absent, work will
 Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		continue. If a nest is present, the permittee shall notify the
 nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		Corps, the Department, and the Service of the location of the
 demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		nest, a 300-foot buffer around the nest will be clearly
 A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		demarcated, and the area avoided until the nest is abandoned.
 present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		A biological monitor with authority to stop construction will be
 the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher; (3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction work within 300 feet of suitable habitat for 		present onsite during breeding-season construction to ensure
 (3) <u>Removal of suitable habitat for the least Bell's vireo (LBV)</u> and construction work within 300 feet of suitable habitat for 		the limits of construction do not encroach into suitable
(3) <u>Removal of suitable habitat for the least Bell's vireo (LBV)</u> and construction work within 300 feet of suitable habitat for		gnatcatcher habitat or within 300 feet of a nesting gnatcatcher;
and construction work within 300 feet of suitable habitat for		(5) <u>Removal of suitable habitat for the least Bell's vireo (LBV)</u> and construction work within 200 for the formit has held in the
the LRV will occur outside the LRV breeding season between		the L RV will occur outside the L RV breeding season between

Condition	Description
	March 15 and September 15. If work is necessary within 300
	feet of suitable LBV habitat during the breeding season, a
	qualified biologist will perform protocol surveys in the area to
	determine whether any nesting LBVs are present. If nests are
	absent, work will continue. If a nest is present, the permittee
	shall notify the Corps, the Department, and the Service of the
	location of the nest, a 300-foot buffer around the nest will be
	abandoned A biological monitor with authority to stop
	construction will be present onsite during breeding season
	construction to ensure the limits of construction do not
	encroach into suitable LBV habitat or within 300 feet of a
	nesting LBV;
	(4) Removal of suitable habitat for the southwestern willow
	flycatcher (flycatcher) and construction work within 300 feet
	of suitable habitat for the flycatcher will occur outside the
	flycatcher breeding season between May 15 and July 31. If
	work is necessary within 300 feet of suitable flycatcher habitat
	during the breeding season, a qualified biologist will perform
	protocol surveys in the area to determine whether any nesting
	approximation of the present. If nests are absent, work will approximately the present the permittee shell petify the
	Corps, the Department, and the Service of the location of the
	nest a 300-foot buffer around the nest will be clearly
	demarcated, and the area avoided until the nest is abandoned.
	A biological monitor with authority to stop construction will be
	present onsite during breeding-season construction to ensure
	the limits of construction do not encroach into suitable
	flycatcher habitat or within 300 feet of a nesting flycatcher;
	and
	(5) If vernal pools are observed within a proposed project site
	under the LOP procedures, vernal pool/fairy shrimp protocol
	Corps, the Department, and the Service of the results prior to
	initiating any ground disturbance
20 Historic Properties	(a) In cases where the district engineer determines that the
	activity may affect properties listed, or eligible for listing, in the
	National Register of Historic Places, the activity is not authorized,
	until the requirements of Section 106 of the NHPA have been
	satisfied. (b) Federal permittees should follow their own procedures
	for complying with the requirements of Section 106 of the NHPA.
	Federal permittees must provide the district engineer with the
	appropriate documentation to demonstrate compliance with those
	requirements. (c) Non-federal permittees must submit with their
	application information on historic properties that may be affected by
	the historic properties or the potential for the presence of historic
	properties. Assistance regarding information on the location of or
	potential for the presence of historic resources can be sought from the
	SHPO or Tribal Historic Preservation Officer (THPO), as
	appropriate, and the National Register of Historic Places (see 33 CFR
	330.4(g)). The district engineer shall make a reasonable and good
	faith effort to carry out appropriate identification efforts, which may
	include background research, consultation, oral history interviews,
	sample field investigation, and field survey. Based on the information

Condition	Description
Condition	Description submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties that the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed. (d) Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). If NHPA Section 106 consultation is required and will occur, the district engineer will notify the non- Federal applicant that he or she cannot begin work until Section 106 consultation is completed. (e) Prospective permittees should be aware that Section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on
	interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.
21. Air Quality	No activity is authorized that causes or contributes to any new violation of national ambient air quality standards, increases the frequency or severity of any existing violation of such standards, or delays timely attainment of any such standard or interim emission reductions, as described in the applicable California State Implementation Plan for the South Coast Air Basin. As part of the Corps application package, the applicant shall submit an air quality emission and impact analysis for the proposed activity if the project would result in long-term or permanent stationary (point or area) source or indirect mobile source emissions, or if the proposed activity would result in area source and direct mobile source emissions that exceed the annual <i>de minimis</i> emissions thresholds for any criteria air pollutant or its precursors.

The use and implementation of the LOP procedures for the review, coordination, and decision making of Corps permit applications is contingent on compliance with the terms and conditions of the LOP procedures. Should a permittee become non-compliant with permit conditions, the Corps may suspend, revoke, or modify the permit and assess administrative penalties. Pursuant to Section 309(g) of the CWA, the Corps is able to levy Class I Administrative Penalties of up to \$11,000 per violation of a permit Special Condition, to a maximum of \$27,000.

RGP

Pursuant to its authority under 33 CFR § 325.2(e)(2) and in accordance with the procedures for processing permits (33 CFR Part 325), the Corps proposes to establish the San Diego Creek Watershed Maintenance RGP to authorize discharges of dredged or fill materials resulting in temporary impacts up to 0.5 acre of waters of the U.S., of which only 0.1 acres may be vegetated with native riparian and/or wetland vegetation. Permanent losses of waters of the U.S., including impacts from fills, flooding, excavation (beyond a maintenance baseline), or drainage would not be permitted under this RGP. Areas eligible for the use of this RGP are limited to aquatic resources located outside of the aquatic resource integrity areas.

Temporary impacts from the discharge of dredged and/or fill materials into waters of the U.S. may be authorized under this RGP, including the following activities:

- Repair, rehabilitation, and replacement of currently serviceable outfall structures, utility lines, pump stations, bank stabilization structures, concrete flood control structures, weirs, drop structures, grade stabilizers, at-grade road crossings, culverts, bridges, pilings, and piers;
- Temporary construction activities and installation of temporary cofferdams, water diversion structures, and access roads; and
- Removal of accumulated sediment in flood control channels and basins (debris, retention, and detention) to restore the facility to maintenance baselines and within its design capacity.

This RGP would allow a permittee to commence work in eligible areas 15 days after the Corps receives proper written notification. Upon receipt of a complete notification and within the 15-day notification period, the Corps may verify the activity with a letter and add any special conditions. If a notification is not complete, the Corps would notify the applicant within 7 days of the needed information items and the applicant would be required to resubmit. If the Corps provides no response within 15 days after complete notification, the project proponent may assume Corps approval of the work. A summary of the Corps proposed general conditions for the RGP is provided in Table 2-4. A detailed summary of the RGP is provided in Appendix C-2, Corps Special Public Notice for the RGP.

Table 2-4.Proposed General Conditions for San Diego Creek Watershed Regional General
Permit

Condition	Description
1. Expiration	The RGP will expire five years from the date of its authorization. Further
	reauthorizations of the RGP will be contingent upon compliance with permit
	conditions, including the provision of notifications. Failure to comply with these
	conditions could result in the suspension or revocation of the permit prior to its
	expiration date, or its non-renewal.
2. Impact Limits	The RGP authorizes up to 0.5 acre of temporary impacts, of which up to 0.1 acre
	may be vegetated by predominantly native wetland vegetation. Non-native
	wetland vegetation does not count to the 0.1-acre threshold. For facilities with an
	established maintenance baseline, vegetation over 0.1 acre of vegetation may be
	removed only if the work is consistent with the established maintenance baseline.
3. Eligible Areas	The RGP shall be available for use in areas outside of the aquatic resource
	integrity areas (Figures 2-2 and 2-3).

Condition	Description
4. Notification	The permittee must provide the Corps with prior notification for each separate
	maintenance activity at each site. A complete notification includes the following
	information:
	1. Name, address and telephone numbers of the applicant, and appropriate point
	of contact and their address and phone number;
	2. Project description of proposed activities;
	A A site location map and view of the project showing areas and acreage to be
	impacted including any areas with native riparian and/or wetland vegetation:
	submit on 8.5" x 11" sheets:
	5. Location coordinates: latitude/longitude or UTM's;
	6. Volume, type and source of material to be temporarily placed into waters of
	the United States;
	7. Total area of waters of the United States to be directly and indirectly affected;
	and
	8. Proposed project schedule.
5. Soil Erosion and Siltation	Appropriate erosion and siltation controls such as siltation or turbidity curtains,
Controls	sedimentation basins, and/or hay bales or other means designed to minimize
	turbidity in the watercourse to prevent exceedences background levels existing at
	the time of project implementation, shall be used and maintained in effective
	implementing controls if site conditions preclude their use, or if site conditions are
	such that the proposed work would not increase turbidity levels above the
	background level existing at the time of the work. All exposed soil and other
	fills, as well as any work below the ordinary high water mark or high tide line.
	must be stabilized at the earliest practicable date to preclude additional damage to
	the project area through erosion or siltation and no later than November of the
	year the work is conducted to avoid erosion from storm events.
6. Equipment	If personnel would not be subjected to additional, potential hazardous conditions,
	heavy equipment working in or crossing wetlands must be placed on temporary
	construction mats (timber, steel, geotextile, rubber, etc.), or other measures must
	be taken to minimize soil disturbance such as using low pressure equipment.
	Temporary construction mats shall be removed promptly after construction.
7. Suitable Material	No discharge of dredged or fill materials into jurisdictional waters may consist of
	unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.) and material
	the Clean Water Act)
8 Management of Water Flows	To the maximum extent practicable, the pre-construction course, condition
6. Wanagement of Water Flows	capacity and location of open waters must be maintained for each activity
	including stream channelization and storm water management activities, except as
	provided below. The activity must be constructed to withstand expected high
	flows. The activity must not restrict or impede the passage of normal or high
	flows, unless the primary purpose of the activity is to impound water or manage
	high flows. To the maximum extent practicable, the activity must provide for the
	retention of excess flows from the site and for the maintenance of surface flow
	rates from the site similar to pre-project conditions, while not increasing water
	flows from the project site, relocating water, or redirecting water flow beyond
	pre-project conditions unless it benefits the aquatic environment (e.g., stream
	restoration of relocation activities).

Condition	Description					
9. Removal of Temporary Fills	Any temporary fills must be removed in their entirety and the affected areas					
	returned to their pre-existing conditions, including any native riparian and/or					
	wetland vegetation. If an area impacted by such temporary fill is considered					
	likely to naturally reestablish native riparian and/or wetland vegetation within two					
	not be required to do restore the riparian and/or wetland vegetation. However					
	Exotic Species Management may be required to prevent the establishment of					
	invasive exotic vegetation. (See Condition #14).					
10. Preventive Measures	Measures must be adopted to prevent potential pollutants from entering the					
	watercourse. Within the project area, construction materials and debris, including					
	fuels, oil, and other liquid substances, shall be stored in a manner as to prevent					
	any runoff from entering jurisdictional areas.					
11. Staging of Equipment	Staging, storage, fueling, and maintenance of equipment must be located outside					
	of the waters in areas where potential spilled materials will not be able to enter					
	any waterway or other body of water.					
12. Fencing of Project Limits	Prior to initiation of the project, the boundaries of the project's impact area must be					
	signage Any additional jurisdictional acreage impacted outside of the approved					
	project footprint shall be mitigated at a 5.1 ratio. In the event that additional					
	mitigation is required, the type of mitigation shall be determined by the Corps in					
	accordance with the SAMP mitigation framework and may include wetland					
	enhancement, restoration, creation, or preservation. The Permittee shall clearly					
	mark the limits of the workspace with flagging or similar means to ensure					
	mechanized equipment does not enter preserved waters of the U.S. and riparian					
	wetland/habitat areas shown on attached Figure 1. Adverse impacts to waters of the					
	U.S. beyond the Corps-approved construction footprint are not authorized. Such					
	impacts could result in permit suspension and revocation, administrative, civil, or criminal penalties, and/or substantial, additional, compensatory mitigation					
	requirements					
13. Avoidance of Breeding Season	With regard to federally listed avian species, avoidance of breeding season					
8	requirements shall be those specified in the Section 7 consultation for the RGP					
	(See RGP Condition 19). For all other avian species, initial vegetation clearing in					
	waters of the U.S. must occur between September 15 and March 15, which is					
	outside the breeding season. Work in waters may occur during the breeding					
	season between March 15 and September 15, in accordance with the					
	Department's WSAA Process and a signed agreement with conditions prescribing					
	procedures for grading of mitigation sites or biological surveys and time					
	foot radius.					
14 Exotic Species Management	All giant reed (Arundo donax) salt cedar (Tamarix spp.) and castor bean					
In Znone Species Humagement	(<i>Ricinus communis</i>) must be removed from the affected area and ensure that the					
	affected area remains free from these invasive, non-native species for a period of					
	five years from completion of the project.					
15. Site Inspections	The Corps shall be allowed to inspect the site at any time during and immediately					
	after project implementation. In addition, compliance inspections of all mitigation					
	sites shall be allowed at any time.					
16. Posting of Conditions	A copy of the RGP general conditions shall be included in all bid packages for the					
	project and be available at the work site at all times during periods of work and must be presented upon request by any Corps or other agonal periods of work and					
	reasonable reason for making such a request					
17. Water Quality	An Section 401 water quality certification must be obtained unless general Section					
	401 certifications are issued or waived for the RGP in the project area (see 33					
	CFR 330.4(c)).					

Condition	Description					
18. Coastal Zone Management	An individual California state coastal zone management consistency concurrence					
	must be obtained or waived where the project may affect the Coastal Zone (see 32 CFR 330.4(d)).					
18. Coastal Zone Management 19. Endangered Species	An individual California state coastal zone management consistency concurrence must be obtained or waived where the project may affect the Coastal Zone (see 33 CFR 330.4(d)). (a) No activity is authorized which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the ESA or which will destroy or adversely modify the critical habitat of such species. Non-federal permittee shall not begin work on the activity until notified by the Corps that the requirements of the ESA have been satisfied and that the activity is authorized. (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. (c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant for the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vi					
	the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until section 7 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMFS, the district engineer may add species-specific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in					
	violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at http://www.USFWS.gov/carlsbad http://www.fws.gov/carlsbad/ and http://www.noaa.gov/fisheries.html respectively.					
	Activities authorized under this RGP shall comply with the following applicable conservation measures resulting from the Corps informal Section 7 consultation to ensure the activity will not adversely affect federally listed species:					
	 Removal of gnatcatcher habitat within non-Reserve areas of the Orange County Central/ Coastal NCCP/HCP will follow the Construction and Minimization Measures for the NCCP/HCP; Removal of suitable habitat for the gnatcatcher and construction work within 300 feet of suitable habitat for the gnatcatcher will occur outside the 					

Condition	Description
	gnatcatcher breeding season between February 15 and August 15. If work
	is necessary within 300 feet of suitable gnatcatcher habitat during the
	breeding season, a qualified biologist will perform protocol surveys in the
	area to determine whether any nesting gnatcatchers are present. If nests are
	absent, work will continue. If a nest is present, the permittee shall notify
	the Corps, the Department, and the Service of the location of the nest, a
	300-foot buffer around the nest will be clearly demarcated, and the area
	avoided until the nest is abandoned. A biological monitor with authority to
	stop construction will be present onsite during breeding-season construction
	to ensure the limits of construction do not encroach into suitable gnatcatcher
	habitat or within 300 feet of a nesting gnatcatcher;
	3) Removal of suitable habitat for the least Bell's vireo (LBV) and construction
	work within 300 feet of suitable habitat for the LBV will occur outside the
	LBV breeding season between March 15 and September 15. If work is
	necessary within 300 feet of suitable LBV habitat during the breeding
	season, a qualified biologist will perform protocol surveys in the area to
	determine whether any nesting LBVs are present. If nests are absent, work
	will continue. If a nest is present, the permittee shall notify the Corps, the
	Department, and the Service of the location of the nest, a 300-foot buffer
	around the nest will be clearly demarcated, and the area avoided until the
	nest is abandoned. A biological monitor with authority to stop construction
	will be present onsite during breeding-season construction to ensure the
	limits of construction do not encroach into suitable LBV habitat or within
	300 feet of a nesting LBV;
	4) <u>Removal of suitable habitat for the southwestern willow flycatcher</u>
	(flycatcher) and construction work within 300 feet of suitable habitat for the
	flycatcher will occur outside the flycatcher breeding season between May 15
	and July 31. If work is necessary within 300 feet of suitable flycatcher
	habitat during the breeding season, a qualified biologist will perform
	protocol surveys in the area to determine whether any nesting flycatchers
	are present. If nests are absent, work will continue. If a nest is present, the
	permittee shall notify the Corps, the Department, and the Service of the
	location of the nest, a 300-foot buffer around the nest will be clearly
	demarcated, and the area avoided until the nest is abandoned. A biological
	monitor with authority to stop construction will be present onsite during
	breeding-season construction to ensure the limits of construction do not
	encroach into suitable flycatcher habitat or within 300 feet of a nesting
	flycatcher; and
	5) If vernal pools are observed within a proposed project site under the RGP,
	vernal pool/fairy shrimp protocol surveys will be performed and the
	permittee shall notify the Corps, the Department, and the Service of the
	results prior to initiating any ground disturbance.

Condition	Description					
Condition 20. Historic Properties	Description (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the NHPA have been satisfied. (b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the NHPA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. (c) Non-federal permittees must submit with their application information on historic properties that may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic resources can be sought from the SHPO or Tribal Historic Preservation Officer (THPO), as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties that the activity may have the potential to cause effects or that consultation under Section 106 of the NHPA has been completed. (d) Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects or that consultation in so required when the Corps determines that the activity does not have the section 106 of the NHPA has been completed. (d) Section 106 consultation is not required when the Corps betermines that the activity does not have the section 106 of the NHPA has been completed. (d) Section 10					
21. Mitigation Policy	Compensatory mitigation will not be necessary unless required through RGP general conditions 12, 17, 18, 19 or 20. Should compensatory mitigation be required, it shall be performed in conformance with the mitigation framework developed for the San Diego Creek SAMP as described in the Corps SAMP					
	document for this Watershed and the Special Public Notice for the San Diego Creek Watershed RGP.					

The use and implementation of the RGP for Corps permit applications would be contingent on compliance with the terms and conditions of the RGP. Should a permittee become non-compliant with permit conditions, the Corps could suspend, revoke, or modify the permit and assess administrative penalties. Pursuant to Section 309(g) of the Clean Water Act, the Corps would be able to levy Class I Administrative Penalties of up to \$11,000 per violation of a permit Special Condition, to a maximum of \$27,000.

Standard Individual Permits

Proposed regulated activities that do not qualify for Section 404 authorization under the retained NWPs, the RGP, or the LOP procedures would be required to undergo a SIP application review process. Potential applicants that have not gone through the pre-application consultation for their proposed project, regardless of whether or not they participated in the SAMP pre-application process for other projects or activities, would be held to the same requirements for demonstrating compliance with the 404(b)(1) Guidelines and an alternatives analysis that projects reviewed during SAMP formulation underwent. Table 2-5 summarizes the percentage of the Watershed's aquatic resource areas ineligible for the LOP procedures or RGP, and thus subject to the SIP application process.

Projects requiring the SIP application review process include those with permanent impacts to greater than 0.1 acre of waters of the U.S. within aquatic resource integrity areas and projects that propose to convert soft-bottom channel reaches to hard-bottom channel reaches in the following mainstem drainages regardless of whether or not the affected reaches are located within aquatic resource integrity areas: Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek.

Subwatershed	Baseline Riparian Habitat	Riparian Habitat in Aquatic Resource Integrity Areas Ineligible for RGP, LOP Procedures, or WSAA Process		Additional Riparian Habitat Ineligible for RGP, LOP Procedures or WSAA Process for Soft- Bottom Channel Conversion Projects		Total <u>Total Area</u> of <u>Riparian</u> <u>Habitat Ineligible</u> for <u>RGP</u> , <u>LOP</u> <u>Procedures</u> , or <u>WSAA Process</u>	
	Acres	Acres	%	Acres	%	Acres*	%
Borrego Canyon Wash	169	142	84 %	18	10 %	160	95 %
Hicks Canyon Wash	32	19	60 %	12	38%	31	97 %
Peters Canyon Wash	69	19	28 %	44	64 %	63	91 %
San Diego Creek	404	225 <u>222</u>	56% <u>55</u>	129 <u>124</u>	32% <u>31</u>	35 4 <u>345</u>	85 %
Serrano Creek	145	108	75 %	34	23 %	142	97 %
Other subwatersheds	847	573 <u>571</u>	68 %	0	0%	573-<u>571</u>	68% <u>67</u>
Total	1666	1086 <u>1080</u>	65 %	237 <u>232</u>	15% <u>14</u>	1323 1311	79 %

Table 2-5.Riparian areas in which certain activities may be ineligible for permitting under
LOP procedures or the WSAA Process.

* Numbers do not add up due to rounding.

An extensive level of data on aquatic resources and analysis of potential impacts of activities on the aquatic resources were compiled during the formulation of the SAMP, including the proposed changes to the Corps permitting program (i.e., LOP procedures, RGP, and retained NWPs). The Corps would retain its discretionary authority to require proposed regulated activities that are inconsistent with the terms and conditions of the LOP procedures, RGP and retained NWPs to undergo a level of analysis commensurate with proposed impacts and to require applicants to demonstrate that the proposed activities would not result in substantial adverse environmental impacts. Furthermore, potential applicants would be expected to implement mitigation per the SAMP Strategic Mitigation Plan and Mitigation Coordination Program. However, the Corps would retain its discretionary authority to determine whether additional special conditions would be required to control adverse impacts to the aquatic environment.

The Corps evaluation of future SIP applications and its basis for making future permit decisions would be informed by the SAMP document, this Program EIS/EIR, and the Corps Record of Decision (ROD) for the SAMP, as well as information contained in any project-specific EIRs. Moreover, the Corps would tier its project-specific environmental review for any SIP from this Program EIS/EIR, in accordance with 40 CFR 1502.20 of CEQ's NEPA regulations. Nevertheless, in evaluating proposed projects under the SIP process, the Corps would still need to assure compliance with the 404(b)(1) Guidelines, which require, except as provided for by Section 404(b)(2), that no discharge of dredged or fill material would be permitted by the Corps if the effects of the discharge, considered either individually or cumulatively, would contribute to the substantial degradation or impairment of waters of the U.S. (40 CFR Part 230).

21.2.4 The Department's Watershed-Specific Permitting Process

The Department's proposed alternate SAA strategy for the Watershed is the WSAA Process. The process consists of three functional habitat quality-based SAA templates (Levels 1, 2 and 3) and a SAA Templates Master Conditions List (provided in Appendix D). The Level 1 template SAAs apply to proposed activities that would alter aquatic resources outside the aquatic resource integrity areas that were not mainstem streams. The Level 2 template SAAs apply to activities that would alter mainstem stream reaches outside aquatic resource integrity areas. The Level 3 template SAAs apply to certain types of activities within aquatic resource integrity areas. All other regulated activities would require a standard SAA or Master Streambed Alteration Agreement (MSAA). The inclusion of a SAA Templates Master Conditions List allows the Department to modify the three SAA templates for future use according to specific project needs while still maintaining a high degree of efficiency and resource protection. Similar to the Corps LOP procedures, qualification for one of the three template SAAs (or MSAA tiered from this Program EIS/EIR) would be based on compliance with specified criteria, including consistency with the SAMP. Copies of the three template SAAs and the SAA Templates Master Conditions List are provided in Appendix D.

Under the Department's normal SAA process, after the Department receives a notification for a particular activity subject to FGC Section 1602 and determines that the activity will require a SAA, the Department will issue a draft SAA to the applicant. If the applicant disagrees with any protective measures in the draft SAA, and the Department and applicant cannot resolve the disagreement, the applicant may have an arbitration panel resolve the disagreement. Under the WSAA Process, the measures in a template SAA are not subject to negotiation. Hence, only those project proponents that are willing to accept a template SAA in full may participate in the WSAA Process. If a project proponent is not willing to accept a

template SAA in full, the project proponent will need to obtain a SAA from the Department through the standard SAA process described in FGC Sections 1602 and 1603.

To implement the SAMP Strategic Mitigation Plan and establish the foundation of a Mitigation Coordination Program for aquatic resource integrity areas among the SAMP Participating Applicants, and to reduce Department staff time associated with preparing and processing agreements, the Department has the option to enter into MSAAs with the City of Irvine, the Irvine Ranch Water District, County of Orange Flood Control District, and The Irvine Company. For applicants who may execute an MSAA (tiered from this Program EIS/EIR) or any of the template SAAs, the following steps would occur under the WSAA Process: the applicant provides notification to the Department; the Department determines the notification application includes adequate conditions to avoid, minimize, and mitigate for project impacts that are consistent with the WSAA Process; the applicant demonstrates all other CEQA requirements have been met; and the Department provides a letter stating that the applicant can proceed with the project subject to the conditions identified within the submitted project-specific notification. The Department would consider entering into a MSAA with other parties, if their activity has been adequately analyzed within this Program EIS/EIR, or additional analysis is conducted pursuant to the CEQA, and the project or activity meets the goals of the SAMP.

The following sections describe specific Department procedures for issuing a SAA under the San Diego Creek Watershed WSAA Process. A flow diagram that summarizes the Department's WSAA Process is provided in Figure 2-6. Table 2-6 shows a comparison between the existing SAA process and the proposed WSAA Process.
Figure 2-6. Flow Diagram for Department's WSAA Process for San Diego Creek Watershed

	i	i	i		
	Current system- SAA/MSAA ¹	Proposed system- Level 1 SAA ²	Proposed system- Level 2 SAA ²	Proposed system- Level 3 SAA ²	MSAA ³
Use Area	All areas	Outside aquatic resource integrity areas, not in major streams ⁴	Outside aquatic resource integrity areas, in major streams ⁴	Inside aquatic resource integrity areas	All areas, with restrictions on areas within aquatic resource integrity areas
Permanent Impacts to Streambeds ⁵	No limit	≤ 1.0 acre	≤ 0.5 acre	≤ 0.1 acre	Same as template SAAs depending on location
Temporary Impacts to Streambeds ⁵	No limit	No limit	No limit	No limit	No limit
Eligible Activities	Eligible Activities Any applicable Streambed alteration WSAA activity types 6		WSAA activity types ⁶ WSAA activity types ⁶		WSAA activity types ⁶
Review and Processing Time	Up to 90 days ⁷	$\leq 60 \text{ days}$	$\leq 60 \text{ days}$	\leq 90 days	No Time Limit
Depth of Review / Additional Conditions beyond template?	Case-by-case (template does not apply)	Low / None or Few	Medium / None or Few	High / Yes	High / Yes
Pre-application Coordination	Not Required	Preferred	Preferred	Required	Required

Table 2-6.	Comparisons between current SAA/MSAA and proposed WSAA Process elements
	for Department SAAs within the San Diego Creek Watershed

Notes:

¹Requires CEQA compliance document.

²Pre-developed templates will allow for greater predictability and faster processing. If project proponent desires a Level 1, 2 or 3 SAA, the arbitration process will be removed. If the project proponent disagrees, then a standard SAA or MSAA will apply. Projects would have to demonstrate compliance with CEQA. This Program EIS/EIR would suffice for CEQA clearance in some cases. Otherwise, local agencies or project proponents would prepare an additional CEQA document (which could be tiered from this Program EIS/EIR) to cover impacts not associated with a SAA. An MSAA tiered from this Program EIS/EIR would be a streamlined process as compared to a standard MSAA. ³ MSAA is an agreement with a term of greater than five years that covers multiple projects that are not exclusively projects to extract gravel, sand, or rock; not exclusively projects that are included in a timber harvesting plan approved by the California Department of Forestry and Fire Protection; or not exclusively routine maintenance projects that the entity will need to complete separately at different time periods during the term of the agreement; and describes a procedure the entity must follow for construction, maintenance, or other projects the agreement covers. ⁴Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek

⁵Provided that project is in full compliance with all applicable SAA conditions. The term "streambeds" would include riparian habitat deemed to be in Department jurisdiction on a case-by-case basis. The acreage limits do not necessarily prevent the issuance of a SAA at a particular level, but may require a more in-depth review and the inclusion of additional, project-specific conditions.

⁶Anticipated activities eligible for WSAA Process procedures: Utility Lines (construction and/or maintenance of new and existing facilities); Flood Control Facilities Maintenance (construction and/or maintenance of new and existing facilities); Road Crossings including Bridges and Culverts (construction and/or maintenance of new and existing crossings); Land Development for Residential, Commercial, Industrial, Institutional and Recreational Facilities (construction and/or maintenance of new and existing land development and recreational facilities); Storm Water Treatment and Management Facilities (construction and/or maintenance of new and existing facilities); Habitat Restoration and Enhancement Projects (construction and/or maintenance of new and existing projects); and Fire Abatement and Vegetative Fuel Management Activities. ⁷Standard SAA includes 30 days to determine if notification is complete, and an additional 60 days for completion of draft SAA. The 60-day limit does not apply to long-term agreements (> 5 years in duration) or MSAA; thus, these types of agreements may take longer than 90 days to review and process.

Pre-Application Coordination and Consultation Meeting

The Department intends to be an active participant in the pre-coordination activities required by applicants that are receiving an LOP from the Corps. The Department's purpose for the pre-application coordination/consultation meeting would be to review a proposed project/activity's effects to rivers, streams and/or lakes and associated biological resources, and to discuss project avoidance of biological resources, minimization measures, and compensation for impacts to biological resources, when applicable. The meeting would also focus on how the proposed project/activity is in, or would be modified to be in substantial conformance relative to impacts and mitigation described in the SAMP and this Program EIS/EIR, and what level of additional CEQA review, if any, would be necessary.

To obtain full benefit of the streamline process built into the WSAA Process, the Department would recommend that applicants not obtaining an LOP from the Corps consult with a Department staff person assigned to implementation of the WSAA Process. Depending on the nature of the proposed project and Department staff's familiarity with the project site, the intricacy of the consultation could widely vary. For example, a consultation for a water pipeline replacement project in a low integrity area that Department staff is already familiar with may consist of a telephone conference call, where the applicant and Department would discuss the area to be impacted, biological resources at the site, timing of work, duration of work, appropriate work conditions to be included in the notification, and elements to be included in a bank stabilization/native vegetation restoration plan to address any temporary loss of vegetation and stabilize the bank to protect aquatic resource values. In contrast, a more complex project such as a public road across a moderate integrity area, may require that Department staff and applicant meet at the site. Prior to that site meeting, the applicant may need to provide the Department staff with preliminary construction plans, biological survey reports, and hydrology studies. Discussion topics at the site meeting could include: 1) the need for the road; 2) alteration to project design to incorporate minimization measures that reduce impacts to aquatic resources; 3) provisions for improved fish and wildlife movement, and other features to reduce the indirect effects on biological resources; 4) construction timing and duration; 5) work conditions; and 6) mitigation sites and mitigation plans.

Notification

FGC Section 1602 requires any person, state or local governmental agency, or public utility to notify the Department before beginning any activity that would do one of the following:

- 1. Substantially obstruct or divert the natural flow of a river, stream, or lake;
- 2. Substantially change the bed, channel, bank of a river, stream or lake;
- 3. Use any material from the bed, channel, or bank of a river, stream or lake; and/or
- 4. Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

FGC Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State of California.

To notify the Department of any of the activities described above, applicants would complete the following steps:

Step 1: Complete the Notification of Lake or Streambed Alteration form (Form FG 2023 (Rev. 7/06)) ("notification form"). The notification form would also include the following supplemental information: a substantial conformance statement (as described below), and a request for an SAA based on the SAA templates (Level 1, 2, or 3). The supplemental information would be considered part of the general notification process (under the WSAA Process), and would not be explicitly described (e.g., Figure 2-6 mentions "notification," although it is implied that the notification includes the supplemental information).

The supplement information would include substantial conformance statements that explain in sufficient detail how the proposed project/activity is in substantial conformance with the activity discussed in the SAMP and analyzed in this Program EIS/EIR, and that explains in sufficient detail how the proposed mitigation for the project/activity is in substantial conformance with the mitigation framework identified in the SAMP and analyzed in this Program EIS/EIR. Focused level delineations and biological assessments would be provided and compared against the Corps PLD (Lichvar et al., 2000) (Appendix B-1 of this document). If the project/activity is not in substantial conformance, the project would not qualify for one of the template SAAs or a MSAA (tiered from this Program EIS/EIR), and the notification would be processed as a standard SAA.

If a project does not qualify for authorization under either the Corps SAMP RGP, LOP procedures, the retained NWPs or SIP, and affects Corps and Department jurisdiction, it would be, by default, not in conformance with the SAMP, and would be processed by the Department as either a standard or long-term agreement. However, the Department would use the SAMP Analytical Framework, the SAMP Strategic Mitigation Plan, Mitigation Coordination Program, the analysis in this Program EIS/EIR, and project-specific CEQA documentation when evaluating and authorizing projects by the issuance of a standard or long-term agreement. Depending on the specific project, the Department could require additional conditions of work and compensatory mitigation beyond what is identified in the SAMP and SAA Templates Master Conditions List for a project that does not conform to the SAMP.

Applicants proposing projects that have impacts below the Corps identified acreage impact thresholds as stated in the SAMP RGP or LOP, would still be required to notify the Department. If the project is consistent with the SAMP goals, and the activity was analyzed in this Program EIS/EIR or in a project-specific CEQA document, the Department would process the notification package pursuant to the WSAA Process. If the applicant's project is not eligible for a template SAA, or if the applicant does not have a MSAA with the Department, the applicant could sign a project-specific SAA.

If a project is authorized by the Corps through the issuance of a SIP, the Department may require conditions in addition to those listed on the SAA Templates Master Conditions List to protect fish and wildlife resources, and the period set forth in the FGC would apply. Additional conditions, including compensatory mitigation may be incorporated into a SAA, and both the applicant and the Department would sign this agreement.

Step 2: The applicant would determine the notification fee that would need to be submitted with the completed notification form.

Step 3: The applicant would submit the completed notification form, supplemental information, and fee to the Department.

Proposed Agreement Conditions

Each template SAA (levels 1, 2, and 3) contains a specific list of conditions that the project applicant would agree to implement to help avoid, minimize, and mitigate any substantial or potentially significant effects that the activity could have on rivers, streams and lakes, and associated fish and wildlife resources. The Department can modify the three SAA templates for specific projects utilizing conditions from the SAA Templates Master Conditions List according to specific project needs. For consistency with the Corps proposed LOP, the Department has established the same mitigation requirements including compensatory mitigation ratios for temporary and permanent impacts, but has additional compensatory mitigation, it is appropriate to apply conditions to the work activity when biological resources are within or adjacent to the mitigation site. The SAA Templates Master Conditions List, included in Appendix D, contains full descriptions of the mitigation requirements and conditions. Table 2-7 provides a summary of this list by condition category.

WSAA Process - Condition Category	Master
	Condition Nos.
Compensatory Mitigation and General Mitigation Ratios for Temporary and	1
Permanent Impacts to Riparian Habitat, as well as Impacts to	
Oak/Walnut/Sycamore woodlands	
General Habitat Mitigation and Monitoring Reports	2
General Mitigation Success Criteria	3
Oak, Walnut, and Sycamore Woodland Mitigation and Monitoring Reports	4
Oak, Walnut, and Sycamore Woodland Success Criteria	5
Oak, Walnut and Sycamore Tree Relocation	6
Grading for Mitigation Sites	7
Biological Surveys and Time Restrictions	8 - 20
Aquatic and Terrestrial Species Specific Protection Conditions	21 – 22
Predator Control	23
Vegetation Removal	24 - 34
Routine Channel Maintenance	35 - 42
Exotic Vegetation Eradication Control – Wildlife and Habitat Protection	43
(associated with mitigation requirement)	
Safeguards	44 – 45
Placement of In-stream Structures – Aquatic and Wildlife Migration Protection	46 - 64
Small Dam and Pond Construction	65 – 76
Directional Drilling	77
Fill and Spoils	78– 87
Turbidity and Siltation	88 - 95
General Conditions which Apply to All Projects	
Equipment Access	96 - 109
Pollution, Sedimentation and Litter	110 – 122

Table 2-7.Summary List ofSan Diego Creek Watershed SAA Templates Master Conditions *.

WSAA Process - Condition Category	Master Condition Nos.
Other General Conditions	123 - 130
Additional Mitigation Conditions	131-141
Additional Resource Protection	142-155
Fisheries Species Protection	156-162
Other General Conditions	163-167

* For a description of each condition, see SAA Templates Master Conditions List contained in Appendix D.

Review of Notification Package and Issuing Authorization

After the Department receives a notification, it would determine whether the notification package was complete. The Department would have 30-days to make its completeness determination, unless the applicant has requested the agreement term for the submitted project to be longer then five years (see also Figure 2-6 and Table 2-6). The 30-day period would not apply to notifications for long term agreements (see FGC Section 1605(g)(5)), or when one of the following occurs:

- 1. The Department and applicant mutually agree to extend the 30-day period.
- 2. The Department determines that an onsite inspection is required before it can make its completeness determination, but the applicant is unable to schedule a date for the inspection that would reasonably allow the Department to make the determination within the 30-day time period.
- 3. The Department determines that an onsite inspection is required before it can make its completeness determination, but the applicant or the owner of the property where the project would take place (if different from the applicant) refuses to allow Department personnel to enter the property. In that case, the Department may refuse to process the notification, in which case the 30-day period would no longer apply.

After the Department determines that the notification package is complete, it would evaluate the project and determine whether the project or activity type is covered by the SAMP and WSAA Process. The evaluation would include the following: if the project or activity type is adequately analyzed in this Program EIS/EIR; whether the conditions of work identified in the notification package adequately protect fish, wildlife, and plants; whether the compensatory mitigation plan (when applicable) is in substantial conformance with the mitigation framework identified in the SAMP; and whether the mitigation adequately compensates for effects to biological resources. If the Department did not make a specific determination that the notification package is complete, the notification would be deemed complete per statute at the end of the 30th day.

After the notification package is deemed complete, for those applicants seeking authorization through the WSAA Process, the Department would have up to 60 days to provide one of the following:

- 1. A letter stating the project may proceed pursuant to the terms and conditions including mitigation identified in the notification package;
- 2. A letter stating that the proposed project and conditions appear to meet the goals of the WSAA Process, but that the Department cannot make a determination that the project has satisfied Section 1602 of the FGC until: a) the CEQA process has been completed by the lead

agency, and b) the Department determines that the project has not substantially changed from the project described in the notification, or

3. Provide an abbreviated draft SAA with proposed additional conditions. This agreement would be signed by the applicant and the Department prior to the commencement of work.

If number 2 above occurs, the Department would issue the letter identified in number 1 above within 30 days after the applicant provides the Department written documentation that the lead agency has completed the CEQA process, including payment of Department filing fee per FGC Section 711.4.

Depending on staffing and prioritized workload, it is anticipated that for those projects that were the subject of a coordination meeting or consultation with the Department, and where the Department received a complete notification package together with the correct notification fee that the Department's determination of notification completeness and issuing of its "authorization to proceed" would occur in fewer days than indicated above. The Department could issue its authorization to proceed at the same time it makes its notification completeness determination. For example, for a project conforming to one of the template SAAs (Level 1, 2, or 3), the Department's response may include a signed draft SAA.

Long-Term Agreements

The WSAA Process has been proposed to allow for an agreement to exceed five years as provided for in Section 1605(g) of the FGC. Participating entity(ies) must agree to provide a status report to the Department every four years. The status report would be delivered to the Department no later than 90 days prior to the end of each four-year period, and would need to include all of the following information:

- A copy of the original SAA (or MSAA);
- The status of the activity covered by the SAA (or MSAA);
- An evaluation of the success or failure of the measures in the SAA (or MSAA) to protect the fish and wildlife resources that the activity may substantially adversely affect; and
- A discussion of any factors that could increase the predicted adverse impacts on fish and wildlife resources, and a description of the resources that may be adversely affected.

The Department would review the four-year status report, and conduct an onsite inspection to confirm that the entity complies with the agreement and that the measures in the agreement continue to protect fish and wildlife resources. If the Department determined that the measures in the agreement no longer protect fish and wildlife resources that were being substantially adversely affected by the activity, the Department, in consultation with the entity, and within 45 days of receipt of the report, would impose one or more new measures to protect fish and wildlife resources affected by the activity.

2.1.2.5 Coordinating Agencies and Other Regulatory Approvals

Applicants may also be subject to permit requirements of agencies besides those of the Corps and the Department. These include: 1) Section 401 Water Quality Certification (or waiver thereof) and Waste Discharge Requirements from the RWQCB; 2) consistency determination under the Coastal Zone Management Act from the California Coastal Commission; and 3) compliance with the federal Endangered Species Act from the USFWS and California Endangered Species Act from the Department. Section 3.5 of the SAMP document (Corps, 2008) contains a detailed discussion of the typical coordinating agencies' approvals needed prior to the Corps/Department's final permit actions.

2.1.2.6 SAMP Mitigation Framework

A component of the SAMP/WSAA Process regulatory program modifications for the Watershed includes an approach to mitigation that is informed by the SAMP Analytical Framework. Mitigation, including avoidance and minimization of impacts and compensation for unavoidable impacts, is within the regulatory purviews of the Corps and the Department. Both agencies have agreed to a set of mitigation policies, as well as to implement the SAMP Strategic Mitigation Plan (third element of the SAMP). Further, the agencies have agreed to a Mitigation Coordination Program (fourth element of the SAMP) to improve the effectiveness and efficiency of mitigation occurring within the Watershed. Details of the Strategic Mitigation Plan and Mitigation Coordination Program are provided herein in Sections 2.1.3 and 2.1.4, respectively.

Proposed and future projects with jurisdictional impacts in the Watershed would be considered in light of the SAMP permitting program and mitigation framework, as consistent with the Corps/USEPA's national regulations governing compensatory mitigation for activities authorized by permits issued by the Department of the Army (33 CFR Parts 325 and 332 [40 CFR Part 230]). Compensatory mitigation in the form(s) of preservation, ereation establishment, restoration, and/or enhancement activities would be required to offset permanent and temporary impacts to aquatic resources. However, the Department and the Corps would retain their respective discretionary authorities to augment the mitigation framework requirements for any proposed project that is inconsistent with the SAMP or that fails to meet the terms and conditions of the LOP, RGP, retained NWPs, or WSAA Process. To implement the Strategic Mitigation Plan, the Corps proposes to implement the following mitigation policies (a-h) as part of its authorizations of regulated activities impacting aquatic resources within the Watershed. The Department's WSAA Process includes provisions for mitigation to be performed in accordance with the SAMP mitigation policies and Strategic Mitigation Plan.

(a) Mitigation Sequencing

Under the SAMP, the mitigation sequencing required pursuant to the Section 404(b)(1) Guidelines (40 CFR Part 230 and the MOA between EPA and the Department of the Army, dated February 6, 1990), whereby the discharge of dredged or fill materials into aquatic resources within the Corps jurisdiction (i.e., waters of the U.S.) must first be avoided and/or minimized to the maximum extent practicable, is being applied to the watershed scale as well as the site scale. An activity seeking authorization under the SAMP permitting framework and evaluated in this Program EIS/EIR would be deemed to have undertaken the requisite avoidance measures by avoiding aquatic resources identified as part of the aquatic resource integrity areas. Projects directly and permanently impacting substantial amounts of aquatic resource integrity areas could still need to demonstrate avoidance, but without a formal alternatives analysis under the LOP procedures or RGP. Minimization measures would be met by demonstrating consistency with the LOP and RGP conditions. Compensatory mitigation would be required to offset any unavoidable impacts that would occur after avoidance and minimization measures have been implemented to the maximum extent practicable, pursuant to the 404(b)(1) Guidelines.

(b) No Net Loss in Acreage and Functions

Consistent with the Corps-EPA MOA and Corps' RGL 02-02 and the Final Mitigation Rule (33 CFR Parts 325 and 332 [40 CFR Part 230]), overall acreage, values services, and functions of wetlands should not be reduced within the Watershed on a program level. All In consideration of the <u>SAMP/WSAA Process</u>, all permanent impacts to aquatic resources (wetland and non-wetland) will be mitigated within the San Diego Creek Watershed. The amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. Appropriate functional or condition assessment methods (e.g., the SAMP Landscape Level Functional Assessment, California Rapid Assessment Method (CRAM), or Hydrogeomorphic Approach (HGM)), or other suitable metrics should be used to evaluate the impact site and to determine suitable compensatory mitigation. If a functional or condition assessment, or other suitable metric is not used, a minimum one-to-one (1:1; acreage created and restored to acreage permanently impacted) or linear foot compensation ratio shall be used.

Compensatory mitigation sites shall be designed and maintained to avoid impacts to any existing wildlife movement corridor. Upland or riparian buffers that provide habitat or corridors necessary to maintain or promote a suite of ecological functions of the aquatic resources may be required as part of a compensatory mitigation site and credit will be provided for such buffers.

(c) Preparation of a Mitigation Plan

All habitat mitigation and monitoring plans would need to shall_conform comply with the requirements of the Corps/EPA Final Mitigation Rule "Compensatory Mitigation for Losses of Aquatic Resources"(33 <u>CFR Parts 325 and 332 [40 CFR Part 230]</u>) and the "Los Angeles District's Final Mitigation Guidelines and Monitoring Requirements," (Corps, 2004), or as subsequently revised). <u>Should any differences in requirements arise, the Corps shall defer to Final Mitigation Rule until such time as the Corps (Los Angeles District) revises its local guidelines to conform to the Final Mitigation Rule. A copy of the Final Mitigation Rule is available online at http://www.usace.army.mil/cw/cecwo/reg/news/final_mitig_rule.pdf and the guidelines are available online at http://www.spl.usace.army.mil/regulatory/.</u>

(d) Prioritization of Mitigation Sites

To the extent practicable, the selection of compensatory mitigation sites should be prioritized to support implementation of the Strategic Mitigation Plan (Section 2.1.3), which is informed by ERDC's restoration plan (Smith and Klimas, 2004) (Appendix B-3), and available online at http://www.spl.usace.army.mil/samp/sdc_rest.pdf

(e) Recommended Restoration

The Corps and the Department will evaluate restoration design plans for compensatory mitigation sites in consideration of the SAMP Strategic Mitigation Plan (Section 2.1.3 and site selection and design criteria provided by ERDC in a Watershed restoration plan for riparian ecosystems (Smith and Klimas, 2004). The ERDC restoration plan (Appendix B-3) provides recommended restoration goals in consideration of landscape setting.

(f) Delays in Implementation of Compensatory Mitigation

Implementation of compensatory mitigation should begin according to a Corps approved construction schedule. The Corps and the Department expect the permittee to schedule the installation of mitigation projects to avoid and minimize temporal losses in function, such that offsite mitigation shall be initiated upfront, and onsite mitigation shall be scheduled to account for project site readiness. Any delays in implementation of compensatory mitigation beyond the Corps approved final construction schedule that extends installation into the next year's growing season may result in penalties of up to 25% increase above the initial compensatory mitigation acreage for every 3-month delay beyond the expected construction season. If the permittee anticipates delays, the permittee should notify the Corps and the Department to provide explanations for the delay and the new expected start date. The Corps and the Department will advise the permittee of each 3 month delay and re-calculate the compensatory mitigation acreage. The Corps will give due consideration to special circumstances and may waive the penalty in cases where delayed compensatory mitigation was a result of natural causes beyond the permittee's control, including without limitation, fire, flood, storm, and earth movement, or as a result of any prudent action taken by the permittee under emergency conditions to prevent, abate, or mitigate significant injury to persons and/or the property resulting from such causes. Note that any action undertaken during emergency conditions must receive prior authorization from the Corps if the action involves a discharge of dredged or fill material into aquatic resources within the Corps jurisdiction.

(f) Amount of Compensatory Mitigation

The Corps will determine mitigation ratios in consultation with the Department and the applicant in a manner to achieve a no net loss of aquatic resource function and acreage in the Watershed, as discussed above in subsection (b) No Net Loss in Acreage and Functions.

<u>Mitigation Ratios</u>

Compensatory mtigation ratios will be based on area-weighted gain in functions at the compensatory mitigation site to compensate for area-weighted loss of functions at the impact site. Functions will be measured in terms of functional units with respect to hydrology, water quality, and habitat indices. ERDC calculated these three indices for all major reaches in the Watershed based on current conditions and after achievement of restoration goals. The Agencies will consider ratios for each of the three integrity indices as follows:

 $\frac{AREA_{MIT} / AREA_{IMP} = FuLOSS_{IMP} / FuGAIN_{MIT}, whereby }{AREA_{MIT} / AREA_{IMP} = mitigation ratio} \\ \frac{AREA_{MIT} = area of mitigation}{AREA_{IMP} = area of impact} \\ \frac{FuLOSS_{IMP} = loss in functional index at the impact site}{FuGAIN_{MIT} = gain in functional index at the mitigation site} \\ \frac{AREA_{IMP} = ration functional index at the mitigation site}{AREA_{IMP} = ration functional index at the mitigation site} \\ \frac{AREA_{IMP} = ration}{AREA_{MIT} = ration} \\ \frac{AREA_{IMP} = ration}{AREA_{IMP} = ration} \\$

The applicant will supply the $AREA_{IMP}$ and the Corps will use the data available from ERDC for $FuLOSS_{IMP}$. The applicant will work in consultation with the Corps and the Department to identify an appropriate mitigation site to offset impacts. $AREA_{MIT}$ will depend on the capacity for $FuGAIN_{MIT}$. Final site selection will take into account the available hydrology to support the proposed mitigation, site access, and other relevant parameters. Additionally, the Corps, in

consultation with the Department will consider other functional or condition assessments that provides site-specific information about both the impact and mitigation sites in determining the appropriate mitigation ratios. The Corps and the Department recommend the applicant conduct an assessment using generally acceptable methodologies such as the CRAM, approved site-level standardized monitoring protocols, or HGM to evaluate the baseline conditions of the impact and potential mitigation sites

Using the metric developed by the Corps to calculate compensatory mitigation in the Watershed will ensure that losses to any function of the aquatic resources will be offset. Specifically, compensatory mitigation shall ensure against loss of any function as characterized by all three area-weighted indices (i.e., for hydrology, water quality, and habitat). Even if there is a gain in one or two of the indices, the overall mitigation must ensure that there is not a loss in any of the three indices. Losses can be further offset by increasing the mitigation ratio.

For rarer, non-riparian/riverine resources such as estuarine wetlands, the formula does not apply. In such cases, the Corps, in consultation with the Department will use a functional and acreage-based assessment to determine the appropriate mitigation ratios. The Corps and the Department recommend the applicant conduct an assessment using generally acceptable methodologies such as the CRAM, approved site-level standardized monitoring protocols, or HGM to evaluate the baseline conditions of the impact and potential mitigation sites.

As a reminder, when using the integrity indices-based ratios, required mitigation shall always be greater or equal to 1:1 in terms of acreage, even if the actual calculated ratios to achieve functional replacement are less than 1:1, which would most likely to occur when the impacted resources have low functions as compared to the functions of the mitigation site. However, if the calculated ratio is less than 1:1, mitigation at 1:1 replacement of acreage will generate a functional gain that exceeds the calculated ratio and will reduce additional mitigation requirements for any temporal loss.

Offsets for Temporal Loss

Temporary and permanent impacts to riparian habitat authorized by LOPs and standard individual permits shall be compensated through consideration of the time needed to fully recover temporarily impacted functions. Temporal loss will apply when compensatory mitigation does not occur prior to or concurrent with impacts, and only to the habitat index, since the other two indices (i.e., water quality and hydrology) should not have a temporal lag. In general, mitigation ratios for temporal loss will be determined on a functional integrity basis as described above. Additional mitigation above a 1:1 ratio to offset temporal losses of habitat function will adhere to the following guidelines:

- <u>impacts to unvegetated aquatic resources will not require additional compensatory</u> <u>mitigation₇</u>;
- <u>impacts to herbaceous vegetation will require no more than an additional 0.5:1 ratio of compensatory mitigation;</u>
- <u>impacts to shrubby vegetation will require no more than an additional 1:1 ratio of compensatory mitigation₇;</u>
- tree vegetation will require no more than an additional 2:1 ratio of compensatory mitigation; and

• <u>tree vegetation with dense understory vegetation will require no more than an additional 3:1</u> <u>ratio of compensatory mitigation.</u>

Compensatory mitigation required above replacement (1:1) may be satisfied through additional restoration and/or enhancement efforts within the aquatic resource integrity areas of the Watershed, or by contribution of fees equivalent to per acreage costs to a Corps and Department-approved third-party mitigation program or mitigation bank operating within the Watershed.

(g) Compensatory Mitigation for Temporary Impacts

The following mitigation measures would be required for projects or activities with temporary impacts to aquatic resources.

Restoration On-Site

Following a temporary impact (e.g. construction impact), an area shall be restored to pre-construction elevations within one month. Re-vegetation shall commence within three months after restoration of pre-construction elevations and be completed within one growing season. If re-vegetation cannot start due to seasonal conflicts (e.g., impacts occurring in late fall/early winter shall not be re-vegetated until seasonal conditions are conducive to re-vegetation), exposed earth surfaces should be stabilized immediately with jute-netting, straw matting, or other applicable best management practice to minimize any erosion from wind or water.

• Offsets for Temporal Loss

Temporary impacts to riparian habitat authorized by LOPs and standard individual permits shall be compensated through consideration of the time needed to fully recover temporarily impacted functions. Temporal loss will apply when compensatory mitigation does not occur prior to or concurrent with impacts, and only to the habitat index, since the other two indices (i.e., water quality and hydrology) should not have a temporal lag. In general, the following-ratios of compensatory mitigation described <u>above in subsection (f) Amount of Compensatory Mitigation</u> will apply to offset temporal losses of habitat function:.

- impacts to unvegetated aquatic resources will not require additional compensatory mitigation,
- impacts to herbaceous vegetation will require an additional 0.5:1 ratio of compensatory mitigation;
- impacts to shrubby vegetation will require an additional 1:1 ratio of compensatory mitigation,
- tree vegetation will require an additional 2:1 ratio of compensatory mitigation; and
- tree vegetation with dense understory vegetation will require an additional 3:1 ratio of compensatory mitigation.

Compensatory mitigation required above replacement (1:1) may be satisfied through additional restoration and/or enhancement efforts within the aquatic resource integrity areas of the Watershed, or by contribution of fees equivalent to per acreage costs to a Corps and Department approved third party mitigation program or mitigation bank operating within the Watershed.

• Preparation of a Compensatory Mitigation Plan

All on-site revegetation efforts require preparation of a habitat mitigation and monitoring plan, <u>as</u> <u>described above in subsection (c) Preparation of a Mitigation Plan. which The plan</u> must be approved by the Corps and the Department prior to implementation. The plan shall conform with the "Los Angeles District's Final Mitigation Guidelines and Monitoring Requirements." (Corps, 2004), or as subsequently revised. All habitat mitigation and monitoring plans need to conform with the requirements of "Los Angeles District's Final Mitigation Guidelines and Monitoring Requirements," (Corps, 2004), or as subsequently revised.

(h) Compensatory Mitigation for Permanent Impacts

Projects with unavoidable permanent impacts to aquatic resources shall provide compensatory mitigation in conformance with the following requirements.

• Mitigation Ratios

The ratios for compensatory mitigation described above in subsection (f) Amount of Compensatory Mitigation will apply to compensatory mitigation for permanent impacts.

The Corps will determine mitigation ratios in consultation with the Department and the applicant in a manner to achieve a no net loss of aquatic resource function and acreage in the Watershed. Specifically, ratios will be based on area-weighted gain in functions at the compensatory mitigation site to compensate for area-weighted loss of functions at the impact site. Functions will be measured in terms of functional units with respect to hydrology, water quality, and habitat indices. ERDC calculated these three indices for all major reaches in the Watershed based on current conditions and after achievement of restoration goals. The ratios will essentially be:

AREA_{MIT} / AREA_{IMP} = FuLOSS_{IMP} / FuGAIN_{MIT}, whereby

AREA_{MIT} / AREA_{IMP} = mitigation ratio

AREA_{MIT} - area of mitigation

AREA_{IMP} = area of impact

FuLOSS_{IMP} = loss in functional index at the impact site

FuGAIN_{MIT} - gain in functional index at the mitigation site

and at a minimum, AREA_{MIT} * FuGAIN_{MIT} = AREA_{IMP} * FuLOSS_{IMP}.

The applicant will supply the AREA_{IMP} and the Corps will use the data available from ERDC for $FuLOSS_{IMP}$. The applicant will work in consultation with the Corps and the Department to identify an appropriate mitigation site to offset impacts. AREA_{MIT} will depend on the capacity for $FuGAIN_{MIT}$. Final site selection will take into account the available hydrology to support the proposed mitigation, site access, and other relevant parameters.

For rarer, non-riparian/riverine resources such as estuarine wetlands, the formula does not apply. In such cases, the Corps, in consultation with the Department will use a functional and acreage based assessment to determine the appropriate mitigation ratios. The Corps and the Department recommend the applicant conduct an assessment using generally acceptable methodologies such as the California Rapid Assessment Method (CRAM) and approved site-level standardized monitoring protocols or the Hydrogeomorphic Approach (HGM) to evaluate the baseline conditions of the impact and potential mitigation sites.

As a reminder, implemented ratios shall always be greater or equal to 1:1, even if the actual ealculated ratios to achieve functional replacement are less than 1:1, which would most likely to occur when the impacted resources have low functions as compared to the functions of the mitigation site. However, if the calculated ratio is less than 1:1, mitigation at 1:1 replacement of acreage will generate a functional gain that exceeds the calculated ratio and will reduce additional mitigation requirements for any temporal loss (see 3 below).

No Loss in Any Functional Type

Using the metric developed by the Corps to calculate compensatory mitigation in the Watershed will ensure that losses to any function of the aquatic resources will be offset. Specifically, compensatory mitigation shall ensure against loss of any function as characterized by all three area weighted indices (i.e., for hydrology, water quality, and habitat). Even if there is a gain in one or two of the indices, the overall mitigation must ensure that there is not a loss in any of the three indices. Losses can be further offset by increasing the mitigation ratio.

• Offsets for Temporal Loss

Temporal loss for permanent impacts will use the same guidelines as for temporary impacts (Section 3.6(g)(2)). Temporal loss will apply when compensatory mitigation does not occur prior to or concurrent with impacts and only to the habitat index, since the other two indices (i.e., water quality and hydrology) should not have a temporal lag. In general, the following-ratios of compensatory mitigation described <u>above in subsection (f) Amount of Compensatory Mitigation</u> will apply to offset temporal losses of habitat function=.

- impacts to unvegetated aquatic resources will not require additional compensatory mitigation,
- impacts to herbaceous vegetation will require an additional 0.5:1 ratio of compensatory mitigation;
- impacts to shrubby vegetation will require an additional 1:1 ratio of compensatory mitigation,
- tree vegetation will require an additional 2:1 ratio of compensatory mitigation; and
- tree vegetation with dense understory vegetation will require an additional 3:1 ratio of compensatory mitigation.

Compensatory mitigation required above replacement (1:1) may be satisfied through additional restoration and/or enhancement efforts within the aquatic resource integrity areas of the Watershed, or by contribution of fees equivalent to per acreage costs to a Corps and Department-approved third-party mitigation program or mitigation bank operating within the Watershed.

• Long-term Conservation

Any compensatory mitigation associated with permanent, unavoidable jurisdictional impacts within the Watershed will require legal assurances to ensure the long-term protection of the site's aquatic resources against degradation of integrity at the Watershed scale over time, unless otherwise approved by the Corps and the Department. Legal assurances include, but are not limited to conservation easements, land dedications, and implementing agreements. <u>The Final Mitigation Rule (33 CFR Section 332.7) and Section 3.6(h)(4) of the SAMP document (Corps, 2008) contains contain more details on legal assurances as well as requirements for long-term conservation management</u>

(including in-perpetuity maintenance, monitoring, identification of conservation manager, estimate of annual costs and long-term funding mechanism).

• Third_Party Mitigation Program or Mitigation Bank

An alternative method to satisfy compensatory mitigation requirements is the purchase of credits or payment of fees to a Corps- and Department-approved third-party mitigation program within the Watershed, including a mitigation bank, conservation bank, or for the enhancement, establishment, or restoration of identified offsite aquatic resources. The Department requires that a WSAA (or other SAA) identify the specific location(s) of the compensatory mitigation, so the third-party mitigation program sponsor would be required to link the mitigation actions with the WSAA. Use of an approved third-party mitigation program conducting preservation and enhancement efforts of identified sites would be available to offset temporal loss or instead of contracting with a separate conservation manager or establishing a separate endowment for individual mitigation sites. Additionally, compensatory mitigation requirements for permanent impacts may be offset by contribution to a Corps- and Department-approved third-party mitigation bank that is conducting establishment (creation) and/or restoration efforts in the Watershed. <u>All third-party mitigation programs must comply with the requirements of the Corps/EPA Final Mitigation Rule (33 CFR Section 332.8).</u>

(i) Delays in Implementation of Compensatory Mitigation

Implementation of compensatory mitigation should shall begin, to the maximum extent practicable, before or concurrent with the activity causing the authorized impacts to jurisdictional areas, and according to a Corps-approved plan and construction schedule. The Corps and the Department expect the permittee to schedule the installation of mitigation projects to avoid and minimize temporal losses in function, such that offsite mitigation shall be initiated upfront, and onsite mitigation shall be scheduled to account for project site readiness. Any delays in To offset temporal losses of aquatic functions resulting from the permitted activity, the Corps and the Department may require, on a case-by-case basis, additional compensatory mitigation for delayed implementation of compensatory mitigation beyond the Corps-approved final construction schedule that extends installation into the next year's growing season¹³. Subsections (f) Amount of Compensatory Mitigation, (g) Compensatory Mitigation for Temporary Impacts, and (h) Compensatory Mitigation for Permanent Impacts describe the additional mitigation ratios to offset temporal loss of habitat for mitigation sites with approved construction schedules that plan for delayed installation after jurisdictional impacts occur.

Compounding of the additional compensatory mitigation requirements will not exceed a ratio of 25% above initial compensatory mitigation acreage for every three-month period beyond the expected construction season. If the permittee anticipates delays, the permittee should notify the Corps and the Department in advance to provide explanations for the delay and the new expected start date. The Corps and the Department will advise the permittee of each 3-month delay and the amount of additional

¹³ Generally, the growing season for non-tidal wetland and riparian systems not subject to snowfall extends from March through September, although the season may begin earlier at lower latitudes and altitudes.

mitigation or additional monitoring time, if any, that will be required to offset temporal losses of function and services. re-calculate the compensatory mitigation acreage.

For example, a project was permitted with the expectation that the mitigation site work would begin during the construction impacts to jurisdictional areas and a 1:1 ratio (1 functional unit or 1 acre) for compensatory mitigation was required. The following year the Agencies learn that the permitted impacts occurred but the installation of the mitigation site had not. Thus, the Agencies required additional mitigation to offset further temporal loss by assessing up to 25% additional mitigation for each 3-month delay beyond the second year growing season until installation of the mitigation is complete. In this example, up to 25% of 1:1, which equals 0.25:1 and equivalent to 0.25 acre that would accrue for every 3-month delay, unless otherwise approved by the Agencies.

A variation on the example above is the project was permitted and the resources to be impacted consisted primarily of riparian tree vegetation with dense understory. Instead of 1:1 ratio as a base mitigation requirement, the base would be 1:1 ratio (1 functional unit or 1 acre), plus 3:1 ratio (3 acres) for initial temporal loss due to the lengthy development time for dense understory. Thus, delayed implementation as described in example above would result in up to 25% additional mitigation for each 3-month delay beyond the second year growing season. In this case, 25% of 4:1 is 1:1 and equivalent to a maximum of 1 acre that would accrue for every 3-month delay, unless otherwise approved by the Agencies.

The Corps and the Department will give due consideration to special circumstances and may waive the penalty requirement for additional compensatory mitigation in cases where no substantive temporal loss to functions or services occurred, or where delayed compensatory mitigation was a result of natural causes beyond the permittee's control, including without limitation, fire, flood, storm, and earth movement, or as a result of any prudent action taken by the permittee under emergency conditions to prevent, abate, or mitigate significant injury to persons and/or the property resulting from such causes. [Note: that any Any action undertaken during emergency conditions must receive prior authorization from the Corps and the Department if the action involves a discharge of dredged or fill material into aquatic resources within the Corps jurisdiction or will impact Department jurisdictional streams.]

2.1.3 Strategic Mitigation Plan

The third component of the SAMP/WSAA Process is the Strategic Mitigation Plan which is a tool the Corps and the Department would use in concert with the coordinated, watershed-specific permitting procedures to improve the long-term sustainability of the Watershed's aquatic resources. The fundamental strategy underlying the plan is to guide mitigation efforts (i.e., avoidance, minimization, and compensation of unavoidable impacts) to realize the maximum functional benefit to the aquatic resources within the Watershed. The Strategic Mitigation Plan offers advantages over the more standard piece-meal approach to mitigation. For example, the Corps and the Department's current standard operating procedures do not typically seek to identify potential mitigation opportunities at a watershed scale, nor address long-term management (beyond the usual 5-year maintenance and monitoring period). However, under the SAMP Strategic Mitigation Plan, aquatic resources that provide the greatest function and are often the most difficult to replace in the Watershed would be the focus of avoidance and minimization of impacts. Restoration, creation, and enhancement efforts would be directed to occur in areas with

moderate or low integrity resources and in a manner appropriate to the landscape setting. The Strategic Mitigation Plan considers a site's landscape context important, because mitigation sites that provide missing connections between other riparian habitats can increase the overall function of the aquatic resources at the site as well as the function of the adjacent riparian habitats. Additionally, the Strategic Mitigation Plan addresses a need for long-term management of mitigation sites and promotes efforts to increase efficiency.

21.3.1 Identification of Restoration Opportunities in the Watershed

The aquatic resource areas with high and moderate habitat integrity would receive a higher level of regulatory oversight under the proposed SAMP changes to permitting procedures within the Watershed. The SAMP analysis also identifies moderately and substantially degraded aquatic resources that do not necessarily trigger increased regulatory protection in their current state. Nevertheless, it is acknowledged that through restoration, such degraded sites would fulfill specific Watershed resource conservation goals. The methodology for identifying Watershed-appropriate riparian ecosystem restoration opportunities is provided by the ERDC's supplemental study to the SAMP, the Riparian Ecosystem Restoration Plan (Smith and Klimas, 2004) included in Appendix B-3.

The restoration plan for the Watershed (Smith and Klimas, 2004) is based upon an evaluation of factors such as the "restoration potential" of specific riparian reaches, a site's geomorphic setting, and the "level of effort" necessary to restore specific stream reaches. Together, restoration potential and level of effort provide a mechanism for estimating the effectiveness of various combinations of restorative actions and for prioritizing the restoration of stream reaches where the greatest functional improvement can be attained for a standardized unit of effort required.

By using an ecosystem function-based methodology (landscape level-functional assessment), the restoration plan identified an array of aquatic resources in various states of cultural alteration as watershed restoration opportunities. In consideration of the reach-specific opportunities and constraints under existing landscape conditions, the restoration plan estimated restoration practicability using units of effort, rather than conducting a traditional cost-benefit analysis. Additionally, the restoration plan established a set of fundamental site selection and design criteria recommended for identifying potential restoration sites and conducting riparian ecosystem restoration activities within the Watershed.

During the SAMP coordination meetings and in the field investigation, state and federal resource agencies and the SAMP Participating Applicants reiterated the following specific objectives that were applied to produce a nested hierarchy of restoration site opportunities to help prioritize areas for restoration. The criteria, which are consistent with the SAMP Tenets (Section 2.1.1.3), allowed the agencies to strategically prioritize restoration sites for potential implementation as compensatory mitigation sites to attain the greatest functional improvement for a standardized estimation of effort required. The following six criteria provided a mechanism for testing the effectiveness of various combinations of restoration actions at improving the functional integrity of the aquatic resources:

- 1. Restore connectivity between aquatic resources located in the NCCP Reserve System;
- 2. Restore reaches within surrounding upland conservation areas;
- 3. Restore connectivity between high and/or medium integrity resource reaches;
- 4. Restore reaches within the headwaters;

- 5. Restore reaches with federally or state-listed species (endangered, threatened, or species of special concern); and
- 6. Prioritize restoration of reaches with greatest amount of functional lift per level of effort.

A summary of the prioritization process for each criterion is presented in Section 4.2.2 of the Corps SAMP document (Corps, 2008). The results of the prioritization process are presented herein in Figures 2-7 through 2-11 and Tables 2-8 through 2-13. The tables provide a key for the numbers in the figures.

Sites are prioritized according to the ratio of the anticipated benefit to aquatic resources to the level of effort required to restore the site. Sites with the greatest functional boost are ranked higher. Sites are grouped into quartiles to show broad groupings. Sites labeled with priority levels of "c" and "d" would experience less functional benefit from any restoration work than would be expected of sites labeled with priority levels of "a" and "b."

Criterion 1: Restore connectivity between aquatic resources located in the NCCP Reserve System;

Figure 2-7 shows three prospective restoration sites through the proposed Orange County Great Park that meet Criterion 1. Two of the sites could connect aquatic resources of the NCCP. Table 2-8 prioritizes the restoration sites.

Table 2-8.Details of Prospective Restoration Sites Connecting Aquatic Resources Located in
the Orange County Central-Coastal NCCP Subregional Reserve System

ID	Driority	Subwatarshad	Doooh	Restoration	Length	Notos
ш	11101109	Subwatersneu	Reach	Template	(m)	THUES
1	я	Borrego Canyon	BG-01, BG-02,	Unearthing	~ 4000	Great Park Wildlife
1	u	Wash/Agua Chinon Wash	BG-03	Chearting	4000	Corridor
2	h	Agua Chinon Wash/Bee		Upearthing	~ 2500	Great Park Drainage
2	U	Canyon Wash	AC-01, AC-02	Oncartining	~ 2500	Corridor
2	h	Baa Canyon Wash		Unconthing	2500	Great Park Drainage
3	U	bee Callyon wash	DE-02	Uneartining	~2300	Corridor

Figure 2-7. Prospective restoration areas connecting aquatic resources in the Orange County Central-Coastal NCCP Subregional Reserve System.

Criterion 2: Restore reaches within surrounding upland conservation areas;

Forty-eight reaches within NCCP Reserve System and other open space areas satisfied this criterion (Figure 2-8) Table 2-9 prioritizes the restoration sites within existing upland conservation areas. Restoration typically involves more than enhancement by planting; it would bring degraded systems into a fully functioning state. Some reaches are within natural upland habitat and others are within non-native habitats such as windrows and orchards. Because of the potentially significant impacts to sensitive upland habitats, restoration efforts should focus on restoring riparian reaches within non-sensitive uplands such as windrows and orchards. In addition, restoration should focus on riparian areas that would produce the most ecological benefit for the level of effort expended. Their status as potential restoration sites would be considered during the review of any application to impact these reaches.

ID	Priority Grouping	Subwatershed	Reach	Restoration Template ¹	Level of Effort ²	Length (m)	Notes
1	а	Laguna Channel	LG-02-2	Natural	Light	736	Continuous with LG-02-1; adjacent to PA17 development
2	а	Borrego Canyon Wash	BG-12-2	Incised	Light	238	Adjacent to SR-241; continuous with BG-12-1
3	а	Hicks Canyon Wash	HK-03-1	Incised	Light	515	Continuous with HK-03-2
4	а	Hicks Canyon Wash	НК-03-2	Incised	Heavy	235	Continuous with HK-03-1
5	а	Rattlesnake Canyon Wash	RS-09-1	Incised	Light	988	Currently in agricultural production; upstream of PA1; continuous to RS-09-2
6	а	Rattlesnake Canyon Wash	RS-09-2	Incised	Heavy	552	Currently in agricultural production; upstream of PA1; continuous to RS-09-2
7	а	Rattlesnake Canyon Wash	RS-11-1	Incised	Light	343	Currently in agricultural production; upstream of PA1;
8	а	Central Irvine Channel	TB-01-8	Incised	Light	210	Downstream of Siphon Reservoir
9	а	Borrego Canyon Wash	BG-13-2	Natural	Heavy	497	Upstream of SR-241; in alignment of future Portola Parkway extension
10	а	San Joaquin Channel	SJ-03-1	Natural	Light	720	Continuous with SJ-02b-1 and SJ- 03-2; adjacent to PA17 development
11	а	San Joaquin Channel	SJ-03-2	Natural	Light	682	Continuous with SJ-03-1; adjacent to PA17 development
12	а	Central Irvine Channel	TB-03-1	Natural	Light	335	Upstream of Siphon Reservoir
13	b	Bee Canyon Wash	BE-15-1	Incised	Light	826	Adjacent to Bowerman Landfill
14	b	Borrego Canyon Wash	BG-10-2	Incised	Light	773	Continuous with BG-11-1 and BG- 12-1; identified as UNBWC ³ restoration site
15	b	Bommer Canyon	BM-04-1	Incised	Light	1129	Upstream end impacted by PA27 development

 Table 2-9.
 Details of prospective restoration sites in upland open space areas

ID	Priority Grouning	Subwatershed	Reach	Restoration Template ¹	Level of Effort ²	Length (m)	Notes
16	b	Bonita Creek	BO-09-1	Incised	Light	996	Downstream of San Joaquin Reservoir; identified as UNBWC ³ restoration site
17	b	Laguna Channel	LG-02-1	Incised	Light	451	Continuous with LG-02-2; adjacent to PA17 development
18	b	Marshburn Channel	MH-03b-2	Incised	Light	134	Upstream of SR-241; continuous with MH-03b-3
19	b	Rattlesnake Canyon Wash	RS-07-2	Incised	Heavy	606	Currently in agricultural production; upstream of PA1;
20	b	Sand Canyon Wash	SC-11a-2	Incised	Light	225	Continuous with SC-09-1; adjacent to PA22 development
21	b	Shady Canyon	SH-06-2	Incised	Light	455	Upstream of PA22 development
22	b	Borrego Canyon Wash	BG-14-2	Natural	Heavy	491	Upstream of SR-241; in alignment of future Portola Parkway extension
23	b	Sand Canyon Wash	SC-11b-2	Natural	Light	654	Upstream of SC-11a-2
24	b	San Joaquin Channel	SJ-02b-1	Natural	Light	675	Continuous with SJ-03-1; adjacent to PA17 development
25	с	Agua Chinon Wash	AC-09-2	Incised	Light	512	Upstream of SR-241
26	с	Bommer Canyon	BM-02d-1	Incised	Light	230	Continuous with BM-02c-1 and BM-05-1; between PA22 and PA27
27	с	Hicks Canyon Wash	HK-04a-1	Incised	Light	1641	Continuous with HK-041a-2
28	с	Hicks Canyon Wash	HK-04a-2	Incised	Light	837	Downstream of SR-241; continuous with HK-041a-1
29	с	Marshburn Channel	MH-03b-3	Incised	Light	309	Continuous with MH-03b-2
30	с	Rattlesnake Canyon Wash	RS-05-1	Incised	Light	976	Upstream of Rattlesnake Canyon Reservoir
31	с	Rattlesnake Canyon Wash	RS-08-2	Incised	Light	811	Downstream of SR-241
32	С	Shady Canyon	SH-01-1	Incised	Light	971	Restoration completed because of prior permit requirements
33	с	Shady Canyon	SH-04-1	Incised	Light	357	Upstream of PA22 development
34	с	Borrego Canyon Wash	BG-12-1	Natural	Light	1923	Within El Toro Conservation Lands; continuous with BG-10-2
35	с	Sand Canyon Wash	SC-05-2	Natural	Light	472	Continuous with SC-06-1; just upstream from Sand Canyon Res.
36	с	Sand Canyon Wash	SC-09-1	Natural	Light	245	Continuous with SC-11a-2; adjacent to PA22 development
37	d	Agua Chinon Wash	AC-08-1	Incised	Light	722	Upstream of SR-241; in alignment of future Portola Parkway extension
38	d	Borrego Canyon Wash	BG-04a-1	Incised	Light	808	Affected by alignment of Alton Parkway; identified as UNBWC ³ restoration site
39	d	Borrego Canyon Wash	BG-04b-1	Incised	Light	398	Affected by alignment of Alton Parkway; identified as UNBWC ³ restoration site

ID	Priority Grouping	Subwatershed	Reach	Restoration Template ¹	Level of Effort ²	Length (m)	Notes
40	d	Bommer Canyon	BM-02c-1	Incised	Light	362	Continuous with BM-02d-1; between PA22 and PA27
41	d	Bommer Canyon	BM-05-1	Incised	Light	1184	Continuous with BM-02d-1; between PA22 and PA27
42	d	Bonita Creek	BO-08-1	Incised	Light	638	Upstream of compensatory mitigation site; adjacent to SR-73
43	d	Peters Canyon Wash	PC-04-2	Incised	Light	1050	Within Peter's Canyon Regional Park; identified as UNBWC ³ restoration site
44	d	Sand Canyon Wash	SC-06-1	Incised	Heavy	410	Continuous with SC-05-2 and SC- 08a-1; adjacent to PA22 development
45	d	Sand Canyon Wash	SC-08a-1	Incised	Light	829	Continuous with SC-06-1 and SC- 08b-1; adjacent to PA22 development
46	d	Sand Canyon Wash	SC-08b-1	Incised	Light	516	Continuous with SC-08a-1 and SC- 12-1; adjacent to PA22 development
47	d	Sand Canyon Wash	SC-12-1	Incised	Light	586	Continuous with SC-08b-1; adjacent to PA22 development
48	d	Borrego Canyon Wash	BG-11-1	Natural	Light	2383	Continuous with BG-10-2

1 Best possible restoration outcome; "natural" templates allows for full restoration and "incised" templates allows for moderately incised conditions after restoration work is completed

2 Amount of work needed; "light" earthwork requires less than six feet of excavation and "heavy" earthwork requires greater than six feet of excavation

3 Upper Newport Bay Watershed Committee

Figure 2-8. Prospective restoration sites within existing open space.

Criterion 3: Restore connectivity between high and/or medium integrity resource reaches;

This restoration criterion could be achieved at six riparian reaches (Figure 2-9). Table 2-10 prioritizes these reaches. One of the identified riparian reaches was also identified as a restoration site under the second restoration criterion. Site selection prioritized those areas that involve conventional restoration and not rely solely on enhancement activities.

ID	Priority Grouping	Subwatershed	Reach	Restoration Template ¹	Level of effort ²	Length (m)	Notes
1	a	Bee Canyon Wash	BE-03-1	Incised	Light	854	On University of California property; connects to Great Park drainage corridor; identified as UNBWC ³ restoration site
2	а	Borrego Canyon Wash	BG-05b-1	Incised	Light	1193	Directly along alignment of proposed Alton Parkway extension
3	а	Bonita Creek	BO-09-1	Incised	Light	996	Downstream of San Joaquin Reservoir; identified as UNBWC ³ restoration site
4	а	Borrego Canyon Wash	BG-05a-1	Incised	Heavy	1121	Along Baker Ranch proposed development
5	b	Sand Canyon Wash	SC-01-1	Constrained	Light	200	Mason Regional Park; identified as UNBWC ³ restoration site
6	b	Sand Canyon Wash	SC-01-3	Constrained	Light	966	Mason Regional Park; identified as UNBWC ³ restoration site

Table 2-10.	Details of prospective restoration sites connecting high/medium integrity resource
	reaches.

1 Best possible restoration outcome; the term "incised" templates allows for moderately incised conditions after restoration work is completed and the term 'constrained templates allow for restoration with constraints on either side of the bank

2 Amount of work needed; "light" earthwork requires less than six feet of excavation and "heavy" earthwork requires greater than six feet of excavation

3 Upper Newport Bay Watershed Committee

Figure 2-9. Prospective restoration sites connecting high/medium integrity resource reaches.

Criterion 4: Restore reaches within the headwaters

The remaining headwater local drainage basins in the Watershed are protected as part of the existing NCCP Reserve System and require only enhancement activities. Thus, no restoration opportunities needed to be identified.

Criterion 5: Restore reaches with species of endangered, threatened, or special concern status

Thirty-four drainage basins had at least one observation of sensitive species. Within these drainage basins, 22 reaches were identified as possible restoration sites (Figure 2-10). Some of these sites were also identified under previous objectives. Restoration of these sites should take into account the species present and conduct the work in manner that would not adversely affect the species. Of these 22 reaches, only reach RS-06-1 is located outside aquatic resource integrity areas. The status of the sites as potential restoration sites would be considered during the review of any application to impact these reaches. Table 2-11 lists sites suitable for restoration as identified by this criterion. In contrast to the other restoration criterion, prioritization is only partially based on achieving gains in functional integrity. The purpose of restoring these sites is to provide habitat for sensitive species, which do not always depend on normal measures of riparian ecosystem integrity for success.

Figure 2-10. Prospective restoration sites with species of endangered, threatened, or special concern status.

	Subwatershed	Reach	Restoration Template ¹	Level of Effort ²	Length (m)	Species of Interest	Notes
1	Bee Canyon Wash	BE-03-1	Incised	Light	681	Mud nama ³	On University of California property; connects to Great Park drainage corridor; identified as UNBWC ⁸ restoration site
2	Bee Canyon Wash	BE-03-3	Incised	Light	335	Mud nama	Downstream of SR-241
3	Rattlesnake Canyon Wash	RS-06-1	Natural	Light	883	LBV/SWFC ⁴	Upstream of Rattlesnake Canyon Reservoir
4	Central Irvine Channel	TB-03-1	Natural	Light	807	LBV/SWFC	Upstream of Siphon Reservoir
5	Bee Canyon Wash	BE-04a-1	Incised	Heavy	516	Mud nama	Downstream of former Lambert Reservoir
6	Bonita Creek	BO-09-1	Incised	Light	410	LBV/SWFC	Downstream of San Joaquin Reservoir; identified as UNBWC ⁸ restoration site
7	Borrego Canyon Wash	BG-03-1	Incised	Light	638	CaGN ⁵	Upstream of Irvine Boulevard; identified as UNBWC ³ restoration site
8	San Diego Creek	SD-12a-1	Natural	Light	254	LBV/SWFC, SPT ⁶	Downstream of Veeh Reservoir
9	University of California	UC-03-1	Incised	Light	889	Southern tarplant ⁷	On UCI property
10	San Diego Creek	SD-11-1	Constrained	Light	996	LBV/SWFC, SPT	Downstream of Veeh Reservoir
11	Sand Canyon Wash	SC-05-2	Natural	Light	1050	LBV/SWFC	Continuous with SC-06-1; just upstream from Sand Canyon Res.
12	Sand Canyon Wash	SC-02-1	Natural	Light	976	LBV/SWFC	Mason Regional Park; within mitigation site
13	Sand Canyon Wash	SC-01-1	Constrained	Light	492	LBV/SWFC	Mason Regional Park; identified as UNBWC ³ restoration site
14	Sand Canyon Wash	SC-01-3	Constrained	Light	206	LBV/SWFC	Mason Regional Park; identified as UNBWC ³ restoration site
15	Rattlesnake Canyon Wash	RS-05-1	Incised	Light	2330	LBV/SWFC	Upstream of Rattlesnake Canyon Reservoir
16	Sand Canyon Wash	SC-06-1	Incised	Heavy	854	LBV/SWFC	Continuous with SC-05-2 and SC-08a-1; adjacent to PA22 development
17	Borrego Canyon Wash	BG-04a-1	Incised	Light	200	CaGN	Upstream of Irvine Boulevard; identified as UNBWC ³ restoration site

 Table 2-11.
 Details of prospective restoration sites with endangered or threatened species habitat

	Subwatershed	Reach	Restoration Template ¹	Level of Effort ²	Length (m)	Species of Interest	Notes
18	Peters Canyon Wash	PC-04-2	Incised	Light	966	LBV/SWFC	In Peter's Canyon Regional Park; identified as UNBWC ³ restoration site
19	Bonita Creek	BO-08-1	Incised	Light	1322	LBV/SWFC	Upstream of compensatory mitigation site; adjacent to SR-73
20	San Diego Creek	SD-10-1a	Natural	Light	472	LBV/SWFC	Along Needlegrass Creek
21	San Diego Creek	SD-10-1b	Natural	Light	840	LBV/SWFC	Along Needlegrass Creek
22	San Diego Creek	SD-10-2	Incised	Light	333	LBV/SWFC	Along Needlegrass Creek

1 Best possible restoration outcome; the term "incised" templates allows for moderately incised conditions after restoration work is completed and "constrained" templates allow for restoration with constraints on either side of the bank.

2 Amount of work needed; "light" earthwork requires less than six feet of excavation and "heavy" earthwork requires greater than six feet of excavation.

3 California Native Plant Society, List 2 species.

4 Least Bell's vireo and southwestern willow flycatcher, both federally and state-listed endangered species.

5 Coastal California gnatcatcher, federally listed threatened species and State of California species of special concern.

6 Southern pond turtle, State of California species of special concern.

7 California Native Plant Society, List 1B species.

8 Upper Newport Bay Watershed Committee.

Criterion 6: Prioritize restoration of reaches with greatest amount of functional lift per level of effort.

Figure 2-11 shows the remaining 15 reaches in terms of the context of the aquatic resource integrity areas, and Table 2-12 classifies the reaches in quartiles with respect to level of functional lift per level of effort. The sites are prioritized with lower numbers representing sites expecting to have the most aquatic resource benefits with respect to the level of effort. Among the four classes, reaches within the two highest quartiles should be prioritized for restoration. Reaches within the other two classes should be restored on a case-by-case basis. Many of the potential restoration sites are in aquatic resource integrity areas where impacts to aquatic resources should be avoided. The remaining sites are on private property or in local government control. Any area whose integrity is improved could be re-evaluated for identification as an aquatic resource integrity area. Some of the restoration sites were not given high priority because of their relative low ranking in the overall prioritization system and the various constraints to be addressed before restoration could occur.

ID	Priority Grouping	Subwatershed	Reach	Restoration Template ¹	Level of Effort ²	Length (m)	Notes
1	a	Bonita Creek	BO-16a-3	Natural	Light	190	Underpass of SR-73
2	а	Hicks Canyon Wash	HK-01-3	Incised	Light	776	Partially underground channel within eucalyptus grove
3	а	Bee Canyon Wash	BE-11b-1	Natural	Heavy	666	North of SR-141
4	а	University of California	UC-01-1	Incised	Light	766	Next to University Research Park
5	b	San Diego Creek	SD-13a-1	Incised	Light	2250	Within a eucalyptus grove
6	b	Bommer Canyon	BM-01-3	Incised	Light	431	Within a City of Irvine local park
7	b	Serrano Creek	SE-07-1	Constrained	Light	476	Surrounded by industrial parks
8	b	Bee Canyon Wash	BE-06-3	Incised	Heavy	234	Round Canyon Wash downstream of SR-241 and upstream of BE-06-2
9	с	Laguna Channel	LG-04-1	Incised	Light	1592	Upstream of old Laguna Reservoir
10	с	Serrano Creek	SE-06-1	Constrained	Light	815	Surrounded by a nursery, upstream of SE-05-1
11	с	San Diego Creek	SD-08-1	Incised	Light	475	Next to Irvine Meadows Amphitheater
12	с	Rattlesnake Canyon Wash	RS-07-1	Incised	Light	600	Adjacent to IRWD property
13	d	Bee Canyon Wash	BE-06-2	Incised	Light	206	Round Canyon Wash downstream of SR-241 and BE-06-3
14	d	Serrano Creek	SE-04-1	Incised	Light	603	Upstream of Trabuco Road
15	d	Serrano Creek	SE-05-1	Constrained	Heavy	965	Surrounded by industrial parks and downstream of SE-06-1

 Table 2-12.
 Details of the Remaining Prospective Restoration Sites

¹ Best possible restoration outcome; the term "incised" templates allows for moderately incised conditions after restoration work is completed, and "constrained" templates allow for restoration with constraints on either side of the bank.

² Amount of work needed; "light" earthwork requires less than six feet of excavation and "heavy" earthwork requires greater than six feet of excavation.

Figure 2-11. Remaining prospective restoration sites.

Other Considerations

Section 4.4.2 (f) of the SAMP document (Corps, 2008) describes other factors considered in the characterization of restoration activities including the selection of restoration over enhancement. Accordingly, opportunities for site enhancement were identified separately from site restoration opportunities. Figure 2-12 identifies sites for enhancement and Table 2-13 provides details of these sites. The enhancement sites require minimal to no earthmoving in order to improve the site. Lower numbers were assigned to sites expecting the greatest benefits to aquatic resources relative to the level of effort needed to attain the results.

Б	Priority	Submatanshad	Daaah	Restoration	Level of	Length	Natas
ш	Grouping	Subwatersned	Reach	Template ¹	Effort ² (m)	INOLES	
1	а	Serrano Creek	SE-03-1	Incised	Heavy	37	Upstream of Bake Parkway adjacent to off-
							line basins
2	а	Bonita Creek	BO-16a-2	Natural	Heavy	418	South of Sage Hill High School; extends
			1 0 00 1			50.6	connection under SR-73
3	а	Agua Chinon	AC-09-1	Natural	Heavy	536	Upstream of SR-241
4	а	San Diego Creek	SD-15a-1	Incised	Heavy	361	Surrounded by mobile homes in Lake
							Forest; isolated
5	а	San Diego Creek	SD-15b-2	Incised	Heavy	235	Surrounded by mobile homes in Lake Forest; isolated
6	а	Agua Chinon	AC-06-1	Incised	Heavy	567	Immediately downstream of
							Agua Chinon Basin
7	а	University of California	UC-02-2	Incised	Light	354	Within UCI Open Space
8	а	Bonita Creek	BO-02-1	Natural	Light	574	Upstream of BO-01-1;
							downstream of BO-06-1
9	а	Borrego Canyon	BG-05c-1	Constrained	Light	509	Downstream of SR-241;
		Wash					adjacent to Baker Ranch
10	b	Agua Chinon	AC-07-1	Natural	Heavy	550	Within Agua Chinon Basin; enhancement
11	h	Sand Canyon	SC-112-1	Natural	Light	464	Within Shady Canyon open space:
11	U	Wash	50-114-1	Taturai	Ligin	-0-	downstream of SC-09-2
12	b	San Diego Creek	SD-09a-1	Natural	Light	1252	Upstream of SD-07-2
		6			8		1
13	b	Shady Canyon	SH-03-1	Natural	Heavy	326	Within Shady Canyon open space;
							downstream of SH-02-1
14	b	Bommer Canyon	BM-01-1	Natural	Heavy	326	Within Turtle Rock community
15	b	Bonita Creek	BO-01-1	Natural	Light	1208	Adjacent to Bonita Creek Park: upstream of
	_				8		confluence with San Diego Creek
16	b	Agua Chinon	AC-03-1	Incised	Heavy	383	Upstream of Irvine Boulevard
17	b	Bonita Creek	BO-04-1	Incised	Heavy	548	Upstream of Ford Road overpass
18	b	Bee Canyon	BE-11a-2	Incised	Heavy	156	Upstream of SR-241; downstream of
		Wash					Bowerman Landfill
19	b	San Diego Creek	SD-07-2	Incised	Heavy	1903	Upstream of I-405;
							downstream of SD-09a-1

 Table 2-13.
 Details of prospective enhancement sites

Priority				Restoration	Level of	Length	
ID	Grouping	Subwatershed	Reach	Template ¹	Effort ²	(m)	Notes
20	с	Bonita Creek	BO-06-1	Natural	Light	672	Surrounded by Bison Ave., Macarthur Blvd., and SR-73
21	с	Bonita Creek	BO-07-1	Natural	Light	263	Upstream of BO-06-1 and downstream of existing mitigation site
22	с	Agua Chinon	AC-05-1	Incised	Heavy	185	Downstream of Agua Chinon Basin; upstream of military housing
23	С	San Joaquin Channel	SJ-04b-1	Natural	Heavy	551	Within Shady Canyon open space
24	С	Peters Canyon Wash	PC-04-1	Natural	Heavy	1249	Within Peters Canyon Regional Park
25	с	San Diego Creek	SD-12b-1	Natural	Heavy	333	Upstream of Veeh Reservoir and downstream of Laguna Hills Golf Course
26	С	Sand Canyon Wash	SC-04-1	Natural	Heavy	1354	Within Strawberry Farms Golf Course; downstream of SC-04-2
27	с	Serrano Creek	SE-04-2	Natural	Light	1293	Downstream of Dimension Drive
28	с	Borrego Canyon Wash	BG-07-1	Natural	Heavy	1317	Upstream of Portola Parkway; within Whiting Ranch Wilderness Park
29	с	Shady Canyon	SH-02-1	Natural	Heavy	1154	Within Shady Canyon open space; downstream of SH-03-1
30	с	Sand Canyon Wash	SC-04-2	Constrained	Heavy	217	Within Strawberry Farms Golf Course; upstream of SC-04-1
31	с	Sand Canyon Wash	SC-03-1	Natural	Light	766	Within Mason Regional Park mitigation area; downstream of BO-06-1
32	с	Borrego Canyon Wash	BG-15-1	Natural	Light	536	Upstream of SR-241; may be impacted by Portola Parkway Extension
33	с	Borrego Canyon Wash	BG-16-1	Natural	Light	317	Upstream of SR-241; may be impacted by Portola Parkway Extension
34	с	Sand Canyon Wash	SC-09-2	Natural	Light	1801	Within Shady Canyon Open Space; upstream of SC-11a-1
35	с	Serrano Creek	SE-08a-1	Incised	Heavy	1298	Upstream of Portola Parkway; within Whiting Ranch Wilderness Park
36	С	Serrano Creek	SE-03-2	Incised	Heavy	1840	Within Serrano Creek Community Park and undergoing revegetation

Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

¹ Best possible restoration outcome; the term "incised" templates allows for moderately incised conditions after restoration work is completed, and "constrained" templates allow for restoration with constraints on either side of the bank.

² Amount of work needed; "light" earthwork requires less than six feet of excavation and "heavy" earthwork requires greater than six feet of excavation.

Figure 2-12. Prospective Enhancement Sites.

Caveats of Restoration Prioritization

The hierarchy of identified restoration priorities is intended to inform decision-making processes; it is not proposed as a rigid structure whereby choices in restoration sites are pre-set with little room for deviation. Although the preference would be to implement restoration sites in order of prioritization, several factors would influence the final selection of any particular site for restoration including restoration site availability, community acceptability of the restoration work, and the appropriateness of the type of restoration work in relation to the type of impact for which compensatory mitigation may be required. To proceed with restoration of any identified site, detailed planning is needed beyond the general design criteria outlined in the restoration plan (Smith, Klimas, 2004) used in the prioritization process. Among the site specific parameters that would be determined through additional evaluation are current conditions of a potential site, appropriate extent of earthwork, development of planting plans, cost of implementation and monitoring protocols.

The Corps and the Department do not intend that the restoration opportunities identified herein would preclude implementation of potential restoration projects identified by the Corps Watershed Feasibility Study (Corps, 2005) or any other restoration opportunities identified by other stakeholders. Also, the identification of opportunities in the context of the SAMP would not mandate nor guarantee that any particular site would be restored or enhanced. Full implementation of the Strategic Mitigation Plan (e.g. avoidance, minimization and compensation of unavoidable impacts following a watershed approach with long-term management) would require the participation of multiple stakeholders in the Watershed. The Corps and the Department would continue to provide guidance and direction and work within the parameters of their authorities. Coordination with other agencies and stakeholders would be instrumental in implementing the Strategic Mitigation Plan. Therefore, the Corps and the Department have proposed a Mitigation Coordination Program which is discussed in Section 2.1.4.

21.3.2 Long-Term Conservation of Aquatic Resource Integrity Areas

The Corps and the Department believe that certain land management practices are needed to prevent substantial degradation of aquatic resource integrity. They also recognize that a concerted effort on the part of all the Watershed's land managers is required to protect the hydrologic, water quality, and habitat integrity and to prevent degradation of the Watershed's remaining higher value aquatic resources (i.e. aquatic resources located within identified aquatic resource integrity areas).

The Corps and the Department intend to work within the bounds of their respective authorities, which extend to the regulation of certain activities that affect their jurisdictions and to the prohibition of activities that adversely affect the conservation values of legally protected mitigation sites, and in an advisory capacity. Consequently, the Corps and the Department have prepared a suite of guidelines and measures for aquatic resource management (Table 2-14). In the case of compensatory mitigation sites, the Corps and the Department would specifically include such measures as requirements in permit special conditions or would require such measures be addressed with legal protections over the land (e.g., a conservation easement). However, beyond the regulatory role, the Corps and the Department offer these as recommendations to the regulated community as additional indication of the parameters by which the Corps and the Department will evaluate future regulated activities within the aquatic resource integrity areas.

Many of the policy recommendations described herein may already be planned or are in operation as a result of existing programs (e.g., state or regional water quality program requirements), while other land management practices would require a greater level of specificity and further analysis prior to implementation. Any latent conflicts with other Watershed resource conservation programs are unintentional and would require further coordination and evaluation. The management measures listed in Table 2-14 are arranged in alphabetical order, not hierarchical, and represent a comprehensive approach to retain and restore the integrity of aquatic resources and to prevent further degradation of higher value aquatic resources. Appendix 4 of the Corps SAMP document (Corps, 2008) contains additional information on land uses and their effects on aquatic resources.

		Applicability for Aquatic		
Management Aspect	Applicability for Mitigation Sites	Resource Integrity Areas in		
		General (Non-Mitigation)		
Adaptive Management Program– The Corps and the Department believe an adaptive management program would be most suitable to address over time the changing needs of the aquatic resources within the integrity areas. Depending on the sites, much of the baseline data would be available for use; however, some biotic surveys may be required. Tasks and costs associated with habitat maintenance, water management, general maintenance, reporting/documentation, operations, and periodic site construction (e.g. fencing and road repair) are anticipated. Any creation or restoration activities would require additional tasks and costs beyond those for general adaptive management and would	Adaptive management plans for the long-term conservation of mitigation sites should include measures to achieve the following goals: maintain and restore the hydrologic, water quality, and habitat integrity of watershed; maintain, restore, and/or enhance native riparian ecosystems and other aquatic resources; protect and support biodiversity; protect and restore sensitive species and their habitats; and allow natural successional stages to occur.	Adaptive management of all the aquatic resources in the integrity areas would support the conservation goals of the SAMP. However, to implement such a program would require expenditure of capital costs for initial tasks as well as ongoing tasks and their associated costs. Economy of scale suggests that sharing costs amongst land owners/managers for a coordinated program would minimize duplication of efforts and minimize costs to individual land owners/managers. See		
general adaptive management and would likely be conducted by the landowners themselves. <i>Agricultural Activities</i> – Unmanaged livestock grazing or other intensive agricultural activities may impair or interfere with the conservation values and the natural condition of aquatic resources.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, grazing or agricultural activities would not be authorized within the aquatic resource or buffer zone, unless approved as part of the	Mitigation Coordination Program discussion (Section 2.1.4). Management strategies to minimize direct and indirect impacts of existing grazing or other agricultural activities on aquatic resources should be evaluated and implemented within the aquatic resource		
	conservation management program.	integrity areas.		
<i>Buffers</i> – Landscape context of aquatic resource is an important influence on the condition of that resource. Buffers are terrestrial habitats that extend beyond the edge of the wetland and/or riparian habitat.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, buffers should be included to protect the aquatic resources from anthropogenic stressors. Buffers should contain adequate width to reduce the negative interactions between adjacent land uses and ecological functions; buffers may	Management strategies to minimize direct and indirect impacts of anthropogenic activities should include buffers vegetated with native species to the extent practicable.		

Table 2-14.Recommendations for long-term management of compensatory mitigation sites and
protection of aquatic resource integrity areas.
Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

Management Aspect	Applicability for Mitigation Sites	Applicability for Aquatic Resource Integrity Areas in General (Non-Mitigation)	
Commercial Industrial Uses –	range from 10m – 100m, depending on site-specific situations; and remain free of activities and pollutants that reduce the buffer's ecological functions. Note: Non- aquatic resources or buffers can be used as credits towards fulfilling compensatory mitigation acreage when those resources are deemed essential to maintaining the ecological viability of adjoining aquatic resources.	Undertaking new commercial or	
Commercial and industrial land uses can directly and indirectly impact the natural condition of aquatic resources.	including preserved areas within the aquatic resource integrity areas, new commercial or industrial uses would not be authorized.	industrial uses within the aquatic resource integrity areas may impair or interfere with the conservation values and the natural condition of the aquatic resources. Activities should be planned in a manner to avoid and minimize permanent impacts to aquatic resources.	
<i>Construction</i> – Construction activities within or adjacent to aquatic resources can directly and indirectly impact the natural condition of aquatic resources. Best management practices can reduce or eliminate adverse effects.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, construction activities or uses would not be authorized, except as minimally necessary to maintain or repair existing structures.	Construction, reconstruction, or placement of any building or other improvement within the aquatic resource integrity areas may impair or interfere with the conservation values and the natural condition of the aquatic resources. Activities should be planned to avoid and minimize permanent impacts to aquatic resources.	
Flood Management and Erosion Control – Under baseline conditions, some aquatic resources are managed to provide flood management or other functions and require routine maintenance activities.	Maintenance activities to preserve the flood management function or to control erosion of watercourses that are mitigation sites shall be performed in a manner to preserve the conservation values of the site. Any removal of sediment and associated vegetation from the aquatic resources shall be minimized and shall occur only to the extent that these activities have been included in the maintenance baseline for the watercourse to restore the facility to its design capacity.	Maintenance activities to preserve the flood management function or to control erosion of watercourses should be performed in a manner to preserve the conservation values of the aquatic resource integrity areas. Therefore, any removal of sediment and associated vegetation from the aquatic resources should be minimized and should occur only to the extent that these activities have been included in the maintenance baseline for the watercourse to restore the facility to its design capacity.	
adjacent to aquatic resources can directly	including preserved areas within the	general topography through	

Management Aspect	Applicability for Mitigation Sites	Applicability for Aquatic Resource Integrity Areas in
and indirectly impact the natural condition of aquatic resources. Best management practices can reduce or eliminate any permanent adverse impact. Habitat Restoration/Enhancement Activities - Aquatic resource restoration, enhancement, and creation activities within the aquatic resource integrity areas should	aquatic resource integrity areas, grading activities, except for ecosystem restoration activities would not be authorized. The permittee shall retain the right to perform the restoration of native plant communities, including the right to plant trees and shrubs of the	General (Non-Mitigation) grading activities, including but not limited to building of roads and new flood management work, and excepting ecosystem restoration activities, may impair or interfere with the conservation values and the natural condition of the aquatic resources within aquatic resource integrity areas. Activities should be planned to avoid and minimize permanent impacts to aquatic resources. A mitigation coordination program would facilitate these efforts within the aquatic resource integrity areas. See
be conducted in a manner consistent with the design criteria established by the Watershed Restoration Plan (Smith and Klimas, 2004) and as consistent with the SAMP Strategic Mitigation Plan to provide self-sustaining sites for increased integrity and function of aquatic resources.	same type as currently existing on the mitigation site, so long as such activities do not harm the habitat types identified in the permit/agreement. For purposes of preventing erosion and reestablishing native vegetation, the permittee shall retain the right to revegetate areas that may be damaged by the permitted activities, naturally occurring events or by the acts of persons wrongfully damaging the natural condition of the mitigation site, including preserved areas within the aquatic resource integrity areas.	Mitigation Coordination Program discussion (Section 2.1.4).
Integrated Pest Management (IPM)– IPMs combine various techniques for the prevention of pests and pest-related damage in order to minimize the adverse affects to the non-target organisms and the environment as well as to reduce adverse risks to human health. Existing models for IPM are available for various types of land uses, including but not limited to golf courses, open spaces, and campus-type facilities (see also Vector Control; Invasive, Exotic Species Control).	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, application of pesticides and herbicides is typically considered a prohibited activity (see also Vector Control; Invasive, Exotic Species Control).	Within the aquatic resource integrity areas, pesticide use for the control of pests should be the last option, but would be permissible. Land owners/ managers are encouraged to develop and implement ecosystem-based strategies to prevent pests and pest-related damage. In consideration of an adaptive management framework, it may be prudent for land owners/managers to incorporate IPM into a mitigation coordination program to better provide long-term protection of high value aquatic resources (<i>see</i> <i>also Vector Control; Invasive,</i> <i>Exotic Species Control</i>).
Invasive, Exotic Species Control – A list	At compensatory mitigation sites,	To avoid redundancy and

Management Aspect	Applicability for Mitigation Sites	Applicability for Aquatic Resource Integrity Areas in General (Non-Mitigation)
of target species of invasive, exotic vegetation is provided (Table 5-1 of Corps SAMP document). Only herbicides and associated surfactants approved by EPA for use in wetlands and with no/low toxicity to aquatic organisms may be used in aquatic resources.	including preserved areas within the aquatic resource integrity areas, the planting, introduction or deliberate dispersal of invasive, exotic plant or animal species is prohibited. Also, see discussion for non-mitigation sites.	improve program efficiency, any new efforts for the control of invasive, exotic vegetation, cowbird trapping, bullfrog and African clawed frog control measures within the aquatic resource integrity areas should be coordinated and to the extent practicable with other land owners/managers with ongoing control programs within the Watershed, in both riparian and terrestrial habitats. A mitigation coordination program would facilitate these efforts. See Mitigation Coordination Program discussion (Section 2.1.4).
Irrigation, Water Influences - Unseasonable watering, manipulating, impounding or altering any natural watercourse, body of water or water circulation and activities or uses detrimental to water quality, including but not limited to degradation or pollution of any surface or sub-surface waters may result in substantial adverse impacts to aquatic resources.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, such activities or uses would not be authorized, except as minimally necessary for the establishment of restored or created native habitats in restoration areas.	Land owners/managers should limit alterations to the natural hydrologic regime within the aquatic resource integrity areas to prevent impairment of the conservation values and the natural condition of the aquatic resources.
Long-term Legal Protection of Conservation Values - The most effective way to provide long-term protection of sensitive resources over time is to confer legal assurances on the lands. Legal assurances refer to implementing agreements, restrictive covenants, conservation easements, or land dedications and are for the purpose of protecting the conservation values of sensitive resources in perpetuity.	Any compensatory mitigation, including preserved sites, associated with projects evaluated under the SAMP regulatory program would require legal assurances to ensure the long-term increased benefits at the watershed scale. See Mitigation Framework (Section 2.1.2.6 (h)(4).	Land owners/managers with control over aquatic resource integrity areas should consider mechanisms for ensuring long- term protections. A Mitigation Coordination Program could facilitate these efforts. See Mitigation Coordination Program discussion (Section 2.1.4).
Long-Term Monitoring and Maintenance – A monitoring strategy that addresses both surveillance and post-restoration/ mitigation type monitoring needs should be included as part of any adaptive management program. Associated with the monitoring program would be certain success criteria relevant to the conservation program in general as well as project- or site-specific criteria for compensatory mitigation or restoration projects.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, the permittee shall be responsible for the ongoing maintenance/repair of the mitigation site. See Mitigation Framework (Section 2.1.2.6 (h)(4).	To avoid redundancy and improve program efficiency, any new efforts for long-term maintenance and monitoring of sites within the aquatic resource integrity areas should be coordinated, to the extent practicable, with other land owners/managers with ongoing control programs within the Watershed, in both riparian and terrestrial habitats. A Mitigation Coordination Program would facilitate these efforts

Management Aspect	Applicability for Mitigation Sites	Applicability for Aquatic Resource Integrity Areas in General (Non-Mitigation)
		Mitigation Coordination Program discussion (Section 2.1.4).
<i>Native Riparian Habitat</i> – Removing, destroying, or cutting of native riparian trees, shrubs or other vegetation may impair or interfere with the conservation values and the natural condition of aquatic resources.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, removal of native riparian habitat, except as required by law for (1) fire breaks, (2) maintenance of existing foot trails or roads, (3) flood or erosion control as provided within a conservation easement, and (4) prevention or treatment of disease would not be authorized.	Land owners/managers should take care to avoid and limit activities that would result in the removal or destruction of native riparian vegetation within the aquatic resource integrity areas.
Natural Resource Extraction – Filling, dumping, excavating, draining, dredging, mining, drilling, removing or exploring for or extraction of minerals, loam, gravel, soil, rock, sand or other material on or below the surface may impair or interfere with the conservation values and the natural condition of aquatic resources.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, natural resource extraction would be prohibited.	Land owners/managers should avoid or limit natural resource extraction activities within the aquatic resource integrity areas.
<i>New Road Crossings</i> – Certain types of road crossings may result in substantial adverse impacts to aquatic resources of high value. Bridges and arched culverts with natural bottoms would be considered among the alternative minimization measures available to project proponents.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, the alteration of the general topography of the site, including but not limited to building of new roads would be prohibited.	Land owners/managers should undertake reasonable measures to minimize adverse impacts to aquatic resources within the integrity areas from new or reconstructed road crossings. Project proponents should expect to consider alternative routes, crossings, and types of crossings, as they will be thoroughly analyzed by the Corps and Department.
Public Access and Recreational Activities – Unless mitigation measures are undertaken to manage active recreation, including, but not limited to, horseback riding, biking, hunting, or fishing, such activities may impair or interfere with the conservation values and the natural condition of aquatic resources. For example, frequent off-trail incursions into the streambed or native riparian habitat and other disturbances in sensitive areas may result in adverse impacts to the aquatic resources or may result in disturbances to riparian species of concern during the breeding seasons.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, recreation including, but not limited to, horseback riding, biking, [and hunting, or fishing] may be prohibited or measures may be required to minimize disturbance.	Any proposals for new recreational facilities within the aquatic resource integrity areas should consider these issues and may wish to include design features, public education component, and access control measures to reduce direct and indirect effects to sensitive resources. Also, see this topic under Appendix 4 concerning existing use areas.
<i>Refuse, Trash</i> – The deposition or accumulation of soil, trash, ashes, refuse, waste, bio-solids, or any other material may impair the conservation values of aquatic resources.	As part of a monitoring and maintenance program, land owners/managers shall be required to undertake all reasonable actions to prevent the deposition or	Land managers/owners may have their own trash removal regime. To avoid redundancy and improve program efficiency, refuse and trash control efforts as

Management Aspect	Applicability for Mitigation Sites	Applicability for Aquatic Resource Integrity Areas in
	accumulation of soil, trash, ashes, refuse, waste, bio-solids, or any	General (Non-Mitigation) part of a long-term maintenance and monitoring of sites within the
	other material within mitigation sites.	aquatic resource integrity areas could be coordinated with other land owners/managers with ongoing control programs within the Watershed, in both riparian
		and terrestrial habitats. A mitigation coordination program would facilitate these efforts. See Mitigation Coordination Program discussion (Section 2.1.4).
Signage – The installation and maintenance of informative signage and other notification features saying "Natural Area Open Space," "Protected Natural Area," or similar descriptions may be used to inform persons of the nature and restrictions on the access or use of sensitive resources.	The permittee may be required to post and maintain informative signage in or adjacent to a compensatory mitigation site, including preserved areas within the aquatic resource integrity areas. The signage shall be maintained in- perpetuity.	To avoid redundancy and improve program efficiency, the posting and maintenance of informative signage within the aquatic resource integrity areas could be coordinated with other land owners/managers with ongoing access control programs within the Watershed, in both riparian and terrestrial habitats. A mitigation coordination program would facilitate these efforts. See Mitigation Coordination Program discussion (Section 2.1.4).
Vehicular Access – Inappropriate vehicle use (e.g., off-road vehicles) can result in direct and indirect impacts to the conservation values of aquatic resources. Any exclusion fencing used to restrict vehicular access should be installed in a manner that retains or facilitates wildlife movement between contiguous areas within the aquatic resource integrity areas.	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, the use of off-road vehicles and use of any other motorized vehicles except on existing roadways and as necessary to restore native plant communities consistent would constitute a prohibited activity.	Land owners/managers should undertake all reasonable actions to preclude the use of off-road vehicles and of any other motorized vehicles, except on existing roadways, and as necessary to restore native plant communities.
<i>Wildlife Movement</i> – Riparian corridors provide foraging, cover, and nesting/breeding habitat for fish and wildlife, and are conduits for many species, including aquatic, riparian, and semi-aquatic or terrestrial species.	Since restoration opportunities prioritized for compensatory mitigation in the SAMP Strategic Mitigation Plan considered wildlife movement, project proponents should consult the plan. An objective is to augment regional aquatic and terrestrial habitat conservation efforts to maintain and restore wildlife movement between existing NCCP Reserve sub-areas.	Activities in the aquatic resource integrity areas should not conflict with, but rather augment regional aquatic and terrestrial habitat conservation efforts to maintain and restore wildlife movement between existing reserve areas such as the Central-Coastal NCCP Subregional Reserve System, the proposed City of Irvine Great Park Wildlife Corridor, and the Laguna Coast Wilderness Park.
<i>Vector Control</i> – The Corps and the Department regard the need for protection of public health against vector-borne	At compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas,	Implementation of the SAMP Strategic Mitigation Plan should minimize mosquito populations in

		Applicability for Aquatic
Management Aspect	Applicability for Mitigation Sites	Resource Integrity Areas in
		General (Non-Mitigation)
diseases as an important consideration. A vector is any insect or arthropod, rodent, or other animal capable of harboring or transmitting the causative agents of disease (i.e., viruses, bacteria, parasites) to humans. In the context of aquatic resources, mosquitoes (<i>Culex</i> , sp.) and mosquito-borne diseases are of particular relevance. The Corps and the Department acknowledge that specific mosquito control programs in the aquatic resource integrity areas may be required to reduce localized mosquito populations and minimize the risk of disease transmission to humans via the mosquito. The following are the Corps and the Department's assumptions with regard to a vector control activities at mitigation sites or other aquatic resources in the integrity areas: (1) mosquitoes provide a food source for many birds, bats, amphibians, and fish species resident to riparian and wetland systems and complete elimination of mosquitoes in riparian areas may upset the food web; (2) healthy wetlands, with adequate water circulation to avoid stagnant conditions, along with the presence of mosquito-eating predators, including mosquito-eating beetles, backswimmers, water striders, dragonfly larvae, etc. should provide adequate conditions to prevent infestation; and (3) the wide availability of proven biological control methods renders the use of pesticides and insecticides within aquatic resources.	application of pesticides, biocides, rodentcides, and herbicides (except for weed abatement) would constitute a prohibited activity. Filling or draining aquatic resources at compensatory mitigation sites, including preserved areas within the aquatic resource integrity areas, for the purposes of vector control would constitute a prohibited activity. Management efforts should remedy cause such as poor circulation or should employ accepted biological control methods.	General (Non-Mitigation) the aquatic resource integrity areas by reducing breeding sites through restoration and enhancement activities to improve the integrity and function of wetlands and riparian areas. The use of pesticides and insecticides in the aquatic resource integrity areas should be avoided and replaced with an IPM program (see Integrated Pest Management above). Vector control activities can be coordinated with the County of Orange's Vector Control District and other land owners/managers in the aquatic resource integrity areas to help avoid duplicative or incompatible efforts.

2.1.3.3 Implementation of Strategic Mitigation Plan

The primary means of implementing the Strategic Mitigation Plan would be through adherence to the SAMP mitigation framework. Management of the aquatic resource integrity areas to promote the maintenance and restoration of aquatic resource integrity would be supported by the regulatory process and is one of the principal benefits of the SAMP.

Compensatory mitigation (e.g. in the form(s) of preservation, creation, restoration, and enhancement activities) would be required to offset permanent and temporal impacts to aquatic resources. Generally, compensatory mitigation would occur onsite and/or within the aquatic resource integrity areas. Although not preferred, the Corps and the Department could consider on a case-by-case basis the use of sites outside the aquatic resource integrity areas for compensatory mitigation. In general, implementation of restoration projects identified in the SAMP or in the riparian ecosystem restoration plan (Smith and Klimas, 2004) would be weighted as providing greater value for the Watershed than an alternative site located outside the aquatic resource integrity areas, or a site that is not identified in the restoration plan.

Furthermore, to facilitate broader scale conservation efforts through compensatory mitigation, the Corps and the Department anticipate the establishment of a mitigation bank and/or an ILF (Corps only) mitigation program. Such efforts would assist in addressing the long-term management needs of mitigation lands. A possible option would be to coordinate with the City and/or the Great Park Corporation, who are considering whether to establish an approved mitigation banking instrument and/or ILF program at the Great Park site. However, at the time of this publication, further investigations and discussions were deemed necessary to determine the appropriateness of establishing mitigation banking agreements and/or other third party mitigation programs with the Corps and the Departments (see further discussion in Section 2.1.4, Mitigation Coordination Program).

As part of the SAMP, the Strategic Mitigation Plan, along with identification of the aquatic resource integrity areas, has been designed in cooperation with, and to the satisfaction of, the Corps and the Department to avoid any apparent conflicts with the other ecosystem reserve and restoration efforts, including the NCCP. Furthermore, the proposed riparian corridor(s) of the Orange County Great Park were designed in coordination with, and to the satisfaction of, the Corps and the Department.

2.1.4 Mitigation Coordination Program

2.1.4.1 Specifications of Program

The Mitigation Coordination Program is intended to guide implementation of the Strategic Mitigation Plan and to support long-term restoration and conservation goals and management strategies for the Watershed's aquatic resource integrity areas identified through the SAMP analysis. Moreover, the Mitigation Coordination Program is a tool for implementing the restoration or enhancement of degraded aquatic resources, which upon restoration should receive the benefits of coordinated long-term monitoring and maintenance activities.

The program is organized into two tiers and summarized below. Details are provided in Section 5.1.1 and 5.1.2 of the Corps SAMP document (Corps, 2008).

Tier One: Priority Activities:

 <u>Coordinate Aquatic Resource Restoration Efforts</u> – to ensure degraded sites are restored or enhanced so that functional gains to the Watershed are realized. This could be done via creation of a protocol acceptable to landowners/managers whereby they would allow restoration or enhancement efforts to occur on their lands.

Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

- <u>Coordinate Long-term Adaptive Management, Monitoring and Maintenance Efforts</u> to manage aquatic resource integrity areas so degradation of natural or near natural aquatic resource areas over time does not occur, and to manage compensatory mitigation sites beyond the short-term five year monitoring and maintenance period. This could entail the establishment of a Corps- and Department-approved mitigation bank and/or in-lieu fee mitigation program (Corps only) to undertake long-term management.
- <u>Implement Strategic Mitigation Plan</u> to guide implementation of the SAMP Strategic Mitigation Plan and update the plan based on implementation of restoration activities and monitoring data so that it is reflective of changes in the ecosystem over time.
- <u>Solicit Sponsor(s) of Third Party Mitigation Program and/or Mitigation Bank</u> to conduct and oversee long-term management activities within the aquatic resource integrity areas and take other actions to help implement the Strategic Mitigation Plan, under a formal agreement with the Corps and Department. Funds would be generated from future project proponents/permittees that would have the option to pay into a third-party mitigation program or bank as well as from appropriate grant sources. The Department requires that a SAA through the WSAA Process identify the specific location(s) of the compensatory mitigation, so the third-party mitigation program sponsor would be required to link the mitigation actions with the project SAA.

Tier Two: Secondary Activities

- <u>Work with Watershed Stakeholder Groups -</u> to integrate with existing watershed management and aquatic resource conservation efforts in the Watershed so that the Corps and Department's regulatory functions (via the SAMP/WSAA Process mitigation and coordination program) can support more comprehensive management efforts that are ongoing and/or planned for the Watershed by other agencies and groups (e.g. Corps Planning Division, RWQCB, County of Orange, Nature Reserve of Orange County (NROC), California Wetlands Recovery Project, Southern California Coastal Water Research Project, City of Irvine, etc).
- Facilitate the Sharing and Use amongst the Watershed Managers of Scientific, Technical Data Available on the Aquatic Environment – to enable a more accurate adaptive management process as well as reduce program costs, and facilitate a more collaborative relationship among stakeholders.
- <u>Facilitate Aquatic Ecosystem Restoration and Enhancement Activities Unrelated to</u> <u>Regulatory Programs or Compensatory Mitigation</u> – by providing information (such as for example, site design criteria for riparian ecosystem restoration), to groups and land owners/managers interested in conducting non-mitigation aquatic resource enhancement and restoration projects within aquatic resource integrity areas.

2.1.4.2 Strategy for Coordination Identified

The recommended strategy for establishing a Mitigation Coordination Program would build upon existing alliances and suggest mechanisms to address the specific long-term management needs of aquatic resources. Alternative models considered are identified and discussed in terms of the broader Watershed context (Appendices 5 and 6 of the Corps SAMP document (2008)). This strategy recognizes that a cooperative effort on the part of the Watershed stakeholders would be required to ensure long-term

conservation of high value resources since watershed-wide aquatic resource conservation extends well beyond the scope or jurisdiction of one agency or land owner/manager.

Several open space and reserve programs already exist in the Watershed, including the NCCP Reserve, a 37,380-acre terrestrial habitat reserve system, which is administered by NROC. The Irvine Ranch wildlands and parks (formerly the Irvine Ranch Land Reserve), overseen by the Irvine Ranch Conservancy, the City of Irvine's Open Space Nature Preserve, and other city open space areas serve recreational and conservation purposes. Generally, the focus of these existing programs has been recreation and the protection and conservation of upland terrestrial natural resources. In contrast, the focus and purpose for this new Mitigation Coordination Program is to bring attention to and coordinate management to the particular conservation needs of aquatic resources, primarily the riparian ecosystems in the Watershed.

The Corps conceptual model for a management structure entails the following:

- Coordination Committee; and
- Mitigation Coordination Program Administrator, Mitigation Bank or other Third-Party Mitigation Program Sponsor

Section 5.2 of the Corps SAMP document (Corp, 2008) contains specific details on potential entities and roles/responsibilities for the Coordination Committee and Program Administrator/Sponsor.

2.1.5 SAMP Implementation

This section summarizes the next steps to finalizing the SAMP as well as what is needed to ensure successful implementation of the SAMP elements. Also included in this section is a discussion about the duration and applicability of the SAMP.

2.1.5.1 Finalizing the SAMP

With the publication of this Draft Program EIS/EIR and the Corps SAMP document, the Department has included draft template SAAs and the SAA Templates Master Conditions List for review and comment (Appendix D). Similarly, concurrent with the publication of the Draft Program EIS/EIR, the Corps included a Special Public Notice announcing its intentions to revoke the use of selected NWPs in the Watershed and to establish procedures for issuing LOPs to authorize activities that meet the terms and conditions of the LOP procedures, regardless of whether the proponent participated in the SAMP formulation (Appendix C-1).

As described in Section 2.1.2.3, the LOP procedures would entail requirements for the preparation of a tiered environmental assessment and public interest review. Since categories of activities eligible for LOP procedures are evaluated in this Program EIS/EIR, the Corps would tier subsequent project-specific environmental review from this EIS/EIR, in accordance with 40 CFR 1502.20 of CEQ's NEPA regulations. Consequently, the environmental impact assessment for future project-specific LOPs would be shortened to focus issues for environmental review and decision and eliminate repetitiveness.

Additionally, the Corps included a Special Public Notice announcing the proposal to establish the RGP for routine maintenance activities in jurisdictional areas outside the aquatic resource integrity areas

(Appendix C-2). As described in Section 2.1.2.3, this RGP would cover the future maintenance projects for project proponents whose activities meet the terms and conditions of the RGP, regardless of whether the proponent participated in formulation of the SAMP.

Following the finalization of this Program EIS/EIR and adoption of the SAMP, the Corps would issue its ROD. Then, the Corps would formally establish its SAMP permitting (revocation of selected NWPs, establishment of LOP procedures and an RGP) and mitigation framework. Permits could be issued under the SAMP permitting process, including the mitigation framework. The Corps would tier its project-specific environmental review for any future permit actions from this Program EIS/EIR, in accordance with 40 CFR 1502.20 of CEQ's NEPA regulations.

Similarly, the Department would verify that future projects meet the conditions of the WSAA Process, including CEQA requirements, and enter into a SAA (or MSAA), tiered off of this Program EIS/EIR, with project proponents.

Permits and special conditions and any subsequent SAA (or MSAA) and its conditions would require the permittee/project proponent to implement mitigation requirements per the SAMP mitigation framework, which may include a combination of avoidance/preservation, restoration, creation, enhancement, and/or acreage equivalent fees to an approved third-party mitigation program for long-term adaptive management. The permit special conditions would reference the SAMP and this Program EIS/EIR for the SAMP/WSAA Process. In this way, the permittees would help implement the long-term aquatic resource conservation and management program. The agencies anticipate a phased implementation of the Mitigation Coordination Program, including the formation of a Coordination Committee by the SAMP participating entities (i.e. resource agencies, private and public land owners and managers).

In the interim period before the SAMP is finalized, project applications will be evaluated in terms of the SAMP Analytical Framework. Moreover, the proposed SAMP mitigation policies and Strategic Mitigation Plan will inform the Corps and the Department's decisionmaking processes within the Watershed.

21.5.2 Term of the SAMP and Permitting Procedures

Since the SAMP is a plan, it has no expiration date per se. Similarly, the elements of the SAMP, including the regulatory procedures, have no expiration date.

In contrast, different regulatory authorizations may have expiration dates. For instance, under Corps regulations (33 CFR Part 325), the Corps may authorize an RGP for a five-year term with the option to renew, but an individual project authorized for work by the RGP would have an approved maintenance window with an expiration date ranging from a few months to less than two years, depending on the project. The LOP procedures would be established for an indefinite period, and until subsequently modified or replaced. However, a specific project authorized by an LOP would be granted a reasonable period of time for construction that would be determined on a project basis, as appropriate to the scope and nature of the particular authorized activity and in accordance to Corps regulations, but generally would be two years. Since a jurisdictional determination verified by the Corps is valid for up to five years unless new information warrants revision of the determination before the expiration date, any long-

term LOPs with durations of greater than five years may include additional notification and verification requirements.

Similar to the LOP procedures, the Department's WSAA Process has no expiration date. The Watershed template SAAs and the SAA Templates Master Conditions List would be reviewed periodically to ensure consistency with the streambed alteration agreement program. Individual SAAs would have expiration dates determined on a project basis, as appropriate to the scope and nature of the particular authorized activity, but generally an SAA expiration date would correspond to that of the Corps authorization (i.e., RGP, LOP, or SIP).

The Corps and Department will retain the right to revoke, suspend or terminate a Corps LOP or RGP or Department SAA, respectively, held by one or more permittee in the event of a violation of the terms and conditions of the Corps LOP or RGP or Department WSAA. Neither the Corps nor the Department shall initiate an action to revoke any Corps LOP or RGP or Department SAA without first pursuing applicable processes as specified in the Corps or the Department's regulations. Any action to suspend activities or privileges under a Corps LOP or RGP, or a Department SAA, to the maximum extent consistent with the purposes of the suspension or revocation, shall be limited to address the discrete action or inaction underlying the suspension or revocation, in order to minimize any impacts on the responsible party and other parties.

21.5.3 Transition to the SAMP/WSAA Process

The effective date will be posted in a subsequent Public Notice/Notice of Decision following the Corps Record of Decision and the Department's certification of the Program EIS/EIR. The SAMP/WSAA Process will apply to applications for permits and agreements received after the effective date of the SAMP/WSAA Process.

Complete applications for permits and agreements received prior to the effective date will be processed in accordance with the previous permitting processes. Nevertheless, applications received prior to the effective date or in the application phase at the publication of this Program EIS/EIR should consider the SAMP tenets, Analytical Framework, mitigation framework, and Strategic Mitigation Plan to the maximum extent practicable. Since the Final Mitigation Rule became effective, the Corps and the Department believe many of the requirements of the Mitigation Rule are incorporated into the SAMP/WSAA Process mitigation framework. Furthermore, the Final Mitigation Rule endorses the use of watershed plans when available and the SAMP is an available watershed plan.

After the effective date, permittees with existing standard individual permits and standard or master streambed alteration agreements shall be eligible for extensions and minor modifications without triggering the SAMP/WSAA Process permitting processes. Significant increases in scope of a previously permitted activity will be processed as a new application for permits (33 CFR Section 325.7) and agreements, and as such will be subject to the SAMP/WSAA Process. However, the Corps and the Department will take into account whether applying the new SAMP/WSAA Process to a particular project would result in a substantial hardship to an applicant. The Agencies will consider whether the applicant can fully demonstrate that substantial resources have been expended or committed in reliance on previous permitting processes or compensatory mitigation in determining the extent to which new provisions under 2-90 Section 2

the SAMP/WSAA Process will apply. In most cases, final engineering design work, contractual commitments for construction, or purchase or long-term leasing of property will be considered a substantial commitment of resources.

After the effective date, activities authorized under current NWPs scheduled for revocation that have commenced or are under contract to commence by the effective date, will have twelve months to complete the activity under the terms and conditions of the current NWPs (33 CFR 330.6(b)). Activities completed under the authorization of an NWP which was in effect at the time the activity was completed will continue to be authorized by that NWP (33 CFR 330.6(b)). Activities that remain incomplete after the close of the grandfather period will require new authorization under the SAMP permitting processes.

Corps and Department-approved mitigation plans for compensatory mitigation projects associated with either previously authorized permits/agreements, or complete applications for permits and agreements that were received prior to the effective date, will remain valid.

2.1.6 Beneficial Effects of the Proposed SAMP Permitting/WSAA Process in comparison to the Current Permitting/Agreement Process

21.6.1 Streamlined Process, More Predictability, More Effective Protection

Corps Permit Process

The proposed SAMP permitting program would result in new watershed-specific RGP and LOP procedures (and some remaining NWPs). These new permit mechanisms would be available for regulated activities that are consistent with the SAMP Analytical Framework and intended to minimize delays for activities with minimal impacts. Project applicants may utilize the new SAMP permit procedures if they can meet the requirements set forth in the proposed permits as discussed in Section 2.1.2.3 including the impact acreage thresholds and the various permit conditions. The option to utilize a SIP and standard streambed alteration agreement would still remain as needed for certain projects that do not meet the eligibility requirements of the RGP or LOP.

The watershed-based alternatives analysis and compliance with the Section 404(b)(1) Guidelines will be completed as part of the proposed SAMP. Eligible regulated activities (primarily maintenance activities) that would result in temporary, minor impacts (0.5 acres of waters of the U.S. of which only 0.1 acre may be vegetated with native riparian and/or wetland vegetation) and mitigated per the mitigation requirements of the SAMP mitigation framework could qualify for the RGP. LOP procedures would apply for regulated activities in non aquatic-resource integrity areas, (no specific impact acreage thresholds) and in aquatic resource integrity areas on a conditional basis for temporary impacts (for the purpose of maintaining established structures) and permanent impacts (up to 0.1 acres of waters of the U.S.). The LOP procedures would also be available for regulated discharges in the five major stream systems (which are aquatic resource integrity areas) in accordance with LOP criteria.

The extent of development in the Watershed will be reduced after the remaining City of Irvine Planning Areas are built-out. Thus, most future proposals for land development projects are not expected to involve large acreage areas or high quality resources. Much of the high quality aquatic resources have been avoided as a result of the early SAMP planning process. Examples of minor, low-impact projects still likely to occur in the future are: flood control-related activities such as repair of bank stabilization features and channel/basin dredging after flood events; minor utility maintenance projects; and restoration/enhancement activities that generally conform to the RGP. None of these projects would involve the permanent removal of any aquatic resource (in terms of both acreage and function). In fact, the total acreage of riparian resources would be expected to increase over time as SAMP mitigation/restoration/enhancement projects are implemented and targeted to key locations that would improve functional integrity of the Watershed overall and increase the acreage of aquatic resource integrity areas.

The RGP and LOP authorizations would minimize delays for projects with minimal impacts on the aquatic environment and provide more effective protections to the aquatic environment by strengthening the review process and establishing a mitigation framework and General Conditions based on specific activity and location in the Watershed. (See Section 2.1.2.6 regarding SAMP mitigation requirements and Tables 2-3 and 2-4 for General Conditions applicable to the LOP and RGP, respectively). The Mitigation Coordination Program involves establishing a program-level management structure to implement the Strategic Mitigation Plan and help insure long-term management and success of mitigation and restoration sites.

Overall, the SAMP permit program assists applicants and the Corps in complying with the Section 404(b)(1) Guidelines through more effective and proactive avoidance, minimization, and compensation of impacts to aquatic ecosystems. It also allows for better coordination between federal and state agencies. These steps would strengthen aquatic resource protections in higher value areas and provide regulatory flexibility for activities in lower value resource areas in situations where the impacts are not substantial. Specific areas identified as lower integrity resource areas are suitable for a stream-lined permitting process for certain classes of activities. Table 2-15 provides further comparisons between the current and proposed permitting procedures. Also, see Section 8.7 of this document (Effects of SAMP Coordinated Permitting Procedures on Future Applicants) for a further discussion.

Tonia	Current Dormit Dropoog	Proposed SAMP Permit/
Горіс	Current Permit Process	WSAA Process
Magnitude of Impacts	Range from minimal to significant; SIPs and individual Streambed Alteration Agreements (SAAs) likely.	Minimal, targeted to low integrity areas, not significant if in compliance with process; fewer SIPs, individual SAAs
Cumulative Impacts	Addressed in SIPs, but not through NWP process.	Addressed in proposed process, designed to reduce watershed-wide impacts to less than significant level.
Scale	Site-specific.	Watershed.
Mitigation	Site-specific; constrained by on- site situation; no holistic approach.	Watershed-scale; focuses on areas with the highest "functional lift."
No Net Loss	Net loss of wetlands (due to low success of mitigation) and non-wetland waters.	Net gain expected with Mitigation Coordination Program; restoration projects identified for targeted areas.
Wetland Types	Change of types.	Maintenance of types.
Avoidance	Completed as part of each permit; focus on project site.	Completed up-front in during SAMP planning process; focus on minimization measures.
Aquatic Resource Protection	No formal plan in place; conservation easements are protective yet may be scattered throughout the Watershed.	Watershed-scale, aquatic resource integrity areas subject to greater protections via review process, mitigation requirements and general conditions.
Special Conditions	NWP conditions, Corps Los Angeles District Regional Conditions, Standard CDFG Section 1600 conditions.	General Conditions and mitigation policies adapted for the Watershed.
Project Location in Watershed	Sites can be within high or low quality areas, and evaluated equally with same mitigation requirements.	Sites can be within high or low quality areas, but extent of evaluation and mitigation requirements based on integrity of the site.
Pre-project Coordination	Little or none.	Required.
Tracking of Data	Lack of data before Corps RAMS database.	Detailed project and mitigation data tracked with RAMS2 and GIS software. Long-term data tracking via Mitigation Coordination Program

Table 2-15.Comparison of Current and Proposed Permitting Processes

Comparisons between the existing permitting system and the proposed system in terms of response times by the Corps are summarized in Table 2-16. Determining factors are whether a proposed project is located within the areas eligible for LOP procedures or RGP permitting (i.e., whether the area is of lower aquatic resource value), whether there are temporary or permanent impacts, and the size of the impact to Corps jurisdictional areas. The proposed process offers better predictability for the regulated community in terms of mitigation requirements and conditions established upfront in the RGP and LOP. For projects that propose to impact higher value aquatic resources, a greater level of scrutiny would be expected during the permit review process, even for those projects that could have been processed as an NWP under the current permit process.

For most projects, the SAMP LOP and RGP processing times would be shortened. Other examples of stream-lined permitting may include the future development of a joint Agency Notification/Application form and the elimination of some application requirements (e.g. those associated with agency coordination) for applicants who participated in the SAMP planning process.

Area and Activity Eligible for SAMP LOP Procedures or RGP Permitting	Impact Situation	Current Permitting System	Proposed Permitting System
RGP Eligible (outside aquatic resource integrity areas)	\leq 0.5 acre temporary impact with only 0.1 acres native riparian and/or wetland vegetation	NWP Response in ≤ 45 days	RGP Response in ≤ 15 days
RGP Eligible (inside aquatic resource integrity areas)	Not Applicable	NWP Response in ≤ 45 days	LOP Response in \leq 45 days
LOP Eligible (inside aquatic resource integrity area)	≤ 0.1 acre permanent impact	NWP Response in ≤ 45 days	LOP Response in ≤ 45 days
LOP Eligible (outside aquatic resource integrity area)	\leq 0.1 acre permanent impact and \leq 0.25 acre temporary impact to vegetation	NWP Response in ≤ 45 days	LOP Response in ≤ 45 days
LOP Eligible (outside aquatic resource integrity area, but with channelization or stream conversion of mainstem channels)	Not Applicable	NWP Response in ≤ 45 days or SIP Response in ≤ 120 days	SIP Response in ≤ 120 days
LOP Eligible (outside aquatic resource integrity area and no channelization or stream conversion)	\leq 0.1 acre permanent impact and \leq 0.25 acre temporary impact to vegetation	SIP Response in ≤ 120 days	LOP Response in \leq 45 days or SIP Response in \leq 120 days

Table 2-16.	Comparisons Between Corps Current and Proposed SAMP Permitting Program in
	Terms of Processing Times

Revoke NWPs

To implement a more effective permitting process that considers the condition of the aquatic resources being affected within the Watershed, the Corps proposes to revoke certain NWPs, and to retain other NWPs that handle small projects with little or no permanent losses of aquatic resources. Revoking several NWPs within the Watershed would be consistent with 33 CFR 330.5(c). In consideration of the SAMP watershed-wide assessment, the current permitting system may not be as effective in protecting aquatic resources. For instance, in some situations, the NWPs may be insufficiently protective of the higher aquatic resource value areas against cumulative impacts measured on a Watershed scale. In other situations, some of the NWPs may be overly restrictive for projects with minor impacts to the aquatic

environment. Applicants who meet the specific activity and acreage thresholds may qualify for streamlined processing under the proposed RGP and LOP procedures. Section 8.7.1 of this document contains a more detailed discussion and analysis of the revocation of selected NWPs for this Watershed.

Department's Watershed-Specific Permitting Process

The Department's proposed alternate permitting strategy for the Watershed is the WSAA Process, which includes three template SAAs and a SAA Templates Master Conditions List. Similar to the Corps LOP procedures, qualification for the WSAA Process would be based on compliance with specified criteria including consistency with the SAMP. Activities regulated under Section 1600 *et seq.* of the FGC, as amended January 1, 2004 and ineligible for the WSAA Process would be evaluated through a conventional SAA (or MSAA) process. For most projects under the WSAA Process, the SAA (or MSAA) processing times would be shortened, especially when the Department is the lead CEQA agency. Also, the proposed WSAA Process offers better predictability for the regulated community in terms of mitigation requirements and conditions established upfront in the template SAAs and SAA Templates Master Conditions List. Another example of stream-lined permitting includes elimination of some application requirements (e.g. those associated with agency coordination) for applicants who participated in the SAMP planning process. Also, for many projects, CEQA compliance for a SAA or MSAA can be tiered off of this Program EIS/EIR, which can save time and resources for the Department and applicants. See Section 8.7.5 of this document (Effects of the Department's WSAA Process as Part of the SAMP's Coordinated Permitting Processes) for more discussion.

21.6.2 Resource-Based Evaluation of Proposed Activities

Unlike the current permitting system, the SAMP permitting program and WSAA Process is based on the SAMP Analytical Framework (functional integrity analysis) to better guide the Corps and the Department in their permit decisions for regulated discharges. Under the proposed SAMP LOP and WSAA Process, the Corps and the Department would restrict the applicability of such permitting procedures for discharges of dredged and fill material and/or alterations to lakes and streambeds in high integrity aquatic resource areas. For the Corps, the LOP procedures are restricted to temporary impacts (for purposes of maintaining established structures) and permanent impacts up to 0.1 acres of waters of the U.S. Such projects would be subject to greater levels of scrutiny during the permit review process, stricter General Conditions, and greater mitigation requirements than under the current permitting system. No revoked NWPs or the proposed RGP could be issued for discharges in aquatic resource integrity areas. Projects not eligible for the LOP (e.g. greater than 0.1 acres of permanent impacts) and WSAA Process would be subject to the existing SIP and standard SAA (or MSAA) processes.

Outside of aquatic resource integrity areas, aquatic resources were identified as being of lower value on a Watershed basis. Within these less sensitive resource areas, the permitting process would involve a more streamlined process such as the RGP and WSAA Process (SAA template levels 1 and 2) to minimize delays and to provide certainty to the applicant, while providing appropriate aquatic resource protection.

2.1.6.3 Avoidance and Minimization

Through the Corps landscape level functional integrity analysis (part of the SAMP Analytical Framework), the Corps identified high integrity areas, which contain higher quality aquatic resources.

These high integrity areas include aquatic resources with medium to high hydrologic, water quality, and/or habitat integrity; aquatic resources providing habitat for threatened and endangered species; and headwater stream systems.

The Corps and the Department worked with Participating Applicants to avoid higher-value aquatic resources and to establish policies to promote aquatic resource ecosystem functions and values in the Watershed. This process allows for better balancing of aquatic resource protection and reasonable development not attainable by conventional project-by-project review, which is limited in its capacity to evaluate proposed projects on a watershed-wide basis. Many of the high integrity areas that were avoided as part of the SAMP/WSAA Process planning elements overlap with areas protected under the NCCP. While the NCCP focuses solely on upland habitats, the SAMP/WSAA Process focuses on riparian habitats, and thus the two processes are complementary, and provide for the conservation of resources.

2.1.6.4 Watershed-based Mitigation

As discussed previously, the Strategic Mitigation Plan includes a new mitigation framework, priority locations for restoration and enhancement in the Watershed, and an associated Mitigation Coordination Program to guide the implementation of mitigation and ensure long-term management of mitigation/restoration sites. Applicants would also have to provide, through a "notification," a proposed mitigation plan in order to qualify for the LOP, RGP or WSAA Process. One or more proposed mitigation scenarios for a project/activity's impacts to streams and lakes and associated riparian resources would need to be included as part of the notification package. Included with the notification would be information consistent with SAMP/WSAA Process mitigation requirements. For example, additional information and reports concerning adequacy of hydrology and soil, cultural resources, as well as information and reports concerning real property matters and land uses relative to the suitability of the proposed mitigation site.

The SAMP mitigation requirements are more protective and are more suited to the Watershed than the currently used requirements. Mitigation planning would have a watershed focus, be designed to achieve no net loss and reduce cumulative impacts overall by targeting restoration/enhancement in areas that would provide an increase in functional benefit to the Watershed. Further, the proposed Mitigation Coordination Program would help ensure that the mitigation/ restoration/enhancement projects are carefully managed and monitored over the long-term to ensure their success in the Watershed. The SAMP/WSAA Process is not proposed to be a "cure all" for all past impacts in the Watershed. Rather, it focuses on avoiding and minimizing future degradation and restoring key locations in the Watershed, thus providing cumulative benefits to aquatic resource integrity overall that could not be achieved under the current permitting system.

The proposed SAMP permitting program and WSAA Process, including the mitigation requirements is consistent with the Federal goal of no overall loss of wetlands, as well as the State's goal of *no overall net loss and to achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values* in a more efficient manner. The new procedures would allow for GIS-based planning and tracking of mitigation sites, increased mitigation performance standards as compared to regulations and policies of the past decade, and an ability to determine mitigation requirements on a functional basis

(according to integrity, not just acreage). And if the mitigation is not acceptable, then the process would default to a SIP and standard SAA process, thus allowing for agency coordination and a public comment period.

As this is a proposed watershed permitting process and mitigation program, it would not, by definition, include Newport Bay as a planning element. However, Newport Bay is the receiving water for the Watershed, and would be expected to benefit from the proposed, more protective, permitting and mitigation program.

2.1.6.5 Conformity Requirements

A permittee's application would need to include substantial conformance statements that explain in sufficient detail how the proposed project/activity is in substantial conformance with the SAMP to obtain authorization under the permitting procedures for an LOP, RGP, and WSAA Process. Focused site-level delineations and biological assessments would need to be compared against the Corps PLD (Lichvar, 2000). If the project/activity is not in substantial conformance, the project would not qualify for this program, and notification would be by the standard permitting process.

With regards to mitigation, the notification/application would be required to include "substantial conformance statements" that explain in sufficient detail how the proposed mitigation for the project/activity is in substantial conformance with the mitigation scenarios analyzed in this Draft Program EIS/EIR If the proposed mitigation is not in substantial conformance, the project would not qualify for the SAMP LOP, RGP, or WSAA Process, and notification would be by the standard permit processes.

2.2 ALTERNATIVES TO THE PROPOSED SAMP/WSAA PROCESS

NEPA and CEQA require that a "reasonable range of project alternatives" be prepared as part of the public environmental review process for projects requiring a federal EIS and/or state EIR. The range of potential alternatives should include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The range of alternatives addressed in this EIS/EIR includes alternatives that are specifically required under state and federal law such as the No Action, Avoidance of Impacts, and Existing General Plan Alternatives. The alternatives may or may not contribute to achieving the goals and purposes of the SAMP/WSAA Process program.

The required alternatives are presented in this EIS/EIR as Alternatives 1 through 4. In addition, the alternative intended to address the purposes and goals of the SAMP/WSAA Process is presented in this EIS/EIR as the proposed SAMP/WSAA Process (Alternative 5), described in Section 2.1. Overall, the five conceptual alternatives allow for a programmatic comparison of potential impacts resulting from implementation of regulated activities under alternative permitting scenarios. None of the alternatives are specific projects but are variations of permitting programs to regulate the discharges of dredged or fill material into waters of the U.S. and Department jurisdictional waters. Alternatives 1 through 4 are variations in permitting scenarios that reflect differing levels of aquatic resource protection. These alternatives allow for a comparison with the proposed SAMP Permitting Program/WSAA Process.

Descriptions of the scope and conceptual basis of the various alternatives considered in addition to the proposed SAMP/WSAA Process are provided below. A table summarizing the key characteristics of each alternative is provided at the end of this section (Table 2-17). Environmental analysis and comparison of the alternatives is presented in Section 5 of this document.

2.2.1 No Project (Existing Case-by-Case Permitting) – Alternative 1

Under the No Project Alternative, no watershed-based planning and permitting would be utilized by the Corps or the Department, which means the Corps and the Department would not use the SAMP Analytical Framework (e.g. functional integrity evaluation of the Watershed) and would not modify permitting procedures to reflect the integrity of aquatic resources. Essentially there would have been no planning to realize the SAMP tenets. Further, no Strategic Mitigation Plan or Mitigation Coordination Program would be implemented to allow for targeted mitigation/restoration to help improve functional integrity of the Watershed and no long-term management/monitoring of mitigation/restoration sites. Proposed actions that involve impacts to jurisdictional areas within the Watershed would continue to be considered on a case-by-case basis, as done under the current permit system which involves use of NWPs and SIPs and individual SAAs. Mitigation would continue to be implemented on a case-by-case basis without regard to overall functional integrity, and thus, produce no measurable, cumulative benefit to the Watershed.

This alternative assumes that some impacts to wetlands, streams, and riparian areas would be authorized by the Corps and the Department pursuant to CWA Section 404 and the FGC Section 1600 *et seq.* Accordingly, both temporary and permanent fill in waters of the U.S. and Department jurisdictional waters would be allowed for residential, commercial and institutional land development, bridge construction and maintenance, and construction/maintenance of utility lines and other public facilities such as flood control channels and storm water treatment facilities. Additionally, the Corps permit actions would require certification from the RWQCB that impacts to water quality have been minimized in accordance with CWA Section 401.

Under case-by-case permitting, the Corps and the Department would evaluate the environmental impacts of individual actions. Under the Corps Section 404 regulatory program, applicants would be required to show that individual projects had avoided impacts to jurisdictional areas to the maximum extent practicable. The feasibility of avoidance of jurisdictional areas for individual projects would be determined based on a consideration of the economic factors, engineering requirements, and land use constraints of individual projects pursuant with the Section 404(b)(1) Guidelines. It is likely that consideration of individual permit applications would result in the authorization of impacts to some high quality jurisdictional areas where such impacts could not, on an individual project level, practicably be avoided. The permitting decision for individual projects would ultimately depend on the ability of the project to comply with the Section 404(b)(1) Guidelines and the Corps public interest review wherein project benefits are balanced against the reasonably foreseeable impacts. Because the permitting process would be authorized. However, it is assumed that the Corps would continue to regulate in compliance with the federal policy of no net loss of wetlands.

For projects having the potential to substantially adversely affect existing fish or wildlife resources, the Department would enter into individual SAAs under Section 1600 *et seq.* of the FGC. Such agreements

2-98

would include measures deemed necessary by the Department to protect fish and wildlife resources. Because the Department would negotiate the terms of any such agreements on a case-by-case basis, it is impossible to identify or quantify the impacts that would be authorized.

2.2.2 Complete Avoidance (No Permits Issued) – Alternative 2

Under Alternative 2, Complete Avoidance, activities that would encroach on Corps or Department's jurisdictional areas would not be permitted. No watershed planning effort would be undertaken by the Corps and the Department (e.g. no use of the SAMP Analytical Framework, no modified permitting procedures to reflect the integrity of aquatic resources, no Strategic Mitigation Plan or Mitigation Coordination Program).

At a program level, implementation of this alternative would constitute pre-decisional, upfront permit denials of all applications for regulated discharges. It is recognized that it is beyond the Corps and the Department's authority to preclude applications for permits/agreements in the Watershed. However, from a regulatory perspective, it could be implemented in other ways such as: (1) EPA could invoke their authority under Section 404(c) of the CWA by specifying any defined area(s) as a disposal site, and to deny or restrict the use of any defined area for specific plans and enact zone changes to restrict uses in certain areas; or (3) local land use or resource agencies, or landowners could issue conservation easements or other legal protections to restrict activities in jurisdictional areas. While such regulatory actions are not likely to be implemented, this alternative is included as a means for comparing the proposed SAMP/WSAA Process to an alternative that would not result in any change to existing resources, and thus would avoid any potential impacts under the SAMP/WSAA Process and would alleviate the need for the SAMP/WSAA Process mitigation requirements.

Under this alternative, development in upland areas could not occur if access required bridging of jurisdictional features since no permits would be issued for impacts to jurisdictional areas. Under this alternative, full development of the MPAH could not occur, which would affect the ability to provide access through some remaining undeveloped areas of the Watershed. Since no direct temporary or permanent impacts to jurisdictional areas would occur, no mitigation would be required.

2.2.3 Avoidance Except for Bridges and Utility Lines (Limited Permitting) – Alternative 3

Under Alternative 3, Avoidance Except for Bridges and Utility Lines, the Corps and the Department would issue permits (under the existing permitting system) for encroachment in jurisdictional areas for construction and maintenance of bridges and utility lines only. No watershed planning effort would be undertaken by the Corps and the Department (e.g. no use of the SAMP Analytical Framework, no modified permitting procedures to reflect the integrity of aquatic resources, no Strategic Mitigation Plan or Mitigation Coordination Program).

At a program level, implementation of this alternative would constitute pre-decisional, upfront permit denials of all applications for regulated discharges except those associated with bridges and utility lines. It is recognized that it is beyond the Corps and the Department's authority to preclude applications for permits/agreements in the Watershed. However, from a regulatory perspective, it could be implemented using three different regulatory actions described in Alternative 2. Although such regulatory actions are highly unlikely, this alternative is included as a means for comparing the proposed SAMP/WSAA Process to an alternative that would reduce the extent of potential impacts to aquatic and riparian resources.

Under this alternative, bridge construction would include both span and conventional pier bridges. Bridge construction/maintenance and utility line maintenance would result in temporary and permanent fill into jurisdictional waters. No land development including public facilities/utilities and associated construction staging areas would be permitted to encroach upon jurisdictional features. Construction of roads and associated bridges would proceed in full accordance with the MPAH. This would include the extensions of Jeffrey Road, Portola Parkway, Alton Parkway, Lake Forest Drive, Bake Parkway, and Santa Maria Avenue. The Corps and the Department would permit bridge construction and maintenance activities under the current permitting (SIPs, NWPs, traditional SAAs) and approval procedures for each agency including mitigation in accordance with existing policies (e.g. no net loss of wetlands). No other dredge and fill activities would be authorized under this alternative including new land development and associated public facilities and utilities, flood control and storm water treatment facilities. The Corps permit actions would require certification from the RWQCB that impacts to water quality have been minimized in accordance with Section 401 of the CWA.

2.2.4 General Plan Build-out without Avoidance (Full Permitting) – Alternative 4

Under Alternative 4, General Plan Build-out, land development would occur in accordance with the local jurisdictional general plans and zoning requirements, utilizing the existing Corps and Department permitting system (SIPs, NWPs, traditional SAAs). No watershed planning effort would be undertaken by the Corps and the Department (e.g. no use of the SAMP Analytical Framework, no modified permitting procedures to reflect the integrity of aquatic resources, no Strategic Mitigation Plan or Mitigation Coordination Program).

From a permitting perspective, this alternative is similar to Alternative 1, Existing Case-by-Case Permitting. However, from an impact perspective, this alternative, which is an artifact of the Corps original alternatives analysis (Smith, 2003), represents the worst-case impact scenario. The Corps alternatives analysis examined three conceptual alternatives with varying gradients of impact to compare against the proposed SAMP/WSAA Process impact avoidance and minimization plan. Alternative 2 (Complete Avoidance, no permits) represents the fewest impacts, Alternative 3 (Avoidance except for bridges and utilities, some permits) represents some impacts, and Alternative 4 (full build-out of the General Plan) represents the worst-case impact scenario. Thus, while permitting under this alternative would be existing case-by-case, this alternative would reflect the greatest level of impacts on the gradient of impacts analyzed in the Corps alternative analysis, and is presented in this context herein.

It is assumed for this alternative that there would be no specified local requirements to preserve areas of riparian and aquatic resources, no conservation easements, no specified buffer zones, and no setbacks from drainages. Hence, under this alternative most drainages would be modified (e.g., channelization, bank protection) to accommodate adjacent land development associated with full build-out of the General Plan. Table 2-17 summarizes the key characteristics of the SAMP/WSAA Process and alternatives.

Alternatives	Permanent Fill in waters of the U.S. ¹ and Impacts to 1600 Streambeds ²	Bridge Impacts in waters of the U.S. ¹ and 1600 Streambeds ²	Temporary Fills in waters of the U.S. ¹ and Impacts to 1600 Streambeds ²
Proposed SAMP/WSAA Process	Yes	Yes	Yes
No Project Alternative – Alternative 1	Yes	Yes	Yes
Complete Avoidance – Alternative 2	No	No	No
Avoidance Except for Bridges and Utility Lines – Alternative 3	Yes – for bridges only	Yes	Yes – for maintenance of bridges and existing utility lines only
General Plan Build Out without Avoidance – Alternative 4	Yes	Yes	Yes

Table 2-17. Key Characteristics of SAMP/WSAA Process and Alternatives

1 waters of the U.S. as defined by the CWA.

2 Streambed as defined by the FGC (may include adjacent riparian habitat).

2.2.5 Off-Site Alternatives

The proposed SAMP/WSAA Process is a watershed (landscape-level) approach to managing riparian ecosystem integrity while allowing economic uses to be permitted within the Watershed consistent with the requirements of federal laws (CWA Section 404) and state laws (FGC, Section 1600 *et seq.*). It is a plan for a permitting/mitigation program, not a specific project for which an alternative location could be evaluated in an alternatives analysis.

Under the SAMP/WSAA Process, state and federal waters, including wetlands in the Watershed have been identified and ranked based on their hydrologic, water quality and habitat integrity (functional integrity). A watershed-specific permit program has been developed based on the functional integrity rankings to increase the Corps and the Department's capacity to make more informed permit decisions. Future activities proposed in aquatic resource integrity areas would be closely scrutinized by the agencies during the permit review process, thus increasing the opportunities for avoidance. Unavoidable impacts in any jurisdictional areas of the Watershed would be minimized and fully mitigated under the SAMP/WSAA Process in accordance with the Strategic Mitigation Plan.

Since the SAMP/WSAA Process has been developed based on location-specific planning criteria and analysis, its goals cannot be accomplished in another watershed. Therefore, there are no off-site alternatives to the SAMP/WSAA Process that could accomplish the watershed-specific aquatic resource conservation and economic development goals of the SAMP/WSAA Process for the Watershed in Orange County.



Figure 2-2 Aquatic Resource Integrity Areas (Northern Area)

Aquatic Resource Integrity Area

Aquatic Resources

Contributing Upland Areas



Other Aquatic Resources



Road and Highways



Source: Corps of Engineers August, 2007



Figure 2-3 Aquatic Resource Integrity Areas (Southern Area)

Aquatic Resource Integrity Area

Aquatic Resources

Contributing Upland Areas



Other Aquatic Resources

Road and Highways



Source: Corps of Engineers August, 2007







¹ Five streams: Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek



Figure 2-6. Flow diagram for Department WSAA Process for San Diego Creek Watershed







Figure 2-10







3.0 BASELINE CONDITIONS

3.1 AQUATIC, WETLAND AND RIPARIAN HABITATS

The undeveloped areas within the Watershed support both upland and aquatic habitats. The undeveloped areas generally exist along the north and northeastern mountainous zone and southern coastal foothill zone. The aquatic habitat types found in the undeveloped areas can be classified into one of four different major habitat classifications: marsh; riparian; lakes/reservoirs; and unvegetated watercourses. Of these major habitat types, riparian areas are the most dominant in terms of coverage. These areas are typically along streams and water bodies in the foothill areas. Riparian coverage is estimated at approximately 1,122 acres or one percent of the entire Watershed. The larger water bodies including lakes and reservoirs comprise less than one percent of the Watershed and are generally located in the northern and southern foothill areas.

Common riparian habitats include willow forests and mulefat scrub, along with freshwater marshes in channels containing perennialized (year-round) flow. Several plant and wildlife species listed as endangered and/or threatened occur within riparian habitats and in adjacent upland habitats. These riparian areas support species such as the least Bell's vireo, southwestern willow flycatcher, and the upland areas include species such as the coastal California gnatcatcher.

Use of the terms "riparian" and "wetland" may lead to confusion unless explicitly defined. Within this EIS/EIR, the following definitions apply (as included in Section 13.0, Acronyms, Abbreviations and Glossary):

Aquatic

General reference to various water-oriented habitats such as rivers, streams, creeks, ponds, lakes, etc. These resources may be perennial, intermittent, or ephemeral in nature.

Waters of the U.S.

Refers to federally regulated rivers, creeks, streams and lakes, bordered by an ordinary high water mark, and extending to the headwaters. Also, includes adjacent wetlands (See 33 CFR 328.3(b); 40 CFR 230.3(s)). Waters of the U.S. are regulated by the Corps 531 U.S. 159 (SWANCC, 2001). The Court found that the Corps could not rely on the presence of migratory birds to find a federal connection to an otherwise isolated, non-navigable water, and therefore, limited the Corps jurisdiction over non-navigable, isolated waters.

Waters of the State

Consistent with the Porter-Cologne Water Quality Control Act, "waters of the state" means any surface water or groundwater within the boundaries of the State of California, including saline waters and perennial, intermittent, and ephemeral rivers and streams (See Water Code section 13050(e)).

Wetland

Refers to the federal definition, and requires three parameters to be present: hydrologic indicators, hydric soil, and hydrophytic vegetation. Wetlands are a subset of waters of the U.S. Wetlands in a riparian context are regulated by both the Corps and the Department.

Special Aquatic Site

Special Aquatic Sites are rare and/or unique habitats inclusive of wetlands, mudflats, pool and riffle areas, vegetated shallows, sanctuaries/refuges, etc., as defined in 40 CFR 230.40-45. With regard to the Watershed, only wetlands (e.g., no mudflats) are present, and are subsequently referred to as Corpsjurisdictional wetlands in the remainder of this document. For the Corps impact analysis and compliance with the 404(b)(1) Guidelines, the term "wetland" is used and the regulatory term Special Aquatic Site is thus inferred. Special Aquatic Sites would be considered a sub-set of waters of the U.S., and a sub-set of the riparian habitat jurisdictional to the Department. Special Aquatic Sites would not be inclusive of non-wetland waters of the U.S.

Riparian

Term used for areas within and adjacent to rivers, streams, and creeks. These areas typically support plant species adapted to (or can tolerate) occasional or permanent flooding and/or saturated soils.

Streambeds

Streambed or stream bed - For the SAMP, the term "streambed" refers to riverine aquatic resources located within the bed, bank, and channel geomorphic features. A streambed may include all or a portion of the riparian zone. Streambeds are a sub-set of aquatic resources, and may overlap with Corps jurisdiction located within the OHWM. Streambed resources include perennial, intermittent, and ephemeral drainages that display a bed, bank, and channel. The Corps regulatory definition of "stream bed" is in terms of its jurisdiction: the substrate of the stream channel between the ordinary high water marks, where the substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed. The Department defines "streambed" as the land beneath a stream and its outermost banks, whereby the streambed includes that portion of a stream channel directly beneath its waters and extends laterally beneath the banks where subsurface hydrologic connectivity exists between the stream and the surrounding land.

Riparian Habitat

Refers to habitat found in a riparian setting, and includes areas within the jurisdiction of both the Corps and the Department. Riparian habitat would contain the applicable river, stream, or creek (within an ordinary high water mark for Corps jurisdiction). Riparian habitat may contain three-parameter wetlands (federal definition), but usually does not. This term refers to streamside habitat that is under jurisdiction of the Department.

Riparian Ecosystem

An ecosystem defined by linear corridors of variable width occurring along rivers, streams, and creeks. Hydrologic interaction (with a river, stream, or creek) and distinct geomorphic features are two unique components of this ecosystem.

3.1.1 Planning Level Delineation of Riparian Ecosystems

The SAMP/MSAA planning process began with a comprehensive analysis of existing conditions within the Watershed. As part of the identification and characterization of existing aquatic resources in the Watershed, the Corps performed two key studies: Planning Level Delineation (PLD) and Landscape Level Functional Assessment (LLFA). These studies are also discussed in the context of the SAMP Analytical Framework in Section 2. The PLD is discussed below, and the LLFA is discussed in the following section (Section 3.1.2).

The Corps (Lichvar et al. 2000) conducted the PLD of aquatic resources within the Watershed, including riparian habitats, wetlands, and non-vegetated streams within the jurisdictions of both the Corps and the Department. Aquatic resources were identified using a high precision PLD approach that adjusts the sampling methods outlined in the Corps Wetlands Delineation Manual (Environmental Laboratory, 1987) and 33 CFR 328 and applies them at a watershed scale. This delineation approach allowed for the identification of different types of waters of the U.S. and State over a large area (watershed scale). While the approach provides a high quality map of jurisdictional wetlands and waters of the U.S., suitable for use in project planning, it does not serve as a substitute for the on-site jurisdictional delineation that is normally conducted as part of Section 404 permit and Streambed Alteration Agreement review process. Details of the PLD methodology are included in Appendix B-1.

In the PLD, Lichvar et al. (2000) evaluated the existing vegetation spatial databases (maps) supplied by the County of Orange (County). Lichvar et al. (2000), though, did not utilize these maps because of the following limitations: 1) numerous rectification problems, 2) lacked sufficient detail to produce acceptable wetland maps, and 3) the spatial extent of the map units was too large to be used for the SAMP/MSAA. In order to develop the wetland delineation map units, Lichvar et al. (2000) developed a new spatial database for use in this project (see the PLD in Appendix B-1 for more details).

Based on the PLD, aquatic resources (inclusive of waters of the U.S. and streambeds) within the Watershed totaled 2,266 acres. There were 354 miles of ephemeral and intermittent stream channels identified as waters of the U.S. These areas were mostly first and second order streams and located higher in the Watershed. Table 3-1 is a summary of the main aquatic resource types found in the Watershed. Figures 3-1a and 3-1b show the results of the PLD for the northern and southern portions of the Watershed, respectively.
Aquatic Resource Type Designations	Total Acres within Watershed
Ephemeral Drainages and Washes	51.8
Intermittent Streams and Creeks	20.9
Perennial Rivers and Streams	213.2
Flood Control Channels	191.5
Spreading Grounds and Detention Basins	107.8

Table 3-1.	Aquatic Resource Types Identified by Lichvar et al. (2000	

The first order streams were digitized by stereoscoping the locations on the aerial photographs and then digitizing the coverage by using the rectified orthophoto quadrangle as a background. The first order streams, identified on the coverages as lines (referred to as 'waters of the U.S.1'), were 15 feet or less wide. These single line features were not associated with other hydrogeomorphic surfaces. In several instances, second and third order streams were also identified as a single line due to their narrow width and lack of other hydrogeomorphic surfaces. Typically, these single-lined second and third order stream channels resulted from human influences that caused down cutting in the channel. Larger intermittent and/or perennial streams were identified on the coverages as polygons (referred to as waters of the U.S.).

Thirty-one vegetation (riparian and some upland) and aquatic resource categories were identified by Lichvar et al. (2000). Fifteen categories accounted for riparian vegetation communities within the study area. The identification of these categories began by using vegetation coverages obtained from Orange County. Additional information about species typically found in these community designations may be found in Lichvar et al. (2000), Corps (2001), and JSA (1993).

Below are summaries of aquatic resources types and riparian vegetation communities as delineated by the PLD protocol. Descriptions are from Lichvar et al. (2000) unless noted otherwise. Table 3-2 shows the relative amounts of riparian habitat mapped within the Watershed.

Aquatic Resource Types mapped within the Watershed

Ephemeral Drainages and Washes. These drainages flow during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. (Federal Register, Vol. 67, No. 10; 2002). They are delineated solely by hydrologic indicators such as the presence of an Ordinary High Water Mark. These drainage features usually provide biogeochemical types of functions. In the PLD, these drainages were typically less than 15 feet wide and were mapped as line features.

Intermittent Streams and Creeks. Intermittent streams and creeks include watercourses such a flood control channels, culverts, streams and rivers that temporarily contain water during rain events and shortly thereafter. Portions of intermittent streams and creeks can be vegetated with plants found in the herbaceous riparian vegetation type and/or the willow riparian scrub, woodland or forest vegetation types. These drainage features may provide functions such as nutrient cycling, groundwater recharge, and habitat support. In the PLD, these drainages were typically greater than 15 feet wide and were mapped as polygon features (vegetated or non-vegetated).

Perennial Rivers and Streams. Perennial rivers and streams include watercourses such as flood control channels, streams, and rivers that contain water year-round. Portions of perennial rivers and streams can be vegetated with plants found in the herbaceous riparian vegetation type and/or the willow riparian scrub, woodland or forest vegetation types. Within the Watershed, most perennial streams result from dry-season runoff from residential areas.

Flood Control Channels. Flood control channels consist of concrete-lined and soft-bottomed watercourses designed to convey large volumes of water during rain events. Flood control channels are generally unvegetated but vary greatly and may support herbaceous riparian, willow riparian scrub and Mule Fat Scrub vegetation types. Many of these channels are routinely maintained by the County (or private landowners), and usually do not contain substantial vegetation growth.

Spreading Grounds and Detention Basins. Basins for detention and groundwater replenishment (spreading basins) consist of enclosed water bodies such as detention/evaporation basins and small ponds. Basins often contain vegetation found in the herbaceous riparian and/or ruderal vegetation types. Within the Watershed, these facilities are routinely maintained (by both mechanical and chemical means) for sediment and vegetation control. Thus, vegetation does not establish within these areas to any great extent. If left undisturbed, or in designated no-maintenance areas within particular basins, riparian vegetation has the potential to develop into dense thickets.

Figure 3-1a. Results of the Planning Level Delineation, Northern portion of the Watershed

Figure 3-1b. Results of the Planning Level Delineation, Southern Portion of the Watershed

Riparian Vegetation Communities mapped within the Watershed

Southern Coastal Salt Marsh. [SCSM] Salt marsh consists of halophytic perennial herbs and low shrubs that occur on regularly (or historically) flooded or saturated clay and silt solids that are high in salts. Salt marsh is dominated by California cord grass (Spartina foliosa) in low intertidal areas, pickleweed (Salicornia virginica), coastal salt grass (Distichlis spicata), shoregrass (Monanthochloe littoralis), fleshy jaumea (Jaumea carnosa), American saltwort (Batis maritima), alkali heath (Frankenia salina), California marsh rosemary (Limonium californicum), saltbush (Atriplex sp.), and sea-blite (Suaeda spp.).

Coastal Freshwater Marsh. [FWS] Freshwater marsh consists of seasonally or permanently flooded low-lying areas dominated by cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.), along with species such as marsh fleabane (*Pluchea odorata*), swamp water weed (*Polygonum lapathifolium*), mayweed (*Cotula coronopifolia*), willow herb (*Epilobium* spp.), Spanish sunflower (*Pulicaria paludosa*), seep monkeyflower (*Mimulus guttatus*), and speedwell (*Veronica* spp.).

Riparian Herb. [RH] Herbaceous riparian vegetation is an early successional stage of riparian scrub and forest. Flooding (or other disturbance factors) often scours woody riparian vegetation away and the site is rapidly colonized by pioneer wetland herbaceous plants and other weedy species. Examples are mugwort (*Artemesia douglasiana*), cattails, sedges, willow seedlings and saplings, millet ricegrass (*Piptatherum meliacea*), rabbit-foot grass (*Polypogon monspeliensis*), cocklebur (*Xanthium strumarium*), western ragweed (*Ambrosia psilostachya*), and black mustard (*Brassica nigra*). Various grasses may also be found within this habitat type.

Floodplain Sage Scrub. [FSS] This vegetation type occurs in alluvial washes and floodplains where flooding is infrequent. Dominant species include Scalebroom (*Lepidospartum squamatum*), California sage (*Artemisia californica*), buckwheat (*Eriogonum fasciculatum*), and various introduced grasses.

Mule Fat Scrub. [MFS] Mule fat (*Baccharis salicifolia*) scrub consists of dense stands of mule fat with lower concentrations of willow. This vegetation type is commonly found within intermittent streambeds, washes and seeps. Other species associated with this vegetation type often include mugwort, western ragweed, castor bean (*Ricinus communis*), cocklebur, rabbit-foot grass, bermuda grass (*Cynodon dactylon*), and Brome (*Bromus* sp.).

Southern Willow Scrub. [SWS] Willow species and riparian forest saplings dominate willow riparian scrub. This vegetation type is characterized by arroyo willow (*Salix laseolepis*) and red willow (*Salix laevigata*) with lower concentrations of mule fat and/or black willow.

Sandbar Willow Scrub. [SEWS] This vegetation type is dominated by Coyote Willow and Sandbar Willow (*Salix exigua*) in shrub and herb layers. This willow species is adapted to areas with repeated natural disturbances, such as in flood scour zones.

Southern Arroyo Willow Forest. [SAWF] This vegetation type is dominated by an arroyo willow canopy, with other components being other willow species such as black willow. This type is found throughout the Watershed, including Sand Canyon, Serrano Creek, Agua Chinon, Upper Borrego Canyon, Shady Canyon, and Bommer Canyon.

Black Willow Riparian Forest. [BWRF] Black willow riparian forest is a multilayered forest with a canopy dominated by mature black willow (*Salix goodingii*) with some lower concentrations of arroyo willow and red willow, and coast live oak (*Quercus agrifolia*) and sycamore (*Platanus racemosa*) occasionally present on the outer margins. This vegetation type is found on floodplains along major streams and creeks, including Peters Canyon, San Diego Creek Channel, and San Joaquin Marsh.

Cottonwood-Willow Riparian Forest. [CWRF] Cottonwood-willow riparian forest (southern cottonwood-willow riparian forest) is a multilayered forest community dominated by Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), black cottonwood (*Populus balsamifera* spp. *trichocarpa*), black willow, and red willow. A second canopy layer consisting of arroyo willow, mule fat, poison oak (*Toxicodendron diversilobum*), wild grape (*Vitis girdiana*) is often present. Various herbs and vines may comprise the understory. Several invasive weedy species are found in this vegetation type, including giant reed (*Arundo donax*), castor bean, and tree tobacco (*Nicotiana glauca*).

Southern Sycamore Riparian Woodland. [SSRW] Sycamore riparian woodland consists of open to dense woodlands dominated by western sycamore, with coast live oak and Mule Fat Scrub, or willow riparian scrub as an understory. Other species associated with this vegetation type include holly-leaf redberry (*Rhamnus ilicifolia*), California coffee-berry (*Rhamnus californica*), laurel sumac (*Malosma laurina*), Mexican elderberry (*Sambucus mexicana*), fuchsia-flowered gooseberry (*Ribes speciosum*), toyon (*Heteromeles arbutifolia*), poison oak, and lemonadeberry (*Rhus integrifolia*). Large grassland areas dominated by *Bromus* sp. are often present under and between the canopies of the trees in this vegetation type. Sycamore riparian woodland is often found on large intermittent streams throughout the Watershed, including Serrano Creek, Agua Chinon, Upper Borrego Canyon, Bommer Canyon, and Shady Canyon.

Southern Coast Live Oak Riparian Forest. [SCLORF] This vegetation type occurs around intermittent and ephemeral drainages throughout the Watershed. Dominated by coast live oak, the understory may contain various riparian and/or upland plant species. Often, this vegetation type is intergraded with sycamore riparian and coast live oak woodlands.

Coast Live Oak Woodland. [CLOW] This community type is dominated by coast live oak with associated shrubs such as California coffee-berry, toyon, *Ribes* spp., elderberry, and poison oak. The herb layer may various herbs and grasses. This vegetation type is generally located on north-facing slopes and shaded ravines, not necessarily associated with drainages.

Canyon Live Oak Ravine Forest. [CLORAVF] This vegetation type is a montane riparian community of steep headwaters dominated by various *Quercus* sp., and may include such tree species as maple (*Acer macrophyllum*) and California bay (*Umbellularia californica*). This community is not common, as it is only found within a few locations in the mountainous region (see Zone 1 below) of the Watershed.

	Total Acres within Watershed			
Riparian Habitat Type Designations	1	7	Total (sum of rating 1-7)	
Southern Coastal Salt Marsh	0.2	0?	0.2	
Coastal Freshwater Marsh	259.2	45.5	304.7	
Freshwater Seeps, Swales	0.8, 0.1	0?	0.8, 0.1	
Riparian Herb	37.2	4.3	98.4	
Floodplain Sage Scrub	0	0	1.6	
Mulefat Scrub	44.0	25.4	113.2	
Southern Willow Scrub	63.3	4.4	129.7	
Sandbar Willow Scrub	1.4	2.1	3.5	
Southern Arroyo Willow Forest	54.9	23.6	101.9	
Southern Black Willow Forest	25.7	52.8	139.4	
Southern Cotttonwood-Willow Riparian Forest	0	10.7	10.7	
Southern Sycamore Riparian Woodland	0.6	5.9	66.2	
Southern Coast Live Oak Riparian Forest	10.2	0.7	121.1	
Coast Live Oak Woodland	0.3	0	254.4	
Canyon Live Oak Ravine Forest	0	0.5	0.5	

Table 3-2. Riparian Habitats as Identified by the PLD (Lichvar et al. 2000)

¹ Acres for Ratings 1 – 3 refer to features most likely to be Corps jurisdictional, and acres for Rating 7 refer to mitigation sites (resulting from past Corps permit actions and therefore jurisdictional). Ratings refer to the likelihood that a riparian vegetation polygon is Corps jurisdictional. Rating 1 = 100%, Rating 2 = 67-98%, Rating 3 = 33-66%, Rating 4 = 2-32%, Rating 5 = < 2%, Rating 6 = Unregulated Uplands. The total acres column is approximately equivalent to the Department jurisdiction (Ratings 1 – 5 are the Department jurisdictional). Only ratings 1, 7, the overall total are shown; ratings 1 and 7 do not equal the total in this table.

Table 3-3. **Major Vegetation Distribution Patterns by Zones**

Zones	Major Landform	Aquatic Resource Types ¹
Zone 1	Mountainous	SCLORF, Intermittent Channels, and SWS; most areas first and second
		order streams with poor development of flood plain terraces.
Zone 2	Coastal Foothills	SAWF, intermittent channels, SBWF, SSRW, SWS; development of some floodplain terraces; mixed active floodplains with flood plain terraces.
Zone 3	Central Flats	FWM, RH, SWS, perennial rivers and streams; highly modified for agriculture and urban development purposes.

Source: Lichvar et al. (2000). (Map of topographic zones is provided in Section 3.2.1).

¹ For acronym explanations, see above paragraphs in this section

Distribution of Riparian Vegetation Communities

According to Lichvar et al. (2000), several distribution patterns of the riparian vegetation types were observed within the three major topographic relief zones within the Watershed. Riparian vegetation distribution patterns within the Watershed are driven by two major features: land development and major topographic features as indicted in Table 3-3.

Riparian vegetation units in Zone 1 (mountainous) reaches of the Watershed are less impacted from land development than those in lower reaches. In the higher elevations of the Watersheds the riparian vegetation types are associated with rocky to gravelly channel substrates. Upland chaparral vegetation types are common in these reaches since the ephemeral and intermittent stream channel areas are dry most of the time. Most of these vegetation types are dominated by upland species except for Southern Willow Scrub, which contains hydrophytic species (i.e., plants adapted to flooding conditions).

In contrast, the lower elevations of the Watershed in both Zones 2 and 3 where there is an increase in hydrology, flood plain terraces, and culturally influenced hydrology regimes, the number of vegetation types increase. Flood Control Channels and Southern Arroyo Willow riparian forest are located in areas below discharge points (from urban areas) for storm water in association of agricultural field and urban development. Generally, most of the larger and wetter wetland areas are located in the lower parts of the Watershed where human influences are prevalent. Sub-Watersheds such as Borrego, Sand Canyon, and portions of San Diego Creek have frequent occurrences of these wetland vegetation types. Plant species compositions in these types are mostly wetland plants except those associated with the riparian herb type. The fresh water marsh type is dominated by man-made features. Most of these wetland types have occurrences of tule (*Scirpus californicus*), cattail (*Typha latifolia*), and spike rush (*Eleocharis macrostachya*). Each of these species is an indicator of disturbances and reflects the altered wetland conditions they are located in. Most of the features associated with this type are settling ponds, abandoned barrow pits, and margins of man made reservoirs located throughout the Watershed.

The sycamore woodlands that are located in parts of Zones 2 and 3 are located in dry upland terraces with very little wetland features. The conversions of sycamore woodlands to pastures are common here. In most of the Watershed, one of the several types of willow is the dominant vegetation type found on the terraces. These types are located mostly along the edges of the active flood plain or on the terrace. At some locations the level of introduced species are lower and the site is less disturbed, but overall it appears that the willow communities have been able to either adapt or respond to all the human modification. The most dramatic impact to wetlands and flood plain riparian systems has been the agricultural and human developments that occurred within the Watershed. In Zone 3, most of the historical flood plains and wetlands have been eliminated and replaced with concrete line channels.

Invasive Plant Species within Riparian Habitats

An important detrimental impact to riparian habitat is the presence and expansion of invasive plant species. These plant species are non-native to California and have the potential to displace native species and alter riparian ecosystem functioning. The California Invasive Plant Council (Cal-IPC, 2006) rated invasive species according to their "invasiveness" in California. The overall score (invasiveness category) includes consideration of impacts, invasiveness, and distribution within California:

- High- invasive plants with severe ecological impacts on physical processes, plant communities and habitat structure; these plants have moderate to high rates of dispersal and establishment;
- Moderate- invasive plants with substantial, but not severe, ecological impacts;
- Limited- invasive plants with minor ecological impacts on a state-wide level; or, there is insufficient data to categorize them as High or Moderate.

Various invasive plant species occur within the riparian habitat of the Watershed, including (with Cal-IPC list rating): saltcedar (*Tamarix* spp.; High), pampas grass (*Cortaderia* sp.; High), arundo (*Arundo donax*; High), black mustard (*Brassica nigra*; Moderate), eucalyptus (*Eucalyptus* spp.; Moderate), tree-of-heaven (*Ailanthus altissima*; Moderate), castor bean (*Ricinus communis*; Limited), poison hemlock (*Conium maculatum*; Moderate), and Brazilian pepper (*Schinus teribinthifolius*; Limited).

Arundo is one of the most common and widely distributed species within riparian habitat within the Watershed. A survey of *Arundo donax* in the Watershed drainages was conducted in 2001 (Harmsworth, 2002), and found approximately 6.0 acres. These acreages have increased slightly since then. The purpose of the study was to provide supplementary information for the SAMP/MSAA process, particularly with regard to the restoration element discussed later in this section.

3.1.2 Landscape Level Functional Assessment

The Corps (Smith, 2000) conducted an assessment of the riparian ecosystems of the Watershed (Appendix B-2). The overall objective of the assessment was to characterize and rank the "integrity" of the riparian ecosystems in order to provide the basis for evaluating the impacts of various SAMP/MSAA alternatives on riparian ecosystems. The assessment was accomplished by dividing the riparian ecosystem along the project site drainages into assessment units or "riparian reaches" and assessing each riparian reach using a suite of indicators of ecosystem integrity.

Riparian ecosystems consist of the biological, physical, and hydrologic features that occur along perennial, intermittent, and ephemeral drainages of project site. The center of the ecosystem consists of the stream channel. The hydrologic interaction between the stream channel and the adjacent areas typically results in two distinct zones. The first zone is called the active floodplain. It includes areas that are inundated by overbank flooding, which typically occurs at least once every five years. This zone exhibits the fluvial features associated with recurring flooding such as point bars, areas of scour, sediment accumulation, and debris. The second zone consists of less frequent floodplains and terraces formed by infrequent fluvial processes. Vegetation in the stream channel consists of aquatic species and short-lived herbaceous plants that are adapted to continual disturbances by scouring. Vegetation in the two floodplain zones is composed of woody perennials that rely on the high water tables present in the riparian zone and capable of re-establishment after floods. A profile of a typical riparian ecosystem is provided on Figure 3-2.

Figure 3-2. Cross-Sectional Profile of a Representative Riparian Ecosystem

"Waters of the U.S." consist of drainages and wetlands subject to regulation under Section 404 of the CWA. Within riparian ecosystems, "waters" include: (1) perennial, intermittent, ephemeral stream channels exhibiting a distinctive bed and bank; and (2) wetland vegetation in the floodplain zones that meet the hydrologic, hydrophytic vegetation, and hydric soils criteria outlined in the Corps Wetlands Delineation Manual (Corps 1987). Not all vegetation in the floodplain zones meets these criteria and represents jurisdictional "waters." In contrast, riparian ecosystems (including both floodplain zones) typically encompass the area of jurisdiction under FGC Section 1600 *et seq.* generally defined as streams, rivers, and creeks that provide habitat for fish and wildlife.

Smith (2000) defined riparian ecosystems with high ecosystem "integrity" as riparian areas that: (1) exhibit the full range of physical, chemical, and biological attributes and processes that characterized riparian ecosystems in the southern California region over short- and long-term cycles prior to cultural alteration; and (2) support a balanced, integrated, and adaptive biological community resulting from natural evolutionary and biogeographic processes. The concept of ecosystem integrity involves many characteristics and processes, and consequently there is no single, direct measure of ecosystem integrity. In order to focus on the most important characteristics and processes contributing to ecosystem integrity, the Corps (2001) identified three ecosystem attributes to represent ecosystem integrity: hydrologic, water quality, and habitat integrity. The selection of these attributes follows directly from the mandate in Section 101(a) of the CWA to "…*restore and maintain the chemical, physical, and biological integrity of the Nation's waters*."

To assess riparian ecosystem integrity, the Corps defined a standard of comparison or "reference condition." It represents a conceptual condition under which riparian ecosystems achieve and sustain a high level of integrity. For the assessment, Smith (2000) defined the reference condition as the "culturally unaltered condition," which consists of the conditions in riparian ecosystems at the project site that existed prior to grazing, agriculture, fire suppression, water resource management, transportation corridors, urbanization, and other cultural alterations.

"Culturally unaltered" was selected as the reference condition for the assessment because it represents the physical, chemical, and biological conditions under which riparian ecosystems have naturally evolved, and therefore, presumably represents the physical, chemical, and biological conditions that the CWA mandates should be maintained. Culturally unaltered reference conditions are expected to be uncommon in the Watershed due to the various urban and agricultural disturbances in the Watershed since Spanish colonization. However, Smith (2000) states that it is possible to make reasonable speculations as to what culturally unaltered conditions were like based on examples of apparently unaltered riparian ecosystems in other portions of southern California.

3.1.3 Habitat Integrity

To assess the three ecosystem integrity attributes (i.e., hydrologic, water quality, and habitat), Smith (2000) developed "indicators," which represent indirect measures of the attributes that can be readily measured through field, map, and aerial photograph investigations. A summary of habitat integrity attributes and the indicators used to evaluate habitat integrity in the Watershed is provided below.

Riparian ecosystems with habitat integrity exhibit the quality and quantity of habitat necessary to support and maintain a balanced, integrated, adaptive biological system having the full range of characteristics, processes, and organisms that historically characterized riparian ecosystems in the region. Several factors were considered in selecting indicators of habitat integrity including the spatial extent and quality of riparian habitat, the "connectedness" of riparian habitats at the riparian reach and drainage basin scales, and the spatial extent and quality of upland habitat in the landscape adjacent to riparian ecosystems. The key indicators of habitat integrity included:

- Area of Native Riparian Vegetation a measure of the degree to which native riparian vegetation occur the floodplain;
- **Riparian Corridor Continuity** a measure of the extent of continuous, uninterrupted riparian vegetation along the drainage;
- Land Use/Land Cover: Riparian Ecosystem Boundary a measure of the presence of manmade features at the boundary of riparian ecosystems and uplands that would inhibit normal movement of wildlife between riparian and upland habitats; and
- Land Use/Land Cover: Upland Buffer a measure of the degree to which the land uses in the upland areas adjacent to riparian ecosystems have been converted to man-made uses (e.g., urban, agricultural, etc.).

Functional Assessment Process

The assessment of riparian ecosystem integrity was conducted by completing the following sequential tasks (Smith 2000):

- Task 1: Identification of riparian reach assessment units;
- Task 2: Characterization of riparian reaches;
- Task 3: Assessment of indicators;
- Task 4: Assigning indicator scores and calculation of indices; and
- Task 5: Archiving of information.

The drainages in the Watershed were divided into assessment units called "riparian reaches." A riparian reach was defined as a segment of the stream channel and the adjacent riparian ecosystem exhibiting relatively homogenous characteristics with respect to geology, geomorphology, channel morphology, substrate type, vegetation communities, and cultural alteration. In association with each riparian reach, two other areas were defined including a "local drainage area" and a "drainage basin" (Figure 3-3a and Figure 3-3b). The local drainage area of a riparian reach included the area from which surface water drained directly to the mainstem channel or tributaries that entered the mainstem channel in the riparian reach. The local drainage area did not include areas that drained to the mainstem channel of upstream riparian reaches.



Figure <u>3-</u>3a. Illustration of a Riparian Reach and Local Drainage Basin



Figure from Smith (2003)

Most riparian reaches were characterized based on field surveys. Inaccessible reaches were characterized through the use of aerial photographs and topographic maps. Ecosystem integrity indicators were measured using a combination of fieldwork and spatial analysis in a Geographic Information System (GIS). Indicator values were assigned as a percent deviation from the reference condition (i.e., 0 to 100 percent). The range of indicator values was then divided into five categories and assigned an indicator score of 1-5 to simplify the calculation of endpoint indices, and facilitate presentation of results in tables, charts, and GIS. A score of 5 represents close concurrence with the reference condition, and consequently a high level of integrity. A score of 1 represents a deviation of 50 percent or more the reference condition, and consequently a low level of integrity.

Overall hydrologic, water quality, and habitat integrity indices were calculated in the spreadsheet by summing the scores of the indicators associated with hydrologic, water quality, and habitat integrity as discussed above. Individual indicator scores and summary indices were presented in tabular form in the spreadsheet and spatially in GIS. Scores and indices were presented for individual riparian reaches, as well as for entire drainages.

Functional Assessment Results

Smith (2000) identified 186 riparian reaches in the Watershed with drainage basins averaging 3,175 acres. In general, the index values exhibited a relatively wide and even spread across the possible range of index values suggesting that indicators were scaled appropriately and were sensitive enough to distinguish varying degrees of hydrologic, water quality, and habitat integrity. A summary of the ecosystem integrity scores for the three key ecosystem attributes for all drainages in the Watershed is presented in Table 3-54.

Ecosystem Integrity Attribute	Mean Score	Range	Maximum Possible Score
Hydrologic	18	6-29	30
Water Quality	28	13-42	45
Habitat	12	5-25	30

Table 3-5.4Summary of Ecosystem Integrity Scores – All Drainages Combined

The spatial distribution of ecosystem integrity scores for habitat is shown in Figure 3-4. The spatial distribution scores for hydrologic integrity and water quality integrity are provided in Section 3.3.3 Hydrology, Erosion, and Sedimentation and Section 3.4.8 Water Quality, respectively.

Figure 3-4 shows the indicator scores for each riparian reach. Dark areas represent scores where the habitat integrity score is high. Lighter areas represent reaches where habitat integrity has been reduced due to anthropogenic disturbances. The lowest habitat integrity scores were observed along creeks where land development has altered the channels and local drainage basins. Some tables in this document refer to reaches with High, Medium and Low integrity. In these cases, the scores are relative scores (or percentage out of 100): High = 0.7 or higher, Medium = 0.4 to 0.7, and Low = less than 0.4.

General types of impairments that reduced the integrity of various riparian reaches were as follows:

- Discontinuity in riparian corridor due to habitat disturbances;
- Increased low-flows due to irrigation return flows and runoff from developed areas;
- Presence of non-native vegetation along certain reaches;
- Presence of adjacent land uses that reduce habitat quality and increase nutrient, pesticide, and sediment loading;
- Disturbances along channel margins that impede wildlife movement to and from uplands; and
- Land use and channel modifications that have disrupted natural sediment dynamics in the Watershed and channel, respectively.

The results of the LLFA allowed for the identification of high and medium quality riparian ecosystems, and represent the cornerstone of the SAMP Analytical Framework (discussed in Section 2.1.1). The LLFA was also used for planning (avoidance and minimization of impacts) of several recent projects within the Watershed. In other contexts, the LLFA may also be used for simulating changes that could be expected to occur as a result of a proposed project (impact analysis), for conducting an alternatives analysis, or for calculating the acreage and functional gain from proposed mitigation or restoration projects.

Figure 3-4. Spatial Distribution of Ecosystem Integrity Scores, Habitat

Changes to the Watershed Baseline After the Year 2000

The Corps collected permit data from its regulatory database (RAMS2, ORM2) to determine the extent of permitted impacts (and compensatory mitigation) that occurred since the preparation of the LLFA (Smith 2000). The permanent impacts and compensatory mitigation acreage data were collected from permits issued between 9/1/2000 through 7/31/2007 (Table 3-65). Acreages related to bank stabilization and temporary impacts were not included in the data, because these projects did not fundamentally change the mapping of the aquatic resources. There were a few projects that were permitted before 9/1/2000, but were not constructed until after the preparation of the LLFA report; such impacts are not captured in the data presented in Table 3-65. However, some of these previously permitted impacts were captured when corrections were made in 2002 to the GIS mapping with the resulting aquatic resources map serving as the basis of the SAMP analysis.

Since the adoption of the final PLD aquatic resources vegetation map in 2002, the amount of impacts that have been permitted is small compared to the total acreage of aquatic resources in the Watershed. Impacts to 52.17 acres of total waters of the U.S. (21.86 acres of wetlands and 30.31 acres of non-wetland waters) represent about 2% of the total aquatic resources within the Watershed. The effects of the permitted activities on the overall conclusions made about the Watershed are minimal.

3.2 BIOLOGICAL RESOURCES INCLUDING THREATENED AND ENDANGERED SPECIES AND MIGRATION CORRIDORS

This section describes the existing biological conditions within the Watershed, and includes the following: (1) topographical overview of the Watershed that defines the vegetation types; (2) biological reserves; (3) upland habitats; (4) threatened and endangered species known to occur, or may potentially occur within the Watershed; (5) the status of wildlife migration corridors linking the northern and southern portions of the Watershed; and (6) critical habitat designated by the USFWS.

3.2.1 Topographical Relief and Vegetation Communities

The 154-square-mile Watershed encompasses a wide variety of habitat types generally grouped within three major landforms (topographic relief zones). These include a mountainous zone, the coastal foothills, and the central flats as shown in Figure 3-5. The mountainous zone is comprised of the Santa Ana Mountains and covers the northeastern portion of the Watershed. The coastal foothills, or San Joaquin Hills, are located in the southern portion of the Watershed east of Newport Bay and south of the I-405. The central flats, the largest zone in terms of area, occupies the broad floodplain of San Diego Creek, Peters Canyon Wash, and their tributaries between the mountainous zone and coastal foothills including the areas around Newport Bay and the majority of the northwestern portion of the Watershed.

Permanent Impacts and Compensatory Mitigation for Wetlands and Non-Wetland Table 3-<u>65</u>. Waters of the U.S. Permitted Between 9/1/2000 and 7/31/2007

		Wetlands		Non-We	tland Waters of U.S.
	Corps Permit Action ID No.	Impact (acres) ^U	Compensatory Mitigation Creation, Restoration, and/or Enhancement (acres)	Impact (acres) ^U	Compensatory Mitigation Creation, Restoration, and/or Enhancement (acres)
Permitted activities reflected in baseline LLFA	970019000	6.5	9.75	2.4	2.4
Permitted activities not	200501057	2.54	5.06	6.11	8.84
reflected in baseline	200400594	0	0	1.46	3.1
LLFA, but in SAMP	200500648	1.02	3.73	1.85	6.05
	200600752	0.25	2.75	1.00	0.75
	200601452	1.66 ^L	1.66	3.34 ^L	8.61
Permitted activities not	990005600	0.86	0.8	2.12	0.8
reflected in baseline	199916339	1.39	2.96	2.77	24.85
LLFA, and not considered	200001036	0.04	3.1	2.47	0
in SAMP	200100337	0	0.5	0.43	0
	980060000	0.92 ^M	2.5	1.66 ^M	2.5
	200201165	0.188^{M}	0.68	0^{M}	0.62
	200201168	0.41 ^M	0.79	0.02^{M}	0
	200201466	$0.73^{ m L}$	1.33	0.46^{L}	0
	200000361	$0.44^{ m L}$	0.05	1.0^{L}	0
	200201465	0^{L}	0.42	0.42^{L}	0
	200201473	0	0	0.1^{L}	0.1
	200301554	2.28^{L}	2.78	0.50^{L}	0
	200401759	0	0	0.34^{L}	0
	200500058	$0.57^{ m L}$	5.44	1.67 ^L	2.0
	200500678	0	0	0.08^{L}	0.18
	200600212	2.06 ^L	2.06	0.11 ^L	0.75
Total acreage not reflected in baseline LLFA and not		21.86	46.36	30.31	61.55
IN SAMP					
Pending applications –		Acreage	Acreage unknown -	Acreage	Acreage unknown -
low integrity resources		unknown -	pre-decisional	unknown-	pre-decisional
		pre- decisional		pre- decisional	

^U Denotes undetermined integrity of aquatic resources, unless otherwise indicated. ^M Denotes moderate to high integrity aquatic resources were permitted for impacts. ^L Denotes low integrity aquatic resources were permitted for impacts.



Figure 3-5. Topographic Relief Zones of the Watershed

Source: Lichvar et al. (2000). Zone 1 = Mountainous; Zone 2 = Coastal Foothills; Zone 3 = Central Flats.

Zone 1: Zone 1 includes the mountainous region (i.e., Santa Ana Mountains) located in the north eastern portion of the Watershed. These are steep sloped (15 to 75 percent grade) and highly erosive receiving an average rainfall of about 17 inches. Cattle grazing, agriculture and wildlife habitats are dominant in this region. In the higher elevations of the Watershed the riparian vegetation types are associated with rocky to gravelly channel substrates. Upland scrub and chaparral vegetation types are common in these reaches. Most of these vegetation types are dominated by upland species. Zone 1 is the least developed of the three zones and contains most of the undisturbed upland vegetation within the Watershed.

Zone 2: The San Joaquin Hills (Zone 2) are located in the southern portion of the Watershed, east of Newport Bay and south of the I-405. This zone averages about 13 inches of rainfall per year with slopes ranging from 15 to 75 percent. Land development and wildlife habitats are dominant in this region. This zone is vegetated primarily with grassland and scrub vegetation communities.

Zone 3: The Tustin Plain (Zone 3) occupies the board floodplain of San Diego Creek, Peter's Canyon Wash, and their tributaries between Zones 1 and 2. This zone averages about 13 inches of rainfall per year with slopes ranging from 0 to 15 percent. This zone is almost entirely built out with urban development and/or is largely devoid of native vegetative communities. This area used to be historical flood plain. In Zone 3, most of the historical flood plains and wetlands have been eliminated and replaced with concrete line channels.

3.2.2 Biological Reserves, Designated Wilderness, and Mitigation Areas

As described above, the northern and southern portions of the Watershed support a fairly extensive set of protected areas that preserve, maintain, or restore the natural character of the Watershed, while the central region has been largely developed and/or utilized for agriculture. Together, they form a network of both interconnected and isolated biological communities that support native populations of flora and fauna in this rapidly developing region. The most significant of these protected areas are described below and depicted in Figure 3-6.

Orange County Central/Coastal Natural Community Conservation Plan/Habitat Conservation Plan - The Orange County Central/Coastal NCCP/HCP is a regional conservation plan for the Central and Coastal subregions of Orange County approved in July 1996, by the USFWS and the Department. The NCCP/HCP is designed to provide incentives that will attract landowners, government agencies, and public interests to become stakeholders in a collaborative process. Under the NCCP/HCP approach, the emphasis is placed on protecting covered species (i.e., those species determined to be adequately conserved by the plan, to conserve natural communities and accommodating compatible land uses). Within the Central and Coastal subregions, the NCCP/HCP focuses on creating a multiple-species, multiple-habitat subregional Reserve System and implementing a long-term adaptive management program that will protect coastal sage scrub (CSS) and other habitats and species located within the CSS habitat mosaic, while providing for economic uses that will meet the social and economic needs of the residents and businesses of the subregion. In total, this plan provides for the conservation of 39 identified species including the three target species (i.e., coastal California gnatcatcher, coastal cactus wren, and the orange-throated whiptail) and five habitat types (i.e., coastal sage scrub, oak woodlands, tecate cypress, cliff and rock, and within the coastal subarea, chaparral). The Central/Coastal subregion NCCP/HCP consists of the following elements: (1) a 37,378 acre Reserve System; (2) Special Linkages and Existing Use Areas to enhance biological connectivity within the Reserve System and subregion; (3) an Adaptive Management Program; (4) an Interim Management Plan; (5) Funding; and (6) a mitigation option for nonparticipating landowners.

The Watershed is located completely in the geographical range covered by the Central/Coastal NCCP/HCP. The following areas of the Watershed are included in the NCCP/HCP Reserve System: Laguna Coast Wilderness Park, Mason Regional Park, Peters Canyon Regional Park, Upper Newport Bay Nature Preserve, Whiting Ranch Wilderness Park, Upper Newport Bay Ecological Reserve, and the University of California Irvine Natural Reserve System.

Figure 3-6. Existing Open Space, Reserves, and Special Linkage Areas

<u>Orange County Regional Parks</u> – Four Regional Parks managed by the County of Orange are located either all or partially within the Watershed. These facilities include the 359-acre Peters Canyon Regional Park, 345-acre William R. Mason Regional Park, 6,300-acre Laguna Coast Wilderness Park, 140-acre Newport Bay Regional Park, and portions of the 1,600-acre Whiting Ranch Wilderness Park. The parks are managed to provide outdoor recreational opportunities in addition to providing some protection of natural areas within the parks. Within the Central/Coastal NCCP/HCP, they are managed as part of the Nature Reserve of Orange County.

<u>MCAS El Toro Habitat Reserve (proposed)</u> – The approximately 900-acre "panhandle" portion in the eastern portion of the former MCAS El Toro is part of the Reserve System established under the Central/Coastal Orange County NCCP/HCP. It is currently owned by the FAA and cooperatively managed by the FAA, the FBI, and the USFWS. Ongoing environmental cleanup activities are being conducted by the U.S. Navy.

Plant communities in the proposed Habitat Reserve include, but are not limited to, a large contiguous area of Venturan-Diegan coastal sage scrub, chaparral, and riparian habitats. The Habitat Reserve supports all three of the target species of the Central/Coastal NCCP/HCP; it contains the largest subpopulation of coastal California gnatcatchers in the Central NCCP/HCP subregion, in addition to a large subpopulation of coastal cactus wrens, and an unknown number of orange-throated whiptails. In addition, the proposed Habitat Reserve area has been designated as critical habitat for the gnatcatcher. Other native species known to occur on the proposed Habitat Reserve include the prostrate spineflower (Chorizanthe procumbens), the federally endangered Riverside fairy shrimp, the western spadefoot toad, the San Diego horned lizard, the coastal western whiptail (Cnemidophorus tigris), Cooper's hawk (Accipiter cooperii), ferruginous hawk (Buteo regalis), prairie falcon (Falco mexicanus), loggerhead shrike (Lanius ludovicianus), southern California rufous-crowned sparrow (Aimophila ruficeps canescens), Bell's sage sparrow (Amphispiza belli belli), grasshopper sparrow (Ammodramus savannarum), San Diego blacktailed jackrabbit (Lepus californicus bennettii), and San Diego desert woodrat (Neotoma lepida intermedia). Borrego Canyon Wash traverses the southern portion of the Habitat Reserve and supports the coast live oak woodland, southern sycamore riparian woodland, and southern willow scrub that occur on the proposed Habitat Reserve.

<u>San Joaquin Marsh</u> – The 538-acre San Joaquin Marsh (the Marsh), located in the City of Irvine, is a remnant of an approximately 5,300-acre wetland ecosystem that historically existed near the mouths of the Santa Ana River and San Diego Creek prior to flood control modifications. The Marsh is comprised of the 202-acre San Joaquin Marsh Reserve, owned and managed by the University of California Natural Reserve System, and a 336-acre eastern portion owned by the Irvine Ranch Water District. A 29.5-acre parcel in the eastern Marsh houses the Sea and Sage Chapter of the National Audubon Society. Mitigation for development projects by The Irvine Company has been conducted as part of the San Joaquin Marsh Mitigation Project (SJMMP), consisting of 42.5 acres of wetland restoration in the eastern Marsh.

Despite human encroachment and historical modifications to hydrology and water quality, the Marsh still provides an important linkage between the riparian habitats in the Watershed and estuarine habitats in the Upper Newport Bay Ecological Reserve. The Marsh provides nesting, foraging, and stopover habitat for numerous birds as well as habitat for other wildlife species. A variety of habitat types are provided in the Marsh, harboring or potentially harboring 54 sensitive species. Fewer sensitive species have been observed in the SJMMP, though a territorial male least Bell's vireo was observed in the mitigation area in 1999.

<u>Clean Water Act Section 404 Compensatory Mitigation Sites</u> – The Corps has preliminarily identified over 50 sites in the Watershed established as mitigation for impacts to waters of the U.S. under the CWA.

3.2.3 Existing Upland Vegetation Communities

The Watershed is highly urbanized and has a variety of habitat types and their acreage based on studies undertaken during the preparation of the Central - Coastal NCCP/HCP are presented in Table $3-7\underline{6}$. Approximately 70 percent of the land in the Watershed is developed, disturbed, or agricultural, most of which is located within Zone 3. The predominant vegetation types are coastal sage scrub and chaparral at higher elevations (primarily Zones 1 and 2) and grasslands at lower elevations (primarily Zone 2).

Vegetation Types	Acres	Percent
Dunes	1.7	<1%
Scrub	9,838.4	13%
Chaparral	1,272.2	2%
Grassland	9,285.2	12%
Woodland	311.1	<1
Vernal pools	30.2	<1
Cliff and Rock	68.1	<1%
Agriculture	12,653.8	17%
Developed	36,972.9	49%
Disturbed	3,418.6	4%
APPROXIMATE TOTAL	73,852.2	97%

Table 3-76. Upland Habitat Types in the Watershed Based on the NCCP GIS Database

Note: Information presented is based on data from the County of Orange GIS, but does not include riparian habitats – "riparian", "lakes and reservoirs", "marsh" and "watercourses". Riparian and wetland resources comprise approximately 3 percent of the Watershed. Furthermore, information presented in Table 3.2-1 is based on data from the County of Orange GIS, collected during the preparation of the Central & Coastal NCCP/HCP in 1995. The habitat designations and associated acreages presented in this table are generalized and approximate and should not be taken literally. For instance, the 30.2 acres of vernal pools reported by the County is inaccurate. Based on more recent vegetation mapping in these areas, the acres of vernal pools is actually less than one acre. Also, percentages for agriculture and developed areas are based on the 1995 GIS data and are currently outdated; agriculture is currently less than 17% and developed areas is greater than 49%.

The following descriptions of the upland vegetation communities and locations identified in the Watershed are taken from Holland (1986). Other cover types mapped in the Watershed such as agriculture, developed lands, and disturbed lands are also discussed. The Watershed encompasses a wide variety of habitat types ranging from mountainous and coastal foothills to central flatlands. In preparation of the Central & Coastal NCCP/HCP, the County of Orange identified 10 upland habitats that occur in the Watershed. For the purposes of this document, the County's (or otherwise stated) upland habitat types are used as the basis for impact analysis in areas outside the Corps and the Department's jurisdiction. A

description of the upland habitats is provided below. Please note that vernal pools have been included in this section concerning upland habitat because vernal pools are generally not subject to the Department's jurisdiction or Corps jurisdiction unless a hydrologic connection to navigable waters of the U.S. can be demonstrated.

Scrub

Scrub communities are generally dominated by small shrubs with drought deciduous leaves. Most of the plant species found within these communities regenerate following fire events. "Scrub" as defined for this subregion, roughly corresponds to Holland's (1986) descriptions of Diegan/Venturan coastal sage scrub (a transitional community containing elements of two major types described by Holland), southern coastal bluff scrub, and Riversidean coastal sage scrub. In the subregion, scrub is more or less open community composed of low, drought deciduous shrubs, with a sparse understory of annual and perennial grasses and forbs.

Venturan/Diegan Sage Scrub is a variable community that occurs on rocky, well-drained slopes away from the immediate coast (where it is replaced by the "coastal bluff scrub" community). Coastal sage scrub vegetation varies between relatively moist (mesic) and relatively dry (xeric) sites. Xeric habitats occur on ridges, terraces, and south-facing slopes and include species such as California sagebrush (*Artemisia californica*), buckwheat (*Eriognum fasimlatum*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), bush monkeyflower (*Mimulus auranticus*), bush sunflower (Encelia californica), deerweed (*Lotus scoparius*), and goldenbush (*Isocoma* spp.). Mesic sites generally occur in microhabitats characterized by north-facing slopes, in canyons and small drainages and include species such as lemonadeberry (*Rhus integrifolia*) and Toyon (*Heteromeles arbutifolia*).

Another community intermixed with coastal sage scrub is southern cactus scrub. Southern cactus scrub contains greater than 20 percent cactus (*Opuntia* spp.); the remainder of the community consists of other typical Venturan/Diegan sage scrub species. This community occurs primarily on south facing slopes on low foothill away from the immediate coast.

These communities often occur on xeric sites such as south facing slopes and provide structures for shelter and nesting. This habitat type is the most common within the Watershed making up approximately 13 percent of the total area and this community dominates much of Zones 1 and 2.

Chaparral

Chaparral communities are dominated by large arborescent shrubs that generally have large evergreen leaves. Most chaparral plant species regenerate from underground root structures following fire events. These communities generally occur on mesic sites such as north facing slopes. Chaparral is a plant association consisting of tall, evergreen, sclerophyllus shrubs requiring more moisture than coastal sage scrub, and typically occurs at higher elevations than scrub associations. Higher elevation chaparral is dominated by species such as chamise (*Adenostema fasciculatum*), ceanothus (*Ceanothus* spp.), scrub oak (*Quercus berberidifolia*), and manzanita (*Archtostaphylos* spp.). Chaparral found close to the coast is dominated by Toyon (*Heteromeles arbutifolia*), laurel sumac (*Malosma laurina*), lemonadeberry (*Rhus integrifolia*), and holly-leaved redberry (*Rhamnus ilicifolia*). This habitat type comprises approximately 2 percent of the Watershed area and dominates much of Zones 1 and 2.

Grassland

Grasslands consist of low-growing herbaceous species dominated by annual, ruderal, and perennial grasses and forbs. The native grassland communities that once blanketed the southern California landscape have largely been outcompeted by non-native annual grasslands. Extant native grasslands are presently restricted to designated open space areas contained within the NCCP reserve system. This habitat type comprises approximately 12 percent of the Watershed area and dominates much of Zone 2.

Annual grassland consists primarily of annual grasses that are dominated by species Mediterranean in origin. Common grasses include Bromes, Oats, Fescues, and Barleys (*Hordeum* ssp.). Many species of native forbs and bulbs, as well as naturalized annual forbs, may be found in annual grasslands, but floristic richness is affected to a high degree by land use activity, such as intensity and duration of grazing. Heavily grazed grasslands have considerably lower species richness. Annual grasslands are generally found on gradual slopes with deep soils.

The most common grassland sub-association within the Watershed is grasslands supporting ruderal species. Ruderal grasslands are dominated by tall, early successional forb species that colonize disturbed sites. Sweet clover (*Melilotus* spp.) and mustards (e.g., *Brassica nigra* and *Hirschfeldia incana*) dominate these grasslands in early spring, replaced by tocalote (*Centaurea melitensis*), cheeseweed (*Malva* spp.) and tumbleweed (*Salsola tragus*) in late spring and summer. Ruderal grasslands differ in density and diversity depending on species composition and soil conditions. Ruderal grasslands are scattered throughout the Watershed primarily occurring in fallow agricultural fields, along manufactured berms and abandoned roads.

Native perennial grasslands occur on clay or clay loam soils, and in areas where grazing and past agricultural uses were less intensive. These native grasslands persist as mosaic patches within and adjacent to non-native annual grasslands and coastal sage scrub. These small isolated patches occur on hilltops, slopes or on rocky slopes.

Woodlands

Woodland habitats consist of multilayered vegetation with tree canopy cover between 20 and 80 percent dominated by Coast live oak (*Quercus agrifolia*). Coast live oak woodlands occur in moist areas with deep soil, along canyon bottoms, valleys and on north-facing slopes or in shaded ravines, and intergrades with coastal sage scrub or chaparral on drier sites. The shrub layer may include species, such as toyon, laurel sumac, lemonadeberry, holly-leaved redberry, and fuchsia-flowered gooseberry (*Ribes speciosum*). The herbaceous component is continuous and often dominated by nonnative grasses and weedy herbs. This habitat type comprises less than one percent of the Watershed and has been identified in Zones 1 and 2.

Vernal pools

Vernal pools are a highly specialized plant habitat occurring on undeveloped mesa tops and supporting a unique succession of floral species. These pools fill with rainwater that does not drain off or percolate away because of the mesa top topography and underlying soil conditions (i.e., a hardpan or claypan layer that prevents or impedes subsurface drainage). Vernal pools are a low, mesic, herbaceous community dominated by annual herbs and grasses. Many sensitive plant species have a potential to occur in these

pools, such as Parish's Brittlescale (*Atriplex coulteri*,), Thread-leaved Brodiaeae (*Brodiaea filifolia*), and Mesa Brodiaea (*Brodiaea jolonesis*). Vernal pools were formerly extensive in southern California, but have been largely extirpated by urban development. In addition to providing breeding pools for a variety of amphibians, vernal pools also provide habitat for endangered wildlife, such as the federally endangered San Diego and Riverside Fairy Shrimp. This habitat type comprises less than one percent of the Watershed and has been identified in Zone 2.

It should be noted that the 30.2 acres of vernal pools reported by the County of Orange GIS, collected during the preparation of the Central- Coastal NCCP/HCP in 1995, is inaccurate. Based on more recent vegetation mapping in these areas, vernal pools actually comprise less than 1 acre.

Dune

Only 1.7 acres of this habitat are located within the Watershed, primarily along the coast. Dunes are typically barren, mobile sand accumulations whose size and shape are determined by abiotic site factors rather than by stabilizing vegetation. Dune size and shape vary with wind direction and speed, site topography, sand source, and grain size. This community may include species such as sea rocket (*Cakile maritima*), sea fig (*Carpobrotus chilensis*), beach morning (*Calystegia soldanella*), and beach morning glory (*Camissonia cheiranthifolia*). This habitat type comprises less than one percent of the Watershed and has been identified in Zone 2.

Cliff and Rock

Cliff and rock habitats consist of cliff faces and rock outcrops. Percent plant cover is typically low in these areas, but because of the unique physical conditions these areas may support sensitive plant species. This habitat type comprises less than one percent of the Watershed and has been identified in Zone 1.

Agriculture

The remaining agricultural areas consist of irrigated lands with crop rows and orchards. Agricultural areas are generally devoid of native vegetation and are located in a few non-mountainous portions of the Watershed. The orchards are also devoid of native vegetation and consist of rows of commercial fruit tress, primarily citrus and avocado and are generally located along the mountainous portions of the Watershed. Agricultural lands are present in Zones 1 and 3.

Developed

Developed areas support no native vegetation and may be additionally characterized by the presence of human-made structures such as buildings or roads. The level of soil disturbance is such that only the most ruderal plant species would be expected. The agricultural component of developed areas includes actively cultivated lands or lands that support nursery operations. Developed areas are found in varying densities in rural areas and dominate much of Zone 3.

Disturbed

Disturbed habitat is any land on which the native vegetation has been significantly altered by agriculture, construction, or other land-clearing activities, and the species composition and site conditions are not characteristic of the disturbed phase of one of the plant associations within the study region. Such habitat is typically found in vacant lots, roadsides, construction staging areas, or abandoned fields, and is

dominated by nonnative annual species and perennial broadleaf species. Typical plant species include Russian-thistle (*Salsola tragus*), sweet fennel (*Foeniculum vulgare*), horseweed (*Conyza* spp.), mustard, lamb's quarters (*Chenopodium album*), fountain grass (*Pennisetum setaceum*), and castor bean (*Ricinus communis*), among others. Nonnative trees, such as eucalyptus, pepper trees, and Russian olive (*Olea europea*), can also occur in this association. Disturbed habitat is found within Zones 1, 2, and 3.

3.2.4 Threatened and Endangered Wildlife Species

The following discussion identifies federally and state listed threatened and endangered wildlife species known to occur or has the potential to occur within the Watershed. The species identified in this section are based on documented occurrences; presence of suitable habitat (as described above), and/or proximity within a species known range. The mountainous zone, coastal foothills, and the central flats of the Watershed provide a diversity of habitat types distinguished by microclimate, slope aspect, and soil type. These habitats provide nesting, breeding, and foraging habitat for hundreds of wildlife species. Native species include large resident predators such as the mountain lion as well as migratory birds and waterfowl such as the southwestern willow flycatcher that spend only a part of the year along willow dominated riparian corridors. Table 3-<u>87</u> presents previously detected or potentially occurring threatened or endangered wildlife species within the Watershed.

Common Name	Scientific Name	Regulatory Status	Habitat Use	Likelihood of Occurring within the San Diego Creek Watershed
Crustacea				
San Diego Fairy Shrimp	Branchinecta sandiegonensis	Fed: EndangeredVernal poolsState: NoneNCCP: ConditionallyCoveredImage: Covered		Low
Riverside Fairy Shrimp	Streptocephalus woottoni	Fed: Endangered Vernal pools State: None NCCP: Conditionally Covered		High (Detected)
Insects				
Quino Checkerspot Butterfly	Euphydryas editha quino	Fed: Endangered State: None NCCP: Conditionally Covered	Coastal sage scrub and chaparral	Low
Fish		1	1	
Amphibians	-	1	1	1
Arroyo Toad	Bufo californicus	Fed: Endangered State: None DFG: CSC NCCP: Conditionally Covered	Riparian and upland habitats	High (Historically Detected)
California Red- legged Frog	Rana aurora draytonii	Fed: Threatened State: None DFG: CSC NCCP: ASOI	Riparian habitats	Low
Birds				

Table 3-87.Previously Detected or Potentially Occurring Threatened or Endangered Wildlife
Species within the San Diego Creek Watershed

Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

Common Name	Scientific Name	Regulatory Status	Habitat Use	Likelihood of Occurring within the San Diego Creek Watershed
California Brown Pelican	Pelecanus occidentalis californicus	Fed: Endangered State: Endangered DFG: Fully Protected FWS: MNBMC NCCP: None	Open ocean, rocky and sandy beaches	High
Swainson's Hawk (nesting)	Buteo swainsoni	Fed: SC State: Threatened USBC: Watch list Audubon: Watch list NCCP: None	Savannah, prairies, deserts, and open woodlands	Low
Bald Eagle (nesting or wintering)	Haliaeetus leucocephalus	Fed: Threatened, FPD State: Endangered DFG: Fully Protected NCCP: None	Lakes, rivers, and estuaries	Low
American Peregrine Falcon (nesting)	Falco peregrinus anatum	Fed: Delisted 2002 State: Endangered DFG: Fully protected NCCP: Covered	Cliffs or outcroppings near water; grassland, scrub and marshes	Low
California Black Rail	Laterallus jamaicensis coturniculus	Fed: SC State: Threatened DFG: Fully protected USBC: Watch list Audubon: Watch list FWS: MNBMC NCCP: None	Marshes	Low
Light-footed Clapper Rail	Rallus longirostris levipes	Fed: Endangered State: Endangered DFG: Fully protected USBC: Watch list NCCP: None	Marshes	Low
Western Snowy Plover (nesting)	Charadrius alexandrinus nivosus	Fed: Threatened State: None DFG: CSC FWS: BCC USBC: Watch list Audubon: Watch list NCCP: None	Beaches	Low
California Least Tern	Sterna antillarum browni	Fed: Endangered State: Endangered FWS: MNBMC DFG: Fully Protected USBC: Watch list NCCP: None	Estuaries or lagoons	Moderate
Western Yellow- billed Cuckoo (nesting)	Coccyzus americanus occidentalis	Fed: Candidate State: Endangered FWS: BCC NCCP: None	Riparian habitats	Low

Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

Common Name	Scientific Name	Regulatory Status	Habitat Use	Likelihood of Occurring within the San Diego Creek Watershed
Southwestern Willow Flycatcher (nesting)	Empidonax traillii extimus	Fed: Endangered State: Endangered USBC: Watch list Audubon: Watch list	Riparian habitats	High (Detected)
		NCCP: Conditionally Covered		
Least Bell's Vireo (nesting)	Vireo belli pusillus	Fed: Endangered State: Endangered USBC: Watch list Audubon: Watch list FWS: BCC NCCP: Conditionally Covered	Riparian habitats	High (Detected)
Coastal California Gnatcatcher	Polioptila californica californica	Fed: Threatened State: None DFG: CSC USBC: Watch list Audubon: Watch list NCCP: Target Species	Coastal sage scrub	High (Detected)
Belding's Savannah Sparrow	Passerculus sandwichensis beldingi	Fed: None State: Endangered NCCP: None	Coastal salt marshes	High (Detected)
Mammals				
Pacific Pocket Mouse	Perognathus longimembris pacificus	Fed: Endangered State: None DFG: CSC NCCP: Conditionally Covered	Coastal plains with fine sands near the ocean	Low

Fed = Federal listing status

SC = Species of Concern

FWS = U.S. Fish and Wildlife Service

BCC = Birds of Conservation Concern

State = State of California listing status

DFG = California Department of Fish and Game

CSC = California Special Concern species

CNDDB = California Natural Diversity Database

AFS = American Fisheries Society

Fully Protected = May not be take without a permit from the Fish and Game Commission

USBC Watch List = United States Bird Conservation Watch List

Audubon: Watch List = Species facing population declines and/or threats such as habitat loss.

NCCP = Natural Community Conservation Plan and Habitat Conservation Plan for the County of Orange, Central and Coastal Subregion

Target Species: NCCP Target Species receiving regulatory coverage

Covered = NCCP covered species receiving regulatory coverage

Conditionally Covered = NCCP conditionally covered species

ASOI = NCCP additional species of interest

SIS = NCCP special interest species

Aquatic Invertebrates

Given the degraded hydrologic condition of San Diego Creek and its tributaries and poor water quality flows, the creek is expected to contain very few types and low numbers of invertebrate species consisting mainly of soft-bodied animals. Invertebrates observed during surveys conducted by Harmsworth Associates (2002) included species tolerant of poor water quality. The most common taxa observed were flatworms (Tricladida), with common amphipods (Family Hyalellidae) and freshwater clams (Family Sphaeriidae) occurring at lower concentrations. Other species observed included dragonfly larvae (*Anax* sp), fly larvae (Families Chironomidae and Empididae), damselfly larvae (Family Chromagrion), mosquito larvae (*Culex* sp), aquatic worms (Family Lumbriculidae), freshwater snail (*Physa gyrina*) and swamp crayfish (*Procabarus clarki*). One federally listed endangered species (i.e., Riverside fairy shrimp) has been detected within the Watershed.

Fish

Southern California is known for its impoverished native freshwater fish fauna. Freshwater fish expected to occur in the Watershed consist primarily of exotic species that have historically been released for recreational fishing and vector control, and individuals from the pet trade. Non-native fish species known to occur in the Watershed include mosquito fish (*Gambusia affinis*), fathead minnow (*Pimephales promelas*), red shiner (*Cyprinella lutrensis*), carp (*Cyprinus carpio*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropteras salmoides*), bullhead (*Ameiurus sp.*), bluegill (*Lepomis macrochirus*), and threadfin shad (*Dorosoma petenense*).

No federal-and state-listed endangered, threatened, or candidate fish species are reported in the Watershed.

Amphibians

Amphibia are a diverse group consisting of frogs and toads, salamanders and newts, and caecilians or legless Amphibia. The frogs, toads, and newts require water for breeding, for laying their eggs, and for the subsequent tadpole stage. After metamorphosis, they become at least partially terrestrial and often move away from water. The arroyo toad (*Bufo californicus*) is the only amphibian species listed as endangered in Orange County. Although known to have historically occurred within the Watershed, recent surveys for Arroyo Toads have not detected their presence. The western spadefoot (*Scaphiopus hammondi*) and the coast range newt (*Taricha torosa torosa*) are both listed as species of special concern to the State of California. Common amphibian species occurring within the Watershed include the Pacific chorus frog (*Hyla regilla*) and the California tree frog (*Hyla cadaverina*). The western toad (*Bufo boreas*) is also common throughout native areas of Orange County. Two invasive species, the bullfrog (*Rana catesbeiana*) and the African clawed frog (*Xenopus laevis*), also occur in the Watershed. No federal-and state-listed endangered, threatened, or candidate amphibian species are reported in the Watershed.

Reptiles

Over 50 reptile species occur in southern California. Reptile species expected to occur in the Watershed include species such as Southwestern pond turtle (Clemmys *marmorata pallida*) side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinatus*), coastal western whiptail (*Cnemidophorus tigris tigris*), coachwhip (*Masticophis flagellum*), two-striped garter snake (*Thamnophis hammondii*), south coast garter snake (*Thamnophis sirtalis* spp.), common kingsnake (*Lampropeltis getulus*), and Southern Pacific rattlesnake (*Crotalus*)

viridis heleri). Non-native reptile species expected to occur within the Watershed include the red-eared slider (*Pseudemys scripta elegans*), yellow-bellied slider (*Pseudemys scripta scripta*), and spiny softshell (*Trionyx spiniferus*). No federal-and state-listed endangered, threatened, or candidate reptile species are reported in the Watershed.

Birds

Over 440 native bird species have been recorded in Orange County (Hamilton 1996). A total of 132 avian species were recorded within the Watershed during surveys by Harmsworth Associated in 1999. Birds occurring in the Watershed include locally common birds, such as mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), and black phoebe (*Sayornis nigricans*); residential birds, such as California towee (*Pipilo crissalis*) and coastal California gnatcatcher (*Polioptila californica californica*); wintering birds, particularly near Newport Bay, such as willet (*Catoptrophorus semipalmatus*), greater yellowlegs (*Tringa melanoleuca*), long-billed curlew (*Numenius americanus*), and western sandpiper (*Calidris mauri*), western grebe (*Aechmophorus occidentalis*), northern shoveler (*Anas clypeata*), northern pintail (*Anas acuta*), and American coot (*Fulica americana*); and migratory birds, such as cedar waxwing (*Bombycilla cedrorum*), western woodpewee (*Contopus sordidulus*), warbling vireo (*Vireo gilvus*), Wilson's warbler (*Wilsonia pusilla*), and Bullock's oriole (*Icterus bullockii*).

Of the 29 raptor species detected in Orange County, only 18 are seen on a regular basis from year to year. Some of the more common raptor species include Turkey Vulture, Red-shouldered Hawk, Cooper's Hawk, Red-shouldered Hawk, Barn Owl, and Western Screech Owl.

Focused surveys for the federally threatened coastal California gnatcatcher and state and federally endangered least Bell's vireo and southwestern willow flycatcher (*Empidonax traillii extimus*) revealed numerous populations within the Watershed.

<u>Southwestern Willow Flycatcher (*Empidonax traillii extimus*):</u> Southwestern willow flycatcher, a state and federally-listed endangered species, breeds from southern California through Arizona, New Mexico, the extreme southern part of Nevada and Utah, and western Texas. Nesting records for this subspecies are from the south fork of the Kern River, Camp Pendleton, and a few other disjunct locations in southern California.

Southwestern willow flycatchers inhabit and nest along waterways with dense riparian vegetation. They are summer residents in California from mid-April through September. Breeding begins in mid-April. The southwestern willow flycatchers prefer extensive thickets of low, dense willows on the edge of wet meadows, ponds, or backwaters. The presence of surface water such as slow moving streams, standing water or seeps seems to be important during the spring for nesting; however, streams may be dry during the summer months after nesting is completed. They will use a broad range of willow habitats, but prefer clumps of bushes interspersed with open areas, rather than dense continuous thickets. Thickets of trees and shrubs most commonly used are approximately 4 to 7 meters tall, with a high percentage of canopy cover and dense foliage of 0 to 4 meters above ground. Willow flycatchers nest primarily in willows and mule fat (*Baccharis salicifolia*); however, they have been known to nest in areas dominated by salt cedar

(*Tamarisk sp.*) or Russian olive. Migrant individuals are common in the spring (mid-May to early June) and fall (mid-August to early September).

<u>Least Bell's Vireo (Vireo bellii pusillus)</u>: Least Bell's vireo, a federal- and state-listed endangered species, is a summer resident of southern California in areas below 2,000 feet in elevation. It winters in Latin America and migrates into its breeding range near the end of March. This species inhabits and nests along waterways with willow riparian thickets mainly along the coast and the western edge of the Mojave Desert. The breeding season for the least Bell's vireo extends from April through the end of July. It typically inhabits low riparian growth, either adjacent to water or in dry river bottoms. This species builds its nests along margins of riparian vegetation, usually in moist thickets and riparian areas that are predominately composed of willow or mule fat. One of the most critical structural components of a riparian zone suitable for vireos is the presence of a dense shrub layer from 2.0 to 9.9 feet above the ground. Plant communities used by least Bell's vireos include willow-cottonwood forest, oak woodland, shrubby thickets and dry washes established with arroyo willows, etc.

<u>Coastal California Gnatcatcher (Polioptila californica californica)</u>: The coastal California gnatcatcher, was listed as threatened by the USFWS in 1993. The gnatcatcher is a non-migratory songbird that nests and forages in moderately dense stands of coastal sage scrub occurring on arid hillsides, mesas, and washes. Habitat loss, degradation and fragmentation due to land alteration and development are considered the major threats to this species. Coastal California gnatcatchers are also subject to nest parasitism by the brown-headed cowbird. Final designation of critical habitat was published in the *Federal Register* on October 24, 2000 (See Section 3.2.6).

The coastal California gnatcatcher is a small, gray, insect-gleaning bird typically associated with different coastal sage scrub plant communities. California sagebrush (*Artemisia californica*) dominated stands of coastal sage scrub are preferred by the coastal California gnatcatcher. Other species that may be present include white sage (*Salvia apiana*), California bush sunflower (*Encelia californica*), and California buckwheat (*Eriogonum fasiciulatum*). The birds do not appear to be obligatorily dependent on any particular plant species found in coastal sage scrub, rather they typically avoid habitats that are either very sparse or extensively invaded by taller shrubs and trees or by non-native plant species.

This bird is a year-round resident. Breeding pairs become highly territorial by late February or early March. Nest building begins during the second or third week of March with fledglings starting to appear around May 1. Post-breeding dispersal of fledglings occurs between late May and late November. During the breeding season (i.e., from mid-February through July), the birds form monogamous pairs, defending a territory from other gnatcatchers and nesting persistently. They may make as many as 10 nesting attempts in a season.

Mammals

Approximately 79 terrestrial mammals occur in Southern California. Small mammal species expected to occur in the Watershed include species such as desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), San Diego pocket mouse (*Chaetodipus fallax*), California vole (*Microtus californicus*), house mouse (*Mus musculus*), dusky-footed woodrat (*Neotoma fuscipes*), deer mouse (*Peromyscus maniculatus*), and black rat (*Rattus rattus*).

Common bat species expected to occur in the Watershed include species such as big brown bat (Eptesicus fuscus), western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), California myotis (*Myotis californicus*), and eastern small-footed myotis (*Myotis leibii*).

Larger mammal species expected to occur in the Watershed include species such as Virginia opossum (*Didalphis virginiana*), mountain lion (*Puma concolor californicus*), bob cat (*Felis rufus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and mule deer (*Odocoileus hemionus*).

No federal-and state-listed endangered, threatened, or candidate mammal species are reported in the Watershed.

Wildlife Summary

In summary, a total of 20 federal- and state-listed endangered and threatened wildlife species have been identified as historically, currently, or potentially occurring within the Watershed. Of these, six wildlife species have been identified as currently occupying the Watershed. Of these listed species previously detected within the Watershed, four species are reliant on riparian ecosystems (i.e., California least tern, southwestern willow flycatcher, least Bell's vireo, and Belding's savannah sparrow) and two species are not associated with riparian ecosystems (i.e., coastal California gnatcatcher and Riverside fairy shrimp).

3.2.5 Threatened and Endangered Plant Resources

This section provides a brief description of nine sensitive plant species that are federal-and state-listed as endangered or threatened that occur or have the potential to occur within the Watershed. Table 3-98 presents previously detected or potentially occurring threatened or endangered plant species within the Watershed.

Common Name	Scientific Name	Regulatory Status	Habitat Use/Life Form/ Blooming Period	Likelihood of Occurring within the San Diego Creek Watershed
Plants			•	
Braunton's rattleweed (milk- vetch)	Astragalus brauntonii	Fed: Endangered State: None CNPS: 1B NCCP: ASOI	Native grasslands, coastal sage scrub, chaparral, forests (Fire follower)/ perennial herb/ March- July	Low
Thread-leaved brodieaea	Brodiaea filifolia	Fed: Threatened State: Endangered CNPS: 1B NCCP: ASOI	Native grasslands, coastal sage scrub, woodlands, clay soils, vernal pools/ perennial herb/ March- June	Low
San Fernando Valley Spineflower	Chorizanthe parryi var fernandina	Fed: Candidate State: Endangered CNPS: 1B NCCP: None	Sandy soils in Coastal Sage Scrub/ annual herb/ April-June	Low
Salt marsh Bird's Beak	Cordylanthus maritimus ssp. maritimus	Fed: Endangered State: Endangered CNPS: 1B NCCP: None	Salt marsh habitat/ annual herb/ late summer	High (Previously Detected)
Slender- horned Spineflower	Dodecahema leptoceras	Fed: Endangered State: Endangered CNPS: 1B NCCP: None	Sandy soils in chaparral, woodlands, and alluvial sage scrub/ annual herb/ April-June	Low
Santa Monica Mountains Dudleya	Dudleya cymosa spp. ovatifolia	Fed: Threatened State: None CNPS: 1B NCCP: Covered	Chaparral and coastal sage scrub between 490 to 5,500 feet amsl/ perennial herb/ April-June	Low
Laguna Beach Dudleya	Dudleya stolonifera	Fed: Threatened State: Threatened CNPS: 1B NCCP: Covered & ASOI	Coastal sage scrub or chaparral on weathered sandstone rock outcrops/ perennial herb/ May to July	Low
Gambell's Water Cress	Rorippa gambelii	Fed: Endangered State: Threatened CNPS: 1B NCCP: None	Marshes and swamps/ perennial herb/ April-June	Low
Crownbeard	Verbesina dissita	Fed: Threatened State: Threatened CNPS: 1B NCCP: ASOI & SIS	Maritime chaparral, coastal sage scrub/ perennial herb/ April-June	Low

Table 3-98.Previously Detected or Potentially Occurring Threatened or Endangered Plant
Species within the San Diego Creek Watershed

Refer to Table 38 for a list of abbreviation definitions used in the above table.

Braunton's milk-vetch (*Astragalus brauntonii*), a federal-listed endangered plant, is a large, perennial herbaceous plant flowering from March through July. It occurs in chaparral, coastal sage scrub, closed-cone coniferous forest and valley and foothill grassland communities. This species is typically found in recently burned or disturbed areas on carbonate soils at elevations between 10 and 2,100 feet above mean sea level (msl). There is moderate potential for this species to occur in the sagebrush-buckwheat scrub communities surrounding Bee, Hicks, East Hicks, and Round retarding basins. There is also a moderate potential for this species to occur in the annual grasslands of Agua Chinon or Marshburn basins and a low potential for this species to occur in the non-native grasslands of Hicks and East Hicks basins.

Thread-leaved brodiaea *(Brodiaea filifolia)* is a federal-listed threatened and state-listed endangered species on the CNPS 1 B List. It is a bulbiferous herb blooming from March to June that occurs in openings in chaparral, cismontane woodland, coastal scrub, playas, valley and foothill grasslands, and vernal pools (often clay soils). The elevation of this species ranges from 100 to 4,000 feet above msl. There is moderate potential for this species to occur in the sagebrush-buckwheat scrub communities surrounding Bee, Hicks, East Hicks, and Round retarding basins. There is also a moderate potential for this species to occur in the annual grasslands of Agua Chinon or Marshburn basins and a low potential for this species to occur in the non-native grasslands of Hicks and East Hicks basins.

San Fernando Valley spineflower *(Chorizanthe parryi var. Fernandina)* is a federal-listed candidate, state-listed endangered, and a CNPS List 1 B species previously presumed extinct but rediscovered in 2001. This annual herb blooms from April to June and occurs on dry, sandy soils between elevations of 500 and 4,000 feet above msl, mostly in coastal sage scrub habitats. There is moderate potential for this species to occur in the sagebrush-buckwheat scrub communities surrounding Bee, Hicks, East Hicks, and Round retarding basins.

Salt marsh bird's-beak (Cordylanthus maritimus ssp. maritimus) is a federal- and state-listed as endangered and is also listed on the CNPS 1 B list. This hemiparasitic annual herb blooms between May and October and occurs in coastal dunes and coastal salt marshes and swamps usually up to 100 feet above msl in elevation. There is a high potential for this species to occur in the Watershed and this species has previously been observed within the Watershed.

Slender-horned spineflower (*Dodecahema leptoceras*) is a federal- and state-listed endangered species. This annual herb blooms from April to June and occurs in chaparral, cismontane woodlands, and coastal scrub, particularly alluvial fan sage scrub, on flood deposited terraces and washes at an elevation between approximately 660 and 2,500 feet above msl. There is moderate potential for this species to occur in the sagebrush-buckwheat scrub communities surrounding Bee, Hicks, East Hicks, and Round retarding basins.

Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *ovatifolia*) is a federal-listed threatened species with no state rarity status. This perennial herb flowers from March to June and occurs in chaparral, coastal scrub, and grasslands on north-facing, rocky outcrops of volcanic origin at elevations of 490 to 5,500 feet above msl. There is low potential for this species to occur in the sagebrush-buckwheat scrub communities surrounding Bee, Hicks, East Hicks, and Round retarding basins.

Laguna Beach dudleya *(Dudleya stolonifera)* is a federal- and state-listed threatened species. It is a stoloniferous perennial herb, blooming from May to July and occurs in coastal scrub, chaparral, cis montane woodland, and valley and foothill grassland on rocky soils. Elevations range from 30 to 850 feet above msl. There is low potential for this species to occur in the sagebrush-buckwheat scrub communities surrounding Bee, Hicks, East Hicks, and Round retarding basins.

California Orcutt grass *(Orcultia californica)* is a federal- and state-listed endangered species that is also listed on the CNPS 1 B list. This annual grass species flowers from April to August and is found in vernal pools at elevations between 50 and 2,170 feet above msl. This species is restricted to habitat that is not present within any of the channels or retarding basins.

Gambel's water cress (*Rorippa gambelii*) is a federal- and state-listed endangered species that is also listed on the CNPS 1B list. This rhizomatous perennial herb flowers from April to September. It occurs in freshwater or brackish marshes and swamps between 15 and 1,080 feet above msl in elevation. There is moderate potential for this species to occur in the freshwater seeps and marshes of channels F07, F08, and F09.

Crown beard (*Verbesina dissita*) is a federal- and state-listed threatened species. It is a perennial herb that flowers from April to July. Habitat for the crown beard is found in coastal scrub and chaparral on gravelly soils at elevations between 150 and 690 feet above msl. There is low potential for this species to occur in the sagebrush-buckwheat scrub communities surrounding Bee, Hicks, East Hicks, and Round retarding basins.

3.2.6 Critical Habitat

The USFWS has designated critical habitat for one species within the Watershed - the coastal California gnatcatcher. Critical habitat is defined in Section 3 of the FESA as:

the specific areas within the geographical areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection: and (ii) specific area outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

"Critical habitat" is a designation used by the USFWS in its administration of the FESA and applies only to the actions of federal agencies. Specifically, federal agencies, if conducting activities on lands designated as critical habitat, are to consult with the USFWS to ensure that their federal actions do not "adversely modify" critical habitat. According to the USFWS, a critical habitat designation is not to have any impact on private property included within the designation, absent federal activity on that property. The USFWS has adopted a "landscape approach" to its designation of critical habitat for the coastal California gnatcatcher, which is not intended to highlight individual parcels of private property. Furthermore, the USFWS recognizes that "not all parcels of land within the areas designated will contain the habitat components essential to gnatcatcher conservation"; and the USFWS has noted that some gnatcatcher habitat loss within designated critical habitat is not likely to adversely modify or destroy critical habitat or appreciably reduce its value for the survival and recovery of the species.
California sagebrush-dominated stands of coastal sage scrub are preferred by the coastal California gnatcatcher. Other species that may be present include white sage, California bush sunflower, and California buckwheat. The birds do not appear to be obligatorily dependent on any particular plant species found in coastal sage scrub; rather they typically avoid habitats that are either very sparse or extensively invaded by taller shrubs and trees or by non-native plant species. This plant community is considered to be declining throughout the region and has been subject to extensive displacement and degradation as urbanization continues throughout southern California. Urbanization has also resulted in increased fragmentation and isolation of remaining coastal sage scrub communities.

<u>Coastal California Gnatcatcher Critical Habitat within the San Diego Creek Watershed</u>: The USFWS has designated approximately 1,557 acres of coastal sage scrub critical habitat (the critical habitat falls within critical habitat Unit 7 as designated by the USFWS) for the coastal California gnatcatcher within the Watershed. Critical habitat has been designated for two sites located within the northern portion of Watershed (i.e., Zone 1) and one site located within the southern portion of the Watershed (i.e., Zone 2). No critical habitat has been designated with the central region of the Watershed (i.e., Zone 3). Approximately 236 acres are associated with western portion of Zone 1 (i.e., Peters Canyon Reservoir site), 1,001 acres are associated with eastern portion of Zone 1, and 320 acres are associated with Zone 2 (i.e., University of California, Irvine).

3.2.7 Wildlife Movement Corridors

Importance of Wildlife Corridors:

In Southern California, where natural areas are often scarce and wildlife reserves are continually being encroached upon and surrounded by development, connectivity between these significant habitats is perhaps one of the best feasible options for preventing localized extinctions and/or enhancing biodiversity. While the debate over the value of corridors has been extensive (Simberloff & Cox 1987, Beier & Loe 1992, Beier & Noss 1998), most authorities seem to agree that if conservation corridors are used in appropriate situations and designed properly, they can be useful conservation tools.

In addition to providing routes for migration and dispersal, several studies have demonstrated the importance of corridors in preventing extinctions and increasing species diversity (Fahrig & Merriam 1985, Crooks 2002, Crooks & Soulé 1999). Corridors also play a very important role in linking reserves and reducing the dire effects of fragmentation. While corridors are not reserves themselves, they can be viewed as a means to effectively increase reserve size. To some wide-ranging animals such as bobcat, coyote, mountain lion, and mule deer, even a relatively large isolated reserve may not be capable of sustaining populations. However, by allowing these and other species to disperse to and move between reserves via wildlife corridors, these animals have more space to utilize and are more likely to maintain stable populations.

Wildlife corridors or wildlife linkages link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. Wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because these conditions prohibit the infusion of new individuals and genetic information. Wildlife linkages mitigate the effects of this fragmentation by: (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the effects of catastrophic events, such as fire or disease that could result in population or local species extinction; and (3) serving as travel routes for individual animals as they move in their home ranges in search of food, water, mates, and other necessary resources.

Existing Conditions:

As previously described, the remaining stands of native vegetation within the southern portion of the Watershed (Zone 2) has been largely cut off from northern portion (Zone 1) by the urban and agricultural development within the central region of the Watershed (Zone 3).

The northern reserve land is predominantly part of the Limestone-Whiting Wilderness Park and the proposed MCAS El Toro Habitat Reserve. These areas contain some very diverse terrain, from the flat, open grasslands of the Refuge up to the rugged hills, canyons, and mountains that define the northern horizon. The lowest areas are predominantly grassland and coastal sage scrub habitats, with the latter extending partway up into the foothills. Eventually, chaparral takes over and dominates the higher elevations with its thicker, brushy cover. Within the canyons and along streams, the other habitats often yield to coastal live oak woodlands and narrow forests of sycamores and willows typically found in these riparian areas.

The southern reserve land is predominantly part of the Irvine Open Space Preserves, Laguna Coast Wilderness Park, and Crystal Cove State Park that are important resources, since so little natural habitat remains this close to the coast in Southern California. These areas provide many of the same habitats as the northern reserves, including coastal sage scrub, more expansive riparian areas, and lower-elevation maritime chaparral.

The preservation and/or the establishment of wildlife corridors can increase the functionality and viability of both the northern and southern reserves. Figure 3-7 shows potential wildlife movement corridors for the Watershed.

Figure 3-7. Potential Wildlife Movement Corridors

3.3 HYDROLOGY, EROSION AND SEDIMENTATION

3.3.1 Hydrologic Conditions

The Watershed encompasses approximately 122 square miles or 78,000 acres in central Orange County, California (see Figure 1-1b in Section 1). Developed areas within the Watershed include portions of Santa Ana, Orange, Tustin, Laguna Hills, Newport Beach, Irvine, Lake Forest, Laguna Woods and unincorporated areas of Orange County. Land uses within the Watershed consist of primarily urban (residential, commercial, industrial, institutional uses), and some agriculture and open space areas.

The Watershed is drained by San Diego Creek, from the north and east, flowing westerly where it discharges into Upper Newport Bay in the City of Newport Beach. Key drainages of the Watershed include:

- Peters Canyon Wash
- Rattlesnake Canyon Wash
- Round Canyon Wash
- Borrego Canyon Wash
- Bommer Canyon Creek
- Trabuco Channel
- Sand Canyon Wash

- Hicks Canyon Wash
- Bee Canyon Wash
- Agua Chinon Wash
- Serrano Creek
- Shady Canyon Creek
- Bonita Canyon Wash
- San Diego Creek

Many of these drainages are characterized as natural ephemeral drainages in the upper undeveloped portions of Watershed, and are channelized in the lower more developed portions. The Watershed is comprised of three general topographic relief zones, including a mountainous zone in the northeastern portion of the Watershed (Santiago Hills), a central flat zone (Northern Flatlands and Central Flatlands) in the central and western portions of the Watershed and the coastal foothill zone (San Joaquin Hills) in the southern portions.

The Watershed is partially encircled by hills and ridges, with the Lomas de Santiago Hills to the northeast and the San Joaquin Hills to the south. The runoff from these hills drains across the Tustin Plain via a series of canyon washes, channels (engineered and natural), and culverts into San Diego Creek and ultimately into Upper Newport Bay. The Watershed drains approximately 80 percent of the 154 square miles that are tributary to Upper Newport Bay. Other flows to Upper Newport Bay come from the Santa Ana-Delhi Channel, Big Canyon, and other smaller drainages, which are not included in the Watershed. Landforms and drainage channels for the Watershed, as of December 2003, are shown in Figures 3-8 and 3-9, respectively. Figure 3-8. Landforms

Figure 3-9. Drainage Channels

Historical Drainage

Over the past century, the majority of drainage courses in the Watershed have been extensively altered and realigned for purposes of urban development, agricultural activities, and flood management. Historically, there were no defined channels existing along the lower reaches of San Diego Creek and Peters Canyon Wash. Storm flow originating from areas of the upper Watershed was intercepted by an ephemeral lake lying within the western portion of the Tustin Plain. Figure 3-10 depicts historic Watershed hydrography.

Historically, San Diego Creek and the small tributaries originating in the Lomas de Santiago Hills drained into an ephemeral lake and marsh area known as the "Swamp of the Frogs" (Cienega de las Ranas). In the later part of last century and early this century, the Watershed underwent considerable changes in land use from ranching/grazing to farming. The "Swamp of the Frogs" was drained, and the vegetation in the marsh cleared to make room for farming. Drainage channels were constructed to augment the farming activity in the area. All of the channels constructed in the Watershed drained to San Diego Creek and eventually Newport Bay. After World War II, land use in the Watershed started shifting from farming to residential and commercial developments. In order to accommodate this development, flood risk management projects were constructed to expand the capacity of the drainages. Changes to the drainage patterns in the Watershed culminated in the channelization of San Diego Creek in the early 1960s by Orange County Flood Control District, which subsequently provided flood management for the surrounding developing areas. Modification to the natural drainages also isolated the San Joaquin Marsh, the last remaining portions of the historic marsh upstream of Upper Newport Bay, from San Diego Creek.

The changes in the Watershed described above resulted in substantial increases in storm water and sediment flows transported in San Diego Creek and deposited into Upper Newport Bay. This in turn resulted in growing concern over the long-term health of the Upper Newport Bay estuarine environment. Several efforts were initiated to address these concerns, including sediment control and a flood management master plan. These measures are described in more detail in the subsection below called Existing Sediment Control Program. These measures engineered the general water quality of the bay and Watershed, reducing the rate of degradation of habitats and shoaling in the navigation channels (Corps, 2000).

Figure 3-10. Historic Watershed Hydrography

Present Drainage Characteristics

The Watershed is presently drained by a series of ephemeral streams, lined and unlined channels and underground storm drains. The principal watercourse, is-San Diego Creek, thatdrains the 122square miles of the total Watershed.San Diego Creek is the largest contributor of fresh water flows into Upper Newport Bay, with the remaining flows into the Bay coming from the Santa Ana-Delhi Channel, Big Canyon, and other small drainages. The second largest watercourse within the Watershed is Peters Canyon Wash, which, like San Diego Creek, was modified and realigned in the 1960s for flood management purposes. Modifications to both San Diego Creek and Peters Canyon Wash included widening, straightening, and realigning in order to contain and control projected 100-year flood flows and reduce the amount of erosion that was occurring in the natural, steeply sloped channels in response to increased flows. San Diego Creek and Peters Canyon Wash consist of both modified and natural segments for the length of their drainages. Modified segments include such engineered features as rip-rap, concrete-lined trapezoidal channels, grass-lined swales and energy dissipaters. The width, depth, and level of modifications for both drainages vary substantially throughout the Watershed.

Major tributaries of San Diego Creek to the north and east west include: Rattlesnake Canyon, Hicks Canyon, Bee Canyon, Round Canyon Agua Chinon Canyon, Borrego Canyon, and Serrano Creek. Tributaries to the south and west include Bonita Creek and Sand Canyon Wash (including Bommer Canyon and Shady Canyon). The highly urbanized areas north and west within Santa Ana, Orange, Costa Mesa and Tustin are drained to San Diego Creek via a number of concrete-lined channels including El Modena-Irvine Channel, Tustin Channel, Santa Fe Channel, Red Hill Channel, Como Channel and the Barranca Channel. Major drainages and channels of the Watershed are shown on Figure 3-9 and listed in the Table 3-<u>109</u>.

San Diego Creek	Drainage Characteristics
watersneu Dramages	
San Diego Creek Mainstem	
San Diego Creek Channel	Drainage originates in eastern portion of the Watershed and flows westerly through
	undeveloped foothills of Irvine and urbanized cities of Newport Beach, Irvine, and Lake
	Forest. Channelized, with lined and unlined portions.
Lane Channel	Originates in western portion of the Watershed within City of Santa Ana, and drains
	southeasterly into San Diego Creek. Engineered channel through cities of Costa Mesa,
	Irvine, Santa Ana.
Armstrong Storm Channel	Engineered channel through Irvine.
San Joaquin Channel	Originates in San Joaquin Hills and drains westerly into San Diego Creek. Combination
	of natural watercourse and engineered channel through the City of Irvine. Upstream
	limit of engineered portion begins at the I-405 and Sand Canyon Ave intersection.
Culver Storm Channel	Engineered channel through portion of Irvine.
Sand Canyon Channel	Partially engineered channel through Irvine. Upstream limit of engineered portion
	begins at Intersection of Ridgeline Drive and University Drive.
Marshburn Channel	Drainage originates in lower Lomas de Santiago foothills and drains southwesterly.
	Partially engineered channel through Irvine and former MCAS El Toro. Engineered
	portion extends upstream from Waterworks Way in Irvine to I-5 Freeway.
Central Irvine Channel	Drainage originates in central portion of Watershed near Siphon Reservoir and drains
	southwesterly.

 Table 3-109.
 Drainage Channels of the San Diego Creek Watershed

Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

San Diego Creek	Drainaga Charactoristics		
Watershed Drainages	Di annage Characteristics		
Barranca Channel	Channel originates near MCAS Tustin. Engineered channel draining southeasterly through City of Irvine		
Agua Chinon Wash and	Natural watercourse upstream of SR-241 to headwaters in Limestone Canyon of the		
Channel	Lomas de Santiago foothills. Engineered open channel downstream of SR-241 to I-405		
	Freeway through former MCAS El Toro and Irvine areas.		
Serrano Creek	Natural watercourse upstream of Serrano Road in Lake Forest to its headwaters in		
	Whiting Ranch Wilderness Park (Lomas de Santiago foothills) drains southwesterly.		
	Engineered portion through former MCAS El Toro and cities of Irvine and Lake Forest		
	downstream of Serrano Road to intersection of Irvine Center Drive and Bake Parkway.		
Borrego Canyon Wash and	Natural watercourse upstream of Irvine Boulevard to headwaters in Whiting Ranch		
Channel	Wilderness Park of the Lomas de Santiago foothills. Drains southwesterly into Agua		
	Chinon Wash. Engineered portion downstream of Irvine Boulevard, draining former		
Round Convon Wosh	MCAS El Toro, and chies of invine and Lake Forest.		
	Canyon Channel near SR-241.		
Bee Canyon	Drainage originates in Lomas de Santiago foothills, and drains southwesterly. Natural		
	watercourse upstream of SR-241, with landfill representing a substantial land		
	disturbance to this canyon wash. Consists of reinforced concrete boxes under MCAS El		
	I oro runways and open channels outside the runway areas. Upstream of Irvine Blvd.		
	SCPPA rollway tracks to 1.5		
Canada Channel	Farthen channel through Laguna Hills Irvine		
Veeh Storm Channel	Earthen channel through Laguna Hills Golf Course in Laguna Hills. Drains into Veeh		
	Reservoir.		
Bonita Creek	Drainage originates in the San Joaquin foothills and drains northwesterly into San Diego		
	Creek near Upper Newport Bay.		
Laguna Canyon Wash	Canyon wash originates in San Joaquin foothills and drains northerly into San Diego		
	Creek. Most of the wash is in a natural condition with a soft bottom. The wash has been		
	channel has been constructed. This channel ends in the downtown area of Laguna Beach		
	where the wash reverts to a natural condition and empties into the Pacific Ocean		
Sand Canyon Wash (includes	Drainage originates in San Joaquin Hills and drains northwesterly into San Diego Creek		
Bommer and Shady	near Campus Drive. Consists of reinforced concrete boxes under MCAS El Toro		
Canyons)	runways and open channels outside the runway areas. Upstream of Irvine Blvd. excess		
•	flows are routed into the Marshburn retarding basin. Engineered portion south of		
	SCRRA railway tracks to I-5.		
Peters Canyon Sub-Drainage	Area		
Peters Canyon Wash	Originates in Peters Canyon Regional Park and drains southerly into San Diego Creek.		
	Partially engineered channel through cities of Irvine and Tustin. Engineered portion is		
	downstream of Peters Canyon Reservoir.		
Rattlesnake Canyon	Originates in Lomas de Santiago foothills. Portions upstream of Portola Parkway are		
	southwesterly into Peters Canyon Wash		
Hicks Canvon Wash	Originates in Lomas de Santiago foothills Portions unstream of Portola Parkway are		
	both natural watercourse (upper reaches) and unlined channelized portions. South of		
	Portola Parkway, drainage is routed underground and flows southwesterly into Peters		
	Canyon Wash.		
El Modena-Irvine Channel	Lined channel originating in northern portion of the Watershed in City of Tustin and		
	drains southerly into Peters Canyon Wash.		
Santa Fe Channel	Engineered/lined channel. Drainage originates in western portion of the Watershed		
	within cities of Santa Ana and Tustin and drains southeasterly into Peters Canyon Wash.		

San Diego Creek Watershed Drainages	Drainage Characteristics
Tustin Channel	Consists of reinforced concrete boxes under MCAS El Toro runways and open channels
	Marshburn retarding basin. Engineered portion south of SCRRA railway tracks to I-5.
Como Channel	Engineered channel that originates in central portion of the Watershed and drains
	westerly into Peters Canyon Wash.
Central Irvine Channel	Unlined channel through Irvine; extends from Peters Canyon Channel to Jeffery Road,
(Trabuco Channel)	and terminates at the Trabuco Retarding Basin.

Surface Flows

The amount of surface flow generated in the Watershed is directly related to the amount of precipitation, the volume of water from urban and agricultural land uses, and the resulting runoff from potable or reclaimed water usage. The annual average precipitation within the Watershed is approximately 18 inches in the mountains and 13 inches near the coast (Corps 2001).

San Diego Creek drains approximately 85 percent of the Watershed. Fresh water flow volumes vary seasonally. Average daily streamflow data are collected from four gaging stations in the Watershed. Average flows during summer months, originating primarily from landscape and some agricultural runoff, are 1 to 3 cubic feet per second (cfs). In contrast, maximum flows occur during winter storms. For example, storms in December 1997 generated flows up to 43,500 cfs in San Diego Creek as measured at the Campus Drive stream gage. San Diego Creek flow characteristics are summarized in Table 3-<u>1110</u>.

Flow Description	Flow (cfs) ¹
Annual Average Base (excludes Flood Events)	20-35
Annual Average	30-90
Winter Base (excludes Flood Events)	<45
Winter Dry Weather	»16
Summer Average Base (excludes Flood Events)	<16
Peak Flood Flows	25,000-43,500

Table 3-1110. Flow Characteristics of San Diego Creek

¹Based on RDMD flow data for San Diego Creek measured at Campus Drive gage.

During dry weather, an average of 5 cfs of surface flow is diverted from San Diego Creek into the five water quality treatment ponds within the San Joaquin Marsh, located just upstream of Campus Drive. The Marsh is a 202-acre water quality treatment facility that consists of a series of lakes, permanent marshes, and riparian wetlands constructed by IRWD to help remove nitrate in San Diego Creek dry weather flows before entering Upper Newport Bay. The water remains in the water quality treatment ponds for approximately two weeks before being discharged back into San Diego Creek.

Floodplains

Floodplains generally include the 100-year flood extent, as shown on Federal Emergency Management Agency (FEMA) maps. The 100-year floodplain corresponds in some cases to Department jurisdiction, and also to the extent of riparian habitat as mapped by Lichvar et al. (2000). This entire floodplain or riparian area was assessed in the LLFA (Smith, 2000).

Flood History

Southern California's history of flooding can be characterized as recurrent but infrequent as understood through records kept by missions and other historical sources. Of these early accounts, floods of 1780, 1825, 1862, 1884, 1891, and 1916 were of major proportion (Corps, 2001).

The flood of 1862 probably was the largest known flood in Orange County; however, the 1916 flood was more destructive because of increased development in the County. There are no records of runoff in the San Diego Creek basin, but historical accounts show flooding on nearby San Juan Creek downstream of what is now I-5 that was more than a mile wide and stretched from bluff to bluff. Additional flooding occurred in 1937/1938 causing severe damage to agricultural and urban areas. A peak discharge of 13,000 cfs was recorded at the "San Juan Creek at La Novia Street Bridge" stream gage on March 2, 1938 which was the fourth highest recorded discharge at that gaging station (Corps, 2001).

Additional flooding from intense storm activity occurred in 1943 and 1969. A peak discharge of 22,400 cfs was recorded on San Juan Creek on February 25, 1969 that is the second largest recorded discharge on San Juan Creek. More recently, the storms of 1994/1995 resulted in extensive flooding to homes, businesses, agriculture land, and roadways in the County. Approximately 50 percent of the total annual rainfall for Orange County occurred in January of 1995 that resulted in the overtopping of 25 flood channels causing severe damage (Corps, 2001).

During the winter of 1997-1998 a series of low-latitude Pacific storms moved into Southern California from the west resulting from strong El Niño atmospheric flow patterns. Three rainfall events in December caused severe property damage resulting in landslides, mudflows and the overtopping of flood management channels. The most sizeable of the three events resulted in a 6-hour maximum rainfall duration of greater than 10,000-year return period for Laguna Beach. Damage from the storm extended from Laguna Beach inland through the city of Lake Forest to the foothill and canyon areas and resulted in the complete closure of the I-5 freeway. During this time, San Diego Creek experienced a peak flow of 43,500 cfs, its highest peak flow for the 1978-2004 period of record. In February 1998, precipitation generally equaled the mean annual precipitation for the entire 12-month period (Corps, 2001).

Flood Management

Flood management facilities within the Watershed are within the Orange County Flood Control District (OCFCD). Orange County Resources and Development Management Department (RDMD) administers the OCFCD and manages its 25 flood management channels and 14 retarding basins within the Watershed through its Flood Control Division. Other facilities within the OCFCD are managed by local cities or private entities. Within the OCFCD, RDMD is responsible for maintaining regional channel reaches where it has right-of-way (either fee title or easements). Local facilities are the responsibility of the RDMD in unincorporated areas, and the City of Irvine within its city limits.

Flood management facilities and flood hazards within the Watershed are controlled and managed by RDMD through implementation of the San Diego Creek Drainage and Flood Control Master Plan (John M. Tettemer and Associates, 1989). The Flood Control Master Plan describes a system of retarding basins, reservoirs, and engineered channels to minimize the potential for flooding impacts in developed areas by conveying stormwater to the Pacific Ocean. Consequently, dry season runoff from urban land uses, landscape irrigation, and agricultural irrigation also flows through the Flood Control Master Plan facilities.

The Flood Control Master Plan analyzed the existing tributary drainage areas of San Diego Creek from its headwaters to I-405 downstream of the confluence with Peters Canyon Channel. The Flood Control Master Plan identified a range of flood risk reduction measures for the Watershed that would manage flood peaks based on a 100-year flood. The Flood Control Master Plan was adopted by the City of Irvine, the City of Tustin, and the County of Orange, and is currently being implemented in phases by these entities.

The Corps Newport Bay Watershed Management Study, Baseline Conditions Report (2001) provides a hydraulic and floodplain analysis of San Diego Creek drainages. According to the Corps analysis, the San Diego Creek drainage system generally has adequate capacity for the 100-year storm event¹. Flow from the 100-year event or less would mostly be contained within the three major channels analyzed in the study (Peters Canyon Wash, San Diego Creek and Serrano Creek). The 200-year and 500-year events could exceed the channel capacity of these three channels in various locations affecting residential and industrial development. However, according to the Corps study, the remaining planned future development in the Watershed is not expected to add substantial flow increase into the major channels.

Geomorphology

The San Diego Creek channel system has undergone considerable natural and man-made changes during the past 75 years, as previously discussed. Nearly all the engineered channel reaches of San Diego Creek and Peters Canyon Wash are trapezoidal earth channels except for the reach from Culver Drive to Jeffrey Road, which is a parabolic-shaped channel with vegetation cover for erosion protection (Corps, 2001). A series of concrete drop structures were constructed along this reach to prevent channel degradation. In the lower reach of San Diego Creek, the channel was further excavated in 1982 and three sediment basins were established for control of sediment loading into Upper Newport Bay, as discussed further in the next section of this document. The Corps generally characterizes these lower modified channels of Peters Canyon Wash and San Diego Creek as geomorphically stable. A geomorphic characterization of some of the canyon washes was not conducted due to lack of data. However, data were available for the Corps to assess Serrano Creek. Serrano Creek has suffered a number of substantial flood events that have resulted in damage to the Creek (Corps, 2001). The Corps geomorphic analysis of various reaches of Serrano Creek and concluded that with the exception of the uppermost reach, the lower reaches of the Creek are unstable generally due to downcutting of the channel and bank erosion from high velocity flows. The City of Lake Forest and the County have been implementing restoration plans to address erosion, flood management, recreation, and landscaping improvements along several portions of the Creek.

Groundwater Hydrology/Recharge

The Watershed overlies a corner of the Orange County coastal groundwater basin referred to as the Irvine Sub-Basin. The Irvine Sub-Basin contains marine sedimentary deposits primarily consisting of layers of clays, silts, and sands. The groundwater is salty, with naturally occurring salts from the original deposition of sediments. Therefore, the groundwater is marginal for drinking water uses and nitrate concentrations in some areas are elevated due to use of agricultural fertilizers.

¹ Use of different hydrologic and hydraulic data and models, or risk management requirements, may lead to results that differ from the Corps study. Consequently, it is expected that divergent conclusions may be reached about the capability of existing facilities to provide the desired flood risk reduction or methods for increasing flood capacity.

The Irvine Sub-Basin is generally recharged by infiltration of runoff, reservoir and basin seepage and from natural stream flow. The sub-basin contains two water bearing zones; a shallow, semi-perched zone and a deeper, alluvial aquifer. The depth to groundwater in the main alluvial aquifer is more than 100 feet below ground surface in the eastern portion of the Watershed, reducing to 10 feet or less below the ground surface in the western portion of the Watershed. Groundwater recharge to the deeper portion of the aquifer generally occurs in the eastern portion of sub-basin, near the foothills of the Santiago Hills where ephemeral streams flow from the Santa Ana Mountains. Groundwater recharge in the western, shallower portion of the aquifer occurs primarily from rainfall and irrigation infiltration (Bonterra, 2003).

3.3.2 Erosion and Sedimentation

Sediment deposition from the Watershed into Upper Newport Bay has been a long-standing concern in the Watershed. Sediment loads to Upper Newport Bay generally result from erosion of open space lands in the foothill areas, grading activities for development, increased runoff and channel erosion due to urbanization and erosion of agricultural lands. Also channelization has increased the quantity and efficiency of freshwater and sediment transport to the Bay from the Watershed. Most deposition occurs during major storm events, although low-level transport occurs -year round. For nearly 20 years, the cities, county, resource agencies and The Irvine Company have been implementing the San Diego Creek Comprehensive Storm Water Sedimentation Control Plan prepared by the Southern California Association of Governments (SCAG) pursuant to Section 208 of the CWA. The "208 Plan" resulted in implementation of agricultural and construction BMPs and resource conservation plans to address erosion at the source. Also, the plan involved capturing remaining sediment in a series of in-channel sediment basins in San Diego Creek, foothill basins, and sediment basins in Upper Newport Bay. These basins are described below in more detail.

In-channel Sediment Basins - Three in-channel sediment basins are located within the lower reach of San Diego Creek. These Basins act as sediment "traps" which are designed to retard the flow of water coming through San Diego Creek prior to its discharge into Newport Bay. By slowing the velocity of the water, sediment is able to drop out of suspension and deposit in the basins rather than being carried to the Bay. In-channel Basin 1 is the southernmost basin, located within San Diego Creek between Campus Drive and MacArthur Boulevard, and has a design capacity of 218,000 cubic yards (5,886,000 cubic feet). In-channel Basin 2, located from Campus Drive to about a quarter-mile upstream of the confluence of San Diego Creek and Sand Canyon Channel has a design capacity of 64,000 cubic yards (1,728,000 cubic feet). In-channel Basin 3, is the northernmost basin, located between In-channel Basin 2 and the confluence of San Joaquin Channel and has a design capacity of 91,000 cubic yards (2,457,000 cubic feet) (RDMD, 2003). These in-channel sediment basins are currently maintained by IRWD under a maintenance agreement with OCFCD.

Foothill Retarding Basins - The foothill basins are elements of the Flood Control Master Plan for San Diego Creek adopted by the County in 1989 and are also identified in the County's San Diego Creek Sediment Control Plan (1983). These basins have dual purposes: 1) sediment collection and 2) flood management. The basins are designed to trap substantial amounts of debris, including sediment that could clog downstream channels, create flooding and ultimately be deposited into Upper Newport Bay. These basins also retard discharge by collecting water during a storm and releasing the water afterwards. Characteristics of the Foothill Retarding Basins are shown in the Table 3-<u>1211</u>.

Dasin Nama	Design Capacity	Maintenance	
Dasin Ivanic	In cubic yards (CY)/ cubic feet (CF)	Responsibility	
Bee Canyon Basin	62,900/1,698,300	RDMD	
Round Canyon Basin	45,200/1,220,400	RDMD	
Agua Chinon Basin	64,500/1,741,500	RDMD	
Hicks Canyon Basin	29,400793,800	RDMD	
East Hicks Canyon Basin	8,100/218,700	RDMD	
Orchard Estates Basin	46,000/1,242,000	RDMD	

Table 3-1211. Characteristics of Foothill Retarding Basins

Source: RDMD, 2003.

Valley Retarding Basins. Valley retarding basins and reservoirs are located in the valley areas (Tustin Plain area). The primary purpose of these basins is flood management. These six basins include: Lower Peters Canyon Retarding Basin; Peters Canyon Regional Park Dam; El Modena-Irvine Retarding Basin; Marshburn Retarding Basin; Trabuco Retarding Basin; and Veeh Reservoir.

Although the 208 Plan helped reduce sedimentation to the Bay, erosion problems in some of the main and tributary channels of San Diego Creek remain (Corps, 2001). Sedimentation continues to adversely affect the estuarine species and habitats and navigation channels south of Upper Newport Bay Ecological Reserve. Recent studies in the in the Watershed indicate that engineered basins can accumulate sediment loads during low flow periods, reducing sediment supply to downstream reaches and increasing channel erosion potential. During periods of high flow, the basins can act as sources of sediment load, and previously accumulated deposition can be re-suspended and transported downstream, potentially exacerbating sedimentation problems (Trimble, 2003).

Sediment Monitoring. The RWQCB Monitoring and Reporting Program No. 99-74 requires sediment monitoring and maintenance activities for compliance with the sediment TMDL. The Upstream Monitoring Element applies to those activities performed in the Watershed. The available capacities of the in-channel sediment basins were monitored to evaluate the need for sediment removal. The 2005-06 survey results showed that all in-channel basins had greater than 50 percent available capacity and, therefore, met the minimum requirements established by the TMDL. The Monitoring and Reporting Program requires that foothill retarding basins be surveyed once every five years or in a year when 100 percent of the mean basin rainfall occurs. Based on the 2005-06 season rainfall totals, the rainfall thresholds requiring basin surveys were not met. However, the County conducted spot surveys of the seven foothill sediment control basins (Hicks, East Hicks, Agua Chinon, Bee, Marshburn, Round Canyon and Orchard Estates) to determine the current available capacity. All seven basins had greater than 50 percent available capacity for sediment storage and therefore met the available capacity targets established in the sediment TMDL. Sediment removal activities were conducted in the Bee Canyon and Marshburn foothill basins during the 2005-06 reporting period. Approximately 36,310 cubic yards of sediment were removed from the Bee Canyon foothill basin, resulting in a 58% increase to the available The Marshburn basin was under reconstruction during the reporting period. sediment capacity. Reconstruction efforts included lowering the invert 12 feet and increasing the overall capacity of the basin. (County of Orange, Resources and Development Management Department, Upper Newport Bay/San Diego Creek Watershed Sediment TMDL, 2005-06 Annual Report).

Sediment Transport. Sediment transport is the movement of sedimentary materials either by gravity; running water such as rivers, creeks, and streams; glaciers; wind; and sea currents or longshore drift. For the Watershed, the primary means of sediment transport is through creeks and streams. Orange County has been measuring sediment transport on a daily basis since 1983 at three gage stations. These gage stations include San Diego Creek at Culver Drive, San Diego Creek at Campus Drive, and Peters Canyon Wash at Barranca Parkway. The sediment transport presented in this section is based on the County's field measurement and analysis.

During the 1999-2006 period, the County collected fluvial sediment samples from the sediment stations along San Diego Creek and Peters Canyon Wash. The data show that sediment samples collected from the Campus Drive Station contain a higher percentage of fine material than samples collected at the Peters Canyon Wash and Culver Drive Stations. This suggests that coarser particles are being deposited upstream of the Campus Drive Station in the sediment basins and reaches. Sediment transport curves for San Diego Creek at Campus Drive, Culver Drive, and for Peters Canyon Wash at Barranca Parkway were calculated by the County using a historic database of sediment concentration curves. The transport curves show a relationship between the daily water discharge and the daily sediment discharge. Sediment transport curves for Bonita Canyon, Sand Canyon, Marshburn, and Agua Chinon are being developed and annual sediment discharges will not be available until this is accomplished. For the more recent 2005-06 reporting period, 602 fluvial sediment samples were collected 147 of which were storm samples. In addition, the United States Geological Survey (USGS), through a joint-funding agreement, collected samples at four of the eight stations (Barranca, Culver, Campus and Santa Ana-Delhi) (RDMD, 2006).

Sediment Discharge. In the 2005-06 reporting period, annual sediment discharges were calculated based on sediment concentration curves, sediment transport curves and streamflow data for four stations within the Watershed. The results were as follows:

- Peters Canyon Wash at Barranca Parkway (Barranca Station): 2,935 tons;
- San Diego Creek at Culver Drive (Culver Station): 6,919 tons;
- San Diego Creek at Campus Drive (Campus Station): 9,291 tons; and
- Santa Ana-Delhi at Irvine Avenue (Santa Ana-Delhi): 345 tons.

Sediment loading at Campus Drive is important because it is the last sediment monitoring station before San Diego Creek enters Upper Newport Bay. Therefore, it offers the most useful data to measure the amount of fluvial sediment being transported into the Bay from San Diego Creek. For the period 1997-2006, sediment discharge from San Diego Creek as reported by RDMD (2006) is as follows:

1997-98:	618,000 tons	2002-03:	64,740 tons
1998-99:	16,400 tons	2003-04:	30,464 tons
1999-00:	28,900 tons	2004-05: 2005-06:	165,810 tons
2000-01:	75,700 tons		9.291 tons
2001-02:	5,640 tons	2000 00.	<i>y</i> ,2 <i>y</i> 1 tons

The variation noted in the sediment discharge record correlates well with the annual rainfall variation measured at a local gage (Tustin-Irvine Ranch) over the same period. As indicated in Figure 3-11, this

correlation extends over the entire period over which the RDMD has been monitoring sediment discharges on San Diego Creek. The recent four years of record (1999/00-2005/06) are highlighted on this figure to demonstrate the consistency of this trend in the present record.





3.3.3 Hydrologic Integrity

Hydrologic integrity is defined as the range of frequency, magnitude, and temporal distribution of stream discharge along with a concomitant surface and subsurface interaction with the floodplain that historically characterized riparian ecosystems in the region. In southern California, this translates into seasonal intermittent, ephemeral, or low flow periods, with annual bankfull discharges superimposed on a background of episodic, and often catastrophic, larger magnitude floods that inundate historical terraces. Indicators used to assess hydrologic integrity included factors that influence the frequency, magnitude, and temporal distribution of stream discharge, and factors that influence the hydrologic linkage between

the stream channel and the active floodplain and adjacent terraces, as listed:

- Altered Hydraulic Conveyance a measure of the extent of man-made modifications to drainage channels such as concrete channels;
- Surface Water Retention a measure of the degree to which the hydrologic regime has been altered due to storage in sediment and retention basins;
- **Perennialized Stream Flow** a measure of the amount of supplemental stream flows, primarily in the summer, due to man-made return flows from irrigation and/or urban runoff;
- Import, Export, or Diversion of Surface Water a measure of the amount of water imported, exported, or diverted from the natural drainage; and

• **Floodplain Interaction** – a measure of the degree to which the stream channel has been disconnected from the adjacent floodplain due to culturally accelerated channel incision, bank protection, and levees.

As discussed in Section 3.1.2, the Corps conducted a hydrologic characterization of drainages throughout the Watershed, as part of the SAMP LLFA (Smith, 2000). The assessment was accomplished by dividing the riparian ecosystem along the project site drainages into assessment units or "riparian reaches" and assessing each riparian reach using a suite of indicators of ecosystem integrity. One of the indicators assessed was hydrologic integrity. Drainages were considered to have high hydrologic integrity if:

- The short and long-term historical patterns of frequency, magnitude, and distribution of stream discharge remain culturally unaltered from the historical reference condition of the region; and
- The interaction between the stream channel, floodplain, and terraces of these drainages through overbank and subsurface flows have similarly remain culturally unaltered from the historical reference condition.

Figure 3-12 shows the hydrologic integrity rankings throughout the Watershed. Dark areas represent high scores where hydrologic integrity is high. Lighter areas represent reaches where hydrologic integrity has been reduced due to man-made disturbances and factors. In general, the lowest hydrologic integrity scores are along creeks where land development has altered the channels and local drainage basins. In reviewing the results, the Corps (Smith, 2000) noted the following general types of impairments that reduced the hydrologic integrity of various riparian reaches:

- Increased low-flows due to irrigation return flows and runoff from developed areas; and
- Land use and channel modifications that have disrupted natural sediment dynamics in the Watershed.

The highest possible score for hydrologic integrity ranking is 30 (darkest). The results showed an integrity range from 6 to 29, with a mean score of 18. A total of 42.7 acres in the Watershed are ranked as having high hydrologic integrity, 85.4 acres are ranked medium quality, and 57.1 acres are ranked low quality.

Most drainages north of the SR-241 (such as upstream reaches of Round Canyon Wash, Agua Chinon Wash, Borrego Canyon Wash, Serrano Creek), and some drainages in the undeveloped San Joaquin foothills have the highest hydrologic integrity scores, while the lowest scores are found in downstream channels including portions of San Diego Creek, Peters Canyon Wash and Veeh Creek. Shady Canyon Creek upstream of Sand Canyon Reservoir was generally characterized as medium to high integrity, while reaches of Sand Canyon Wash downstream of the reservoir were characterized as medium integrity.

3.4 WATER QUALITY

3.4.1 Surface Water Quality

The Watershed is within the jurisdiction of the Santa Ana RWQCB and is subject to the provisions of the Santa Ana River Basin Water Quality Control Plan (Basin Plan) which identifies the water quality objectives and beneficial uses for waters within its jurisdiction. Table 3-<u>1312</u> shows the present and

potential beneficial uses for San Diego Creek and Upper Newport Bay as specified in the Basin Plan. Table 3-1413 shows present and potential beneficial uses for other water bodies in the Watershed including the San Joaquin Marsh, lakes/reservoirs, and groundwater sub-basins.

Water quality objectives identified in the Basin Plan are based on the established beneficial uses, and are defined as "the limits or levels of water quality constituents or characteristics, which are established for the reasonable protection of beneficial uses." In addition, U.S. EPA established numeric water quality criteria for toxic substances in certain designated Receiving Waters of California based on beneficial uses relating to aquatic life or human health. This is known as the California Toxics Rule (CTR) (40 CFR §131.38). The SWRCB adopted a State Implementation Plan (SIP) for the CTR. The CTR criteria do not apply to storm water discharges; instead, those discharges are regulated through various NPDES storm water permits. Applicable numeric water quality objectives for surface water as well as the CTR standards are shown in Table 3-<u>1514</u>. Applicable numeric water quality objectives for groundwater are shown in Table 3-<u>1615</u>. The Basin Plan also references California Drinking Water Standards as additional objectives that are sometimes applied to surface and groundwater.

San Diego Creek (Reaches 1, 2, and 4) and Newport Bay (Upper and Lower) have been determined to be impaired by the State Water Resources Control Board (SWRCB) and included on the State's 2006 303(d) list of impaired water bodies since they do not meet established water quality standards as discussed later in this section. (The list is periodically updated). These water bodies are considered impaired from, pathogens (fecal coliform), toxics (dichlorodiphenyltrichloroethane (DDT), chlordane, PCBs, and toxaphene), salinity/total dissolved solids/chlorides, sediment toxicity as well as some metals (copper, and selenium). These contaminants have impacted San Diego Creek and Newport Bay in the form of excessive sedimentation, eutrophication, bacterial contamination, and toxic contamination.

The County of Orange regularly monitors surface water quality in San Diego Creek and Newport Bay including many of the constituents for which these water bodies are impaired. Table 3-<u>1716</u> provides a summary of San Diego Creek and Upper Newport Bay water quality data for dry and wet weather from the County's 2001/2002, 2002/2003, and 2003/2004 annual monitoring reports.

Figure 3-12. Spatial Distribution of Ecosystem Integrity Scores, Hydrology

Beneficial Use	San Diego Creek ¹	Upper Newport Bay
Municipal and Domestic Supply (MUN) – includes waters used for community, military, municipal or individual water supply systems. These uses may include but are not limited to drinking water supply.	\mathbf{X}^2	
Groundwater Recharge (GWR) – includes the uses of waters for natural or artificial recharge of groundwater for purposes that may include, but are not limited to future extraction, maintaining water quality or halting salt water intrusion into freshwater aquifers.	X	
Water Contact Recreation (REC-1) – includes the uses of waters for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, washing, water-skiing, skin and scuba diving, surfing whitewater activities, fishing, and use of natural hotsprings.	X ³	Х
Non-Contact Water Recreation (REC-2) – includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.	X	X
Commercial and Sport fishing (COMM) – includes uses of waters for commercial or recreational collection of fish or other organism, including those collected for bait. These uses may include, but are not limited to uses involving organism intended for human consumption.		Х
Warm Freshwater Habitat (WARM) – includes uses of water that support warm water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.	X	
Preservation of Biological Habitats of Special Significance (BIOL) – includes uses of water that support designated areas or habitats, including but not limited to, established refuges, parks, sanctuaries, ecological reserves or preserves, and Areas of Special Biological Significance, where the preservation and enhancement of natural resources requires special protection.		Х
Wildlife Habitat (WILD) – includes uses of water that support terrestrial ecosystems, including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.	X	Х
Rare, Threatened, or Endangered Species (RARE) – includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.	\mathbf{X}^{4}	Х
Spawning, Reproduction, and Development (SPWN) – includes uses for supporting a high quality aquatic habitats necessary for reproduction and early development of fish and wildlife.		Х
Marine Habitat (MAR) – includes use of waters that support of marine ecosystems that include, but are not limited to preservation and enhancement of Marine habitats vegetation (e.g., kelp beds), fish and shellfish, and wildlife (e.g., marine mammals and shorebirds).		Х
Shellfish Harvesting (SHEL) – includes uses of waters that support habitats necessary for shellfish (e.g., clams, oysters, limpets, abalone, shrimp, crab, lobster, sea urchins, and mussels) collected for human consumption, commercial or sports purposes.		X
Estuarine Habitat (EST) – includes uses of water that support estuarine ecosystems, which may include, but are not limited to, preservation and enhancement of estuarine habitats, vegetation, fish and shellfish, and wildlife, such as waterfowl, shorebirds, and marine mammals.	X ⁵	X

Table 3-1312. Present or Potential Beneficial Uses of San Diego Creek and Upper Newport Bay

¹ For areas of San Diego Creek upstream of Jeffrey Road to headwaters, applicable beneficial uses are intermittent only, meaning that water conditions do not allow the beneficial use to exist year-round. Intermittent beneficial uses also apply to tributaries of San Diego Creek including Bonita Creek, Serrano Creek, Peters Canyon Wash, Hicks Canyon Wash, Bee Canyon Wash, Borrego Canyon Wash, Agua Chinon Wash, Laguna Canyon Wash, Rattlesnake Canyon Wash, Sand Canyon Wash, and other tributaries to these creeks. The RWQCB is considering listing Peters Canyon Wash individually and assigning its own beneficial uses (RWQCB 2002 Triennial Basin Plan Review).

² Water body has been specifically excepted from the MUN designation in accordance with the criteria specified in the "Sources of Drinking Water Policy".

³ For reaches below Jeffrey Road, access is prohibited in all or part by County RDMD.

4 The RWQCB is considering adding the RARE beneficial use designation to all reaches of San Diego Creek (RWQCB 2006 Triennial Review of Basin Plan.

⁵ The RWQCB is considering designating San Diego Creek from Upper Newport Bay mean high tide to drop structure upstream of MacArthur Boulevard as a separate reach (Reach 1A) and adding the EST designation (RWQCB 2006 Triennial Review of Basin Plan).

Beneficial Use		Lakes and	Groundwater
		Reservoirs ¹	Subbasins ²
Municipal and Domestic Supply (MUN) – includes waters used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.		X ³	X
Agricultural Supply (AGR) – includes waters used for farming, horticulture or ranching. These uses may include, but are not limited to, irrigation, stock watering and support of vegetation for range grazing.		X	Х
Industrial Service Supply (IND) – includes waters used for industrial activities that do not depend primarily on water quality. These uses may include, but are not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.			Х
Industrial Process Water (PROC) – includes waters used for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, process water supply and all uses of water related to product manufacture or food preparation.			Х
Water Contact Recreation (REC-1) – includes the uses of waters for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, washing, water-skiing, skin and scuba diving, surfing whitewater activities, fishing, and use of natural hotsprings.	X	\mathbf{X}^4	
Non-Contact Water Recreation (REC–2) – includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.	Х	X	
Warm Freshwater Habitat (WARM) – includes uses of water that support warm water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.	X	X	
Preservation of Biological Habitats of Special Significance (BIOL) – includes uses of water that support designated areas or habitats, including but not limited to, established refuges, parks, sanctuaries, ecological reserves or preserves, and Areas of Special Biological Significance, where the preservation and enhancement of natural resources requires special protection.	Х		
Wildlife Habitat (WILD) – includes uses of water that support terrestrial ecosystems, including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.	Х	Х	
Rare, Threatened, or Endangered Species (RARE) – includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.	X		

 Table 3-1413.
 Present or Potential Beneficial Uses of Other Water Bodies in San Diego Creek Watershed

¹ Includes Laguna, Lambert, Peters Canyon, Rattlesnake, Sand Canyon and Siphon Reservoirs.

² Includes Irvine Forebay I, Irvine Forebay II, and Irvine Pressure Zone.

³Water body has been specifically excepted from the MUN designation in accordance with the criteria specified in the "Sources of Drinking Water Policy". However, the U.S. EPA reserved action on a previous Basin Plan amendment that excepted a number of water bodies from the MUN beneficial use. These include several waters that are currently used exclusively for storage of agricultural irrigation water: Laguna Reservoir, Lambert Reservoir, Peters Canyon Reservoir and Siphon Reservoir. Issue no. 14 of the 2006 Triennial Review Priority List specifies removal of Laguna and Lambert Reservoirs from Lakes and Reservoirs section of Table 3-1, Beneficial Uses and Table 4-1, Water Quality Objectives of the Basin Plan. ⁴ Access prohibited by The Irvine Company.

Constituent	Units	Basin Plan	California Toxics Rule ^{a,b}	
		Objectives ^a	(CMC) ^c	(CCC) ^d
Inorganic Chemicals			. ,	
Aluminum	mg/L			
Antimony	mg/L			
Arsenic	mg/L		0.34	0.15
Asbestos	MFL			
Barium	mg/L			
Bervllium	mg/L			
Boron	ma/L	0.75		
Cadmium	ma/l		0.0043	0.0022
Chromium	mg/L		0.016	0.011
Chloride	mg/l			
Copper	mg/L		0.013	0.009
Cvanide	mg/L		0.010	
Fluoride	mg/L	San Diego Creek 1.2- 0.7 (depending on air temp.)		
Iron	ma/L			
Lead	mg/l		0.065	0.0025
Manganese	mg/l			
Mercury	mg/L			
Nickel	mg/L		0.47	0.52
Nitrate+Nitrite (as N)	mg/L	b		
Nitrite (as N)	mg/L			
Selenium	mg/L			0.005
Silver	mg/L		0.003/	0.000
Sodium	111g/L		0.0004	
Sulfate	/0 ma/l			
Thallium	mg/L			
Zinc	mg/L		0.12	0.12
Others	iiig/L		0.12	0.12
Ammonia (as N) ^e	mg/L	San Diego Creek Table 4-2 of Basin Plan		
Chlorine, Residual	mg/L	0.1		
Chemical Oxygen Demand (COD)	mg/L	San Diego Creek Reach 1: 90 Reach 2: Upper Newport Bay		
Fecal coliform bacteria	Organisms/ 100mL	San Diego Creek MUN: < 100 REC-1: < 200 REC-2: < 2000 Upper Newport Bay REC-1: < 200 SHEL: 14 MPN	-	
рН	pH Units	San Diego Creek 6.5-8.5 Upper Newport Bay 7.0-8.6	-	
Specific Conductance	(μs)			
Temperature	٥F	San Diego Creek		

Table 3-1514. Water Quality Objectives and CTR Standards Applicable to Surface Water

Constituent	Units	Basin Plan	California Toxics Rule ^{a,b}	
Constituent		Objectives ^a	(CMC) ^c	(CCC) ^d
		< 90 June through Oct < 78 Nov through May		
Total dissolved solids (TDS)	mg/L	San Diego Creek Reach 1: 1500 Reach 2: 720 Upper Newport Bay		
Total Inorganic Nitrogen (TIN)	mg/L	San Diego Creek Reach 1: 13 Reach 2: 5 Upper Newport Bay		
Turbidity	NTU	0-50 NTU: max. incr. 20% 50-100 NTU: max. incr. 10 NTU > 100 NTU: max. incr. 10%		

^a California Toxics Rule (CTR) freshwater aquatic life criteria.

^b Certain CTR criteria (e.g., copper, lead, zinc) are hardness dependent and can vary depending on the hardness of the receiving water at a given time.

^c Criteria Maximum Concentration (CMC) equals the highest concentration to which aquatic life can be exposed for a short period of time not to be exceeded more than once every three years on average.

^d Criteria Continuous Concentration (CCC) equals the highest concentration to which aquatic life can be exposed for an extended (4-days) period of time not to be exceeded more than once every three years on average.

e Un-ionized ammonia is toxic to fish and other aquatic organisms.

Source: Santa Ana River Basin Water Quality Control Plan, 1995; California Toxics Rule, May 2000.

Constituent	Units	Basin Plan Objectives
Inorganic Chemicals		
Aluminum	mg/L	
Antimony	mg/L	
Arsenic	mg/L	0.05ª
Asbestos	MFL	
Barium	mg/L	1.0 ^a
Beryllium	mg/L	
Boron	mg/L	0.75
Cadmium	mg/L	0.01 ^a
Chromium	mg/L	0.05ª
Chloride	mg/L	150
Cobalt	mg/L	0.2^{a}
Copper	mg/L	1.0 ^a
Cyanide	mg/L	0.2^{a}
Fluoride	mg/L	1.0 ^a
Iron	mg/L	0.3^{a}
Lead	mg/L	0.05 ^a
Manganese	mg/L	0.05 ^a
Mercury	mg/L	0.002 ^a
Nickel	mg/L	
Nitrate (NO ₃)	mg/L	
Nitrate+Nitrite (as N)	mg/L	8,6,6°
Nitrite (as N)	mg/L	
Selenium	mg/L	0.01 ^a
Silver	mg/L	0.05ª

Table 3-1615. Water Quality Objectives Applicable to Groundwater

Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

Constituent	Units	Basin Plan Objectives
Sodium	%	180,100,100 ^c
Sulfate	mg/L	340,240,240°
Thallium	mg/L	
Zinc	mg/L	
Others		
Bacteria, Coliform	Organisms/100 mL	2.2 ^a
Color	Color Units	b
Hardness	mg/L	450,380,380°
Methylene Blue-Activated Substances (MBAS)	mg/L	0.05ª
Odor	Units	e
Oil and Grease		^d
РН	pH Units	6-9
Radioactivity:		
Combined Radium-226 & Radium-228	PCi/L	5 ^b
Grass Alpha particle activity	PCi/L	15 ^a
Tritium	PCi/L	20,000 ^a
Strontium-90	PCi/L	8^{a}
Gross Beta particle activity	PCi/L	50 ^a
Uranium	PCi/L	20 ^a
Specific Conductance	(µs)	
Total dissolved solids	mg/L	1000,720,720 ^c
Toxic Substances		f
Others		
Turbidity	NTU	

^a In groundwaters designated MUN.

^b Shall not result in coloration of the Receiving Waters which causes a nuisance or adversely affects beneficial uses.

^c Irvine Forebay I, Irvine Forebay II, and Irvine Pressure, respectively.

^d Shall not result in deposition of oil, grease, wax or other materials in concentrations which cause nuisance or adversely affect beneficial uses.

^e Shall not contain taste or odor-producing substances at concentrations which cause a nuisance or adversely affect beneficial uses.

^{*f*} Shall be maintained free of substances in concentrations toxic or physiologically detrimental to human, plant, animal or aquatic life.

	Units	County of Orange 2002/2003				County of Orange 2003/2004				County of Orange 2004/2005			
Water Quality Constituent		Program Effectiveness				Program Effectiveness				Program Effectiveness			
		Assessment Data				Assessment Data				Assessment Data			
		San Diego Creek		Upper Newport		San Diego Creek		Upper Newport		San Diego Creek at		Upper Newport	
		at Campus Drive		Bay, Unit I in-bay		at Campus Drive		Bay, Unit I in-		Campus Drive		Bay, Unit I in-bay	
				basın				bay basin				basin	
		Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
		Season	Season	Season	Season	Season	Season	Season	Seaso	Season	Season	Season	Season
		Avg.	Avg.	Avg.	Avg.	Avg.	Avg.	Avg.	n	Avg.	Avg.	Avg.	Avg.
									Avg.				j
Inorganic Chemicals													
Cadmium	Ug/L	<1.05	<1.04		<1.2	<1	<5.2		<1	<1	< 0.72	<1.1	< 0.7
Copper	Ug/L	<10.5	<12.2		<6.9	19.5	<15.4		9.1	7.8	<7.0	13.4	<7.3
Lead	Ug/L	<2.3	<2.8		<1.9	<2.2	<2.6		<2.4	<2.1	<2.2	<3.6	<2.4
Nitrate as NO ₃	Mg/L	11.1	23.3	<0.6	3.8	10.6	25.0	< 0.5	<2.5	<7.5	<28.3	< 0.75	<4.6
NH _{3/} N	Mg/L	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1	< 0.09	0.2	< 0.2	<1.5	< 0.09	< 0.09	< 0.21
NH ₄ /N	Mg/L	-										-	
TKN	Mg/L	1.8	2.0	0.7	0.8	2.4	1.9	0.6	0.8	2.2	1.4	0.66	1.1
Phosphorous (Total Phosphate as PO ₄)	Mg/L	0.6	1.0	0.4	0.7	0.4	0.7	0.4	0.6	0.5	1.7	0.41	1.2
Ortho Phosphate as P	mg/L	< 0.02	< 0.2	0.09	0.2	< 0.02	< 0.09	0.1	0.1	<.05	< 0.17	6.6	<0.2
Selenium	ug/L	<22.2	<19.1		3.6	15	<6.4			<13.8	<14.6		
Zinc	ug/L	<19.9	<30.6		<20.8	<29.0	<28.7	-	32.3	<20.5	<24.1	<35.8	<29.3
Others													
Sediment	Sediment monitoring data are provided in Section 3.3.2 of this EIS/EIR. Sediment chemistry data are available in the County of Orange												
2002/2003 Annual Report and can be found at http://www.ocWatersheds.com/StormWater/documents_damp_pea.asp									-				
Toxics													
Diazinon	ng/L	<50	<51.8			<5	<30.86			<6.3	<218.4		
Chlorpyrifos	ng/L	<50	<20.4			<5	<5			<5	<219.6		

Table 3-1716. San Diego Creek and Upper Newport Bay Water Quality Monitoring Data

3.4.2 Total Maximum Daily Loads (TMDLs)

To address the water quality impairments of San Diego Creek and Newport Bay, Total Maximum Daily Loads (TMDLs) have been adopted by the RWQCB. TMDLs set seasonal loading targets of a constituent for dischargers to both San Diego Creek and Newport Bay. TMDLs have been adopted for nutrients (total nitrogen and total phosphorus); sediment; and pathogens using fecal coliform as a pathogen indicator, diazinon and chlorpyrifos. Technical TMDLs for toxic substances including dissolved metals (cadmium, copper, lead, zinc), selenium, organochlorines [DDT, chlordane, dieldrin, polychlorinated biphenyls (PCBs), toxaphene] were promulgated by U.S. EPA. The RWQCB is working on Basin Plan amendments to incorporate these toxic substance TMDLs.

Implementation of the TMDLs is intended to help achieve the water quality objectives listed in Table 3-15. At this time and in accordance with the phased TMDL implementation program, regulatory agencies, local governments, and private entities are conducting monitoring studies to determine how to attain the TMDL objectives. Table 3-<u>1817</u> contains details of the TMDLs.

Sediment	Nutrients	Pathogens	Toxics	
General Information and	Target Reductions			
1998 estimate: 250,000 tons deposited/yr Reduction: 50% (to 125,000 tons/yr) within 10 years (2008)	1998 estimate: 1,087,000 lbs/yr. Predominant sources: commercial nursery and agricultural land tailwaters Reduction: 50% by 2012	Fecal coliform bacteria used as indicator. Reduction: less than 200 organisms/100 ml. No more than 10% of samples to exceed 400 organisms/100 ml for any 30-day period.	Problem toxic substances: PCBs, DDT, chlordane, dieldrin, diazinon, chlorpyrifos, toxaphene, copper, cadmium, lead, zinc, and selenium (occurs naturally).	
Allocations				
62,500 tons to Newport Bay. 62,500 tons to rest of the Watershed. Load allocations (total 10 yr. Running annual avg. (in tons/yr): Open space = 28,000 Agriculture = 19,000 Construction = 3,000 Urban = 2,500	Loading targets for seasonal and annual amounts of total nitrogen and phosphorus, with 5, 10, and 15-year target dates. Waste & load allocations for total nitrogen (5-year target) (in Ibs/season): Nursery = 67,344 Silverado Constr. = 25,671 Urban = 20,785 Agricultural = 22,963 Open space/natural = 63,334 Waste & load allocations for total phosphorous (5-year target) (in Ibs/yr): Urban = 4,102 Construction = 7,947 Agricultural = 26,196 Open space = 38,640	Waste & load allocations (14 yr. Target date): Urban runoff (incl. Storm water), agricultural runoff (incl. Storm water), and natural sources = 5-day sample/30-day geometric means of less than 200 organisms/100 ml, no more than 10% of samples to exceed 400 organisms/ 100 ml for any 30-day period. Vessel waste = 0.	PCB to San Diego Creek: 282.1 g/yr DDT to San Diego Creek: 432.6 g/yr Chlordane: 314.7 g/yr Dieldrin: 262.0 g/yr Diazinon: Acute: 80 ng/L Chronic: 50 ng/L Chronic: 50 ng/L Chronic: 14 ng/L Toxaphene: 8.9 g/yr Copper to Newport Bay: 11,646 lbs/yr Cadmium: 14,753 lbs/yr Lead: 27,136 lbs/yr Zinc: 285,340 lbs/yr Selenium to San Diego Creek: 891.4 ug/L	

Table 3-1817. TMDLs Applicable to Newport Bay and San Diego Creek

Sediment	Nutrients	Pathogens	Toxics
Implementation			
Monitoring and surveys conducted by the County, and cities of Irvine, Tustin, Lake Forest, Costa Mesa, Santa Ana, and Newport Beach with the financial participation of The Irvine Company. Maintenance of basins to performance standards and other requirements.	Agricultural Nutrient Management approved by RWQCB identifies management measures and guidance practices. Based upon monitoring studies, RWQCB will review and may revise the current nitrogen objective for San Diego Creek in the Basin Plan.	Monitoring plans resulting from studies conducted by County Health Care Agency. Monitoring study to determine appropriateness of current bacteria objectives and reduction target.	Diazinon and Chlorpyrifos: Phase out household use. DDT and PCBs: State conduct investigations of potential spill sites to identify hotspots and remedial action. Selenium: monitor flow, discharge management practices. Copper: reduce through five areas of action.

 Table 3-18.
 TMDLs Applicable to Newport Bay and San Diego Creek (continued)

Following is description of each water quality impairment and how the TMDL is addressing the impairment.

Sedimentation: Erosion in the Newport Bay Watershed and resultant sediment deposition in the Bay is a continual threat to the beneficial uses of the Bay. Most deposition occurs during major storm events and can originate from construction activities, channel erosion, and erosion of agricultural land and open space. The sediment TMDL adopted by the RWQCB in 1998 requires implementation of sediment control measures to ensure that sediment discharges to Newport Bay will not substantially change the existing acreage of aquatic, wildlife, and rare and endangered species habitat, and maintain the navigational and non-contact recreational uses of the Bay (RWQCB, 2004).

The major elements of the sediment TMDL are:

- Maintain both the Unit III and Unit II sediment control basins in Upper Newport Bay to a minimum depth of 7 feet below mean sea level.
- Ensure that sediment control measures to protect the habitat in Newport Bay does not allow more than a one percent change from existing acreage.
- Reduce the annual average sediment load in the Watershed from a total of approximately 250,000 tons per year to 125,000 tons per year within 10 years (i.e., 2008), thereby reducing the sediment load to Newport Bay to approximately 62,500 tons per year. It is assumed that the rest of the material would be trapped in the Watershed basins.
- Implement sediment control measures in Upper Newport Bay such that the basins need not be dredged more frequently that about once every 10 years, and the long-term goal of reducing the frequency of dredging to once every 20 to 30 years.
- All Watershed in-channel and foothill sediment control basins shall be maintained to have at least 50 percent design capacity available prior to November 15 of each year².

Other aspects of the sediment TMDL include a monitoring program and a requirement to prepare topographic and vegetation surveys of Upper Newport Bay every three years. Additional details about sedimentation and sediment discharge are discussed in Section 3.3.2.

² Sediment removal in the in-channel and foothill sediment control basins is a County of Orange project regulated under CWA Section 404 and FGC Section 1600 *et seq*.

Eutrophication: Newport Bay has exhibited signs of nutrient enrichment for over 25 years. Nutrient enrichment and resulting algae growth adversely impact the beneficial uses of the Bay. In addition, existing numeric water quality objectives for total inorganic nitrogen in San Diego Creek were not being achieved. These factors prompted development of the nutrient TMDL for the Newport Bay Watershed in 1998 (RWQCB, 2004). The TMDL identifies tailwaters from commercial nurseries and agricultural lands as the predominant sources of nutrients, but recognizes the substantial reductions in nutrient loads over the years, primarily due to the introduction of drip irrigation systems and/or recycle systems. The TMDL states that these improvements coupled with the increased tidal flushing caused by the construction of the in-Bay basins appear to have resulted in a substantial downward trend in nitrate concentrations in the Bay. However, since algae blooms are still occurring in Newport Bay and San Diego Creek, they are listed as water quality impaired due to nutrients pursuant to Section 303(d) of the CWA.

The nutrient TMDL provides loading targets and compliance schedules for seasonal and annual amounts of total nitrogen and phosphorus. The nutrient load reduction targets are incorporated into Waste Discharge Requirements (WDRs) as effluent limits, load allocations, and wasteload allocations to ensure that the total inorganic nitrogen for the Bay and Watershed are achieved, and the CWA requirements for the implementation of the TMDL are satisfied (RWQCB, 1998). The primary reduction of phosphorous loading is expected to be achieved by implementation of the Sediment TMDL for the Newport Bay/San Diego Creek Watershed, since much of the phosphorus loading to the Bay occurs via soil particle transport to the Bay (RWQCB, 2000, 2002). IRWD's ongoing Natural Treatment System (NTS) project, is a watershed-wide network of constructed wetlands, designed to treat dry weather flows as well as runoff from smaller, more frequent storms, in response to nutrient loading throughout the Watershed and TMDL limits for total nitrogen and total phosphorus.

Monitoring results from the past few years indicate substantial progress toward compliance with the TMDL some of which can be attributed to the implementation and effectiveness of BMPs in the Watershed. There have also been substantial nitrogen load reductions resulting from IRWD's diversion of a portion of San Diego Creek flows through wetlands ponds at the San Joaquin Marsh (RWQCB, 2000). Also, under the Agricultural Nutrient Management Program prepared by the University of California Cooperative Extension (UCCE) and approved by the RWQCB in 1999, BMPs have been implemented to improve agricultural operations and reduce nutrient loads from agricultural runoff.

As part of the 2002 Triennial Review, the RWQCB reviewed the nutrient TMDL and concluded the following:

- TMDL-required nutrient loading reductions have been largely achieved;
- Considerable progress is evident in reducing the extent of macroalgal blooms in Newport Bay;
- Water quality objectives are still not fully achieved (fall blooms still continue in Upper Newport Bay); and
- TMDL allocations need to be revised downward to ensure Newport Bay becomes free of macroalgal blooms.

Based on the above conclusions, the RWQCB intends to complete studies necessary to revise the water quality objectives in San Diego Creek for nutrients, sediment and dissolved oxygen; develop revised (lower) TMDL allocations; and continue to support nitrogen reduction efforts including: 1) finalized/revised NPDES permits and WDRs; 2) reductions in urban nutrient loading; and 3) IRWD's NTS Program. As part of the 2006 Triennial Review and pursuant to the Newport Bay/San Diego Creek Watershed nutrient TMDL implementation plan, the RWQCB is conducting studies to consider revised nutrient objectives. The results of these investigations will be used to develop specific recommendations for changes to the nutrient objectives.

Bacterial Contamination: Bacterial objectives established to protect the beneficial uses of Newport Bay have rarely been achieved. Because of consistently high levels of total coliform bacteria, the upper portion of Upper Newport Bay has been closed to water-contact recreation, while shellfish harvesting has been prohibited in the entire Upper Bay since 1978. A prioritized, phased approach to the control of bacterial quality in the Bay is specified in the pathogen TMDL, adopted by the RWQCB in 1999. The phased approach is intended to allow for additional monitoring and assessment to address areas of uncertainty and for future revision and refinement of the TMDL as warranted by these studies (RWQCB, 2004).

The pathogen TMDL addresses bacterial contamination of the Newport Bay. The two beneficial uses that can be affected are water-contact recreation and shellfish harvesting. The pathogen TMDL applies waste load allocations for fecal coliform (pathogen indicator) for urban runoff, including storm water and vessel waste. Initial work efforts are directed towards monitoring and assessment of existing conditions. It is expected that implementation of IRWD's NTS program will help control fecal coliform levels in the Watershed, helping to meet the pathogen TMDL.

Toxic Substance Contamination: Toxic substances such as pesticides, metals, and organics are present in the Watershed and Newport Bay at concentrations that adversely impact attainment of water quality standards. In January 2001, the RWQCB published a document that reviewed available chemistry data from water column samples, sediment, fish, and shellfish tissue, and water column toxicity tests to identify the substances that were causing water quality impairments. More recently, U.S. EPA conducted its own evaluation of the data and has formulated technical TMDLs for a list of chemicals (See Table 3-18). The RWQCB has amended the Basin Plan to incorporate TMDLs for nutrients, sediment, fecal coliform, chlorpyrifos and diazinon. In addition, the RWQCB is currently considering the adoption of a Basin Plan amendment to incorporate organochlorine compounds TMDLs for San Diego Creek and Upper and Lower Newport Bay. Basin Plan amendments for the other toxics contained in U.S. EPA's technical TMDLs are forthcoming from the RWQCB. It is expected that IRWD's NTS program will help reduce total copper, lead, zinc and selenium in storm water runoff to San Diego Creek and Newport Bay. Along with other Watershed efforts, the NTS program would help toward meeting future TMDLs for metals.

3.4.3 NPDES Storm Water Permits, Drainage Area Management Plan and Local Implementation Plans

The RWQCB regulates discharges of storm water under NPDES storm water permits. Storm water discharges from construction activities disturbing one acre or more of soil are regulated by the SWRCB

under the General Permit for Storm Water Discharges Associated with Construction Activities (99-08-DWQ) (General Construction Permit). The General Construction Permit requires implementation of a Storm Water Pollution Prevention Plan (SWPPP) that specifies BMPs to reduce or eliminate sediment and other construction material pollutants in storm water and non-storm water discharges from the construction site. BMPs implemented under the General Construction Permit must meet the technology standards of Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology. Under the General Construction Permit, the SWPPP must describe the anticipated construction activities and potential pollutants, select BMPs to control the anticipate pollutants (including sediment and erosion controls as well as material management controls), establish processes for inspection and maintenance of BMPs, and include reporting provisions. Per the General Construction Permit, the SWPPP for any project must be designed and implemented such that discharges from construction sites do not to cause or contribute to exceedances of Receiving Water quality standards.

Beginning in 1990, the County of Orange, the OCFCD and the central and northern incorporated cities in Orange County collectively received NPDES Permit No. CAS618030 Permit (MS4 Permit) for storm water discharges into the MS4 within the jurisdiction of the Santa Ana RWQCB. The MS4 Permit was re-issued in 1996 and again in 2002. In July 2006, in compliance with their current permit, the permittees filed a Report of Waste Discharge (ROWD). Adoption of the 4th Term Permit is pending. The MS4 Permit requires implementation of storm water management practices, control techniques, system design and engineering methods to protect beneficial uses of Receiving Waters to the maximum extent practicable. The MS4 Permit governs storm water and urban runoff discharged into the MS4 operated by the County and cities and provides conditional approval of certain non-storm waters to be discharged through the MS4 as long as such discharges are not identified as a significant source of pollutants. Examples of some of these non-prohibited non-storm waters include irrigation waters, passive footing or foundation drains, potable water line flushing, air conditioning condensate, and non-commercial vehicle washing.

The Orange County Drainage Area Management Plan (DAMP) describes the programs and activities that are implemented by the County and the cities for compliance with the MS4 Permit. The County and cities have developed Local Implementation Plans (LIPs) for implementation of the DAMP program elements within their respective jurisdictions. One program element of the DAMP, as required by the MS4 Permit, is to minimize the short- and long-term impacts on Receiving Water quality from new development and significant redevelopment³. Under this program element, Water Quality Management Plans (WQMPs) that meet specific criteria of the MS4 Permit, DAMP and LIPs to minimize the effects of development on site hydrology, runoff flow rate and velocities, and pollutant loads to the maximum extent practicable must be prepared for new development project must incorporate a variety of post-development BMPs that collectively address pollutants of concern and hydrologic conditions of concern for the project's storm water runoff. The four categories of BMPs that can be incorporated into a proposed project as specified in the Model WQMP developed by the County and the cities include: 1) site

³ New Development is defined as land disturbing activities; structural development, including construction or installation of a building or structure, the creation of impervious surfaces; and land subdivision. Significant Redevelopment is defined as the addition of 5,000 or more square feet of impervious surface on an already developed site.

design BMPs; 2) routine non-structural source control BMPs; 3) routine structural source control BMPs; and 4) treatment control BMPs. As required by the MS4 Permit, the DAMP/LIPs require that new development and significant redevelopment projects must meet specific volume-based and/or flow-based numerical sizing criteria for treating storm water runoff.

Both the MS4 Permit and the Model WQMP encourage the use of regional or Watershed management programs to address runoff from new development and significant redevelopment. Participation in RWQCB-approved regional treatment systems, such as IRWD's NTS program, can fulfill the treatment control requirements of the DAMP/LIPs.

The DAMP/LIPs also contain programs governing private and public construction and utility maintenance projects. These programs mandate implementation of certain pollutant management practices in addition to those requirements imposed by the General Construction Permit. These programs also establish municipal inspection and reporting programs for construction projects.

3.4.4 General NPDES Permit/Waste Discharge Requirements for Short-Term Groundwater Discharges and De Minimus Wastewater Discharges

The RWQCB's Order No. R8-2004-0021 is a General Permit for short-term groundwater discharges and *de minimus* wastewater discharges to surface waters within the San Diego Creek/Newport Bay Watershed. This General Permit covers:

- Short term (one year or less duration) discharges from activities involving groundwater extraction and discharge such as wastes associated with well installation, development, test pumping and purging; aquifer testing wastes; dewatering wastes from subterranean seepage; and groundwater dewatering wastes at construction sites; and
- Discharges that pose a minimal (de minimus) threat to water quality such as, but not limited to, construction dewatering wastes not involving groundwater or storm water, discharges resulting from diverted stream flows, discharges resulting from hydrostatic testing, non-contact cooling water, etc.

The General Permit establishes numeric effluent limitations for oil and grease, sulfides, total suspended solids, total residual chlorine, and total petroleum hydrocarbons for authorized groundwater discharges and de minimus wastewater discharges. Additionally for groundwater discharges, the General Permit establishes effluent limitations for total nitrogen and total recoverable selenium in support of the nutrient and selenium TMDLs. This General Permit also requires development and implementation of an effluent monitoring program, with monitoring reports submitted to the RWQCB on a monthly basis.

3.4.5 General Discharge Prohibition

The Basin Plan (Chapter 5 Implementation) contains the following general discharge prohibitions, encompassing all Waters of the State within the RWQCB boundaries: "Unless regulated by appropriate waste discharge requirements, the discharge to surface or groundwaters of waste which contains the following substances is prohibited:

- Toxic substances or metals;
- Pesticides;
- PCBs;
- Mercury or mercury compounds;
- Radioactive substances; or
- Materials in excess of levels allowed by the California Code of Regulations.

3.4.6 Antidegradation Policy

Under the SWRCB's Antidegradation Policy (Resolution 68-16), whenever the existing quality of water is better than that needed to protect existing and probable future beneficial uses, such existing high quality is to be maintained until or unless it has been demonstrated to the state that any change in water quality:

- Will be consistent with the maximum benefit to the people of the state;
- Will not unreasonably affect present or probable future beneficial uses of such water; and
- Will not result in water quality less than prescribed in state policies.

Unless these three conditions are met, background water quality—the concentrations of substances in natural waters that are unaffected by waste management practices or contamination incidents—is to be maintained. If the SWRCB or a RWQCB determines that some water quality degradation is in the best interest of the people of California, some incremental increase in constituent concentrations above background levels may be permitted. However, in no case may such degradation cause unreasonable impairment of beneficial uses that have been designated for a Water of the State. The effect of this policy is to define a range of water quality—between natural background levels and the water quality objectives—that must be maintained. Within this range, the RWQCBs must balance the need to protect existing high quality water with the benefit to California as a whole of allowing some degradation to occur from the discharge of waste. The policy also specifies that discharges of waste to existing high quality waters are required to use "best practicable treatment or control," thereby imposing a technology-based limit on such discharges.

3.4.7 Groundwater Quality

The Irvine Groundwater Sub-Basin (portion of the Orange County coastal groundwater basin underlying the Watershed) is salty, with naturally-occurring salts from the original deposition of marine sediments. Therefore, the groundwater is considered marginal for drinking water uses. In addition, nitrate concentrations in some areas of the Sub-Basin are elevated due to historical and present use of agricultural fertilizers. Furthermore, the former Department of Defense facilities in this Sub-Basin have groundwater contamination that is currently being addressed. At former MCAS El Toro, water quality problems include a trichloroethylene (TCE) plume, fuel plume, and landfills. The Department of the

Navy has accepted full responsibility for contaminant cleanup at this facility and is participating financially in the Irvine Desalter Project. The Irvine Desalter Project is a joint groundwater quality restoration project by the IRWD and Orange County Water District (OCWD), with financial participation by the Department of the Navy and the State of California and includes a purification plant that treats groundwater in the Sub-Basin to remove salts and nitrates caused by the natural geology and past agricultural drainage as well as two purification plants that remove volatile organic compounds from the groundwater contaminated by solvent degreasers used at the former MCAS El Toro. This groundwater, once cleaned is used only for irrigation and other non-drinking water uses.

At the former MCAS Tustin, water quality problems include a volatile organic compound (VOC) plume and a fuel plume. The Department of the Navy is completing their on-going efforts to remediate soil and water contamination left during the military's operation of the former base.

3.4.8 Water Quality Integrity

Water quality integrity is defined as the range of pollutant loading (i.e., nutrients, pesticides, hydrocarbons, and sediments) similar to that which historically characterized riparian ecosystems in the region. The key indicators of water quality integrity used in the Corps (2001) study included:

- Land Use/Land Cover a measure of the extent to which the loading of nutrients, pesticides, hydrocarbons, and sediments exceeds natural levels; and
- Sediment Regime a measure of the degree to which sediment dynamics in the stream channel are in equilibrium with the upstream sediment supply, and the erosion and deposition processes in the channel.

As discussed in Section 3.1.2, the Corps conducted a water quality characterization of drainages throughout the Watershed as part of the SAMP LLFA (Smith, 2000). The overall objective of the LLFA was to characterize and rank the "integrity" of the riparian ecosystems to provide the basis for evaluating the impacts on riparian ecosystems of various alternatives considered in the SAMP formulation process. The assessment was accomplished by dividing the riparian ecosystem along the project site drainages into assessment units or "riparian reaches" and assessing each riparian reach using a suite of indicators of ecosystem integrity.

One of the indicators assessed was water quality integrity. Riparian reaches characterized as having high water quality integrity were those where the range of pollutant loading (in the categories of nutrients, pesticides, hydrocarbons, and sediments) were determined to be similar to those that historically characterized riparian ecosystems in the region. The factors used in this characterization of water quality integrity included:

- No changes in land use/land cover in the areas tributary to the riparian reach;
- No changes in stream system that transports pollutants (e.g., no changes in frequency, magnitude, and temporal distribution of stream flow); and
- No changes in the riparian ecosystem condition with respect to its ability to physically capture and biogeochemically process pollutants (Smith, 2002).

Figure 3-13 shows the baseline water quality integrity rankings of the riparian reaches throughout the Watershed. Dark areas represent high scores where water quality integrity is high. Lighter areas represent reaches where water quality integrity has been reduced due to man-made disturbances and factors. The lowest integrity scores were observed along creeks where urbanization and agricultural activities have altered the channels and local drainage basins. The highest possible score for water quality integrity ranking is 45 (darkest). The results showed an integrity range from 13 to 42, with a mean score of 28. A total of 40.5 acres in the Watershed are ranked as having high water quality integrity, 58.7 acres are ranked medium quality, and 86 acres are ranked low quality.

Most drainages north of the SR-241 (such as upstream reaches of Round Canyon Wash, Agua Chinon Wash, Borrego Canyon Wash), portions of Serrano Creek, Needlegrass Creek, and some drainages in the undeveloped San Joaquin foothills have the highest water quality integrity scores, while the lowest scores are found in downstream channels including portions of San Diego Creek, Peters Canyon Wash and Veeh Creek. Shady Canyon Creek upstream of Sand Canyon Reservoir was generally characterized as medium to high water quality integrity, while reaches of Sand Canyon Wash downstream of the reservoir were characterized as medium water quality integrity.

3.5 OTHER RESOURCES AND ISSUES

3.5.1 Agricultural Resources

Agriculture has long been an important activity in Orange County as a result of good soil and favorable weather. Avocado and citrus groves, nurseries, and row crops all contribute to the County's economy. The amount of land in agricultural uses began declining in the 1940s as large areas were converted to urban uses. This trend continues today and is expected to continue. Within the Watershed, agricultural uses consist primarily of row crops, avocado orchards, and citrus in currently undeveloped flat areas in and near the City of Irvine. The most intensive agricultural activity in the central area is found in the northern portion of the Tustin Plain, including orchards, row crops, and horticultural operations north of the MCAS El Toro and north of Trabuco Road. Avocado and citrus groves are located adjacent to, and include portions of, Loma Ridge and portions of adjacent canyons. There are patches of unique farmland, farmland of statewide importance, and grazing land throughout the foothills of the Santiago Hills and along the northern foothills of the San Joaquin Hills.

The Resources Element of the Orange County General Plan as well as the General Plans of some cities (e.g., Orange, Irvine, and Tustin) include goals and objectives that promote the wise management of existing agricultural lands while still recognizing that such uses are temporary.

Two major landowners in Orange County, The Irvine Company and the Rancho Mission Viejo Company, have historically held the majority of property within agricultural preserves under the Williamson Act (County of Orange General Plan). In 1987, The Irvine Company filed notice of non-renewal on all of their remaining properties from their contract. Withdrawal of The Irvine Company properties from the agricultural preserve was completed in 1999. The remaining 22,000 acres in agricultural preserve belong to the Rancho Mission Viejo Company and are located outside of the Watershed.

Figure 3-13. Spatial Distribution of Ecosystem Integrity Scores, Water Quality
Growth projections through 2020 indicate the continued urbanization of the County. This urban development will continue to convert agricultural acreage to more intensive land uses. Objectives and policies presented in the Natural Resources Component of the Orange County General Plan identify opportunities for the preservation and maintenance of agricultural acreage. These policies have been developed to assist in the preservation of agricultural land in areas where infrastructure has not yet been provided for more intensive activities.

The City of Irvine's General Plan includes objectives and policies that encourage the maintenance of agriculture in undeveloped areas of the City until the time of development, and in areas not available for development. For example, one policy provides for farming opportunities in the community, where feasible and appropriate, through an Agricultural Legacy Program. This program facilitates limited scale agricultural operations and programs on public lands. Locations for implementation of the Agricultural Legacy Program include the following:

- Designated open space spine network;
- Designated open space areas not subject to the NCCP; and
- Other appropriate publicly owned lands.

Another policy permits agricultural use of land that is unsuitable for building because it is within flood plains, or is subject to hazards to public health, safety, and welfare or similar constraints that preclude development. Other policies permit agricultural uses, on an interim basis, on land designated for development and encourage and support federal and state legislation proposed for the purpose of preservation of agricultural lands which are compatible with the City's goals and objectives.

Some continuation of existing agricultural operations is planned for orchards, field crops and nurseries after build-out of planned development in the Watershed. Agricultural production within the development footprint would be phased out as new planned communities are implemented. The only expansion of agricultural operations would be associated with areas under power line easements and implementation of the Agricultural Legacy Program with the City of Irvine.. The Agricultural Legacy Program has over 500 acres.

3.5.2 Air Quality

The Watershed lies within the South Coast Air Basin (SoCAB), California's largest metropolitan region. The area includes the southern two-thirds of Los Angeles County, all of Orange County, and the western urbanized portions of Riverside and San Bernardino counties. The topography and climate of Southern California combine to make the SoCAB an area with a high potential for air pollution, which constrains efforts to achieve clean air. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward. In addition, light winds during the summer further limit ventilation. Furthermore, sunlight triggers the photochemical reactions which produce ozone, and this region experiences more days of sunlight than many other major urban areas in the nation. (South Coast Air Quality Management District, 2003).

Regulatory Overview

Air quality in the project area is regulated by a cooperative effort between federal, state, and regional agencies, as described below:

Federal Authority - U.S. Environmental Protection Agency

Ambient air quality standards have been set by both the federal government and the state of California to protect public health and welfare with an adequate margin of safety. Pollutants for which National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS) have been set are often referred to as criteria air pollutants. The term is derived from the comprehensive health and damage effects review that culminates in pollutant-specific air quality criteria documents, which precede NAAQS and CAAQS settings. These standards are reviewed on a legally prescribed frequency and revised as warranted based on new health and welfare effects data. Each NAAQS or CAAQS is based on a specific averaging time over which the concentration is measured. Different averaging times are based upon protection of short-term, high dosage effects or longer-term, low dosage effects. NAAQS may be exceeded no more than once per year; CAAQS are not to be exceeded. NAAQS and CAAQS are in place for the following criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxides (SO₂), respirable particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), and lead.

Federal Attainment Status

A *nonattainment* designation indicates that the ambient air quality concentrations violate the AAQS. An *attainment* designation indicates that the air quality does not violate the established standard. An *unclassified* designation indicates that there are insufficient data for determining attainment or nonattainment.

State Authority - California Air Resources Board

The California Air Resources Board (CARB) is the state regulatory agency which: (1) sets and enforces emission standards for motor vehicles, fuels and consumer products; (2) sets health-based air quality standards; (3) conducts research; (4) monitors air quality; (5) identifies and sets control measures for toxic air contaminants; (6) provides compliance assistance for businesses; (7) produces education and outreach programs and materials; and (8) oversees and assists local air quality districts which regulate most non-vehicular sources of air pollution.

CARB approves regional air quality management plans (AQMPs) for incorporation into the State Implementation Plan (SIP). CARB and the local metropolitan planning organization, Southern California Association of Governments (SCAG), are responsible for preparing the portions of the SIP related to mobile source emissions. CARB implements the California Clean Air Act (CAA) requirements, regulating emissions from motor vehicles and setting fuel standards. The CCAA established the CAAQS for O₃, PM₁₀, PM_{2.5}, CO, NO₂, SO₂, lead, visibility reducing particles, sulfates, hydrogen sulfide and vinyl chloride. California standards are generally stricter than national standards. Table 3-<u>1918</u> presents the California and National (Federal) Ambient Air Quality Standards.

	Averaging	California S	Standards ¹	Federal Standards ²			
Pollutant	Time	Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷	
$O_{\text{zone}}(\Omega_{1})$	1 Hour	0.09 ppm (180 μg/m ³)	Ultraviolet		Same as	Liltraviolet	
020110 (03)	8 Hour	0.070 ppm (137 μg/m ³)	Photometry	0.08 ppm (157 μg/m ³)	Standard	Photometry	
Respirable	24 Hour	50 µg/m ³	Gravimetric or	150 μg/m ³	Same as	Inertial	
Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	$20 \ \mu g/m^{3*}$	Beta Attenuation*		Primary Standard	Separation and Gravimetric Analysis	
Fine	24 Hour	No Separate S	tate Standard	35 μg/m ³	Same as	Inertial	
Matter (PM _{2.5})	Annual Arithmetic Mean	12 μg/m ³ *	Gravimetric or Beta Attenuation	15 μg/m ³	Primary Standard	Gravimetric Analysis	
	8 Hour	9 ppm (10 mg/m ³)	New Discoursion	9 ppm (10 mg/m ³)	None	Non-dispersive Infrared	
Carbon Monoxide	1 Hour	20 ppm (23 μg/m ³)	Infrared Photometry	35 ppm (40 μg/m ³)	none	Photometry (NDIR)	
(CO)	8 Hour (Lake Tahoe)	$\begin{array}{c} 6 \text{ ppm} \\ (7 \ \mu\text{g/m}^3) \end{array}$	(NDIR)				
Nitrogen Dioxide	Annual Arithmetic Mean		Gas Phase Chemiluminesc	0.053 ppm (100 μg/m ³)	Same as Primary	Gas Phase Chemilumine- scence	
(NO ₂)	1 Hour	0.25 ppm (470 μg/m ³)	ence		Standard		
	30 days average	1.5 μ g/m ³					
Lead (Pb)	Calendar Quarter		Atomic Absorption	1.5 μg/m ³	Same as Primary Standard	High Volume Sampler and Atomic Absorption	
	Annual Arithmetic Mean	1		0.030 ppm (80 μg/m ³)		Currenting hate	
Sulfur Dioxide	24 Hour	0.04 ppm (105 μg/m ³)	Ultraviolet	0.14 ppm (365 μg/m ³)		metry (Pararosaniline	
(SO ₂)	3 Hour		Tuorescence		0.5 ppm (1300 μg/m ³)	Method)	
	1 Hour	0.25 ppm (655 μg/m ³)					
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer – visibility of 10 miles of more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter		NO FEDERAL STANDARDS			
Sulfates (O ₄ S-22)	24 Hour	25 μg/m ³	Ion Chroma- tography*				

Table 3-19.	State and Federal Ambient Air Ouality Standards
1 4010 0 170	State and I caef al Timblent Tim Quanty Standards

	Averaging	California S	Standards ¹	Federal Standards ²			
Pollutant	Time	Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷	
Vinyl Chloride (C ₂ H ₃ Cl)	24 Hour	0.01 ppm (26 μg/m ³)	Gas Chroma- tography				
Hydrogen Sulfide (H ₂ S)	1 Hour	0.03 ppm (42 μg/m ³)	Ultraviolet Fluorescence				

- California standards for O₃, CO (except Lake Tahoe), SO₂ (1 and 24 hour), NO₂, PM₁₀, PM_{2.5}, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California Ambient Air Quality Standards (CAAQS) are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
- 2. National standards (other than O₃, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O₃ standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150µg/m³ is equal to or less than one. For PM_{2.5} the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard is attained when 98 percent of the daily concentration and current Federal policies.
- 3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
- 4. Any equivalent procedure which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
- 5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
- 6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- 7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
- 8. The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source: California Air Resources Board (11/10/06)

Data from the 2007 Draft Air Quality Management Plan (AQMP) indicate that the SoCAB is currently designated as a "severe-17" nonattainment area for the 8-hour O_3 standards. Assuming all the long-term mitigation measures stated in the 2007 Draft AQMP are successfully implemented, then the 8-hour O_3 standard could be met by year 2021. However, SCAQMD may request for a "bump up" in the non-attainment status to an "extreme" classification to extend the deadline to year 2024. This request will not be determined until year 2021 after assessing the success of all mitigation measures. For PM_{10} the SoCAB is designated "serious" nonattainment, and is required to meet the national 24-hour standard by 2010. The SoCAB is also in nonattainment for $PM_{2.5}$ and currently has until 2010 to achieve the national 24-hour and annual standards; but will be filing a five-year extension to 2015. The SoCAB is in attainment for NO_2 and SO_2 . For CO the SoCAB has met the federal standards since 2003 and has requested for reclassification to attainment, but has not been officially redesignated in attainment.

Regional Authority - South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) is the regional agency responsible for the regulation and enforcement of federal, state and local air pollution control regulations in the SoCAB. The SCAQMD operates monitoring stations in the basin, develops rules and regulations for stationary sources and equipment, primary agency responsible for preparing emissions inventory and air quality management planning documents, and conducts source testing and inspections. In compliance with the CAA, the SCAQMD develops and adopts the AQMP which includes control measures and strategies to be implemented to attain state and federal ambient air quality standards in the SoCAB. The SCAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment (point and area sources) and indirect mobile sources. The SCAQMD prepared and submitted the 2003 AQMP primarily to address the SoCAB nonattainment status for O_3 and PM_{10} . The current development of the 2007 Draft AQMP is to address the nonattainment status for 8-hour O_3 and $PM_{2.5}$ standards.

At the local level, SCAG aids in the development of the AQMP and facilitates coordination with local jurisdictions and subregional associations to develop transportation control measures, including indirect source control strategies for the local jurisdictions to implement.

Global Warming and the Regulation of Greenhouse Gases

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs), analogous to the way in which a greenhouse retains heat. Global warming is the observed increase in average temperature of the earth's surface and atmosphere, primarily caused by an increase of GHG emissions in the atmosphere. The current scientific community believes that human events and activities such as the industrial revolution and the increased consumption of fossil fuels (e.g., combustion of gasoline, diesel, coal, etc.), have heavily contributed to the increase in atmospheric levels of GHG emissions.

On April 6, 1990 the SCAQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion." The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to their Air Quality Management Plan (AQMP). In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include the following directives:

- phase out the use and corresponding emissions of chlorofluorocarbons, methyl chloroform, carbon tetrachloride, and halons by December 1995;
- phase out the large quantity use and corresponding emissions of hydrochlorofluorocarbons (HCFCs) by the year 2000;
- develop recycling regulations for HCFCs;
- develop an emissions inventory and control strategy for methyl bromide; and,
- support the adoption of a California GHG emission reduction goal

In September 2006, Governer Schwarzenegger signed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. This new law added Division 25.5 (commencing with Section 38500) to the California Health and Safety Code related to air pollution, specifically greenhouse gas (GHG) emissions. The California Global Warming Solutions Act of 2006 defines GHG emissions as carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

AB 32 requires CARB to adopt regulations to require the reporting and verification of statewide GHG emissions and to monitor and enforce compliance with this program. CARB is required to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990, by the year 2020. CARB is required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. Overall compliance with this program can be achieved through rules, regulations, orders, emission limitations, emission reduction measures, or market-based mechanisms. The bill allows CARB to adopt a schedule of fees to be paid by regulated sources of GHG emissions.

Deadline	Action
January 1, 2007	AB 32 becomes effective.
July 1, 2007	Adopt a list of discrete early action GHG reduction measures that can be implemented before
	January 1, 2010.
January 1, 2008	Adopt regulations to establish a mandatory GHG reporting and verification program; define the
	1990 statewide baseline; and adopt the baseline as the 2020 statewide cap.
January 1, 2009	Adopt a plan outlining how emission reductions will be achieved from significant sources of
	GHG emissions via regulations, market mechanisms, and other actions.
During 2009	Draft rule language to implement the "plan" and hold a series of public workshops.
January 1, 2010	Early action measures take effect.
During 2010	After workshops and public hearings, conduct a series of rule making efforts to adopt GHG
	regulations.
January 1, 2011	Complete major rule making for GHG reductions. May revise rules and adopt new ones after
	January 1, 2011 in furtherance of 2020 cap.
January 1, 2012	Adopted rules and market mechanisms take effect and are legally enforceable.
December 31, 2020	Deadline for California to achieve 1990 levels of GHG emissions.

CARB's AB	32 imr	lementation	timeline	is as	follows:
CIND SIND	<i>52</i> mip	nementation	unnennie	15 45	10110 W.S.

AB 32 will create a new regulatory program intended to reduce statewide GHG emissions to 1990 levels. It is not yet clear how, or if, these future regulations will affect local governments or local land use planning decisions.

The California Climate Solutions Act of 2006 expressed the views of the State legislature - global warming poses significant adverse effects not only to California, but the entire world. Further, pursuant to 40 CFR Section 1500.1, NEPA is the national charter for the protection of the environment, establishes policy, sets goals and provides the means for carrying out the policy. NEPA also includes procedures to ensure that environmental information is available to public officials and citizens before decisions are made and actions are taken. CEQA Guidelines state that the basic premise behind that statute is to inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities. As a result, a discussion of AB 32 and global warming impacts has been included in this EIS/EIR.

Given the current state of the scientific tools and uncertain regulatory environment, no significance thresholds have been established that would allow a lead agency to compare quantified results with such criteria and determine if an individual project's emissions are significant. The SCAQMD has recently stated in its environmental documents that until appropriate scientific tools are available to evaluate the global effects of a specific project and significance thresholds are developed and adopted, it will report GHG emissions to the extent GHG emission factors are available, and will not make any conclusions regarding significance. Consequently, little regulatory or scientific guidance is available for analyzing the significance of GHG emission under CEQA or NEPA. In most situations, an individual project is unlikely to generate sufficient GHG emissions to influence global climate change. Instead, projects likely incrementally contribute to the cumulative global increase in GHG emissions.

3.5.3 Cultural Resources

Cultural resources are the tangible remains of human activities and events that took place over 50 years before present (BP). Cultural resources include prehistoric and historic archaeological sites, historic structures and districts, or any other physical evidence of human activity in the past. These resources are considered important for scientific, traditional, religious, and other reasons.

Ethnography

The Watershed was occupied by the Gabrielino and Luiseño tribes. They spoke related languages and shared fairly similar cultures. The Gabrielino occupied most of Orange and Los Angeles Counties, including the Watershed and adjacent southern Channel Islands. Their territory included the Newport Bay Region. The Luiseño have sometimes been divided into two distinct groups called the Juaneño and the Luiseño; however, these two groups practiced a similar culture and spoke a sufficiently similar language to be considered a single group. The territory of the Luiseño extended from a point near Aliso Creek south to Agua Hedionda Creek.

The Gabrielino lived at spots that provided adequate access to food and water and that were not likely to be flooded. Key resources probably included shellfish, fish, acorns, and deer. The Gabrielino often placed their settlements near the junction of several different habitats, providing some insurance against environment catastrophes that might afflict one of those habitats. The Luiseño developed similar strategies for coping with environmental variability and located their villages on ground near sources of reliable freshwater, and most foods and other resources could be obtained within a day's travel from the village.

Historic Record

European exploration of California began in AD 1542 with the voyage of the Spanish explorer Juan Rodriguez Cabrillo. The Spanish landed in San Diego Bay and claimed the land for Spain. The journey led to the colonization of Alta California. Between 1769 and 1822, the Spanish established four presidios, two pueblos, and 21 missions. The Spanish intended the missions to be only temporary establishments, and used them to convert Indians to the Spanish Catholic faith and to assimilate them into the lower ranks of Spanish society.

Many Spanish outposts were founded along El Camino Real. El Camino Real is the route that Gaspar de Portola and his expedition traveled in AD 1769. Portola led this expedition from San Diego in order to find a route to Monterey and establish a settlement there. On July 22, 1769, the group entered Orange County. Traveling north, the group passed through the western foothills of the Santa Ana Mountains.

The Portola party may have camped twice at Tomato Springs (ORA-244), a site within the City of Irvine Planning Area 6 (some areas now under development). The first stop at Tomato Springs occurred on July 26, 1769 as the group headed north. The second visit took place on January 19, 1770, during Portola's return trip. No archaeological evidence of Portola's visit has been identified. Tomato Springs is also the site of a large important Late Holocene archaeological site.

The Spanish Mission period ended when Mexico won its independence from Spain in AD 1821. The period between the 1830s and the 1840s is known as the golden age of ranching in California because the Mexican governor gave huge land grants during this time. The Watershed includes two of these land grants and part of a third: Rancho San Joaquin, Rancho Lomas de Santiago, and Rancho Santiago de Santa Ana.

The governor granted Rancho San Joaquin to Don José Sepulveda in AD 1842. This rancho spanned an area totaling 48,803 acres, covering the foothills of the Santa Ana Mountains and south toward Newport Beach and Laguna Canyon. Sepulveda built an adobe house for his family on the ranch. The foundation of his adobe remains intact and is located in northeastern portion of the Watershed.

The governor granted Rancho Lomas de Santiago to Don Teodosio Yorba in AD 1846. The ranch totaled 47,226 acres, and was bounded on the north by the Santa Ana River, on the west by Rancho San Joaquin, on the east by the Santa Ana Mountains, and on the south by the Rancho Aliso. In AD 1860, William Wolfskill purchased this rancho.

Rancho Santiago de Santa Ana was granted to José Antonio Yorba in AD 1810 by the Spanish governor. The rancho covered an area of 62, 516 acres and stretched from the east bank of the Santa Ana River to the Santa Ana Mountains and west to the Pacific Ocean. Approximately 3,800 acres of the original land grant is located within the project area. Between the early AD 1800s and 1840s, livestock ranching was the primary economic resources of California.

The Mexican-American War lasted between AD 1846-1848. On February 2, 1848, the Treaty of Guadalupe Hidalgo was signed between the United States and Mexico. This treated ceded California, Nevada, New Mexico, Arizona, and parts of Colorado and Wyoming to the United States for \$15,000,000, officially ending the war with Mexico. The Treaty of Guadalupe Hidalgo bound the United States to honor the legitimate land claims of Mexican citizens residing in those captured territories.

The Land Act of 1851 established a Board of Land Commissioners to review these records and adjudicate claims and charged the Surveyor General with surveying confirmed land grants. From AD 1852 to 1856, a Board of Land Commissioners determined that the validity of grant claims. The Board rejected land claims and reverted the land back to public domain and the land became fair game for squatters. Although the claims of some owners were eventually substantiated, the owners lost their lands through bankruptcy or the inability to meet the exorbitant interest on their legal debts.

Drought forced many of the landowners who survived the collapse of the cattle market to sell their property. As cattle ranching declined, sheep raising grew in importance and the industry reached its greatest prosperity during the Civil War. Don José Sepulveda sold his ranch in 1864 to a business partnership consisting of James Irvine, Llewellyn Bixby, Thomas Flint, and Benjamin Flint. The partnership was called Flint, Bixby & Company. Two years later they purchased Wolfskill's Rancho

Lomas de Santiago as well as a portion of Rancho Santiago de Santa Ana. Between AD 1864 and 1866, Flint, Bixby & Company added Rancho San Joaquin to its holdings, under James Irvine's management. The Company grazed about 30,000 sheep on 110,000 acres of the rancho by 1867.

In AD 1876, James Irvine I bought out his partners and became sole owner of Rancho San Joaquin and the property became known as the Irvine Ranch. Tenant farming was introduced and Irvine began subdividing land southeast of Tustin and selling the land in 40-acre parcels. In addition land was leased to tenant farmers and remains of these houses and associated trash deposits may still be present in the Watershed. James Irvine I died in AD 1886. In AD 1892, James Irvine II (also known as James Harvey Irvine, Sr.) inherited the ranch and he incorporated the Irvine Ranch Company.

Agriculture remained the primary activity on the Irvine Ranch until World War II. The United States Navy purchased 2,318 acres for the construction of the El Toro Marine Base and addition 1,600 acres for the Tustin Air Base. James Irvine, Sr. died in AD 1947. Upon his death 53.7 percent of The Irvine Company stock was assigned to the James Irvine Foundation. Irvine hoped that his foundation would continue to run the ranch as an agricultural empire. In AD 1960 The Irvine Company gifted 1,000 acres and sold an additional 500 acres to the University of California for a new campus in Irvine. In AD 1960, The Irvine Company hired William Pereira and Associates to create a master plan for the development of the Irvine Ranch. The Irvine Ranch is the largest master-planned area in North America and continues to be developed with commercial and residential uses as well as transportation facilities.

Paleontological Resources

Paleontological resources are fossils, which are found in sedimentary rocks throughout the study area. A fossil is any evidence of past life over 10,000 years old and, therefore, includes fossil plants, animals, and other traces of life (root casts, trackways, etc.). The entire study area, with the exception of a small area around Red Hill in Orange and a few areas in the San Joaquin Hills, is underlain by fossiliferous sedimentary rocks. Therefore, these areas are considered to have a high paleontological sensitivity. Unlike cultural resources, fossils are integral components of the rock unit and are likely to be encountered whenever ground disturbing activities impact intact sediments from these units. Thus, paleontological resources may be present even under existing development.

No paleontological sensitivity is present in igneous rocks of the Red Hill area and within diabase dikes of the San Joaquin Hills. High sensitivity is assigned to all areas where sedimentary units are at, or near, the ground surface. High sensitivity below 10 feet is assigned within the Tustin Plain where recent (Holocene) alluvium caps paleontological sediments. There is no "maximum depth" at which paleontological sensitivity in excavations is reduced to zero.

3.5.4 Floodplain Values

Floodplains are discussed in Section 3.3, Hydrology, Erosion and Sedimentation.

3.5.5 Geology/Soils

The Watershed is bounded on the south by the San Joaquin Hills and on the north by Loma Ridge, a part of the Santiago Hills. The central and major part of the Watershed is the relatively flat Tustin Plain. Most drainage is initially internal into the center of the Watershed, collecting in the Tustin Plain and then exiting westward, then southward into Upper Newport Bay, mainly via San Diego Creek.

Soils

Soils within the Watershed are complex and are divided into three primary landform areas: 1) the Lomas de Santiago Hills, 2) the Tustin Plain, and 3) the San Joaquin Hills. Figure 3-14 depicts the different soils underlying the Watershed. Soils of the Lomas de Santiago Hills (foothill soils) reflect their underlying geology and consist mainly of the Alo-Bosonico and Cieneba-Anaheim-Soper associations. Soils of the Tustin Plain (alluvial fan and coastal terrace) tend to become finer with decreased elevation, with much of the lower valley floor near Newport Bay composed of clay loam, clay adobe, or silty clay. Soils in the Tustin Plain consist mainly of the Metz-San Emigdio and Chino-Omni associations. Most of the lowland soils consisting of clay loam are alkaline. Soils in the San Joaquin Hills are primarily composed of the Cieneba-Anaheim-Soper, Myford, and Alo-Bosonico associations.

Expansion or shrink-swell potential varies depending on the clay and moisture content in the soil. The expansion potential of the soils in the Tustin Plain varies from moderate to very high for the Chino Omni association, low for the Metz-San Emigdio association, low to moderate for the Sorrento-Mocho association, and low to high for the Myford association.

About 250 acres of peat are part of the large San Joaquin Marsh located approximately two miles northeast of Upper Newport Bay. Coarser texture soils (no coarser than sandy loam) are downslope from most valley mouths of the Santiago Hills. Soil profiles surveyed in 1901 tend to show finer soil textures at the surface, often overlying coarser material. This is important because it suggests a mild hydrologic and erosional regime before settlement extending up to the time of the 1901 soil survey.

The Natural Resources Conservation Service (NRCS), formally the Soil Conservation Service (SCS), classifies soils into four hydrologic soil groups based on their infiltration characteristics and runoff potential. According to this classification, soil groups C and D will produce more runoff volume and higher peak flow than soil groups A and B, under a given rainfall condition. The County of Orange prepared soil maps, which designate the locations and various soil groups within the County. Major portions of the Santiago Hills and San Joaquin Hills contain hydrologic soil groups C and D, which possess low infiltration capacities. Natural soils in the central portion of the upper San Diego Creek mainly consist of soil group B, which has a higher infiltration capacity. Peters Canyon Wash upstream of the El Modena-Irvine Channel confluence is composed largely of group B with limited group A soils. In contrast, the drainage areas of the El Modena-Irvine channel, lower Peters Canyon Wash, and lower San Diego Creek (downstream of Peters Canyon Wash) mainly consist of soils with low infiltration capacities, namely soil groups C and D.

Figure 3-14. Soils Map

Mineral Resources

There are no known mineral resources in the Watershed that would be of value to the region and the state.

Seismicity

Over a dozen small, generally north-trending faults have been identified on the north face of the San Joaquin Hills, inside the Watershed. These faults continue to the north and into the central part of the Watershed, but are buried in alluvium or colluvium in the Tustin Plain. Cutting through this network of faults are the much lengthier Pelican Hill fault and Shady Canyon fault. None of these faults are noted as having been active from historical times, back through the beginning of the Pleistocene (i.e., 3 million years before present) and are therefore considered to be inactive. Larger faults close to the Watershed are the Newport-Inglewood Fault, the Whittier Fault, and the Elsinore Fault. More distant faults with a history of causing earthquakes and damage include the Palos Verdes Hills Fault, the Elysian Park Fault, the Sierra Madre Fault, the Cucamonga/San Jose Fault, the San Jacinto Fault, the San Andreas Fault, and the San Clemente Fault. A search of historical records for earthquakes within a 50 mile radius of the center of the Watershed located 48 earthquakes between a magnitude 5.0 and 7.0 (the search was conducted for earthquakes as large as magnitude 9.0, but none that large occurred), for the search years of 1800 to 1995 (Corps, 2001). Eight major earthquakes occurred on the Newport-Inglewood between 1920 and 1969, the most sizeable of which was the Long Beach earthquake of March 10, 1933, a magnitude 6.3 event with an epicenter offshore from Newport Beach (Corps, 2001). Although the Newport-Inglewood Fault passes through the Watershed, the several other large earthquake-producing fault zones in the region such as the San Andres, San Jacinto and Whittier-Elsinore faults, also have the potential to impact the Watershed.

The degree of groundshaking at any one location and the hazards associated with groundshaking vary depending on: 1) the earthquake magnitude; 2) the distance from the earthquake epicenter; 3) groundshaking from site-specific response; 4) soil and groundwater conditions; and 5) the type of structure/facility. Generally, groundshaking will be most severe in areas underlain by alluvium or thick slope wash deposits and least severe in areas underlain with bedrock.

Liquefaction, defined as the transformation of a granular material from a solid state into a liquefied state due to increases in pore water pressure, is a specific hazard resulting from groundshaking. Groundshaking associated with an earthquake is capable of providing the mechanism for liquefaction, generally in saturated, loose, medium- to fine-grained sands, silty sands, and certain types of clayey soils. Potential liquefaction impacts in the Watershed are in the lowlands, primarily where saturated sediments constitute the subsurface. General areas projected to be susceptible are much of the Peters Canyon Wash drainage and the Tustin Plain, San Diego Creek, and the margin of Upper Newport Bay (Corps, 2001).

3.5.6 Land Use

The 122-square-mile Watershed includes the cities of Irvine and Tustin, portions of unincorporated Orange County and the cities of Lake Forest, Laguna Hills, Laguna Woods, Orange, Santa Ana and Newport Beach. Predominant land uses in the area include commercial, residential, industrial and institutional uses with scattered agricultural and open space areas including parks, undeveloped areas, and the San Joaquin Freshwater Marsh. Also located within the western and eastern portions of the Watershed are the former Marine Corps Air Station (MCAS) Tustin (encompassing 1,673 acres), and

former MCAS El Toro (encompassing 4,738 acres), respectively. The University of California, Irvine is located in the southwestern portion of the Watershed and encompasses 1,500 acres, some of which are dedicated to institutional uses including university facilities and student housing (Corps, 2001).

The increased demand for housing in Orange County has resulted in substantial land use changes from agriculture to urban development within the Watershed, especially over the last several decades. The entire western portion of the Watershed is developed, and urbanization continues to the east and south. Most of the vacant areas that remain in the largely developed Watershed fall into the category of committed open space reserve under the NCCP. The other remaining undeveloped or developing areas include the former MCAS Tustin and MCAS El Toro bases and City of Irvine planning areas (mostly agriculture or former agriculture areas). Figure 3-15 shows the extent of development in the Watershed.

Predicted future land use conditions are described in terms of general plan land use designations, the projected timing and conditions of build-out, and applicable land use development policies. The remaining large open space areas in the Watershed are primarily located in the foothill regions of the Santiago and San Joaquin Hills and near the Upper Newport Bay. In general, these areas correspond with the NCCP/HCP Reserve System, which includes: Laguna Coast Wilderness Park, Mason Regional Park, Peters Canyon Regional Park, Upper Newport Bay Nature Preserve, Whiting Ranch Wilderness Park, Upper Newport Bay Ecological Reserve and the University of California Irvine Natural Reserve System. Other vacant areas include remaining undeveloped City of Irvine Planning Areas, remnants of vacant land occur along portions of Peters Canyon, and as vacant infill lots in urbanized areas.

Agricultural Land

Agricultural lands occupy approximately eight square miles, which is over six percent of the Watershed (Corps 2001). There are patches of unique farmland, farmland of statewide importance, and grazing land throughout the foothills of the Santiago Hills and along the northern foothills of the San Joaquin Hills. (See Section 3.5.1, Agricultural Resources).

Landfills

Under the County Board of Supervisors, the Integrated Waste Management Department (IWMD) administers the solid waste management within the County. The Frank R. Bowerman Landfill, located in the foothills north of the former MCAS El Toro, is the only active landfill in the Watershed. However 22 closed sites are located throughout the County, three of which are located in the Watershed:

- Coyote Canyon Landfill;
- Lane Road Landfill; and
- San Joaquin Landfill.

Figure 3-15. Aerial Map of Watershed Showing Developed/Developing and Remaining Undeveloped Areas

County of Orange

Unincorporated Orange County comprises a substantial portion of the Watershed. The Orange County General Plan Land Use Element (LU-3-1) states that, "The final portions of the available land within the County will achieve first generation build-out sometime after the year 2020, varying somewhat by geographic area." It should be noted that Orange County considers build-out in conceptual terms only, as redevelopment and intensification will continue after all developable land has been used (Corps, 2001).

The Santiago Hills overlook the Watershed from the north and provide the largest remaining block of open space in the Watershed. These hills are largely protected from future development under the NCCP/HCP agreement. The Frank R. Bowerman Landfill is located north of State Route (SR)-241 in the Bee Canyon area, surrounded by NCCP reserve areas. The estimated closure date of the landfill is 2024. Upon closure, it is anticipated that the landfill site would be converted to a recreational facility. Much of the remaining land to the east and west of the landfill will be incorporated into the Limestone-Whiting Ranch Wilderness Park in the future (Corps, 2001).

Urbanization has rapidly diminished the amount of land available for agricultural production in the Watershed. Currently, less than six percent of the Watershed is comprised of agricultural fields. The remaining agricultural lands are generally located in the foothills of the Santiago Hills, in a few tracts north and west of the former MCAS El Toro.

City of Irvine

The City of Irvine encompasses 45 square miles and is the largest jurisdiction that lies completely within the Watershed. Approximately 29,156 acres or 38 percent of the Watershed, is within the City of Irvine. Over 60 percent of the City is currently developed. The City of Irvine estimates full build-out by 2040.

The City of Irvine's General Plan represents the long-range vision of the City. It is a comprehensive statement of Irvine's development and preservation policies for all geographic areas of the City and its sphere of influence, and the relationships between social, financial, environmental, and physical characteristics.

The Orange County Great Park, as proposed by the City of Irvine, is located in the center of Orange County at the former MCAS El Toro. Land uses planned in the proposed Great Park are open space/park, residential, cultural facilities, transit oriented development, golf courses, habitat preserve/wildlife corridor, sports parks, agriculture, auto center use, educational, research and development, institutional, exposition centers, and transportation facilities (Cotton Bridges Associates, 2003).

In addition to the proposed Great Park, the San Joaquin Hills offer the largest remaining undeveloped land in the City of Irvine. Those areas not protected from future development under the NCCP/HCP are currently undergoing development and will likely be fully developed within the next 10 years with planned residential communities. Other areas of ongoing and future development in the City of Irvine include:

• Remaining, residential, commercial, and industrial development south of Interstate 405 between Sand Canyon Road and Lake Forest Drive. Michelson Drive, Sand Canyon Road, and Lake Forest Drive may be extended through this area.

- Remaining commercial and industrial development west of Sand Canyon Road between Interstate 5 and 405.
- Remaining residential, industrial, and commercial development north of Interstate 5 and west of Culver Drive.

The City of Irvine will ultimately own over 4,000 acres of open space lands located in the southern portion of the City, and additional lands in the northern portion. In 2002, the City accepted the first 2,100 acres and now has responsibility for the management and operation of this land. As a signatory to the Central and Coastal Subregion NCCP/HCP, the City has certain obligations. To address those obligations, the City has developed the South Recreation and Resource Management Plan. The Plan was prepared to address the future access uses and facilities for the City's Open Space Preserve – South. Additional plans will be prepared at a later date for areas in the north. The Plan describes the City's program for permanent protection of significant, large-scale conservation and open space areas by public ownership. Through this program, visually significant ridgelines and hillsides, significant biotic communities (e.g., riparian, marsh, and oak woodland), recreational lands, archeological and paleontological resources and areas subjected to geophysical and societal hazards are permanently preserved.

The Open Space Preserve – South is located within the San Joaquin Hills, which parallels the Pacific Ocean and forms the City's southern boundary. The area consists of rolling terrain with moderately steep slopes, canyons and narrow ridges. Other features include the Shady Canyon fault, Bommer and Shady Canyons, and Quail Hill.

City of Lake Forest

Approximately 5,296 acres of the City of Lake Forest are located in the eastern portion of the Watershed and is largely developed. The Lake Forest Planning Area (PA) (City and sphere) consists of approximately 17.2 square miles (10,775 acres). The City's total land area, including its sphere of influence, is composed of: 37 percent residential uses, 29 percent open space, 17 percent commercial, 8 percent light industrial, 5 percent transportation facilities, and 4 percent public facilities. The City's General Plan policies emphasize establishing the City's identity, developing pre-incorporated Planned Communities, and phasing new development that is compatible with the community (City of Lake Forest 1994). Industrial development continues to occur to the north and south of SR-241 in the northern portion of the city. Full build-out is anticipated to occur prior to 2020 (Corps, 2001).

City of Laguna Hills

The City of Laguna Hills is almost completely built out. Approximately 758 acres of the City are located within the Watershed. Approximately 51.8 percent of the City is composed of Planned Community developments with their own specific development standards. Overall, the City is deficient in community facilities such as active parks and community centers. The General Plan addresses several land use issues, including the need to: 1) unify land uses in and around the Laguna Hills Mall and Saddleback Memorial Hospital; and 2) increase the overall intensity of the non-residential uses along the I-5 Freeway corridor. The General Plan focuses primarily on the maintenance of the City's residential neighborhoods (City of Laguna Hills 1994). Full build-out of the city is estimated to occur between 2010 and 2015 (Corps 2001).

City of Orange

The City of Orange is currently 95 percent developed (Corps, 2001). Approximately 1,041 acres of the City are located within the northeastern portion of the Watershed. Within the Watershed, the uses are residential (primarily single family units) and related greenbelts, and a small amount of commercial services.

City of Tustin

The entire city, approximately 7,087 acres, is located within the Watershed. The Tustin General Plan policies emphasize balanced, compatible, and complementary development in addition to the revitalization/redevelopment of older and historic areas. The City of Tustin estimates full build-out of the city by 2020. The largest remaining undeveloped area in the city is the former MCAS Tustin, which is located west of Jamboree Road and north of Barranca Parkway in the center of the Watershed. Reuse plans for the 1,606-acre former air station have been approved and many planned uses are currently under construction or completed. Planned uses includes a variety of housing, employment, recreation, educational, and community support facilities designed to complement the existing urban character of the surrounding area and strengthen the economic base of Tustin and nearby cities.

City of Santa Ana

Approximately 3,608 acres of the City of Santa Ana are within the southeastern portion of the Watershed. The city currently has an estimated build-out date of 2010, however, the portion of the city within the Watershed is essentially fully built-out. Currently, 97 percent of the city is developed, and there are no plans for any large-scale projects in the near future (Corps, 2001). Within the Watershed area, uses include industrial, commercial, residential, and open space. Since Santa Ana is an almost fully developed city, the goals and policies of the General Plan focus largely on the conservation, maintenance, and rehabilitation of existing property, while identifying opportunities for redevelopment and new development that serve to improve the employment tax base and quality of residential life in the city (City of Santa Ana, 1998).

City of Newport Beach

The City of Newport Beach forms the south/southwestern boundary of the Watershed. Existing land uses are primarily residential neighborhoods and commercial areas, as well as marine industrial uses. Approximately 2,966 acres of Newport Beach are within the Watershed. This portion of the city within the Watershed is characterized by light industrial and commercial uses in the vicinity of John Wayne Airport, and residential uses in the Bonita Canyon area (City of Newport Beach, 1998). According to the City's General Plan, ultimate residential build-out is projected to occur by the year 2010. Overall, open space in the City of Newport Beach will generally be limited to the foothills and land set aside for the NCCP/HCP (Corps, 2001).

City of Laguna Woods

The City of Laguna Woods was incorporated in March 1999. The City's General Plan and Housing Element were adopted in October 2002, with an amendment to the General Plan approved in July 2003. Within the Watershed, the City is developed with a variety of residential and commercial uses and a golf course. Approximately 1,033 acres of the city are located within the Watershed.

Irvine Ranch Land Reserve

The Irvine Ranch Land Reserve comprises more than 50,000 acres of permanently protected open space. The entire Reserve stretches 22 miles from the mountains to the sea and is home to hundreds of species of native plants and animals. The Reserve includes massive regional open space systems in the northern and southern hillsides of Irvine, and extends to the Laguna Coast Wilderness Park and Crystal Cove State Park near Laguna Beach. The open space and recreational parks within the Reserve include:

- Anaheim Wilderness Area
- Bommer Canyon
- Crystal Cove State Park
- Fremont Canyon
- Irvine Lake
- Irvine Regional Park
- Laguna Coast

- Mason Regional Park
- Peters Canyon
- Round Canyon
- San Joaquin Wildlife Sanctuary
- Santiago Canyon
- Upper Newport Bay
- Weir Canyon

In October 2006, 37000 acres of the Reserve (corresponding to the NCCP/HCP areas) were designated a National Natural Landmark for its biological and geological diversity. A substantial portion of the Reserve is within the Watershed.

3.5.7 Noise

Noise is defined as unwanted sound, typically considered unpleasant and bothersome. The most pervasive noise sources in the Watershed are mobile noise sources such as motor vehicles, railroads, and aircraft. In addition to the arterial and local street system, two interstate freeways (I-5 and I-405), four toll road corridors (State Routes 73, 261, 241, and 133), and several railroad tracks traverse or are adjacent to the Watershed. Motor vehicle noise is characterized by a high frequency of events, short duration, and proximity to areas sensitive to noise exposure. Noise levels on and adjacent to major streets are relatively constant, whereas they are intermittent on neighborhood streets where traffic is lighter. The Community Noise Equivalent Level (CNEL) is commonly used by California local governments to quantify community noise levels and standards. The CNEL is an average of noise levels over a twenty-four hour period, with penalties applied for evening and night time periods.

John Wayne Airport is located just outside the Watershed. Located within the western and eastern portions of the Watershed are former MCAS El Toro and former MCAS Tustin. Both are planned for reuse, with some construction currently underway at former MCAS Tustin.

The noise contours for MCAS El Toro were generated as part of a 1981 Air Installation Compatible Use Zone (AICUZ) and reflect the military use noise levels. These contours were adopted by the County of Orange as the "Policy Implementation Line," or PIL, and remained the adopted policy of the County until they were recently rescinded by the County Board of Supervisors. There are restrictions on the types of land uses that can be developed within noise contours of 65 CNEL or greater. The City of Irvine General Plan includes an adopted noise contour for the MCAS Tustin base that reflects previous helicopter activity. There is no aviation use contemplated in the MCAS Tustin reuse plan.

Railroad noise is the result of the mechanical processes of the engine, the interaction of the wheels with the track, and the use of the whistle. Generally speaking, the noise generated by spur lines in industrial areas is insufficient to provide contours in excess of 60 CNEL outside the railroad right-of-way. Higher level noise contours adjacent to active tracks with a substantial high number of operations may extend up to several hundred feet on either side of the tracks. Within the Watershed, the only areas adjacent to existing railroad tracks (roughly between Walnut Avenue and Irvine Center Drive) are already developed, with the exception of the slated redevelopment of MCAS El Toro. These tracks traverse from northwest to southeast and are used for passenger (Amtrak) and commercial transport (BNSF). The Amtrak train stops within the Watershed at the Irvine Regional Transportation Center at 15215 Barranca Street in the City of Irvine.

3.5.8 Public Health and Safety

Emergency Response Plan

The County of Orange is responsible for preparation, maintenance, and implementation of emergency response plans and emergency evacuation plans for the County of Orange. The County coordinates with all local jurisdictions and emergency service providers within its boundaries. The County recently revised the Orange County Emergency Management Plan (EMP), which is the official emergency plan for the County. The EMP addresses the County's response to extraordinary emergency situations associated with natural disasters, technological incidents, and nuclear protection. In addition, it provides operational concepts related to emergency situations and identifies the components and describes the responsibilities of the Local Emergency Management Organization for protecting the life and property of Orange County citizens.

An EMP has been prepared for the City of Irvine to provide guidance for the city's response to extraordinary emergency situations associated with natural disasters, technological incidents, and natural security emergencies. The city's EMP focuses on potential large-scale disasters which can generate unique situations requiring unusual emergency responses. The objective of the EMP is to incorporate and coordinate all the facilities and personnel of the city into an efficient organization capable of responding to any emergency.

The cities of Laguna Hills, Laguna Woods, Lake Forest, Newport Beach, Orange, Santa Ana and Tustin have also prepared EMPs for their city. These plans will guide the cities during natural disasters and other types of emergencies.

Fire Hazards

The foothills areas of Orange County are considered high to very high fire hazard areas. The portions of the Watershed most susceptible to wildland fires are the San Joaquin Hills and the outlying foothills of the Santiago Hills and the Santa Ana Mountains. The Orange County General Plan Safety Element identifies fire hazard areas. Portions of the Watershed are within areas designated as being subject to moderate to high fire hazard along the Watershed perimeters, in the vicinity of the former MCAS El Toro, and in the unincorporated area between the cities of Tustin and Orange. The Land Use Element of the General Plan states:

"The foothill areas of Orange County are considered high to very high fire hazard areas. Future development in these areas must minimize potential fire hazards and adequate fire protection must be maintained. Both these actions may raise development costs but will not preclude development."

The Orange County Fire Authority (OCFA) serves more than one million residents in 20 member cities and the unincorporated areas of Orange County including all municipalities in the Watershed. OCFA provides fire protection and emergency service response, and participates in the California Mutual Aid Master Plan for use and assignment of resources for daily operations, and in the event of major emergencies. The Fire Authority headquarters and Emergency Operation Center (EOC) is located within the Watershed at Tustin Ranch and Jamboree Roads. This center became operational in 2004.

The OCFA protection area is diverse and the delivery system must be as well. Three demand categories exist within OCFA:

- *Urban:* Industrialized areas and high density housing areas;
- *Suburban:* Communities with mostly one- and two- story single family dwellings or moderate density with a maximum of three story buildings; and
- *Rural:* Canyons and ranch area or portions of the protection area that plan to remain less developed.

Much of the open space/vacant areas of the southern and northern perimeter of the Watershed perimeters are covered by native and non-native vegetation. Of these different vegetation types, coastal sage scrub, chaparral, and grasslands reach some degree of flammability during the dry summer months and, under the right conditions, during the winter months.

Topography has considerable effect on wildland fire behavior and on the ability of firefighters and their equipment to take action to suppress those fires. For example, a fire starting in the bottom of a canyon may burn quickly to the ridge and become large, before initial attack forces can arrive, simply because of topography. Rough topography greatly limits road construction, road standards and accessibility by ground equipment. Steep topography also channels air flow, creating extremely erratic winds on slopes and in canyons.

In an effort to alleviate fire dangers near the interface between urban development and wildlands, the construction of fuel modification zones (firebreak, fuelbreak, or greenbelt) has been required by the OCFA. The most effective fire prevention measures to reduce the level of risk to structures with wildland exposure are those that are incorporated into the design of the development rather than modifications to the natural resource areas.

Vectors

A vector is any insect or arthropod, rodent, or other animal of public health significance capable of harboring or transmitting the causative agents of disease (e.g., plague, malaria) to humans [Orange County Vector Control District (OCVCD) website, www.ocvcd.org, July 8, 2002]. Pests and/or vectors of concern that have the potential to transmit diseases are mosquitoes, flies, rodents, and waterfowl.

<u>Mosquitoes</u>

Mosquitoes are flying insects that breed in standing water and are considered a pest as well as a known vector of human and animal pathogens. Orange County currently has 19 recognized species of mosquitoes; however, it has three common species that are associated with carrying either encephalitis viruses or malaria protozoans. These species include: the southern house mosquito (*Culex quinquefasciatus*), the western encephalitis mosquito (*Culex tarsalis*), and the southern malaria mosquito (*Anopheles hermsi*). The first two species are known to periodically transmit the St. Louis encephalitis (SLE) virus, and the last species has the potential of transmitting human malaria parasites. Several mosquito species found in Orange County (e.g., *Cx. quinquefasciatus*) are considered to be competent hosts and vectors of the West Nile Virus. Mosquitoes could potentially breed at any site that has standing water for more than 72 hours.

There are several alternatives for controlling mosquito populations in the urban environment. The type of control used depends on the urgency, weather, time of year and treatment area. The primary abatement alternatives include: reduction of breeding sites (i.e., removal of stagnant water), synthetic pesticides, biochemical pesticides and biological controls (use of natural predators). Secondary abatement measures include flooding or draining of the facilities, water surface agitators, increased biochemical pesticide application, trapping and killing pests, and lastly, chemical pesticide application.

<u>Flies</u>

There are several types of flies that are a concern in southern California, the most important of which include houseflies (*Musca domestica*), lesser houseflies (*Fannia* sp.), blowflies (*Phaenicia* sp.), flesh flies (*Sarcophagidae*), and latrine flies (*Chrysomyia* sp.). All of these have the potential of transmitting human disease. The most effective method of controlling fly populations is to minimize breeding sites. Other methods of control are similar to the methods for mosquito control and include the application of synthetic pesticides, biochemical pesticides, and biological controls (use of natural predators).

Rodents

Rats, squirrels, mice, chipmunks, beavers, and muskrats are rodents that may inhabit stormwater infrastructure and thus raise human health concerns. Rodents are capable of transmitting diseases, and can be carriers or hosts for several pathogens that may get transmitted to humans by biting insects, such as mosquitoes. From a human health perspective, the rodent of most concern in Orange County is the roof rat (*Rattus rattus*). Removal of potential breeding grounds and food and water sources is the best method of rodent control. Traps are an effective method of reducing nuisance rodent populations. The use of poisons is the least preferred method of control.

Brown-headed Cowbird

The Brown-headed cowbird (*Molothrus ater*) is a regular nest parasite of over 150 host species of North American birds, the majority of which are songbirds. There are several bird species in southern California that are being threatened by cowbird parasitism as well as habitat reduction, including the following state- and federally listed threatened or endangered species: least Bell's vireo (*Vireo bellii pusillus*), the southwestern willow flycatcher (*Empidonax trailli extimus*), and the California coastal gnatcatcher (*Polioptila californica californica*). The IRWD water quality treatment wetlands may provide substantial habitat for a variety of songbirds, such as those described above. However, the

proximity to suburban landscapes, agriculture, and livestock may also make this habitat ideal for cowbirds. (Refer to Section 3.3 for information on existing bird populations in the Watershed.) The primary cowbird control method is trapping.

Vector Control

The OCVCD is the agency responsible for protecting public health by controlling rats, flies, mosquitoes and other vector related problems. OCVCD vector control programs are based upon scientific approaches that have been incorporated into a comprehensive strategy of Integrated Pest Management (IPM). This management strategy includes all available options from public education to chemicals for effective control of vectors. Because of its application specifically engineered to controlling vectors, this management approach is referred to as Integrated Vector Management (IVM).

OCVCD programs for vector control rely more on prevention, exclusion, and public education, with use of chemicals as the least desirable method of control. If the application of chemicals is necessary, the products used include those recognized by the U.S. EPA as minimizing adverse impacts to the environment and relatively low toxicity for humans and wildlife (Class III or "Caution" products).

Hazardous Wastes

Current and historic land uses within the Watershed that have resulted in contamination by hazardous and toxic materials and waste have the potential to adversely affect water quality within San Diego Creek and its tributaries. Depending on their location, contaminated sites can affect creek water quality either directly or indirectly through Watershed features such as surfaces and subsurface soils, storm water channels, and groundwater aquifers. Surface soils and storm water channels tend to release contaminants during storm events, with the magnitude of the impact depending on the degree of contamination and type of contaminant. Subsurface soil contamination can impact a creek either via subterranean soil water migration or through contamination of groundwater aquifers that connect to the creek or its tributaries. Additional factors influencing the magnitude of impact of previous and existing contaminated sites are factors such as location in the Watershed, soil types, geology aspect, and vegetation communities within and proximate to the subject sites.

The Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as the Superfund Act, primarily addresses the cleanup of designated Superfund hazardous waste sites. To achieve its stated purpose, CERCLA establishes a Hazardous Substances Trust Fund, the Emergency Trust Fund, and the Post-Closure Liability Trust Fund. This Act provides money necessary for the decontamination of the environment. A list of known hazardous wastes sites that are under consideration for the Superfund list is compiled by the U.S. EPA. This list is referred to as the CERCLIS database. Fourteen Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) sites were identified within the Watershed.

Of the 14 sites, only one site was identified as a National Priority List (NPL) site. NPL sites are commonly referred to as Superfund sites that are known hazardous sites and require immediate cleanup. The NPL site within the Watershed is the former MCAS El Toro, which occupies approximately 4,700 acres. A total of 25 potentially contaminated areas were identified on this site, including four landfills suspected of containing hazardous and solid waste and other areas where PCB, battery acids, leaded fuels,

and other hazardous substances were suspected of being dumped or spilled. A remedial investigation conducted at the base identified VOC, primarily trichloroethylene (TCE), in groundwater that has migrated more than three miles off the base. The Department of the Navy has been responsible for the on-going clean-up of contaminated areas at this site and in groundwater.

The Resource Conservation and Recovery Act (RCRA) established a national waste management program as of 1984. Under this act, hazardous wastes must be tracked from the time of generation to the point of disposal. A program must be instituted by every generator and handler to manage hazardous waste in a manner that minimizes the present and future threat to the environment and human health. Each hazardous waste generator must register and obtain an U.S. EPA identification number under RCRA regulations and (except for small quantity generators) must file reports periodically to inform the U.S. EPA of their activity. An inventory of facilities listed on the RCRA database identified hundreds of generators within the Watershed.

3.5.9 Recreation

Orange County has 31 inland and 27 coastal regional recreation facilities. Comprising more than 27,000 acres, these facilities include regional parks, county harbors and beaches, marine life refuges, and historical sites. An additional 24,000 acres are proposed for acquisition in the County, increasing Orange County's public recreation land to over 50,000 acres (Orange County General Plan Recreation Element, 2000). Regional parks and trails in the Watershed are addressed in the section below.

Regional Parks

The Recreation Element of the County General Plan defines a regional park as a park with countywide significance and of greater size than a local park to accommodate regional recreational activities. This element classifies regional recreational facilities into several categories: Urban Regional Park, Natural Regional Park, Wilderness Regional Park, County Wilderness Areas, Nature Preserves, Regional Harbors, Regional Beaches, and Historic Sites. The latter three categories are not relevant to the Watershed or are addressed in other sections (e.g., Cultural Resources section).

The regional parks serve two purposes: preservation/protection of natural habitat and wilderness areas, and provision of opportunities for recreation or scenic attractions that are of countywide significance. Figure 3-16 shows regional recreational resources. The five regional parks discussed below are located within or adjacent to the Watershed boundaries.

Laguna Coast Wilderness Park

The Laguna Coast Wilderness Park (LCWP) is located in the San Joaquin Hills, adjacent to the Watershed on southeast, between the cities of Newport Beach, Irvine, Laguna Hills, and Laguna Beach. This approximately 6,300-acre park is jointly owned by the City of Laguna Beach, the County of Orange, and the Department. Primary usage within the LCWP is habitat preservation and passive recreation. Recreational use within the park is restricted to hiking, mountain biking, equestrian use, and picnicking. No waterbodies within the Watershed have been identified in the LCWP.

Peters Canyon Regional Park

Peters Canyon Regional Park is located in the northwestern portion of the Watershed, within the City of Orange, and is bounded on the east by Jamboree Road, south of Santiago Canyon Road and Chapman Avenue. The 354-acre park contains native habitat including coastal sage scrub, riparian, freshwater marsh and grassland habitats, and the 55-acre Upper Peters Canyon Reservoir. Peters Canyon Creek traverses the park from north to south. Willows, sycamores and black cottonwoods line the reservoir and the Creek. The Park is owned and managed by the County of Orange and contains a variety of recreational trails along Peters Canyon Creek. The upper portion is outside the Watershed, while the lower portion is within.

Upper Newport Bay State Ecological Reserve/Upper Newport Bay Regional Park <u>Nature</u> <u>Preserve</u>

The Upper Newport Bay State Ecological Reserve/Upper Newport Bay Regional Park <u>Nature Preserve</u> is located in Newport Beach at the southwestern corner of the Watershed, beginning where San Diego Creek outlets to Upper Newport Bay at the Jamboree Road Bridge. Pacific Coast Highway, Back Bay Drive, Eastbluff Drive, Jamboree Road, the Orange County Regional Park, and the Dover cliff bluffs generally bound the reserve. This 756-acre reserve provides essential habitat for a number of state and federally-listed threatened and endangered species, including the salt marsh bird's-beak, California brown pelican, American peregrine falcon, light-footed clapper rail, California least tern, and Belding's Savanna sparrow. The Park Ecological Reserve is owned and managed by the <u>County of Orange-Department and the Department's land in the Nature Preserve is managed by the City of Newport Beach</u>. Recreational activities include hiking, biking, equestrian riding, fishing, boating, and interpretive programs.

Figure 3-16. Regional Recreational Resources within the Watershed

Limestone Canyon and Whiting Ranch Wilderness Park

Limestone Canyon and Whiting Ranch Wilderness Park is owned by the County and managed by the Nature Conservancy-County. It is located within the foothills of the Cleveland National Forest, west of Santiago Canyon Road between Modjeska Canyon Road and Live Oak Road, and is bordered by the communities of Foothill Ranch and Portola Hills. The westerly portions of the park are within the Watershed. Adjacent to Whiting Ranch Wilderness Park is Limestone Canyon, also known as the Northern Reserve, which was donated to the County by The Irvine Company. A 640-acre portion of Limestone Canyon, known as the Hangman Tree area, was incorporated into the Whiting Ranch Wilderness Park in the fall of 1999, increasing the size of Whiting Ranch Wilderness Park to approximately 2,400 acres. The remainder of Limestone Canyon, approximately 7,000 acres, while donated, has yet to be incorporated into the Whiting Ranch Wilderness Park has been irrevocably offered for dedication to the County. Three streams flow through Whiting Ranch, including Borrego, Serrano and Aliso Creek; the latter is located outside the Watershed. These streams are intermittent in the upper reaches and become more perennialized in the lower reaches. Recreational activities in Whiting Ranch include horseback riding, hiking, and mountain biking.

William R. Mason Regional Park

William R. Mason Park is located in the southern portion of the Watershed in the City of Irvine. The park is bounded by University Drive to the north and bisected by Harvard Avenue, Culver Drive, and Ridgeline Drive in Irvine. The 345-acre park, owned and managed by the County of Orange, contains open space, grassy knolls, and natural areas. The recreational opportunities include picnic areas, softball back stop, large turf areas, hiking and bicycling trails, three sand volleyball courts, a physical fitness vita course, three tot lot playgrounds, amphitheater, and nine acre lake (supplied with reclaimed water from IRWD). San Diego Creek is located near the Park, paralleling University Drive.

Proposed Regional Parks

The City of Irvine has proposed the Orange County Great Park as part of the re-use of the former MCAS El Toro, located in the central portion of the Watershed. The total project area encompasses approximately 4,800 acres, or 7.5 square miles. Proposed recreational land uses planned in the project area include open space/park, cultural facilities, golf courses, habitat preserve, and trails along wildlife and riparian drainage corridors.

Local and Regional Riding and Hiking Trails and Off-Road Bikeways

The County Recreation Element envisions a countywide system of <u>regional riding and hiking</u> trails. for hiking, equestrian, and non-motorized biking uses. A total of 349 353 miles of trails is proposed, with approximately 96 120 miles remaining to be constructed. When complete, the trail The system would connect all to beaches, parks, and other open space areas, allowing a user to travel from the ocean to the Cleveland National Forest. Existing trails are largely Trails are off-road and generally unpaved. Per the goals and objectives of the Recreation Element, these trails are intended to be used by people on a year-round basis. Public safety is a major consideration in trail design, construction, and maintenance. Acquisition is accomplished through a variety of means, including the land development process, public/private partnerships, and dedications.

The County Transportation Element of the General Plan similarly envisions a system of regional Class I (paved off-road) bikeways. Class I bikeway uses includes commuter and recreational cyclists. A total of 300 miles of Class I bikeways is proposed on County's Bikeway Plan and the Orange County Transportation Authority's Commuter Bikeways Strategic Plan. Class I bikeways provide routes for off-road travel throughout much of the developed part of the county. Class I bikeways are paved with asphalt or concrete offering users all-weather riding throughout the year. Bikeways are often located along flood control channels and creeks and between communities. These commuter and recreation facilities are often built as part of new development, through partnerships and dedications.

Trails create a web of connective paths throughout the Watershed. They link many of the regional parks, and are adjacent to or alongside some of the drainage channels and other watercourses. Trails <u>and Class I</u> <u>bikeways</u> located or proposed to be within the boundaries of the Watershed are described below.

Atchison, Topeka & and Santa Fe (AT&SF) Bikeway

This existing <u>and proposed 4-mile 6.5-mile</u> Class I (off road) bikeway extends along the AT&SF Railroad between Peters Canyon Bikeway and Sand Canyon Road in the City of Irvine <u>to the Aliso Creek Bikeway</u> in the City of Lake Forest.

Borrego Canyon Bikeway

This Class I bikeway is located along Towne Centre Drive near the intersection of the Foothill Transportation Corridor (SR-241) and Alton Parkway. An extension is proposed from this area north to the Irvine Multimodal Transportation Center, according to the County of Orange Bikeways Plan. The proposed bikeway would cross the eastern tributary of the Borrego Canyon Wash, underneath the Foothill Transportation Corridor (SR-241). The combination of existing and proposed bikeway segments will be approximately six miles long.

Hicks Canyon Riding/Hiking Trail and Bikeway

The horseback riding and hiking portion of this-trail is proposed to extend approximately five miles from Limestone Canyon and Whiting Ranch Wilderness Park to connect with Peters Canyon trail. This trail would cross Hicks Canyon Wash, near the proposed Jeffrey Road extension, north of Portola Parkway. The Class I bikeway currently exists between Culver Drive and east of Yale Avenue for approximately one half mile Portola Parkway and Peters Canyon Channel.

Irvine Coast Trail

This existing proposed trail commences at Upper Newport Bay Regional Park <u>Nature Preserve</u>, heads east along the San Diego Creek trail, enters William R. Mason Regional Park, borders the Turtle Rock area, goes south to Bommer Canyon, and finally connects to Crystal Cove State Park. This trail is approximately 10 miles long and runs adjacent to and/or across San Diego Creek Channel, Sand Canyon Wash, and Bommer Canyon Creek.

Jeffrey Road Bikeway

This bikeway is both existing and proposed. The existing portion of this bikeway extends for two miles along Jeffrey Road between the 405 Freeway and the AT&SF Bikeway. The planned section will continue south to Mason Regional Park and north to the Irvine Lake area. The total length of the planned

trail will be approximately 10.5 miles. This bikeway will cross or be adjacent to the Hicks Canyon Wash, Central Irvine Channel, Como Storm Channel, San Diego Creek Channel, San Joaquin Channel, and Sand Canyon Wash.

Peters Canyon Trail

This <u>existing</u> trail commences at <u>Peters Canyon Regional Park at Peters Canyon Reservoir</u>, <u>Irvine</u> <u>Regional Park</u>, heads south through Tustin, then along the Peters Canyon Wash Channel, the San Diego Creek Channel, and ends just north of Campus Drive, where the Irvine Coast Trail crosses the San Diego Creek Channel <u>Edinger Avenue</u>. The length of this trail is approximately 10 miles. As proposed, the trail <u>will be approximately 12 miles long when complete</u>. There are 2-, 4-, and 8-mile loops along this trail within Peters Canyon Regional Park.

San Diego Creek Bikeway

The existing portion of this bikeway extends along San Diego Creek from Newport Beach to Jeffrey Road in Irvine. The planned extension will continue to follow San Diego Creek east of Jeffrey Road to Old Laguna Canyon Road and will then divide; the southern portion will extend just past the 405 Freeway and the northern portion will connect with to Lake Forest Drive. The existing portion of this bikeway is approximately eight miles long; the planned portion is approximately six miles long.

Sand Canyon Bikeway

This existing approximately 2-mile bikeway extends along the west side of Sand Canyon Avenue between the San Diego Freeway and the AT&SF Bikeway, just south of the I-5 Freeway. This bikeway crosses the San Diego Creek at Sand Canyon Avenue.

Serrano Creek Riding and Hiking Trail

This approximately 6-mile riding and hiking trail is located in the City of Lake Forest. The trail begins at Serrano Creek Park and follows the Creek to Whiting Ranch Wilderness Park. For the past three years, the County, OCFCD, City of Lake Forest, and the Serrano Creek Conservancy along with other agencies and local citizens have been working to restore Serrano Creek. Programs have been implemented to control erosion along the Creek and plant trees in the Serrano Creek Park. Restoration of the creek is ongoing.

3.5.10 Socioeconomics

The Watershed includes all of the cities of Irvine and Tustin and portions of the cities of Newport Beach, Laguna Hills, Laguna Woods, Lake Forest, Orange, and Santa Ana, along with portions of unincorporated Orange County. The majority of the Watershed is within the City of Irvine or its sphere of influence and has been included in the City of Irvine General Plan.

Based on census figures, the population of Orange County in the year 2004 was 2,987,591 (U.S. Census Bureau 2004). The county grew by 24.7 percent between 1980 and 1990, and by 18.1 percent between 1990 and 2000. The fastest growing city in the County was Tustin at 33.2 percent between 1990 and 2000 due to the Tustin Ranch development area.

The City of Irvine has reached the halfway point of its projected population growth. Population growth as a yearly percentage has slowed considerably as the City has matured. Between 1970 and 1980, population increases averaged 20 percent per year. Between 1980 and 1990, the average increase dropped to 8 percent per year; and since 1990, the annual increase has averaged 2 percent per year (City of Irvine 2003). Table 3-2019(a) Orange County Projects 2004 (OCP-2004) population in five-year increments for the City of Irvine and Orange County. Based on this table, Orange County is projected to grow by approximately 458,300 people by the year 2030. <u>Tables 3-2019(b-d) show the population forecasts from the 2004 Regional Transportation Plan (RTP) (SCAG, 2007) in five-year increments through 2035.</u>

Table 3-2019(a). OCP-2004 Population¹

	Population					
Jurisdiction	2005	2010	2015	2020	2025	2030
Irvine	182,890	192,185	197,280	200,291	202,291	203,964
Orange County	3,094,461	3,291,628	3,402,964	3,485,179	3.537.559	3,552,742
					3,537,559	

¹ Source: Center for Demographic Research, California State University, Fullerton

Tables 3-2019(b-d).	2004	RTP	Population	Forecasts ¹
1 a D C S S - 2017 (D - u)	2004	1/11	1 opulation	rorccasts

	Population							
(b) Adopted SCAG Regionwide Forecasts	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>	<u>2035²</u>		
Population	<u>19,208,661</u>	20,191,117	<u>21,137,519</u>	22,035,416	22,890,797	24,056,000		
Households	6,072,578	6,463,402	<u>6,865,355</u>	7,363,519	7,660,107	7,710,000		
Employment	8,729,192	9,198,618	9,659,847	10,100,776	10,527,202	10,287,000		

¹ The 2004 RTP growth forecast at the regional, county, and subregional levels was adopted by SCAG's Regional Council in April 2004 and provided to the Corps and the Department in SCAG's comment letter for the draft Program EIS/EIR for the San Diego Creek SAMP/WSAA Process, dated April 15, 2008. City totals are the sum of small area data and were used for advisory purposes only.

² Source: Draft 2008 RTP Baseline Growth Forecast, as provided by SCAG in its comment letter dated April 15, 2008.

	Population					
(c) Adopted OCCOG ² Forecasts	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>	<u>2035</u> ³
Population	3,291,628	3,369,745	3,433,609	3,494,394	3,552,742	3,653,988
Households	1,034,027	1,046,473	1,063,976	1,081,421	1,098,474	1,118,490
Employment	1,749,985	1,801,602	1,848,135	1,887,542	1,921,806	1,981,901

¹ The 2004 RTP growth forecast at the regional, county, and subregional levels was adopted by SCAG's Regional Council in April 2004 and provided to the Corps and the Department in SCAG's comment letter for the draft Program EIS/EIR for the San Diego

² Orange County Council of Governments

³ Source: Draft 2008 RTP Baseline Growth Forecast, as provided by SCAG in its comment letter dated April 15, 2008

	Population					
(d) Adopted OCCOG ³ Unincorporated Area Forecasts	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>	<u>2035²</u>
Population	<u>197,735</u>	216,810	234,112	<u>251,091</u>	286,705	237,210
Households	65,939	70,509	76,264	82,267	94,243	74,598
Employment	58,855	63,148	67,279	71,005	82,903	47,695

¹ The 2004 RTP growth forecast at the regional, county, and subregional levels was adopted by SCAG's Regional Council in April 2004 and provided to the Corps and the Department in SCAG's comment letter for the draft Program EIS/EIR for the San Diego

² Orange County Council of Governments

³ Source: Draft 2008 RTP Baseline Growth Forecast, as provided by SCAG in its comment letter dated April 15, 2008

Minority Population

The majority of residents within the Watershed are non-Hispanic Whites, with Hispanics and Americans of Asian descent forming the second and third largest ethnic and racial groups, respectively (U.S. Census Bureau 2003). The cities of Irvine and Santa Ana support a larger population of minority groups than the other portions of the Watershed (Corps 2001).

Housing

In Orange County, 1990-1994 housing production lagged demand by 13,600 units. In 1995-1997, the County's home construction lagged demand growth by nearly 25,000 units, or by 4.1 percent as compared to inventory (University of California Berkeley 2000). <u>Tables 3-2019(b-d) show the household forecasts</u> from the 2004 RTP (SCAG, 2007) in five-year increments through 2035. Table 3-2120 provides a summary of OCP-2004 housing projections in five-year increments for the City of Irvine and Orange County.

	Dwelling Units					
Jurisdiction	2005	2010	2015	2020	2025	2030
Irvine	53,750	63,200	64,904	66,686	68,439	68,883
Orange County	978,004	1,066,476	1,086,044	1,100,848	1,112,915	1,118,429

 Table 3-2120.
 OCP-2004 Dwelling Units¹

¹ Source: Center for Demographic Research, California State University, Fullerton

While it is estimated that Orange County will add approximately 140,000 dwelling units by 2030, the population is expected to grow at a faster rate than housing. For every unit added, the County will add another four people (William Gayk, CDR-Cal State University Fullerton).

SCAG is mandated to prepare a Regional Housing Needs Assessment (RHNA) and to allocate "fair share" housing needs for cities and counties within its jurisdiction, which includes Orange County. SCAG's adopted RHNA Construction Need for some of the key cities in the Watershed are shown in Table 3-2221. These numbers are the housing production targets through 2005. No new data is available at this time.

 Table 3-2221.
 Adopted Regional Housing Needs Assessment Construction Need¹

Jurisdiction	Need
City of Irvine	10,782
City of Tustin	3,298
City of Santa Ana	1,339
City of Lake Forest	183

¹ Source: Center for Demographic Research, California State University, Fullerton

Each jurisdiction's approach to meeting these targets is reflected in its General Plan, including the Housing Element. For example, the City of Irvine has adopted housing policies addressing achievement of housing production and meeting RHNA goals in its 2000-2005 Housing Element.

Employment and Income Levels

Unemployment rates for Orange County and the City of Irvine are 3.3 percent and 3.5 percent, respectively (U.S. Census Bureau 2003). For the year 2000, the median household income for Orange County is \$58,820 and City of Irvine is \$72,057 (U.S. Census Bureau 2003).

Existing and Projected Jobs

Tables 3-19(b-d) show the household forecasts from the 2004 RTP (SCAG, 2007) in five-year increments through 2035. Table 3-2322 shows OCP-2004 employment projections in five-year increments for the

City of Irvine and Orange County. Jobs created in the County are expected to increase by approximately 419,400 by the year 2030.

	Employment (Jobs)					
Jurisdiction	2005	2010	2015	2020	2025	2030
Irvine	176,986	209,464	227,879	248,731	252,940	261,309
Orange County	1,502,434	1,749,985	1,816,387	1,858,579	1,896,752	1,921,800

Table 3-2322. OCP-2004 Employment¹

1 Source: Center for Demographic Research, California State University, Fullerton

Southern California Association of Governments

In general, SCAG policies encourage job and housing opportunities to be balanced at the county or Regional Statistical Area (Orange County can be divided into 10 of these areas). SCAG policies also encourage job growth to be concentrated near transit services and transit nodes, and near existing freeways and toll roads. Future build-out of the Watershed, particularly residential development, would help address relevant SCAG policies regarding increased housing opportunities and job growth near transit nodes and existing freeways/toll roads.

3.5.11 Transportation/Circulation

The transportation system in the Watershed is comprised of local roads and arterials, freeways, and transportation corridors (tollroads). The Orange County Master Plan of Arterial Highways (MPAH), shown in Figure 3-17 establishes an existing and proposed countywide roadway network intended to coordinate transportation system development among local jurisdictions in Orange County. The MPAH includes a network of major thoroughfares comprising freeways, transportation corridors, and five main arterial highway classifications. The Orange County Transportation Authority (OCTA) is responsible for administering the MPAH. The main purpose of the MPAH is to describe an arterial highway system that effectively supports General Plan policies of the cities and County and is in balance with existing and adopted future land uses.

Figure 3-17. Orange County Master Plan of Arterial Highways (MPAH)

Local Roadways: Table 3-2423 lists major arterial roadways throughout the Watershed and provides characteristics of the existing and proposed segments based on the MPAH.

Alignment	Established Segments	Proposed Segments	
Irvine Center Drive	6-lane Smart Street	None. Completed.	
Irvine Boulevard/Trabuco Road	Major 6-lane divided	None. Completed.	
Bake Parkway	Major 6-lane divided (southern) Primary 4- lane divided (northeastern)	Major 6-lane divided (southeastern)	
Alton Parkway	Major 6-lane divided (northeastern and eastern) Primary 4- lane divided (central)	None shown on MPAH. Planned segment from Irvine Blvd to Towne Center Dr. Completed.	
Lake Forest Drive	Major 6- lane divided (southeastern) Primary 4- lane divided (northeastern)	Primary 4-lane divided (southeastern)	
Ridge Route	Secondary 2-lane divided (northeastern and southeastern) Primary 4-lane divided (southeastern)	None. Completed.	
Santa Maria Avenue	Secondary 2-lane divided (southern) Primary 4-lane (southeastern)	Primary 4- lane divided (southeastern)	
Barranca Parkway/Muirlands Blvd.	Major 6- lane divided (western) Primary 4- lane divided (central, eastern)	None. Completed.	
Portola Parkway	Major 6- lane divided (western) Primary 4- lane divided (eastern)	Primary 4-lane divided (eastern)	
Jamboree Road	Major 6- lane divided	None. Completed.	
Culver Drive	Major 6-lane divided (northeastern) Primary 4-lane divided (southwestern)	None <u>shown on MPAH</u> . Completed.	
Jeffrey Road	Major 6-lane divided (central) Primary 4-lane divided (southwestern)	Primary 4-lane divided (northeastern)	

Table 3-2423. Major Arterial Roadways in Watershed

Source: Orange County Transportation Authority, Master Plan of Arterial Highways, December 2005 August 2007

As shown on Figure 3-17, major east-west corridors that transect the Watershed include Irvine Center Drive, designated a six lane "Smartstreet," and Irvine Boulevard, a major arterial for its full extent within the Watershed. Alton Parkway and Barranca Parkway also provide east-west continuity, although their status varies between major and primary arterial. North-south connectivity is provided by Jamboree Road, a major arterial. Jeffrey Road/University Drive will provide a continuous north-south route throughout the Watershed once the extension of Jeffrey Road north of Portola Parkway is completed. According to the MPAH, Jeffrey Road is proposed to connect to SR-241 and continue northeasterly outside the Watershed boundary. The Jeffrey Road extension was planned concurrently with the NCCP/HCP Reserve and is an was approved under the NCCP/HCP as a new use. within the Watershed under the NCCP/HCP The MPAH also shows proposed extensions of Bake Parkway, Lake Forest Drive and Santa Maria Avenue south of Irvine Center Drive. These proposed extensions are each planned to connect to Laguna Canyon Road. The MPAH shows the following roadways as established, but some segments are planned, and at the time of this Program EIS/EIR not constructed: Alton Parkway from Irvine Boulevard to Towne Center Drive, a segment of Culver Drive, and a segment of Portola Parkway.

Regional Transportation Facilities: Regional transportation facilities located within the Watershed but outside the jurisdiction of the OCTA or local agencies include I-5 and I-405 [owned and operated by California Department of Transportation (Caltrans)] and the Foothill (SR-241), Eastern (SR-133), and San Joaquin Hills (SR-73) Transportation Corridors (tollroads). The tollroads are owned and operated by the Transportation Corridor Agencies (TCA). Regional transportation planning emphasis in Orange County over the next 20 years will be on the completion of the Watershed), High Occupancy Vehicle (HOV) systems, public toll roads, and privatization corridors. The focus will move to more efficient use of the existing system and includes completion of the Traffic Operations System Plan, the addition of new HOV Drop Ramps and Connectors as Express Bus service is expanded on the HOV system, and expansion of ITS technology (Corps 2001).

3.5.12 Visual Resources

The Watershed includes a variety of visual features typical to coastal southern California, including highly developed urban areas, suburban planned residential communities, highly developed to undeveloped hills, and broad alluvial and coastal plains. The inland northeastern boundary of the Watershed is defined by Loma Ridge and the Santiago Hills. The San Joaquin Hills occupy the southern central portion of the Watershed, south of I-405.

The visual character of the western portion of the Watershed reflects this area's developed nature, including developed portions of Costa Mesa, Orange, Santa Ana, Tustin, and unincorporated areas of Orange County. Views of the built environment (e.g., retail commercial buildings, multi-family and single-family housing, roads, business parks and light industrial facilities) dominate the landscape. In general, natural features within this area, such as creeks and washes, have been modified and no longer appear in their natural state. Areas where the creek channels have been lined with concrete are generally not considered scenic focal points (i.e., places that are expected or intended to draw viewers' attention).

In the developed western portion of the Watershed, the areas most resembling their natural condition include the Upper Newport Bay, located in Newport Beach, and San Joaquin freshwater marsh, upstream of Upper Newport Bay, along San Diego Creek.

The San Joaquin Hills in the southern central portion of the Watershed are experiencing continued urbanization. These hills are visible from I-405 just north of its junction with I-5 freeway. Some areas are protected under the NCCP/HCP from future development; however, large residential developments within the City of Irvine have recently been constructed or are presently under construction, south of I-405, roughly between Bake Parkway and Jeffrey Road.

Along the eastern and southeastern boundary of the Watershed, the visual character is dominated by suburban residential development in the cities of Lake Forest, Irvine, Laguna Hills and Laguna Woods. Many of the coastal hills in this area have been developed with planned residential communities. Towards the northeastern Watershed boundary, these developed areas contrast with the natural appearance of nearby undeveloped hills. The extreme northeastern portion of the Watershed is less developed and retains more of a natural appearance.

The former MCAS El Toro is one of the largest remaining underdeveloped areas along the alluvial plains that occupy the central portion of the Watershed. Large tracts of agricultural fields and patches of undeveloped hillsides also characterize the alluvial plains in the eastern portion of the Watershed. The Santiago Hills and Santa Ana Mountains are the most prominent visual features of this portion of the Watershed. The Foothill Transportation Corridor (SR-241) traverses this area and provides unobstructed views of the surrounding open space and an elevated view of the Watershed.

There are no state highways that are officially designated as "scenic" within the Watershed. According to the City of Irvine General Plan Land Use Element, Sand Canyon Avenue, Jeffrey Road, Culver Drive, SR-133 and Laguna Canyon Road are designated as roads important for "Rural or Natural Character" major views. Additionally, the proposed Millennium Parkway would be considered a scenic highway with Urban Character.

3.5.13 Water Supply and Conservation

IRWD is the primary retail water purveyor within the Watershed, encompassing a 133-square mile service area including all of the City of Irvine and portions of Tustin, Santa Ana, Orange, Costa Mesa, Lake Forest, Newport Beach and unincorporated areas of the County. Total estimated population served by IRWD is 316,000 (IRWD, 2005). Chartered by the State as a public agency in 1961, IRWD produces and distributes domestic water, collects and reclaims wastewater, and distributes reclaimed water for agricultural and urban irrigation uses, along with other uses not requiring domestic quality water. IRWD has been producing reclaimed water since 1966, and has been instrumental in advancing the use of reclaimed water into areas that have traditionally been served with domestic quality water.

Other retail water providers in the Watershed include the cities of Tustin and Santa Ana and small portions of Orange and Newport Beach. In addition, prior to its merger with IRWD in January, 2001, the Los Alisos Water District (LAWD) provided retail water service on the eastern edge of the Watershed.
Domestic Water

Domestic water served in the Watershed is a combination of water produced from local groundwater wells of the Orange County Coastal Plain Groundwater Basin and surface water imported from the Colorado River and State Water Project by the Metropolitan Water District of Southern California (MWD). MWD water is supplied to Orange County through the Municipal Water District of Orange County (MWDOC), a local MWD member agency and wholesale importer of MWD water. The Orange County Water District (OCWD) is responsible for management of the Orange County Coastal Plain Groundwater Basin.

Imported Water - MWD operates the Colorado River Aqueduct (CRA) that conveys water from the Colorado River to Southern California. Two additional sources of imported water are from the State Water Project (SWP) and the California Adequate. The SWP is anchored by Lake Oroville located on the Feather River north of the Sacramento/San Joaquin Delta, and the California Aqueduct, conveys water south from the delta through the Central Valley and into Southern California.

Local Groundwater- As mentioned above, OCWD is responsible for management of the Orange County Coastal Plain Groundwater Basin, which underlies roughly the northern half of the County comprising the historic floodplain of the Santa Ana River. The basin provides significant groundwater resources, and the cities and other water suppliers within OCWD presently meet up to 75 percent of their demands from basin groundwater. In 2003-04 groundwater production from the basin was 336,789 AFY (IRWD 2005). Water quality of the basin groundwater varies, but is generally superior to imported water. Water quality is the best in the northern and central areas of the basin and tends to deteriorate in areas east of the 55 Freeway and north of the I-5 Freeway. The potable groundwater supply to IRWD is produced at IRWD's Dyer Road Well Field in Santa Ana. IRWD's pumping at the Dyer Road Wellfield does not typically exceed 36,000 AFY (IRWD, 2005).

The Irvine Sub-Basin underlies the central IRWD service area and is the southeastern most extension of the Orange County Coastal Plain Groundwater Basin. The Irvine Sub-Basin encompasses the area from the base of the foothills of the Santa Ana Mountains and the San Joaquin Hills on the northeast and south, respectively, and the main Orange County Coastal Plain Groundwater Basin to the northwest. Groundwater from the Irvine Sub-Basin is generally high in total dissolved solids (TDS), color, and/or nitrates. A portion of the Sub-Basin is contaminated with TCE and other trace VOCs. Existing use of this groundwater by IRWD has been limited to supply augmentation for the reclaimed water system, primarily due to the limitation imposed by the Irvine Sub-Basin Agreement.

IRWD's Irvine Desalter Project is designed to treat and deliver 7,800 AFY of Irvine Sub-Basin groundwater to IRWD for use as both potable and nonpotable sources. The Irvine Desalter Project utilizes new wells in conjunction with IRWD's existing Well No. 78 and the TCE Well as source wells. See Section 3.4.7, Groundwater Quality for more discussion of the Irvine Desalter Project.

Water Supply Impoundments

Several water supply reservoirs exist in the Lomas de Santiago foothills as a means of impounding surface water for municipal use and agricultural irrigation. These impoundments, managed by IRWD, include: Rattlesnake, Siphon, Bonita Canyon, San Joaquin, Laguna, and Sand Canyon. Rattlesnake Reservoir, which is used for commercial, agricultural, and landscape irrigation, receives its water from surface runoff and water from Irvine Lake through the Irvine Lake Pipeline. Laguna and Siphon Reservoirs are also used to supply irrigation water. San Joaquin Reservoir is used by IRWD as a domestic water supply, and Sand Canyon Reservoir is used to store reclaimed water.

Water Demand

In 2005, water use within the IRWD service area was 79,696 AFY (IRWD, 2005). IRWD has projected an estimated total future water use of 128,725 AFY by year 2030, an increase of approximately 31 percent. Of this, approximately 70 percent is projected for the potable water system. The remaining approximately 30 percent is for the reclaimed and untreated water portions of the nonpotable water system. The conversion of agricultural land to urban uses continues with agricultural declining from approximately 60 percent of total water use in the early 1980s to approximately 11 percent in 2005 and a projected 4 percent by 2025 (build-out).

IRWD projects that in average demand years as well as multiple dry years they can produce sufficient water supplies to meet customer needs through build-out in 2025 (IRWD, 2005). To meet projected demands, IRWD is proposing a change in its water resources mix and to move from a heavy reliance on imported water to a greater utilization of local groundwater as well as expanding its water recycling through conversions, groundwater storage and groundwater treatment methods (IRWD, 2005). One of the major new local groundwater projects includes IRWD's Irvine Desalter Project.

Water Conservation

IRWD is member of the California Urban Water Conservation Council and implements a prescribed set of urban water conservation practices (BMPs) intended to reduce long-term urban water demands (IRWD 2005). BMPs include but are not limited to customer rate structures that reward conservation and free distribution and/or installation of water saving devices.



Figure 3-1a

Results of the Planning Level Delineation

within Northern Portion of Watershed







Cross-Sectional Profile of a Representative Riparian Ecosystem



* The edges of Zone II approximate the 100-year floodplain boundary.



Figure 3-4 Spatial Distribution of Ecosystem Integrity Scores - Habitat



Habitat integrity scores for each riparian reach (ranging from 5 to 30) were determined from indicators measuring area of native riparian vegetation; riparian corridor continuity on a riparian reach scale; and on a watershed scale; land use within the riparian ecosystem boundary; and land use in the upland buffer. Habitat integrity increases as scores get higher. Riparian ecosystems with high habitat integrity exhibit the quality and quantity of biological systems having the full range of characteristics, processes, and organisms at site specific, landscape, and watershed scales that historically characterized riparian ecosystems in the region.

Higher index scores represent better quality.



Source: U.S. Army Corps of Engineers Waterways Experiment Station U.S. Army Corps of Engineers ERDC Cold Regions Research & Engineering Laboratory December, 2003 Adapted from Lichvar, 2000



Figure 3-6 Existing Open Space, Reserves, and Special Linkage Areas



Other Open Space

Bodies of Water

San Diego Creek Watershed





Figure 3-7 Potential Wildlife Movement Corridors





8







Figure 3-9
Drainage Channels





Source: U.S. Army Corps of Engineers, ERDC December 2003





Spatial Distribution of Ecosystem Integrity Scores - Hydrology



Hydrologic integrity scores for each riparian reach (ranging from 5 to 30) were determined from indicators measuring altered hydraulic conveyance in the local drainage basin; surface water retention structures; perennialized stream flow; import, export or diversion of surface water; altered hydraulic conveyance at the riparian reach scale; and floodplain interaction of the riparian reach. Hydrologic integrity increases as scores get higher. Riparian ecosystems with high hydrologic integrity exhibit a range of frequency, magnitude, and temporal distribution of stream discharge along with surface and subsurface interaction with the floodplain that historically characterized riparian ecosystems in the region.

Higher index scores represent better quality.



Source: U.S. Army Corps of Engineers Waterways Experiment Station U.S. Army Corps of Engineers ERDC Cold Regions Research & Engineering Laboratory December, 2003 Adapted from Lichvar, 2000



Spatial Distribution of Ecosystem Integrity Scores - Water Quality



Water quality integrity scores for each riparian reach (ranging from 11 to 45) were determined from indicators measuring surrounding land use/land cover; altered hydraulic conveyance in the local drainage basin and the riparian reach, surface water retention structures; perennialized stream flow; import, export or diversion of surface water; floodplain interaction of the riparian reach; sediment regime; and area of native riparian vegetation. Water quality integrity increases as scores get higher. Riparian ecosystems with high water quality integrity scores exhibit a range of loading in the pollutant categories of nutrients, pesticides, hydrocarbons, and sediments that are similar to those that historically characterized riparian ecosystems in the region.

Higher index scores represent better quality.



Source: U.S. Army Corps of Engineers Waterways Experiment Station U.S. Army Corps of Engineers ERDC Cold Regions Research & Engineering Laboratory December, 2003 Adapted from Lichvar 2000





Aerial Map of Watershed Showing Developed/Developing and Remaining Undeveloped Areas

City Boundary

San Diego Creek Watershed

Central Coastal Orange County NCCP/HCP Reserve Areas (not for development)





Regional Recreation Resources





Figure 3-17 Master Plan of Arterial Highways

Alignment

Established	Proposed		
	•••	Principal	
		Major	
		Primary	
		Secondary	
		Collector	

Classification

Principal: 8 Lane Divided Roadway Accommodates 45,000 to 60,000 ADT

Major: 6 Lane Divided Roadway Accommodates 30,000 to 45,000 ADT

Primary: 4 Lane Divided Roadway Accommodates 20,000 to 30,000 ADT

Secondary: 4 Lane Undivided Roadway Accommodates 10,000 to 20,000 ADT

Collector: 2 Lane Undivided Roadway Accommodates 7,500 to 10,000 ADT

Roads outside the watershed boundary shown for continuity

Freeway

---- Transportation Corridor

Smart Street 8 Lanes

Smart Street 6 Lanes

Smart Street 4 Lanes

(Existing Interchange

(

Proposed Interchange

San Diego Creek Watershed

50 Source: OCTA, Master Plan of Arterial Highways, December 2000 December 2005

4.0 PROGRAMMATIC IMPACT ASSESSMENT OF SAMP/WSAA PROCESS AND REGULATED ACTIVITIES

4.1 INTRODUCTION

The proposed SAMP establishes a watershed-specific permitting process with the Corps using a Regional General Permit (RGP) and Letters of Permission (LOPs) to authorize the discharge of dredged and/or fill materials into waters of the U.S. pursuant to Section 404 of the Clean Water Act (CWA) (33 USC 1344). The SAMP permitting procedures also include the establishment of a WSAA Process to authorize alterations to the bed, bank and channel of lakes or streambeds pursuant to Section 1600 *et seq.* of the California Fish and Game Code (FGC). This section provides a programmatic impact assessment of seven categories of regulated activities expected in the Watershed under the proposed SAMP/WSAA Process.

A summary of the differences between existing and proposed watershed-specific permitting processes within the Watershed is provided in Table 2-2 of Section 2.1.2.3, Table 2-6 of Section 2.1.2.4 and Tables 2-15 and 2-16 of Section 2.1.6. The proposed permitting process would require substantial pre-application requirements for applicants seeking a permit for regulated activities within the Watershed. Considering the proposed General Conditions and Strategic Mitigation Plan developed specifically for the Watershed, the proposed SAMP Permitting/WSAA Process (RGP, LOP, WSAA Process) is expected to result in less than minimal impacts, both on an individual site level and on a cumulative Watershed level. This process is expected to result in a more protective program with respect to aquatic resources in the Watershed. Section 2.1.6 discusses the expected, beneficial effects of the new permitting process within the Watershed.

4.1.1 Defining Significance Thresholds

Evaluation of impacts in the following sections assumes implementation of the SAMP/WSAA Process including the proposed general conditions of the RGP, LOP, and WSAA Process (including Level 1, 2 and 3 SAA templates), Strategic Mitigation Plan and Mitigation Coordination Program. Because of the differences between NEPA and CEQA with respect to identification of impacts as significant or not significant, the discussion of impacts includes applicable CEQA thresholds for each topic area and an ultimate conclusion with respect to the significance of analyzed impacts, even though these are not required for the NEPA EIS analysis.

Under NEPA, significance is used to determine whether an EIS is required. NEPA requires the preparation of an EIS when the proposed federal action (project) as a whole has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. In comparison to CEQA, some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA.

CEQA requires the identification of each "significant effect on the environment" resulting from the project and should include mitigation measures suitable for mitigating each significant effect. A potential significant effect on any environmental resource triggers the preparation of an EIR. Every significant effect on the environment must be disclosed in the EIR and mitigated, if feasible.

4.1.2 Direct versus Indirect Impacts

The proposed SAMP/WSAA Process and associated Strategic Mitigation Plan and Mitigation Coordination Program are being evaluated at a program level for potential impacts of regulated activities that could be permitted under the SAMP/WSAA Process for the Watershed. Authorization of regulated activities, such as land development and infrastructure construction and maintenance may result in certain *direct* impacts on jurisdictional resources of the Watershed (i.e., discharges of dredged and fill material into jurisdictional waters, as described in detail later in this section). Authorization of these regulated activities can also have *indirect* effects occurring later in time or further removed in distance than the direct effect. For example, loss of habitat (direct effect) can produce indirect effects on adjacent upland habitats (edge effects) and facilitate the influx of exotic species into riparian areas (indirect effect). Increased discharges from site- runoff or storm water outfalls into the stream (direct effect) could result in hydro modification of downstream areas (indirect effect) and may lead to wetland type changes (e.g. saline wetland to freshwater wetland).

For many projects that seek authorization under the SAMP/WSAA Process, other local permitting approvals independent of the Corps and the Department approvals, would likely be required before actual construction of the project. The construction and operation of a given project may produce impacts that would be considered an *indirect* result of the Corps/Department approvals. These indirect impacts may occur throughout the Watershed area, not just in Corps/Department jurisdictional areas. These would be considered *indirect* impacts as they would occur later in time or further removed in distance from the direct effect. Such indirect impacts of construction and operation of a project could include increases in traffic and noise, increases in mobile source emissions, and increases in utility usage and water consumption. The Corps typically reviews these indirect effects as Public Interest Review Factors or for compliance with other applicable federal laws. Many of these future projects would be subject to local permitting approvals, independent of the Corps/Department approvals, where these other types of environmental impacts and any associated mitigation measures would be fully disclosed in a separate CEQA document. Therefore, discussions in this section distinguish, where appropriate, direct versus indirect impacts of the proposed SAMP/WSAA Process (e.g. those direct and indirect impacts in jurisdictional areas authorized by Corps/Department through the SAMP/WSAA Process versus those indirect impacts in the greater Watershed area, occurring later in time, indirectly resulting from Corps/Department approvals and analyzed in future CEQA documents required for local agency approvals).

4.1.3 CEQA Mitigation versus SAMP/WSAA Process Mitigation

To help explain and clarify the following programmatic impact evaluation, a brief discussion highlighting the difference between CEQA mitigation and SAMP/WSAA Process mitigation is provided here. CEQA documents typically contain mitigation measures to minimize impacts of a project to below a level of significance. Mitigation measures are not features of the project or compliance requirements of other regulatory policies or programs. CEQA mitigation measures are separate structural or procedural methods identified by the lead agency during the CEQA impact analysis process to minimize significant impacts of a proposed project.

In contrast, the proposed SAMP/WSAA Process contains specific compensatory mitigation requirements (mitigation framework) to address temporary and permanent impacts to jurisdictional areas. This mitigation framework is an inherent "project feature" of the SAMP/WSAA Process. To effectively implement the required compensatory mitigation under the SAMP/WSAA Process, the program also includes a Strategic Mitigation Plan and Mitigation Coordination Program that would be used to target mitigation/restoration to areas that would provide the greatest functional benefit to the Watershed ecosystem and effectively manage the mitigation areas over the long-term.

With this difference in mind, the reader will note that for many environmental topic areas, no CEQA mitigation measures are listed, since through the impact analysis process, it was concluded that the SAMP/WSAA Process compensatory mitigation requirements (and sometimes general conditions of the SAMP LOP, RGP, and Level 1, 2 and 3 SAA templates of the WSAA Process), no additional mitigation under CEQA is needed to minimize impacts to below a level of significance. In other words, in many cases the SAMP/WSAA Process is self-mitigating and no additional mitigation measures under CEQA are needed to minimize significant impacts.

4.2 AQUATIC, WETLAND, AND RIPARIAN HABITATS

4.2.1 Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this analysis, an impact is considered significant if the proposed project would:

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the Department or USFWS; or
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

The CEQA significance criteria listed above relate to wetland and riparian areas as discussed in this section. Riparian habitats, although not directly mentioned in FGC Section 1600 *et seq.* are listed in Appendix G of the Guidelines as an important issue to consider. Other evaluation criteria, such as consistency with the federal and state no net loss (of wetlands) policy, are discussed in Section 9. This programmatic impact analysis utilizes the two CEQA criteria listed above as well as topics from the Section 404(b)(1) Guidelines (Table 4-1).

Topics	404(b)(1) Guidelines	Appendix G^
Special Aquatic Sites (e.g.,	230.10 (c 1-3)	IV (c)
wetlands)	Subpart E	
Riparian Habitat	Not directly mentioned.	IV (b); FGC 1602*

Table 4-1.	Comparison of Corps	404(b)(1) Guidelines and	CEQA Appendix G

[^] Roman numerals relate to the text of Appendix G. *Department, FGC 1600 et seq. Section 1602(a)(4)(B) – Does the activity "substantially adversely affect an existing fish and wildlife resource..."? The terms riparian and wetland do not occur in FGC 1600 et seq.

4.2.2 Programmatic Impact Analysis - Overview

All future activities in the Watershed requiring authorization from the Corps and Department would be evaluated by these agencies for their consistency (or lack thereof) with the SAMP/WSAA Process. If a proposed activity is consistent with the SAMP/WSAA Process, then it is not expected to have a significant adverse impact. With implementation of the proposed permitting program's key elements mentioned below, impacts from these activities are expected to be either (a) below a level of significance or (b) below a level of significance after incorporation of additional site-specific mitigation measures. In other words, the project elements of the SAMP/WSAA Process include criteria and mitigation such that a *consistent* activity, by definition, would also be one with less than significant impacts. In addition, acreage thresholds for both the RGP and LOP further restrict impacts: RGP, less than or equal to 0.5 acre outside of aquatic resource integrity areas; and LOP, less than or equal to 0.1 acre within any aquatic resource integrity area.

Otherwise, a *non-consistent* activity would proceed using the current permitting program in effect in the Watershed, which would be a Corps standard individual permit (SIP) and Department individual streambed alteration agreement (SAA). Any non-consistent activity type (e.g., one with potentially significant impacts to aquatic, wetland, and riparian habitats), is by definition outside the scope of this programmatic impact evaluation, and would be evaluated in subsequent NEPA/CEQA documentation. Authorization would include the preparation of a NEPA Environmental Assessment (EA) or EIS, a CEQA Negative Declaration or EIR, an additional evaluation of compliance with the 404(b)(1) Guidelines, consistency with the SAMP/WSAA Process mitigation policies for the Watershed, a separate cumulative impacts determination, and additional mitigation measures. Consideration of impacts to aquatic resources within high and medium quality integrity areas and consistency with SAMP Tenets would also be considered.

The SAMP/WSAA Process includes several key elements to ensure future activities authorized through the RGP, LOP, WSAA Process result in less than significant impacts to aquatic, wetland, and riparian habitats. The RGP/LOP General Conditions, in particular, are mentioned in the following sub-sections as important criteria for ensuring less than significant impacts. The following elements are organized within the four-part SAMP structure (Analytical Framework, Permitting Program including the mitigation framework, Strategic Mitigation Plan, and Mitigation Coordination Program):

Analytical Framework (Avoidance and Minimization at watershed scale)

- Identification of high and medium quality integrity areas as aquatic resource integrity areas, which are priority impact avoidance areas.
- Implementation of the SAMP Tenets.
- Restrictions on use of certain permitting procedures for activities inside/outside high and medium quality integrity areas.

Permitting Program and Mitigation Framework (Avoidance, Minimization, Mitigation at site-specific and watershed scales)

- Pre-application requirements, including agency coordination.
- General conditions for RGP and LOP (discussed in more detail below).
- RGP for temporary impacts only.
- Revocation of selected NWPs for use in Watershed.
- Application of general and activity-specific conditions for the WSAA Process.
- Sequencing requirements addressed by development of the Analytical Framework based on Watershed-wide analysis of anticipated activities and development alternatives, and through the identification of aquatic resource integrity areas that would inform the realm of potential offsite alternatives within the Watershed. The Analytical Framework would inform the expectations for avoidance and minimization (i.e., avoidance of aquatic resource integrity areas). Site-specific avoidance and minimization may still be required, either with or without a formal alternatives analysis, if there are potential impacts to moderately to well-matured wetland or riparian vegetation located outside of the aquatic resource integrity areas. Through application of the permitting procedures, the Corps would authorize projects/activities that either would need to demonstrate they are the Least Environmentally Damaging Practicable Alternative (LEDPA) (for SIPs and some LOPs) or that they meet criteria to ensure it is the LEDPA (for RGPs and some LOPs).
- Demonstration of no net loss in acreage or functions (hydrologic, water quality, and habitat integrity).
- Long-term, adaptive management and legal protection of restoration sites.

Strategic Mitigation Plan and Mitigation Coordination Program (Mitigation at site-specific and watershed scale)

- Priority restoration areas for maximum "functional lift" (watershed and site-specific scale).
- Recommended site design templates for riparian ecosystem restoration.
- Facilitation of landowner participation and coordination to provide long-term management of aquatic resource integrity areas.

Additional site- and project-specific mitigation measures

Site and project-specific measures may be added to any RGP, LOP, or WSAA Process if required to ensure impacts would remain below a level of significance. The Corps and Department would retain their

respective discretionary authorities to augment the SAMP/WSAA Process mitigation framework requirements for any proposed project that is inconsistent with the SAMP/WSAA Process or fails to meet any of the terms and conditions of the RGP, LOP, retained NWPs, or Level 1 - 3 SAA templates of the WSAA Process. If the project remains inconsistent with the SAMP/WSAA Process, then a SIP review process would be required (see below), which would entail supplemental NEPA review and 404(b)(1) analysis.

4.2.3 Programmatic Impact Analysis- Proposed Regulated Activities

The following programmatic impact analysis outlines potential impacts to aquatic, wetland, and riparian areas from the seven categories of regulated activities under the proposed SAMP/WSAA Process. The regulated activities that would be permitted under the SAMP/WSAA Process are similar to those that would otherwise be permitted on case-by-case basis under existing Corps/Department Section 404 and Section 1600 et seq. programs. As such, potential impacts from these regulated activities would be expected to be similar in nature to those authorized under the existing regulatory programs. However, the SAMP/WSAA Process was established based on a holistic, Watershed-wide evaluation of aquatic resources from which permit conditions, compensatory mitigation, and targeted restoration requirements were developed to help maintain and improve the ecosystem function over the entire Watershed. Comparatively, the current permitting process is conducted on a case-by-case project basis with no holistic plan for compensatory mitigation. Therefore, potential impacts of regulated activities under the SAMP/WSAA Process would be expected to be similar or even less detrimental to the Watershed overall, in comparison to existing permitting programs because compensatory mitigation would be targeted to areas providing the greatest functional benefit to the Watershed's ecosystem. The compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve and enlarge key habitat areas.

Utility Lines (Construction and Maintenance)

As with existing Corps/Department permitting programs, construction and maintenance of utility lines (such as pipelines, conduits, cables, utility poles and towers associated with the conveyance of water, sewage, gas/oil, or transmission of electricity) that would be permitted under the SAMP/WSAA Process could result in discharges of dredged or fill material into jurisdictional waters and streambeds. The discharges may result from required grading, excavation, boring, backfill, and or bedding, temporary stream diversion, dewatering operations, temporary construction access roads and work areas.

Temporary Impacts

Temporary impacts to federally and state-listed species and their upland and riparian habitats can occur from the installation and maintenance of utility lines. Temporary, impacts to species and their upland and riparian habitats may result from required grading, stockpiling, trenching, temporary stream diversion, dewatering operations, temporary construction access roads, and work areas.

Construction activities could temporarily displace sensitive wildlife. Human activity would cause most sensitive wildlife species to avoid an area until the disturbance conditions are eliminated. Bird populations and other mobile species would retreat from an area until after construction is complete and reoccupy the area following revegetation. During temporary ground disturbing activities, less mobile wildlife and plants would be eliminated if located within the project footprint. Impacts to wildlife species are expected to be of limited duration.

Temporal loss of habitat from construction of trenches may occur if across intermittent or perennial streams with riparian habitat, or across ephemeral streams within or adjacent to coastal sage scrub. These areas would remain unvegetated until after project completion. These temporary construction areas may serve to temporarily disconnect habitat corridors used by listed species.

Noise generated during construction and maintenance of utility lines can have an indirect impact on listed wildlife species during the temporary work period. Noise can cause sensitive wildlife species to avoid an area until the disturbance conditions are eliminated. Bird populations and other mobile species would retreat from an area until after construction was complete. In addition, noise can cause potential disruption of breeding activities of wildlife inhabiting wetland and riparian areas. In addition, downstream effects (indirect impacts) may result from a potential discharge of construction-related pollutants (e.g., concrete, waste oil, solvents, debris, etc) spilled, leaked or transported via storm runoff into receiving waters.

Permanent Impacts

The vast majority of new utility projects would service new developments; therefore, most impacts associated with these facilities would be evaluated in the land development category. Relatively few new above-ground utilities are expected to be constructed using the SAMP RGP, LOP, or WSAA Process permitting processes. Thus, permanent alteration of habitat is not anticipated to any significant extent. Yet, some permanent impacts, provided compliance with the SAMP/WSAA Process conditions and the completion of mitigation, may occur. Such long-term impacts could occur in wetland and riparian areas where vegetation would be cleared. Vegetation removed in these areas would require a relatively longer period for reestablishment. The loss of vegetation could affect wildlife species by reducing available refuge areas, foraging habitat, and nesting/roosting areas for species.

Some utility line projects have the potential to reduce the hydrologic and habitat connectivity of riparian reaches. Some of these fragmentation impacts may be addressed through proper project design elements (e.g., preservation of corridors and habitat linkages). Through the planning process of the SAMP/WSAA Process, and agency coordination between 2000 and 2006 by the Participating Applicants, many such reach- and watershed-scale direct and indirect impacts to the Watershed have been avoided and minimized. Under the SAMP/WSAA Process, future land development activities must comply with the terms and conditions associated with the permitting and mitigation requirements of the SAMP/WSAA Process. As a consequence, potential impacts to high and medium integrity riparian reaches would be avoided and impacts to wetland and riparian areas would be less than significant. Additionally, implementation of prioritized restoration plans (Corps 2004, 2006), as specified in the Strategic Mitigation Plan and Mitigation Coordination Program, would serve to reconnect areas previously fragmented, and ensure the sustainability of these aquatic resources. Thus, the SAMP/WSAA Process permitting and mitigation requirements would reduce potential fragmentation impacts from utility line activities to less than significant levels.

4-7

Conditions applicable to mitigating potential impacts are provided below. LOP and RGP general conditions are fully described in Tables 2-3 and 2-4 of Section 2.1.2.3, respectively, and the SAA Templates Master Conditions List of the WSAA Process is summarized in Table 2-7 of Section 2.1.2.4, and provided in full in Appendix D. (Note that the above-mentioned documents include more conditions than shown below).

- RGP: Conditions that relate to avoiding, minimizing, and compensating for impacts to wetland and riparian habitats include: 2-Impact Limits; 3-Eligible Areas; 5-Soil Erosion and Siltation Controls; 6-Equipment; 7-Suitable Materials; 8-Management of Water Flows; 9-Removal of Temporary Fills; 10-Preventive Measures; 11-Staging of Equipment; others.
- LOP: Conditions that relate to avoiding, minimizing, and compensating for impacts to wetland and riparian habitats include 1-Avoidance and Minimization; 2-Ineligible Impacts; 3-Mitigation Policy; 4-Soil Erosion and Siltation Controls; 5-Equipment; 6-Suitable Materials; 7-Management of Water Flows; 8-Removal of Temporary Fills; 9-Preventative Measures; 10-Staging of Equipment; 13-Exotic Species Management; others.
- SAA Templates Master Conditions List of the WSAA Process: Conditions that relate to avoiding, minimizing, and compensating for impacts to wetland and riparian habitats as provided in the categories listed below as well as the SAMP mitigation framework.

1.	Vegetation Removal	Conditions 24 - 34
2.	Routine Channel Maintenance	Conditions 35 – 42
3.	Exotic Vegetation Eradication Control	Condition 43
4.	Placement of Instream Structures	Conditions 46 – 64
5.	Turbidity and Siltation	Conditions 88 – 95
6.	Equipment and Access	Conditions 96 – 109
7.	Additional Mitigation Conditions	Conditions 131 – <u>140141</u>
8.	Additional Resource Protection	Conditions 142 – 154<u>155</u>
9.	Fisheries Specific Protection	Conditions 156 - 162

• SAMP mitigation framework policies would apply to RGPs, LOPs, and the WSAA Process. (Section 2.1.2.6 contains details about compensatory mitigation requirements for permanent and temporary impacts. The Department's SAA Templates Master Conditions List also contains mitigation ratios for impacts to Oak/Walnut/Sycamore woodlands as follows:

a. Minimum acreage requirement for impacts to a large area of Oak/Walnut/Sycamore woodlands shall be a minimum of 3:1 to 20:1 (compensation to impact ratio), with associated understory.

b. Replacement ratios for impacts to a small area of Oak/Walnut/Sycamore woodlands shall be mitigated on impacts to individual stem counts as follows:

- i. Trees less that 5 inches diameter at breast height (DBH) shall be replaced at 3:1
- ii. Trees between 5 and 12 inches DBH shall be replaced at 5:1
- iii. Trees between 12 and 36 inches DBH shall be replaced at 10:1
- iv. Trees greater than 36 inches DBH shall be replaced at 20:1

c. Replacement ratio for damaged trees less than 12 inches DBH shall be 2:1, and greater than 12 inches DBH shall be 5:1 (compensation to impact ratio), with associated understory.

Due to provisions in the applicable mitigation policies and general conditions of the RGP, LOP, WSAA Process, any impacts from authorizing construction and maintenance of utility lines would be mitigated by restoring the area to pre-project conditions, which may include habitat enhancement and additional mitigation upstream and/or downstream.

Other Applicable Regulations

Water quality-related requirements (e.g., WDRs, Section 401 Certifications, BMPs, etc.), as discussed in the Section 4.5 Water Quality, would provide additional safeguards against degradation of wetland and riparian habitats. It is likely the permitting and mitigation requirements of the SAMP/WSAA Process in combination with other water quality regulatory requirements would avoid or mitigate any potential adverse impacts resulting from future utility line projects in the Watershed. In the event that a future utility project requires additional environmental review under CEQA or NEPA, supplemental, project-specific mitigation may be required.

Impact Analysis Conclusion

The permitting and mitigation requirements established by the SAMP/WSAA Process allow for increased protection of aquatic resource integrity areas, as well as a more efficient riparian ecosystem restoration program for the entire Watershed. General conditions and permit requirements of the RGP, LOP WSAA Process are clear, and mitigation is set up to be efficient and successful. No significant impacts are anticipated because any activities authorized under the new SAMP/WSAA Process would be subject to conditions of the RGP, LOP, and Level 1 - 3 SAA templates of the WSAA Process and other agency permitting programs (e.g., water quality). In addition, acreage thresholds for both the RGP and LOP further restrict impacts: RGP, less than or equal to 0.5 acre outside of aquatic resource integrity areas; and LOP, less than or equal to 0.1 acre within any aquatic resource integrity area. Therefore, implementation of the SAMP/WSAA Process for utility projects would not be expected to result in substantial adverse effects on any riparian habitat or other sensitive natural community; or have a substantial adverse effect on federally protected wetlands. Potential impacts from the construction and maintenance of utility lines would be considered less than significant.

Mitigation Measures

No additional mitigation measures are needed for construction and maintenance of utility lines because no significant impacts to wetland and riparian habitats are expected.

Level of Significance After Mitigation

No significant impacts are expected.

Flood Control Facilities. The SAMP/WSAA Process would include flood control construction and maintenance as a regulated activity. The exact location and frequency of occurrence of some flood control maintenance activities cannot be known at this time, as many maintenance activities occur on an as-needed basis. With other facilities, though, there is a regular, scheduled maintenance program in place.

Flood control facilities include flood control channels, outfalls, culverts, retention/detention and sediment basins, bank protection, grade stabilizers, storm drain outlets, trash racks, and pump stations, all of which are located within or near waters under the jurisdiction of the Corps and the Department. As under existing Corps/Department permitting programs, construction and routine maintenance of these facilities that could be permitted under the SAMP/WSAA Process may involve grading, trenching, temporary stream diversion, dewatering operations, installation of temporary access roads and work areas, sediment removal, channel desilting, and vegetation management and removal affecting the quality of jurisdictional waters.

Temporary Impacts

The maintenance of flood control facilities would likely have some temporary, direct impacts on aquatic, wetland, and riparian habitats from direct habitat disturbance and/or removal, or indirect impacts from erosion and sedimentation. Streams may be diverted during work within these areas, preventing natural flooding or saturation of soils. Flood control activities may increase the potential for invasive, exotic plant species to colonize the sites (an indirect impact). The removal of vegetation may temporarily reduce the ability of these areas to assimilate nutrients from upstream and adjacent activities, as well as provide channel/bank stability against erosion. Vegetation management may occur through mowing or use of herbicides, resulting in impacts that may include the persistence of disturbance-tolerant vegetation or a reduction in overall species diversity from herbicide use. Although these impacts are expected to be temporary in nature, a temporal loss of habitat functions is expected.

The temporal loss would be mitigated by compensatory mitigation required when establishing a maintenance baseline and/or by implementing minimization measures to ensure no substantial decrease in net aquatic resource functions occurs. Compensatory mitigation required when a maintenance baseline is established would allow for upfront compensation for all future, related maintenance activities. The maintenance baseline itself would allow for the avoidance of key aquatic resource elements that provide important functions. Minimization measures would ensure that net functions related to hydrology, water quality, and habitat are not adversely affected. Some examples include retaining root structures of wetland plants within the channel to promote the subsurface denitrification processes, which are dependent on available carbon, or the rotational provision to retain standing biomass that allows for a baseline level of riparian habitat functions for fauna.

Permanent Impacts

Maintenance of flood control channels is expected to occur on a frequent basis. Thus, many of the temporary impacts occurring on a regular basis may in effect be like permanent impacts. Yet, disturbance is part of the natural processes that shape the structure and functioning of aquatic, wetland, and riparian

habitats. Also, the vast majority of flood control maintenance would occur in areas with a long history of maintenance. Thus, areas not subject to frequent maintenance now are not expected to be maintained on a regular basis in the future. The maintenance has been ongoing, and the basin, channel, and bank habitats are not as well developed in many of these areas as other, non-disturbed reaches.

Installation of a new concrete flood control feature in a drainage course containing riparian habitat may adversely affect aquatic resource functions. However, no new structures are expected to be built within or adjacent to riparian habitat under the LOP procedures or RGP. Thus, permanent impacts are not expected to occur as a result of these types of construction projects. Additional restrictions on channelizing specific reaches within the Watershed are being proposed through the proposed conditions; such restrictions will avoid any major permanent impacts. If any new facility projects are proposed in the future, then the projects would be required to undergo a SIP process and may be required to obtain an individual SAA instead of one of the template SAAs of the WSAA Process.

Through the SAMP/WSAA Process, and agency coordination between 2000 and 2006 by the Participating Applicants, many such reach- and watershed-scale direct and indirect impacts to the Watershed have been avoided and minimized. Under the SAMP/WSAA Process, future flood control activities must comply with the terms and conditions associated with the SAMP/WSAA Process permitting and mitigation requirements. As a consequence, potential impacts to high and medium integrity riparian reaches would be avoided and impacts to wetland and riparian areas would be less than significant. Additionally, implementation of prioritized restoration plans (Corps 2004, 2006), as specified in the SAMP/WSAA Process Strategic Mitigation Plan and Mitigation Coordination Program, would serve to reconnect areas previously fragmented, and ensure the sustainability of these aquatic resources. Thus, the permitting and mitigation requirements of the SAMP/WSAA Process would reduce

Requirements and Applicable General Conditions of the RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities. In addition, otherwise permissible activities cannot be issued an LOP if they would: (a) substantially alter a compensatory mitigation site; (b) involve flood-control related conversions of soft-bottom channels to concrete-lined channels; or (c) result in the channelization of any major stream system such as Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek. Such activities would require a review under an SIP process with additional NEPA/CEQA review and 404(b)(1) analysis.

Other Applicable Regulations

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities.

Impact Analysis Conclusion

The permitting and mitigation requirements established by the SAMP/WSAA Process allow for increased protection of aquatic resource integrity areas, as well as a more efficient riparian ecosystem restoration program for the entire Watershed. General conditions and permit requirements of the RGP, LOP, and WSAA Process are clear, and mitigation is set up to be efficient and successful on a Watershed basis. In addition, acreage thresholds for both the RGP and LOP further restrict impacts: RGP, less than or equal to 0.5 acre outside of aquatic resource integrity areas; and LOP, less than or equal to 0.1 acre within any

aquatic resource integrity area. Therefore, implementation of the SAMP/WSAA Process for flood control projects would not be expected to result in substantial adverse effects on any riparian habitat or other sensitive natural community; or have a substantial adverse effect on federally protected wetlands. Potential impacts from the construction and maintenance of flood control projects would be considered less than significant.

Potential impacts would not degrade habitat quality, nor create or contribute runoff that would provide additional sources of polluted runoff. Further, under the SAMP/WSAA Process, where aquatic resource impacts would be primarily focused in areas of low ecosystem integrity, the compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve habitat quality, including functions, in the Watershed to a greater extent than existing Corps and Department permitting programs.

Mitigation Measures

No additional mitigation measures are needed for flood control activities because no significant impacts to wetland and riparian habitats are expected.

Level of Significance After Mitigation

No significant impacts are expected.

Road Crossings including Bridges, and Culverts. Construction of bridges and culverts across or within jurisdictional waters can be necessary to meet local and regional circulation needs associated with continual development of the Watershed, as specified in the County Master Plan of Arterials and Highways (MPAH). Bridges may span the watercourse or be constructed with one or more piers depending on bridge length. As under existing Corps/Department permitting programs, construction and routine maintenance of at-grade crossings, box culverts, pipe culverts, and bridges that would be permitted under the SAMP/WSAA Process may include grading, excavation, compacting and/or filling, vegetation clearing, temporary stream diversion, dewatering operations, installation of temporary access roads and work areas, channel desilting, paving operations and vegetation management and removal.

Bridge construction activities would typically be associated with future land development activities however, as the Watershed is almost built-out, significant new bridge construction activities are not expected. Nonetheless, should any new bridge construction activities occur, this analysis reviews the possible temporary and permanent impacts of such activities.

Temporary Impacts

The construction of road crossings such as bridges and culverts would likely have some temporary, direct impacts on aquatic, wetland, and riparian habitats from habitat disturbance and/or removal, or indirect impacts from erosion and sedimentation. The necessity for channel and/or bank stabilization may result in temporary impacts, assuming the design includes buried, un-grouted rip-rap, buried structures, or bioengineering elements. Streams may be diverted during work within these areas, preventing natural flooding or saturation of soils. Construction activities may increase the potential for invasive, exotic plant species to colonize the sites. The removal of vegetation may temporarily reduce the ability of these areas to assimilate nutrients from upstream and adjacent activities, as well as provide channel/bank stability against erosion. Although these impacts are expected to be temporary in nature, a temporal loss of habitat functions is expected. As required by the general conditions and mitigation framework, restoration of these areas plus a requirement to mitigate for temporal losses would ensure the persistence and sustainability of the impacted sites.

It is anticipated that recovery from temporary impacts at one particular site would be completed before impacts would occur in another location. Thus, multiple temporary impacts occurring at the same time are unlikely. These activities are usually completed in a relatively small area within a single riparian reach. Thus, the overall impact on the Watershed is not expected to further degrade the hydrologic, water quality, or habitat functions of affected riparian areas. The temporary nature of these impacts would not reduce the acreage of aquatic, wetland, and riparian resources in the Watershed.

Permanent Impacts

Construction of a new bridge within or over a drainage course containing riparian habitat may adversely affect the structure and functions of these areas, however, mitigation would be implemented in accordance with the permitting and mitigation requirements of the SAMP/WSAA Process. Shading of available sunlight may impact areas located directly under bridges because shading limits the amount and quality of riparian habitat and wetlands that would normally be present in the absence of bridges. Plant species adapted to low-light conditions, such as those adapted to living under a closed riparian forest canopy, would be expected to persist.

Long-term, indirect impacts may include subtle changes in downstream hydrology, which may in turn impact riparian areas from channel incision and/or unnatural scouring. Changes in flooding extent and timing may affect the persistence of riparian plants by reducing the frequency of recruitment events (i.e., new plants colonizing areas from seed or vegetation fragments).

Coordination among agencies and stakeholders through the SAMP formulation process has resulted in requirements for some recently authorized projects to use span bridges rather than culverts in sensitive habitat areas (within applicable development areas only). For any major road construction projects proposing to use culverts in sensitive habitat areas, these projects would likely not meet the criteria for an LOP and would be required to undergo review for an SIP. With a bridge design that includes pilings under a span bridge, shading impacts would be minimized and, overall, there would be minimal disturbance to hydrologic regimes and sediment transport dynamics.

Bridge and culvert projects across the entire Watershed may reduce the hydrologic and habitat connectivity of riparian reaches. Given the emphasis of the SAMP/WSAA Process on implementing a holistic approach to preserving the aquatic and riparian ecosystems, such potential fragmentation impacts would be addressed through the SAMP/WSAA Process program which will require proper design elements (e.g., large culverts to allow wildlife passage, or bioengineering solutions such as un grouted rip rap planting appropriate native vegetation to dissipate energy) or other avoidance or mitigation techniques. Through the SAMP/WSAA Process, and agency coordination between 2000 and 2006 by the SAMP Participating Applicants, many such reach- and watershed-scale direct and indirect impacts to the Watershed have been avoided and minimized. Under the SAMP/WSAA Process, future land development activities must comply with the terms and conditions associated with the SAMP/WSAA Process permitting and mitigation requirements. As a consequence, potential impacts to high and medium integrity riparian reaches would be avoided to the maximum extent practicable and remaining unavoidable impacts would be mitigated. Thus, impacts to wetland and riparian areas would be less than significant. Additionally, implementation of prioritized restoration plans (Corps 2004, 2006), as specified in the SAMP/WSAA Process Strategic Mitigation Plan and Mitigation Coordination Program, would serve to reconnect areas previously fragmented, and ensure the sustainability of these aquatic resources. Thus, the permitting and mitigation requirements of the SAMP/WSAA Process would reduce potential framgentation impacts from road/bridge construction to less than significant levels.

Requirements and Applicable General Conditions of the RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for roads involving bridges and culverts across jurisdictional waters.

Other Applicable Regulations

The discussion under Category 1 (Utility Lines) is applicable for roads involving bridges and culverts.

Impact Analysis Conclusion

The permitting and mitigation requirements established by the SAMP/WSAA Process allow for increased protection of aquatic resource integrity areas, as well as a more efficient riparian ecosystem restoration program for the entire Watershed. Permit requirements are clear, and mitigation is set up to be efficient and successful. Acreage thresholds for both the RGP and LOP further restrict impacts: RGP, less than or equal to 0.5 acre outside of aquatic resource integrity areas; and LOP, less than or equal to 0.1 acre within any aquatic resource integrity area. In addition, General Conditions of the RGP, LOP, WSAA Process and other agency permitting programs (e.g., water quality) would help further reduce potential impacts. Therefore, implementation of the SAMP/WSAA Process for road projects involving bridges and culverts would not be expected to result in substantial adverse effects on any riparian habitat or other sensitive natural community identified or have a substantial adverse effect on federally protected wetlands. Potential impacts from the construction and maintenance of roads involving bridges and culverts would be considered less than significant.

Further, under the SAMP/WSAA Process, where aquatic resource impacts would be primarily focused in areas of low ecosystem integrity, the compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve habitat quality, including functions, in the Watershed in comparison to existing Corps and Department permitting programs.

Mitigation Measures

No mitigation measures are needed as no significant impacts to aquatic, wetland and riparian habitats are expected from roads involving bridges and culverts.

Level of Significance after Mitigation

No significant impacts.

Land Development for Residential, Commercial, Industrial, Institutional and Recreational Uses

Most remaining land development in the Watershed would consist of residential and commercial projects with some industrial institutional and recreational uses (local and regional parks including open space areas, trails, playing fields, golf courses, administrative buildings). Attendant features to most of these uses would include local roads, parking lots, driveways, garages, utilities and storm water management systems. Land development would typically require vegetation clearing, grading and excavation for construction access, building pads, roads and culverts; boring and trenching for utility, sewer and storm drain installation; and paving operations. These activities may result in discharge of fill or encroachment into stream channels, wetlands or unlined agricultural drainages, redirecting of surface runoff into underground storm drains, temporary stream diversion and dewatering operations.

Temporary Impacts

Temporary impacts to jurisdictional areas can occur during excavation of soil, placement of fill material, and construction of temporary access roads. Construction may also involve temporary stream diversion and dewatering. Land development activities within jurisdictional areas would likely have temporary impacts on aquatic, wetland, and riparian habitats from direct habitat disturbance and/or removal, or indirect impacts from erosion and sedimentation of adjacent or downstream reaches. Streams may be diverted, preventing natural flooding or saturation of soils.

Construction activities may increase the edge effects on adjacent wetland and riparian areas, thus creating the potential for invasive, exotic plant species to colonize project sites. Although these impacts are expected to be temporary in nature, a temporal loss of habitat functions is expected. As required by the general conditions and mitigation framework, restoration of these areas plus a requirement to mitigate for temporal losses would ensure the persistence and sustainability of the temporarily impacted sites.

For recreation-related activities, temporary impacts may include trail maintenance activities such as vegetation clearing, sediment removal, and soil stabilization. Some new recreational facilities such as the City of Irvine's proposed Great Park may be built within or adjacent to existing (or restored) riparian habitat in the Watershed. If any such recreation projects are proposed in the future, then the projects would proceed after demonstrating compliance with the SAMP/WSAA Process.

It is anticipated that recovery from temporary impacts at one particular site would be completed before impacts would occur in another location; thus, multiple temporary impacts at the same time are unlikely. These activities are usually completed in a relatively small area within a single riparian reach; thus, the overall impact on the Watershed is not expected to further degrade the hydrologic, water quality, or habitat functions of these habitats. The temporary nature of these impacts, coupled with the mitigation

required under the SAMP/WSAA Process, would avoid or mitigate any reduction in the acreage of aquatic, wetland, and riparian resources in the Watershed.

Indirect impacts may result in temporary impacts (if part of construction only) or may be more chronic in nature. Edge effects from adjacent activities after construction is completed may indirectly impact the integrity of wetland and riparian areas even if no direct impacts were made to jurisdictional areas. Invasive, non-native plants may enter wetland and riparian areas and substantially change the diversity and sustainability of these habitats. Domesticated animals and household pets may influence the composition and competitive abilities of riparian wildlife.

Permanent Impacts

Impacts from land development activities have the greatest potential for permanent impacts at the riparian reach and watershed scales. Yet, due to the fact that the Watershed is almost built-out, land development activities would be limited to the remaining developable areas. Thus, potential impacts would be expected on only a portion of the Watershed, rather than over the entire Watershed area. As discussed below, many permanent impacts will be addressed and mitigated through the SAMP/WSAA Process. Other types of permanent impacts, if they should occur, would likely not meet the requirements of the SAMP/WSAA Process, and thus be processed as a SIP; this analysis focuses on impacts likely to occur and be authorized through the SAMP/WSAA Process.

Land development activities may result in increased impervious (i.e., paved) surfaces. Increased storm water and dry weather urban runoff from these impervious surfaces may permanently alter jurisdictional drainages and wetlands through hydromodification, sedimentation, and nutrient inputs (indirect impacts). Modifying the hydrology may result in channel incision, which in turn may isolate floodplains by reducing the ability of flood flows to reach floodplain areas. Floodplain isolation has many ecological impacts such as recruitment limitation, establishment of upland vegetation, and reduced functional capacity. In these cases, flood flows often have high peak flows with highly variable disturbance regimes.

In other cases, urban runoff consists of permanent, low flows with reduced variability in disturbance regimes. Runoff may include high nutrient, herbicide, and pesticide loads from the irrigation of landscaping and household lawns. Such runoff may result in the expansion of disturbance- or nutrient-tolerant wetland plants such as *Typha* spp. (i.e., cattails). A monotypic stand of cattails, although providing some wildlife benefits, has less structural and compositional diversity of vegetation.

Land development projects have the potential to reduce the hydrologic and habitat connectivity of riparian reaches. Some of these fragmentation impacts may be addressed through proper project design elements (e.g., preservation of corridors and habitat linkages). Through the SAMP/WSAA Process, and agency coordination between 2000 and 2006 by the Participating Applicants, many such reach- and watershed-scale direct and indirect impacts to the Watershed have been avoided and minimized. Under the SAMP/WSAA Process, future land development activities must comply with the terms and conditions associated with the SAMP/WSAA Process permitting and mitigation requirements. As a consequence, potential impacts to high and medium integrity riparian reaches would be avoided and impacts to wetland and riparian areas would be less than significant. Additionally, implementation of prioritized restoration

plans (Corps 2004, 2006), as specified in the SAMP/WSAA Process Strategic Mitigation Plan and Mitigation Coordination Program, would serve to reconnect areas previously fragmented, and ensure the sustainability of these aquatic resources. Thus, the permitting and mitigation requirements of the SAMP/WSAA Process would reduce potential fragmentation impacts from land development activities to less than significant levels.

Requirements and Applicable Conditions of the RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for land development activities impacting jurisdictional waters.

Other Applicable Regulations

Water quality-related requirements (e.g., WDRs, Section 401 Certifications, BMPs, etc.), as discussed in the Section 4.5 Water Quality, would provide safeguards against degradation of wetland and riparian habitats. Many future activities in the Watershed would require additional CEQA analysis such as the preparation of an EIR; thus, additional, project-and site-specific mitigation measures may be implemented at that time to further reduce temporary and permanent impacts to wetland and riparian habitats. Many such measures provide protections for various sensitive plant and wildlife species that occur within aquatic, wetland, and riparian habitats.

Impact Analysis Conclusion

Impacts to aquatic, wetland, and riparian habitats from land development activities would be mitigated through application of the SAMP/WSAA Process mitigation framework and general conditions of the RGP, LOP, and WSAA Process. Proposed temporary and permanent impacts would be mitigated through: (a) avoidance of moderate and high quality riparian areas (through the SAMP/WSAA Process), (b) conformance to the General Conditions of the SAMP/WSAA Process, including minimization measures, and (c) strategic compensatory mitigation. Recreation projects, for example, are expected to include maintenance of the acreage of vegetated riparian habitat and wetlands and riparian ecosystem functions over the entire land development area.

The permitting and mitigation requirements established by the SAMP/WSAA Process promote increased protection of aquatic resource integrity areas, as well as a more efficient riparian ecosystem restoration program for the entire Watershed. Permit requirements are clear, and mitigation is set up to be efficient and successful. In addition, acreage thresholds for both the RGP and LOP further restrict impacts: RGP, less than or equal to 0.5 acre outside of aquatic resource integrity areas; and LOP, less than or equal to 0.1 acre within any aquatic resource integrity area. The Corps and Department retain discretionary authority to augment the mitigation framework.

In the case of land development activities, the following serve as examples of conditions that may be added, on a case-by-case basis, to the permit/agreement conditions and mitigation requirements:

• <u>Buffers shall be required for the compensatory mitigation site, including long-term preservation</u> <u>areas</u>. This component of an authorization from the Corps or Department may be necessary to ensure the long-term sustainability of adjacent or downstream riparian areas. Within the legal bounds of the Corps and Department's authorities, buffers shall be required wherever feasible. Specific dimensions of buffers will be decided on a case-by-case basis, based upon the scientific



literature to achieve the specific goal(s) of the project such as wildlife movement or water quality protection.

- <u>The compensatory mitigation site shall include an exotic, invasive species management</u> <u>component to protect native riparian habitat against direct and indirect, short- and long-term</u> <u>impacts from invasive species.</u> This condition is a component of the conservation element provides a focus on protecting and restoring native riparian habitat. Such a focus may be necessary to ensure the long-term sustainability of areas within or outside the aquatic resource integrity areas, as well as native vegetation experiencing competition from non-native plants.
- <u>Compensatory mitigation shall be designed and maintained to avoid impacts to wildlife</u> <u>movement corridors.</u> This component, especially important to the Department, may be added to the conditions and mitigation measures to ensure the persistence of, and possible enhancement of, existing wildlife movement corridors.

Therefore, implementation of the SAMP/WSAA Process for land development projects would not be expected to result in substantial adverse effects on any riparian habitat or other sensitive natural community, nor have a substantial adverse effect on federally or state-protected wetlands. Overall, impacts to aquatic resources would be less than significant.

Mitigation Measures

No CEQA mitigation measures are required because impacts are expected to be less than significant.

Level of Significance After Mitigation

No significant impacts.

Storm Water Treatment and Management Facilities

Stormwater treatment and management facilities, such as constructed treatment wetlands and water quality treatment basins, capture urban runoff and storm water flows for treatment and subsequent return to surface water or infiltration of groundwater. As under existing Corps/Department permitting programs, construction and maintenance activities of such facilities within jurisdictional boundaries and in upland areas permitted under the SAMP/WSAA Process could include grading, trenching, temporary stream diversion, dewatering operations, installation of temporary access roads and work areas, channel desilting, and vegetation and sediment management removal.

Temporary Impacts

Temporary impacts to jurisdictional areas can occur during construction of the facilities from required excavation of soil, placement of fill material, and construction of temporary access roads. Construction may also involve temporary stream diversion and dewatering. Maintenance would involve dredging of accumulated sediment and potentially contaminated soil in water quality treatment basins and constructed treatment wetlands. Also, vegetation removal and vector control within wetland and riparian habitats that are part of in-stream constructed wetlands may be required on a periodic basis.

Potential impacts to aquatic resources from maintenance activities would be periodic and temporary, and may include: (a) possible type changes of wetland flora (i.e., the change from one wetland type [diverse and natural] to another [monotypic and disturbed]); (b) an increase in a monotypic wetland (i.e., cattails)

across the Watershed; and (c) accumulation of pollutants in wetland plants. These impacts are expected to be minor, and due to the resiliency of many freshwater marsh and riparian areas to disturbance regimes, the habitats are expected to persist and remain functioning.

Temporary impacts from storm water management activities are expected to occur in various locations throughout the Watershed. It is anticipated that recovery from temporary impacts at one particular site would be completed before impacts would occur in another location; thus, multiple temporary impacts at the same time would be unlikely. These activities may occur on a small scale within a single riparian reach, or may involve the reestablishment of entire riparian corridors.

Permanent Impacts

Potential adverse impacts associated with storm water treatment and management facilities in jurisdictional riparian and wetland resources in the Watershed may include hydrologic alternations. As stated in Section 4.4, Hydrology, Erosion, and Sedimentation, it is not anticipated that these facilities would appreciably alter the quantity of water flowing in San Diego Creek. Some anticipated facilities could affect stream flow (i.e., waters of the U.S. and wetland hydrology) as a result of (a) diversions to off-line facilities, (b) increased evaporation (or evapotranspiration [ET], if transpiration from plants is included), and (c) increased infiltration and percolation. Where diversions from stream channels are proposed, there would be a section of the stream between the point of diversion and the point of return flow that would experience a reduction in flow.

These diversions and ET losses are expected to have minimal impacts to existing riparian and wetland resources in the Watershed for several reasons: (a) the Watershed has numerous development-derived sources of flows that have perennialized certain reaches- the diversions may act to balance an overabundance of runoff; (b) many of the in-stream facilities slow flows, but do not divert flows; and (c) the natural occurring riparian areas are adapted to an intermittent, and periodically absent, flow regime. Many of the freshwater marsh or riparian herb areas (that contain wetland plant species) are sustained by urban runoff, and would not otherwise exist in certain areas of the Watershed. In some cases, if water tables were allowed to rise within reach of vegetation (due to a reduction in groundwater withdrawals or increased percolation), some of these wetland may be self-sustaining even without urban runoff. Also, infiltration loss to the groundwater may reduce flow in mainstem creeks (e.g., San Diego Creek), but because creek flows are often inter-connected with the groundwater tables, this is expected to have only negligible impacts on flow.

Since the primary purpose of these facilities includes the treatment of runoff, they are expected to have beneficial effects on receiving water quality. On the other hand, potential impacts to aquatic resources may include the accumulation of pollutants and nutrients (in particular phosphorus) in treatment wetland (or basin) sediments. For the in-line facilities, no new sources of flow (or contaminants) are expected through these areas. The water quality functions provided by these habitats would continue. Minimal impacts to aquatic resources are expected from pollutant and nutrient addition because sediment testing and removal (if necessary) is a management measure often associated with these activities.

Permanent impacts to aquatic resources may occur from fill required for permanent structural features, as well as dredging required for construction of any new water quality treatment basins. Direct impacts from these activities are expected to be minimal as most of the sites are located in upland areas (non-
jurisdictional) or degraded (i.e., low integrity) drainages, and are anticipated to result in an increase in potential habitat and some wetland functions throughout the Watershed. Another potential benefit of these facilities, particularly constructed treatment wetlands, is providing increased aquatic habitat support available for wildlife. On a Watershed basis, the extent of wetlands (especially freshwater marsh) is expected to increase as a result of wetland creation activities in upland areas, depending on their design as well as maintenance regime.

A reduction in wetland/riparian acreage may occur if an increase in open water areas (e.g., ponds) causes the permanent loss (via replacement) of degraded marshes, for example. This situation, referred to as wetland type change, would result in habitat replacement, and the functions performed by a flow-through pond (although good for water quality) may be different from an existing wetland or riparian area. For instream facilities, the potential for type-change may be a negative impact from a Watershed perspective. These in-line facilities, though, would be monitored, and case-specific management actions may be implemented to mitigate this potential problem. As with the wetland sediments, plant tissue monitoring may provide baseline information, as well as information to assess potential adverse impacts to wildlife.

Given the SAMP mitigation framework and applicable general conditions of the RGP, LOP, and WSAA Process, additional mitigation (per Section 404) may be unnecessary because the facilities are built in uplands (i.e., non-wetland or non-riparian areas) or would include only temporary impacts within existing aquatic resources. Where impacts are expected, most would be of a temporary nature, and habitat would be allowed to re-establish. Alternatively, if there are minor permanent impacts, these impacts would be mitigated on-site within the facility itself. Given that under the SAMP/WSAA Process site specific conditions of approval would be imposed at each project site, and that new habitat would be created in upland areas, the total wetland extent (acreage) and functions within the Watershed could increase, incidentally.

Through the WSAA Process pre-application consultation, the mitigation framework, and the agreement conditions, the Department would strive to ensure that treatment facilities permitted through this process would benefit wildlife to the extent feasible. If a component of a proposed project would not benefit wildlife, then the applicant would need to provide adequate mitigation per the WSAA Process conditions to compensate for any loss of wildlife habitat.

Requirements and Applicable General Conditions of the RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for storm water management and treatment facilities affecting jurisdictional areas.

Other Applicable Regulations

Water quality-related requirements (e.g., WDRs, Section 401 Certifications, BMPs, etc.), as discussed in the Section 4.5, Water Quality, would provide safeguards against degradation of wetland and riparian habitats. Future activities in the Watershed may require additional CEQA analysis such as the preparation of an EIR. Thus, additional, project-specific mitigation measures related to potential wetland and riparian habitat impacts may be imposed by the local agency at the time these projects receive local approval. For example, the Revised Draft EIR on the IRWD's Natural Treatment System Project (BonTerra Consulting, 2004) discusses anticipated storm water treatment activities in the Watershed and includes numerous mitigation measures for future individual projects.

Regardless of the scale of a particular water quality treatment or storm water management activity, no further degradation to the hydrologic, water quality, or habitat functions of these habitats would be expected in the Watershed overall. The temporary nature of these impacts would not reduce the acreage of aquatic, wetland, and riparian resources in the Watershed. In addition, the net impacts from some anticipated storm water management and treatment facilities could have a beneficial impact on aquatic, wetland, and riparian resources through greater hydrologic retention times, increased habitat support, and reduction of flood scouring and channel incision.

The permitting and mitigation requirements established by the SAMP/WSAA Process allow for increased protection of aquatic resource integrity areas, as well as a more efficient riparian ecosystem restoration program for the entire Watershed. General conditions and permit requirements of the RGP, LOP WSAA Process are clear, and mitigation is set up to be efficient and successful. In addition, acreage thresholds for both the RGP and LOP further restrict impacts: RGP, less than or equal to 0.5 acre outside of aquatic resource integrity areas; and LOP, less than or equal to 0.1 acre within any aquatic resource integrity area. Therefore, implementation of the SAMP/WSAA Process for storm water management and treatment facilities would not be expected to result in substantial adverse effects on any riparian habitat or other sensitive natural community, or have a substantial adverse effect on federally protected wetlands. No significant impacts are anticipated because any activities authorized under the new SAMP/WSAA Process would be subject to conditions of the RGP, LOP, and WSAA Process and other agency permitting programs (e.g., water quality). Potential impacts from storm water management and treatment facilities would be considered less than significant.

Mitigation Measures

No CEQA mitigation measures are required because impacts are expected to be less than significant. To ensure this determination, additional permit/agreement conditions may be included during permit processing of future storm water treatment projects to address unique, site-specific issues. The Corps and Department retain discretionary authority to augment the mitigation framework. In the case of storm water treatment and management facilities, the conditions listed in the land development section may also be utilized in this context. Those additional conditions may be added to any permit/agreement conditions or mitigation framework on a case-by-case basis.

Level of Significance after Mitigation

No significant impacts.

Habitat Restoration and Enhancement Projects. Habitat restoration and enhancement projects are typically located in jurisdictional areas to fulfill their functions in restoring and/or improving wetland/riparian habitat to increase wildlife habitat and hydrologic functions and values. While there may be some minor temporary impacts during construction, as discussed below, these restoration and enhancement projects would produce a beneficial effect for the aquatic ecosystem in the long-term by re-establishing native habitats. During the permit review process, the Corps would evaluate proposed habitat restoration and enhancement projects in light of their ability to meet restoration criteria of the SAMP Strategic Mitigation Plan described in Section 2.1.3.1.

Temporary Impacts

Anticipated impacts from habitat restoration and enhancement activities would occur from mass grading and channel reconfiguration as well as from minor enhancement of vegetation. During construction of restoration projects, temporary sedimentation impacts to aquatic, wetland, and riparian habitats may occur due to potential clearing and grading activities. Additionally, during construction, temporary impacts to jurisdictional drainages may occur from clearing and grading activities, installation of check-dam features, stream dewatering, and planting of riparian vegetation. These changes, albeit for the goal of increasing one or more functions, modify the existing channel. It is expected that habitat restoration and enhancement projects would allow for the natural re-establishment of riparian habitat and wetlands along the stream channels, and allow for a balanced system in terms of sediment regime and hydrology. Although temporal loss of some structural or functional elements at a particular site is anticipated, the low-quality habitat being disrupted may consist of upland vegetation, non-native plants, or be nonvegetated. Thus, the temporary loss of a few minor functions of degraded habitat would be compensated by the establishment of several major functions of restored habitat.

Temporary impacts from restoration activities are expected to occur in various locations throughout the Watershed. It is anticipated that recovery (from temporary impacts) at one particular site would be completed before impacts would occur in another location; thus, multiple temporary impacts at the same time are unlikely. These activities may occur on a small scale within a single riparian reach, or may involve the reestablishment of entire riparian corridors.

Permanent Impacts

As under existing Corps/Department permitting programs, construction and maintenance of habitat restoration and enhancement projects may include grading for creating stream meanders, vegetation management and removal, sediment removal, temporary stream diversion, dewatering operations, and the installation of temporary access roads and work areas. Although some of these impacts may be considered permanent, the post-activity, impacted areas would remain as habitat, rather than dredged or fill material. Thus, permanent impacts are not anticipated, except for in-channel or bank structural elements that serve as stabilizing features of restoration projects. In some cases, channel reconfiguration may include permanent impacts in one section of a reach (or a given project site), but more habitat would be made available elsewhere in the reach. In summary, no reduction in acreage or functions is anticipated; in fact, an increase in riparian habitat acreage and function is expected, a beneficial effect for the Watershed riparian ecosystem.

Requirements and Applicable General Conditions of the RGP, LOP, and WSAA Process The discussion under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement activities.

Other Applicable Regulations

The discussion under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement activities.

Impact Analysis Conclusion

Regardless of the scale of a particular restoration activity, no further degradation to the hydrologic, water quality, or habitat functions of these habitats would be expected in the Watershed overall. The temporary nature of these impacts would not reduce the acreage of aquatic, wetland, and riparian resources in the

Watershed. In addition, the net effect of the anticipated restoration activities, especially at priority sites with the highest functional lift per effort (Corps 2004), would be a beneficial impact on aquatic, wetland and riparian resources Watershed-wide.

The permitting and mitigation requirements established by the SAMP/WSAA Process allow for increased protection of aquatic resource integrity areas, as well as a more efficient riparian ecosystem restoration program for the entire Watershed. General conditions and permit requirements of the RGP, LOP, and WSAA Process are clear, and mitigation is set up to be efficient and successful. In addition, acreage thresholds for both the RGP and LOP further restrict impacts: RGP, less than or equal to 0.5 acre outside of aquatic resource integrity areas; and LOP, less than or equal to 0.1 acre within any aquatic resource integrity area. Therefore, implementation of the SAMP/WSAA Process for habitat restoration and enhancement projects would not be expected to result in substantial adverse effects on any riparian habitat or other sensitive natural community; or have a substantial adverse effect on federally protected wetlands. No significant impacts are anticipated because any activities authorized under the new SAMP/WSAA Process would be subject to conditions of the RGP, LOP, and WSAA Process and other agency permitting programs (e.g., water quality). Potential impacts from habitat restoration and enhancement activities would be considered less than significant.

Mitigation Measures

No additional mitigation measures are needed for habitat restoration and enhancement activities because no significant impacts to wetland and riparian habitats are expected.

Level of Significance After Mitigation

No significant impacts.

Fire Abatement and Vegetative Fuel Management Activities

Fire abatement and vegetative fuel management activities that could be permitted under the SAMP/WSAA Process may involve thinning of vegetation, clearing of brush, and installing construction access roads and work areas. This work may occur within or adjacent to waters that are under the jurisdiction of the Corps and the Department.

Temporary Impacts

Management of vegetation for the purposes of fire abatement usually involves upland plant communities composed of coastal sage scrub or chaparral. Where ephemeral drainages are interspersed within such communities, or where a riparian zone is adjacent to such habitat, vegetation management activities may temporarily impact wetland and riparian habitat. This activity may include vegetation removal, thinning of vegetation, as well as temporary access roads and staging areas. Although these activities are ongoing and may occur on a regular basis, the aggregate impact does not constitute a permanent loss of habitat or functions. As riparian vegetation would only be indirectly affected (because it is not upland vegetation), maintenance for fire protection would result in only minor impacts to small areas on an intermittent basis.

The temporary impacts to wetland and riparian habitats from fire abatement activities would occur on an infrequent basis, and in various locations throughout the Watershed. It is anticipated that recovery (from temporary impacts) at one particular site would be completed before impacts would occur in another

location; thus, multiple temporary impacts at the same time are unlikely. These activities are usually completed in a relatively small area within a single riparian reach. Drainages within or adjacent to coastal sage scrub or other upland habitats are usually ephemeral in nature, and in turn do not support significant riparian corridors. The biogeochemical functions of low-order, ephemeral tributaries would not be compromised by vegetation removal, as long as the drainages remain intact.

In many cases, as the Corps does not regulate removal of vegetation with hand tools, fire abatement activities may not be considered a Corps-jurisdictional activity. Thus, the activity would then be solely under the jurisdiction of the Department, and only WSAA Process conditions would apply.

Permanent Impacts

No permanent impacts were identified.

Requirements and Applicable General Conditions

The discussion under Category 1 (Utility Lines) is applicable for fire abatement and vegetative fuel management activities within and adjacent to jurisdictional areas, although in many cases, only the WSAA Process conditions would be applicable.

Other Applicable Regulations

In general, the discussion under Category 1 (Utility Lines) is applicable for fire abatement and vegetative fuel management activities within and adjacent to jurisdictional areas. In addition, the requirements of the applicable NCCP (for upland-associated species) would further condition activities to ensure compliance of activities with the NCCP (County of Orange, 1996).

Impact Analysis Conclusion

The overall impact on the Watershed is not expected to further degrade the hydrologic, water quality, or habitat functions of these habitats. The temporary nature of these impacts would not reduce the acreage of aquatic, wetland, and riparian resources in the Watershed.

With application of the above permit/agreement conditions, implementation of the SAMP/WSAA Process for fire abatement activities would not be expected to cause substantial, adverse impacts to riparian areas or federally protected wetlands. No significant impacts are anticipated because any activities authorized under the new SAMP/WSAA Process would be subject to conditions of the RGP, LOP, and WSAA Process and other agency permitting programs (e.g., water quality). In addition, acreage thresholds for both the RGP and LOP further restrict impacts: RGP, less than or equal to 0.5 acre outside of aquatic resource integrity areas; and LOP, less than or equal to 0.1 acre within any aquatic resource integrity area. Potential impacts from the construction and maintenance of utility lines would be considered less than significant.

Mitigation Measures

No additional mitigation measures are needed for fire abatement and vegetative fuel management activities because no significant impacts to wetland and riparian habitats are expected.

Level of Significance After Mitigation

No significant impacts.

4.3 BIOLOGICAL RESOURCES INCLUDING THREATENED AND ENDANGERED SPECIES

This programmatic impact evaluation satisfies the Federal requirement under the Endangered Species Act (FESA) and the State requirement under the California Endangered Species Act (CESA) for incidental take of endangered plant and animal species. Furthermore, this evaluation assesses any substantial interference with migratory and wildlife movement resulting from the proposed SAMP/WSAA Process. Potential impacts to sensitive species (i.e., species listed, or proposed for listing, under either the FESA and/or the CESA), and their movement corridors are assessed for both upland and aquatic habitats. Upland sensitive species include the coastal California gnatcatcher and Braunton's milk-vetch and sensitive aquatic species include the least Bell's vireo and southwestern willow flycatcher, and Riverside fairy shrimp.

4.3.1 Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purpose of this analysis, an impact is considered significant if the proposed SAMP/WSAA Process would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the Department or USFWS; or
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Topics listed in Appendix G overlap with those found within the 404(b)(1) Guidelines. Table 4-2 below shows the overlap.

Table 4-2.	Comparison o	of Corps 404(b)(1)	Guidelines and	CEQA Appendix G
------------	--------------	--------------------	-----------------------	------------------------

Topics	404(b)(1) Guidelines	Appendix G^
Biological Resources	230.10 (b 3-4; c 2-3)	IV (a, d-f); XVII (a)
	Subpart D	

^ Roman numerals relate to the text of Appendix G.

4.3.2 Impacts

Consistency of SAMP/WSAA Process with Existing Sensitive Species Policies and Regulations

Implementation of the SAMP/WSAA Process permit program (e.g., Corps RGP, LOP and the Department's WSAA Process) would have little or no effect on how existing endangered species regulations and policies would apply to regulated activities of the SAMP/WSAA Process. The Corps and the Department have been in informal consultation with the USFWS throughout the formulation of the SAMP/WSAA Process to insure that any impacts to listed species (or their critical habitat) are not adverse. With respect to obligations under FESA, mitigation and minimization in the Corps LOP and RGP shall constitute reasonable and prudent measures for all non-jeopardy Section 7 consultations, except as provided by any Biological Opinion. Nevertheless, the Corps may undergo a separate Section 7

consultation with the USFWS as part of the SAMP permitting process should they choose to do so. Similarly, project proponents would have to comply with any of the Department's requirements for CESA. Overall, the SAMP/WSAA Process would neither conflict nor be inconsistent with existing federal and state endangered species regulations and policies.

Programmatic Impact Analysis of Regulated Activities

The following programmatic impact analysis outlines potential impacts to federally and state listed species and their habitat from the seven categories of regulated activities under the proposed SAMP/WSAA Process. The regulated activities that would be permitted under the SAMP/WSAA Process are similar to those that would otherwise be permitted on case-by-case basis under existing Corps/Department Section 404 and Section 1600 et seq. programs. As such, potential impacts from these regulated activities would be expected to be similar in nature to those authorized under the existing regulatory programs. However, the SAMP/WSAA Process was established based on a holistic, Watershed-wide evaluation of aquatic resources from which permit conditions, compensatory mitigation, and targeted restoration requirements were developed to help maintain and improve the ecosystem function over the entire Watershed. Comparatively, the current permitting process is conducted on a case-by-case project basis with no holistic plan for compensatory mitigation. Therefore, potential impacts of regulated activities under the SAMP/WSAA Process would be expected to be similar or even less detrimental to the Watershed overall, in comparison to existing permitting programs because compensatory mitigation would be targeted to areas providing the greatest functional benefit to the Watersheds ecosystem, including listed species and their habitat. The compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve and enlarge key habitat areas identified within the Watershed that would be most beneficial to sensitive species.

Under the SAMP/WSAA Process, seven regulated activities would be expected to occur within the Watershed. In general, the anticipated activities under the proposed SAMP/WSAA Process include the construction of roads and bridges, conversion of land to residential, commercial, office/industrial, and recreational uses; construction and maintenance of utilities and flood control facilities, and other uses. In general, these activities would result in temporary and permanent impacts to the upland and aquatic habitats upon which sensitive species rely on for food and reproduction. In this Watershed sensitive upland species include the coastal California gnatcatcher and Braunton's milk-vetch, and sensitive aquatic species include the least Bell's vireo, southwestern willow flycatcher, and Riverside fairy shrimp.

Utility Lines (Construction and Maintenance)

As with existing Corps/Department permitting programs, construction and maintenance of utility lines that would be permitted under the SAMP/WSAA Process could affect streambeds and/or result in discharges of dredged or fill material into jurisdictional waters, including habitat occupied by sensitive species. In addition to impacts to jurisdictional waters, utility lines could impact adjacent upland areas that may also support sensitive species and/or habitat upon which sensitive species rely. The discharges may result from required grading, excavation, boring, backfill, and or bedding, temporary stream diversion, dewatering operations, temporary construction access roads and work areas.

Temporary Impacts

Temporary impacts to federally and state-listed species and their upland and riparian habitats can occur from the installation and maintenance of utility lines. Temporary, impacts to species and their upland and

riparian habitats may result from required grading, stockpiling, trenching, temporary stream diversion, dewatering operations, temporary construction access roads, and work areas.

Construction activities could temporarily displace sensitive wildlife. Human activity would cause most sensitive wildlife species to avoid an area until the disturbance conditions are eliminated. Bird populations and other mobile species would retreat from an area until after construction is complete and reoccupy the area following revegetation.

During temporary ground disturbing activities, less mobile wildlife species (e.g., Riverside fairy shrimp) and plant life (e.g., Braunton's milk-vetch) would be eliminated if located within the project footprint. Impacts to wildlife species are expected to be of limited duration.

Some construction and maintenance of existing utility structures would be expected to result in a shortterm loss of habitat. Some breeding potential could be lost for animals that may currently breed or nest within the construction footprint. This loss of productivity would be of limited duration and breeding individuals would be expected to reoccupy adjacent habitats following completion of construction activities and vegetation recovery. Early recovery of some wildlife populations would likely occur within two to three years after temporary ground disturbance.

Temporal loss of habitat from construction of trenches may occur if across intermittent or perennial streams with riparian habitat, or across ephemeral streams within or adjacent to coastal sage scrub. These areas would remain unvegetated until after project completion. These temporary construction areas may serve to temporarily disconnect habitat corridors used by listed species.

Noise generated during construction and maintenance of utility lines can have an indirect impact on listed wildlife species during the temporary work period. Noise can cause sensitive wildlife species to avoid an area until the disturbance conditions are eliminated. Bird populations and other mobile species would retreat from an area until after construction was complete. In addition, noise can cause potential disruption of breeding activities including nest abandonment for one or more seasons. Sensitive species that may be adversely affected by noise include the coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher.

In addition, downstream effects (indirect impacts) may result from a potential discharge of constructionrelated pollutants (e.g., concrete, waste oil, solvents, debris, etc) spilled, leaked or transported via storm runoff into Receiving Waters that may be inhabited or used by listed sensitive species, such as the least Bell's vireo, southwestern willow flycatcher, California least tern, and Belding's savannah sparrow.

Permanent Impacts

The vast majority of new utility projects would service new developments; therefore, most impacts associated with these facilities would be evaluated in the land development category. In general, once habitat supporting sensitive species is permanently converted to an above ground facility or utility line the area would no longer be expected to provide habitat value for sensitive species. Long-term impacts could occur in woodlands, riparian, wetland and sage scrub where vegetation would be cleared. Vegetation removed in these areas would require a relatively longer period for reestablishment. The loss of vegetation could affect wildlife species by reducing available refuge areas, foraging habitat, and

nesting/roosting areas for species such as the least Bell's vireo, southwestern willow flycatcher, and California least tern.

The relatively few new above-ground utilities expected to be constructed using the SAMP RGP, LOP, or WSAA Process may permanently alter habitat (e.g., willow woodland and coastal sage scrub) used by sensitive species for foraging, breeding, and/or migration corridors.

Construction of new utility projects may include downstream hydromodification and the influx of exotic plant species. These indirect impacts could, over time, reduce the sustainability of riparian areas and in turn affect the long-term habitat use by listed species.

Applicable General Conditions of RGP, LOP, and WSAA Process that Minimize Impacts

Utility projects would be subject to either the Corps RGP or LOP and the Department's WSAA Process. (For those projects that cannot meet the requirements of the RGP, LOP or WSAA Process, project applicants would need to file for a Corps SIP and Department individual streambed alteration agreement).

The Corps proposed Maintenance RGP authorizes discharges of dredged or fill materials, outside aquatic resource integrity areas, resulting in temporary impacts up to 0.5 acre of which only 0.1 acre may be vegetated with native riparian and/or wetland vegetation. This RGP contains several general conditions that address potential impacts to biological resources including threatened and endangered species. The conditions relating to water quality are applicable because hydromodification may alter flooding regimes, which may in turn alter the structure of riparian habitat suitable for the least Bell's vireo and southwestern willow flycatcher. The key conditions are Nos. 13 and 19, as these relate most directly to minimizing any impacts to these species. These conditions are listed below and detailed in Table 2-4 of Section 2.1.2.3.

- Condition No. 5 Soil Erosion and Siltation
- Condition No. 6 Equipment
- Condition No. 11 Staging of Equipment
- Condition No. 12 Fencing of Project Limits
- Condition No. 13 Avoidance of Breeding Season
- Condition No. 19 Endangered Species

The Corps would issue an LOP for temporary impacts within aquatic resource integrity areas only for: (1) the purpose of maintaining established structures (and permanent impacts up to 0.1 acre); (2) would not result in stream channelization/storm drain conversion for five major stream systems in aquatic resource integrity areas including Borrego Canyon, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek and Serrano Creek; (3) would only apply to projects with a small overall footprint; and (4) would not substantially alter a compensatory mitigation site. LOP conditions that address potential impacts to biological resources including threatened and endangered species are similar to those of the Maintenance RGP and include the following (see Table 2-3 of Section 2.1.2.3 for details):

- Condition No. 1 Avoidance and Minimization
- Condition No. 4 Soil Erosion and Siltation
- Condition No. 5 Equipment
- Condition No. 6 Suitable Material
- Condition No. 7 Management of Water Flows

- Condition No. 9 Preventive Measures
- Condition No. 10 Staging of Equipment
- Condition No. 11 Fencing of Project Limits
- Condition No. 12 Avoidance of Breeding Season
- Condition No. 13 Exotic Species Management
- Condition No. 19 Endangered Species

The Corps would issue LOPs for impacts to waters of the U.S. outside of aquatic resource integrity areas for applicants who can demonstrate impact avoidance and minimization was achieved to the extent practicable and resulting changes in low integrity areas would only have a minor effect on Watershed integrity. LOP procedures apply to those projects that do not qualify for the RGP. As part of the LOP process, a mitigation plan must be prepared in accordance with the compensatory mitigation requirements of the LOP that effectively addresses unavoidable impacts to waters of the U.S. and the goal of no net loss of wetlands and functional integrity units.

The Department's WSAA Process also contains compensatory mitigation requirements and numerous conditions that would further help avoid, minimize and mitigate any significant or potentially significant impacts to sensitive species and wildlife movement. Applicable conditions contained in the SAA Templates Master Conditions List (of the WSAA Process) are as follows: (see Appendix D for full descriptions of the conditions).

- Condition No. 1 (Mitigation Requirements);
- Condition No. 2 (General Habitat Mitigation and Monitoring)
- Condition No. 3 (General Mitigation Success Criteria);
- Condition No. 7 (Grading for Mitigation Sites);
- Condition Nos. 8 20 (Biological Surveys and Time Restrictions);
- Condition Nos. 21 22 (Aquatic and Terrestrial Species Specific Protection Conditions)
- Condition No. 23 (Predator Control);
- Condition Nos. 24 34 (Vegetation Removal);
- Condition No. 43 (Exotic Vegetation Eradication Control Wildlife and Habitat Protection);
- Condition Nos. 46 64 (Placement of Instream Structures Aquatic and Wildlife Migration Protection);
- Condition Nos. 88 95 (Turbidity and Siltation);
- Condition Nos. 131 140 (Additional Mitigation Conditions);
- Condition Nos. 142 154 (Additional Resource Protection; and
- Condition Nos. 156 162 (Fisheries Species Protection)

Applicable Mitigation Program Elements

The SAMP mitigation framework and requirements/recommendations for long-term conservation of aquatic resource integrity offer additional measures that would ensure less than significant impacts to listed species and their habitats. The Corps and Department reserve the right to further condition projects based on site-specific information, as well as reasonable and prudent measures developed by the USFWS during agency coordination (or consultation). In particular, additional measures may be applicable in

situations where long-term, indirect impacts may degrade the sustainability of habitat. Recommendations may be made to avoid and minimize impacts to non-listed, sensitive plant and animal species.

If a proposed project with significant, adverse impacts to listed species cannot be mitigated to a less than significant level, then the Corps and the Department may require the applicant to proceed under a SIP or individual SAA. In that case, additional NEPA and CEQA documentation would be required, and a formal Section 7 consultation may occur. Many applicable mitigation elements of the SAMP/WSAA Process, relevant to riparian-associated species such as the least Bell's vireo, are discussed in Section 4.2 Aquatic, Wetland, and Riparian Habitats.

The Corps restoration plan for the Watershed (Smith and Klimas 2003) contains a set of criteria (i.e., strategies which relate directly to the protection and restoration of riparian and adjacent upland areas). The criteria, which are consistent with the SAMP Tenets, were developed by the agencies to identify strategic restoration sites for potential implementation as compensatory mitigation sites. These sites were chosen because they would result in the greatest functional improvement per level of effort. The following six criteria provided a mechanism for prioritizing the potential effectiveness of various combinations of restoration actions at improving the functional integrity of the aquatic resources:

- Restore connectivity between aquatic resources located in the NCCP Reserve System;
- Restore reaches within surrounding upland conservation areas;
- Restore connectivity between high and/or medium integrity resource reaches;
- Restore reaches within the headwaters;
- Restore reaches with federally or state-listed species (endangered, threatened, or species of special concern); and
- Prioritize restoration of reaches with greatest amount of functional lift per level of effort.

These restoration "prescriptions" for the Watershed are expected to benefit not only riparian areas, but also associated upland habitats and wildlife habitats. Riparian areas that contain listed species are priority sites, and restoring these areas would directly improve the habitat for listed species. The increased connectivity would re-establish wildlife movement corridors, especially between the northern and southern portions of the Watershed.

The SAMP's long-term conservation elements include a suite of policies and measures for aquatic resource management. Among these are an adaptive management framework and the requirement/recommendation for buffers. These measures also serve to coordinate the SAMP/WSAA Process with the existing NCCP reserve system. The two plans, one focused on upland species (NCCP) and one focused on riparian resources (SAMP/WSAA Process), are complementary approaches to protecting and enhancing habitats used by listed species.

Buffers are important aspects of any mitigation for a project, yet buffers are especially important for ensuring the sustainability of wildlife habitats from exotic species, edge effects, and other short- and long-term impacts. Buffers include upland areas that serve as a barrier to these impacts, and the use of buffers as a component of mitigation may ensure that impacts to listed species are less than significant.

Other Applicable Federal and State Regulations that Minimize Impacts

Regulated activities under the proposed SAMP/WSAA Process (as under existing case-by case permitting) are also subject to the following state and federal policies and regulations, as applicable, to address potential impacts to sensitive species and their habitats located within aquatic and upland areas of the Watershed.

Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP): As described previously in this document, the Central and Coastal Orange County NCCP/HCP provides for the regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development growth. The law provides an alternative to "single species" conservation through the formulation of regional, natural community-based, and habitat protection programs. The NCCP/HCP was developed to provide adequate mitigation for impacts to the California gnatcatcher and other Identified Species' habitat. The Department and USFWS developed the NCCP/HCP that provides coverage under Section 10 of FESA and CESA to those who are signatory to the NCCP/HCP. The NCCP Central and Coastal sub-region extends within the Watershed. As under the existing Corps/Department permitting, qualifying applicants within the Watershed seeking coverage under the SAMP/WSAA Process can continue to utilize the NCCP/HCP process for authorizing the take of a listed species, including the federally listed coastal California gnatcatcher.

Sections 7 and 10 of the FESA: As described previously in this document, the FESA prohibits activity that adversely affects any federally threatened or endangered species or species proposed for such listing or their designated critical habitats. The FESA also establishes a process for consultation and evaluation by the USFWS of proposed federal projects. Through the consultation process and specific provisions for habitat preservation, the FESA provides federal protection for species and habitat diversity, especially in cases where habitat loss has caused species endangerment. Sections 7 and 10 of the FESA would continue to be utilized as needed for the purpose of authorizing take of a listed species. With respect to obligations under FESA, mitigation and minimization in the Corps LOP and RGP shall constitute reasonable and prudent measures for all non-jeopardy Section 7 consultations, except as provided by any Biological Opinion. Nevertheless, the Corps may undergo a separate Section 7 or 10 consultation with the USFWS as part of the SAMP permitting process should they choose to do so. Four federally listed species are found or are potentially present in the Watershed: the coastal California gnatcatcher, the least Bell's vireo, southwestern willow flycatcher, and the Riverside fairy shrimp. Of the four species, only the California gnatcatcher has critical habitat designations that are in effect over portions of the Watershed. The Riverside fairy shrimp and the southwestern willow flycatcher had critical habitat designations in effect over portions of the Watershed until vacated by court order. Recovery plans have been prepared for the southwestern willow flycatcher, least Bell's vireo, and Riverside fairy shrimp (the Riverside fairy shrimp is covered by the Recovery Plan for Southern California Vernal Pools.

<u>California Endangered Species Act (CESA)</u>: As described previously in this document, the CESA establishes a state policy to conserve, protect, restore, and enhance threatened and endangered species and their habitats designated by the State of California. The CESA authorizes the acquisition of habitat to conserve threatened and endangered species. CESA also protects listed fish, wildlife, and plant species from unauthorized taking, importing, exporting, or selling. An exemption, however, greatly reduces the protection of plants on private land. CESA also establishes a consultation process between state agencies

and the Department. Project proponents would have to comply with any of the Department's requirements for CESA.

If the Department determines that a project would jeopardize a designated species or adversely modify its essential habitat, the Lead Agency must implement Department's alternatives to avoid jeopardy. CESA includes exceptions to the alternatives requirement and applies only to state-approved projects. Private projects do not require consultation under the Act. However, taking is still prohibited without a permit pursuant to Section 2081 of the FGC.

Impact Analysis Conclusion

Given the aquatic resource impact restrictions and general conditions in the RGP, LOP, and WSAA Process, as well as the requirements of the NCCP, FESA and CESA, construction and maintenance of utility lines would not be expected to create a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the Department or USFWS; nor interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. The approach of the SAMP/WSAA Process would seek greater avoidance in aquatic resource integrity areas in comparison to the existing case-by-case permitting approach, and thus provide greater protections to key habitat areas important to sensitive and endangered species. Further, under the SAMP/WSAA Process, the compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve and enlarge key habitat areas identified within the Watershed that would be most beneficial to sensitive species. Therefore, potential impacts to sensitive species and their habitats from construction and maintenance of utility lines under the proposed SAMP/WSAA Process would be considered less than significant.

Mitigation Measures

No mitigation measures are needed beyond those required under the SAMP/WSAA Process because no significant impacts to biological resources including threatened and endangered species are anticipated for construction and maintenance of utility projects.

Level of Significance after Mitigation

No significant impacts.

Flood Control Facilities (Construction and Maintenance)

Flood control facilities, described in Section 4.2.3, are located within or near waters under the jurisdiction of the Corps and the Department. As under existing Corps/Department permitting programs, construction and routine maintenance of these facilities that could be permitted under the SAMP/WSAA Process may involve the following with riparian habitats for sensitive species: grading, trenching, temporary stream diversion, dewatering operations, installation of temporary access roads and work areas, sediment removal, channel desilting, and vegetation management and removal affecting the quality of jurisdictional waters. Upland habitats for sensitive species may be affected by temporary construction areas and the temporary and permanent storage of stockpiles.

Temporary Impacts

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities.

Permanent Impacts

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities. In addition, otherwise permissible activities cannot be issued an LOP if they would: (a) substantially alter a compensatory mitigation site; (b) involve flood-control related conversions of soft-bottom channels to concrete-lined channels; or (c) result in the channelization of any major stream system such as Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek. Such activities would require a review under an SIP process with additional NEPA/CEQA review and 404(b)(1) analysis.

Other Applicable Federal and State Regulations that Minimize Impacts

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities.

Impact Analysis Conclusion

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities.

Mitigation Measures

No mitigation measures are needed beyond what has been incorporated into the proposed SAMP/WSAA Process program described above.

Level of Significance after Mitigation

No significant impacts.

Road Crossings including Bridges and Culverts

Construction of road crossings such as bridges and culverts across or within uplands and riparian areas can be necessary to meet local and regional circulation needs associated with continual development of the Watershed. Bridges may span the watercourse or be constructed with one or more piers depending on bridge length. As under existing Corps/Department permitting programs, construction and routine maintenance at-grade crossings, box culverts, pipe culverts, and bridges that would be permitted under the SAMP/WSAA Process may include grading, excavation, compacting and/or filling, vegetation clearing, temporary stream diversion, dewatering operations, installation of temporary access roads and work areas, channel desilting, paving operations and vegetation management and removal.

Temporary Impacts

The discussion under Category 1 (Utility Lines) is applicable for road crossings.

Permanent Impacts

The discussion under Category 1 (Utility Lines) is applicable for roads crossings.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for road crossings.

URS

Other Federal and State Regulations that Minimize Impacts

The discussion under Category 1 (Utility Lines) is applicable for road crossings.

Impact Analysis Conclusion

The discussion under Category 1 (Utility Lines) is applicable for road crossings.

Mitigation Measures

No mitigation measures are needed beyond what has been incorporated into the proposed SAMP/WSAA Process described above.

Level of Significance after Mitigation

No significant impacts.

Land Development for Residential, Commercial, Industrial, Institutional and Recreational Uses

Land development activities permitted under the SAMP/WSAA Process would include residential, commercial, industrial, institutional and recreational uses as well as attendant features to most uses. Land development would typically require vegetation clearing, grading and excavation for construction access, building pads, roads and culverts; boring and trenching for utility, sewer and storm drain installation; and paving operations. These activities may result in discharge of fill or encroachment into stream channels, wetlands or unlined agricultural drainages, redirecting of surface runoff into underground storm drains, temporary stream diversion and dewatering operations.

Temporary Impacts

Temporary impacts may result from the construction activities including temporary construction access roads and construction staging areas. Such impacts would include temporary disturbance to native upland and riparian habitats and the federally and state-listed species that occupy them. Temporary impacts can also affect species and their upland and riparian habitats resulting from required grading, stockpiling, trenching, temporary stream diversion, dewatering operations, temporary construction access roads, and work areas.

Construction activities can have indirect impacts on listed species such as from construction noise. In addition, downstream effects on aquatic habitat may result from the following factors: potential discharge of construction-related pollutants (e.g., concrete, waste oil solvents, debris, etc spilled, leaked or transported via storm runoff into downstream areas); or temporary change in hydrologic or geomorphic characteristics of the water body during certain flow conditions affecting the rate of downstream erosion and sedimentation (See also discussions in Section 4.4, Hydrology, Erosion and Sedimentation and Section 4.5, Water Quality).

Permanent Impacts

Construction of residential, commercial, industrial, institutional, and recreational features such as utilities, building pads, roads, bridges, or culverts within or over a drainage course may require the permanent removal of upland and riparian habitat that would permanently affect sensitive species. In addition, large land development activities may permanently disrupt migration corridors and make it difficult or impossible for wildlife to pass through or around a large development. However, unlike the current case-by-case permitting process, the proposed SAMP/WSAA Process seeks greater avoidance in aquatic resource integrity areas, including the avoidance of high value migration corridors.

Several indirect impacts to sensitive species can occur following completion of land development projects. For example domestic pets (in particular cats) from a new residential neighborhood can be predators that kill wildlife once they gain access to native habitats. The federally-listed coastal California gnatcatcher may be particularly vulnerable to such threats. Additionally, increased human activity from new residential neighborhoods can disturb sensitive species in their habitat and discourage species re-occupation. Post-construction noise, such as from traffic serving new development may affect sensitive

wildlife located nearby. Increased night lighting has also been known to adversely impact sensitive wildlife species. In addition, downstream water quality impacts and hydrologic impacts on sensitive aquatic habitat may continue post-construction resulting from increases in urban and storm water runoff. For individual projects, many such impacts would be discussed in detail in separate CEQA documents required by local agencies.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for land development activities.

Other Applicable Federal and State Regulations that Minimize Impacts

The discussion under Category 1 (Utility Lines) is applicable for land development activities.

Impact Analysis Conclusion

The discussion under Category 1 (Utility Lines) is applicable for land development.

Mitigation Measures

No mitigation measures are needed to beyond what has been incorporated into the proposed SAMP/WSAA Process.

Level of Significance after Mitigation

No significant impacts.

Storm Water Treatment and Management Facilities

Construction and maintenance activities of storm water treatment and management facilities permitted under the SAMP/WSAA Process would include the following activities within upland and riparian areas: grading, trenching, temporary stream diversion, dewatering operations, installation of temporary access roads and work areas, desilting, and vegetation and sediment management and removal.

Temporary Impacts

The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities.

Permanent Impacts

The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities.

Other Applicable Federal and State Regulations that Minimize Impacts

The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities.



The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities

Mitigation Measures

No mitigation measures are needed beyond what has been incorporated into the proposed SAMP/WSAA Process described above.

Level of Significance after Mitigation

No significant impacts.

Habitat Restoration and Enhancement Projects

Habitat restoration and enhancement projects are typically located in jurisdictional areas to fulfill their functions in restoring and/or improving wetland/riparian habitat and their upland buffers to increase wildlife habitat and hydrologic functions and values. As under existing Corps/Department permitting programs, construction and maintenance of habitat restoration and enhancement projects may include clearing and grading, channel reconfiguration, installation of check dam features, vegetation management and removal, sediment removal, temporary stream diversion, dewatering operations, and installation of temporary access roads and work areas.

Temporary Impacts

Temporary impacts to federally and state-listed species and their upland and riparian habitats can result from habitat restoration and enhancement projects. Construction of habitat restoration and enhancement projects can have temporary water quality impacts from erosion and sedimentation into Receiving Waters. Species may also be affected from required grading, stockpiling, trenching, temporary stream diversion, dewatering operations, temporary construction access roads, and work areas that affect upland and riparian habitats occupied by sensitive species.

Permanent Impacts

No permanent impacts are expected from this regulated activity. The purpose of habitat restoration and enhancement projects is to restore and/or improve wetland/riparian habitat and hydrologic functions and values, including those habitats for sensitive species. Although not specifically designed for water quality treatment, habitat restoration and enhancement projects can help filter pollutants in urban and storm runoff, thereby providing an indirect beneficial effect on water quality and consequently sensitive species habitat downstream of proposed projects

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement projects.

Other Applicable Federal and State Regulations that Minimize Impacts

The discussion under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement projects.

The discussion under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement projects.

Mitigation Measures

No mitigation measures are needed beyond what has been incorporated into the proposed SAMP/WSAA Process.

Level of Significance after Mitigation

No significant impacts.

Fire Abatement and Vegetative Fuel Management Activities

Fire abatement and vegetative fuel management activities that could be permitted under the SAMP/WSAA Process may involve thinning of vegetation, clearing of brush, and installing construction access roads and work areas.

Temporary Impacts

Temporary impacts to federally and state-listed species and their upland and riparian habitats can occur from the thinning of riparian and upland vegetation and from temporary clearing for access roads and work staging areas. Additionally, equipment noise can cause temporary disturbance to sensitive species

Permanent Impacts

No permanent impacts are anticipated as a result of the fire abatement and vegetative fuel management activities.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for fire abatement and vegetative fuel management activities. Since the Corps does not regulate the removal of vegetation with hand tools, fire abatement activities may not be considered a Corps-jurisdictional activity. Thus, the activity would then be solely under the jurisdiction of the Department and only the WSAA Process conditions would apply.

Other Applicable Federal and State Regulations that Minimize Impacts

The discussion under Category 1 (Utility Lines) is applicable for fire abatement and vegetative fuel management activities.

The discussion under Category 1 (Utility Lines) is applicable for fire abatement and vegetative fuel management activities.

Mitigation Measures

No mitigation measures are needed beyond what has been incorporated into the proposed SAMP/WSAA Process.

Level of Significance after Mitigation

No significant impacts.

4.4 HYDROLOGY, EROSION, AND SEDIMENTATION

4.4.1 Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this analysis, an impact is considered significant if the proposed project would:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard boundary or Flood Insurance Rate Map or other flood hazard delineation map; or
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, inundation by seiche, tsunami, or mudflow.

Topics listed in Appendix G overlap with those found within the 404(b)(1) Guidelines. Table 4-3 shows the overlap.



Topics	404(b)(1) Guidelines	Appendix G^
Hydrology	230.10 (c 3)	VIII (b-e)
	Subpart C	

Table 4-3.	Comparison of Corn	s 404(b)(1) Guidelines	and CEOA Appendix G.
	comparison of corp	s io i(b)(1) Guiachies	and CEQT Appendix O.

^ Roman numerals relate to the text of Appendix G.

4.4.2 Impacts

The regulated activities that would be permitted under the SAMP/WSAA Process are similar in nature to regulated activities that would otherwise be permitted under existing Section 404 and Section 1600 *et seq.* regulations. As such, potential hydrologic impacts from these regulated activities would be expected to be similar in nature to those authorized under the existing Corps and Department permitting framework. However, the SAMP/WSAA Process was established based on a holistic, Watershed-wide evaluation of resources from which permit conditions, compensatory mitigation and targeted restoration requirements were developed to help maintain and improve the Watershed ecosystem integrity, including hydrologic integrity over the existing case-by-case permitting programs. Therefore, under the SAMP/WSAA Process impacts to watershed hydrology would be minimized overall.

The SAMP/WSAA Process represents a comprehensive planning program for the location and extent of potential aquatic resource impacts, compensatory mitigation and restoration so that impacts to the Watershed as a whole are targeted to areas which would not substantially alter the baseline functions (i.e., areas of low ecological integrity), while areas of high integrity are avoided, maintained or improved to the maximum extent practicable. Therefore, potential hydrologic impacts of regulated activities under the SAMP/WSAA Process would be expected to be minimized overall, in comparison to existing permitting programs, and in fact may ultimately result in an improvement in Watershed ecosystem integrity, including watershed hydrology.

Following is a programmatic impact analysis of each regulated activity resulting from authorization of temporary and permanent discharges of dredged or fill material to waters of the U.S. under the Corps proposed RGP and LOP, as well as temporary and permanent impacts to Department jurisdictional areas under the proposed WSAA Process.

Utility Lines (Construction and Maintenance)

The proposed SAMP/WSAA Process is applicable to the construction and maintenance of utility features across or adjacent to jurisdictional drainages. Utility lines often cross one or more jurisdictional waters as part of the utility distribution system. Utility lines are sometimes attached to bridges, if available and feasible, but often, the lines are trenched and placed underground. Construction and maintenance of pump stations and lift stations are also included in this category of activities eligible for the proposed permitting process. These structures are commonly located in or adjacent to jurisdictional waters as these are the natural corridors of subsurface and surface waters. Periodic maintenance is required for repair and/or replacement of damaged lines or structures. Construction and maintenance activities may result in temporary discharges from grading and excavation for foundations, supports and structures, boring, backfill, and/or bedding placement, temporary stream diversion, vegetation clearing, dewatering operations, temporary construction access roads and work areas.

Temporary Impacts

Potential hydrologic impacts from construction and maintenance of utility lines include temporary loss of aquatic habitats, temporary and minor changes in channel hydrology, redirection or intensification of flows toward adjacent properties, and potential short-term discharges of sediment during grading and excavation.

Permanent Impacts

The vast majority of new utility lines in the Watershed would service new developments, and therefore, most potential impacts associated with new utility lines would be accounted for in the land development category. No new structures outside the extent of land development activities are expected to be built within or adjacent to riparian habitat.

Requirements and Applicable General Conditions of the RGP, LOP, and WSAA Process

The Corps proposed maintenance RGP authorizes discharges of dredged and fill materials outside aquatic resource integrity areas, resulting in temporary impacts up to 0.5 acres of which only 0.1 acre may be vegetated with native riparian and/or wetland vegetation. This RGP contains several general conditions that address potential hydrology, erosion and sedimentation impacts. These conditions are listed below and detailed in Table 2-4 of Section 2.1.2.3.

- Condition No. 5 Soil Erosion and Siltation Controls;
- Condition No. 6 Equipment;
- Condition No. 7 Suitable Material;
- Condition No. 8 Management of Water Flows;
- Condition No. 9 Removal of Temporary Fills;
- Condition No. 10 Preventive Measures; and
- Condition No. 11 Staging of Equipment.

The Corps would issue an LOP for temporary impacts within aquatic resource integrity areas only for: 1) the purpose of maintaining established structures (and permanent impacts up to 0.1 acres); 2) would not result in stream channelization/storm drain conversion for five major stream systems in aquatic resource integrity areas including Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek and Serrano Creek; 3) would only apply to projects with a small overall footprint; and 4) would not substantially alter a compensatory mitigation site. LOP conditions that address hydrologic effects are similar to those of the Maintenance RGP and include the following (see Table 2-3 of Section 2.1.2.3 for details)

- Condition No. 4 Soil Erosion and Siltation;
- Condition No. 5 Equipment;
- Condition No. 6 Suitable Material;
- Condition No. 7 Management of Water Flows;
- Condition No. 9 Preven tive Measures; and
- Condition No. 10 Staging of Equipment.

The Corps would issue LOPs for impacts to waters of the U.S. outside of aquatic resource integrity areas for applicants who can demonstrate impact avoidance and minimization was achieved to the extent practicable and resulting changes in low integrity areas would only have a minor effect on Watershed integrity. LOP procedures apply to those projects that do not qualify for the RGP. A mitigation plan must be prepared in accordance with the compensatory mitigation requirements of the LOP that effectively addresses unavoidable impacts to waters of the U.S. and the goal of no net loss of wetlands and functional integrity units. The application must also contain a description of BMPs to be used during project implementation to control siltation and erosion. Compliance with the General Conditions is required for the RGP and the LOP, respectively.

In addition, the Department's WSAA Process contains numerous general conditions applicable to utility projects that would further help avoid, minimize and mitigate potential impacts on hydrology, erosion and sedimentation. Applicable mitigation is contained in the following conditions (see the Master Streambed Condions List of the WSAA Process in Appendix D for full descriptions of the conditions):

- Condition Nos. 35 42 Routine Channel Maintenance;
- Condition Nos. 46 64 Placement of Instream Structures;
- Condition Nos. 65 76 Small Dam and Pond Construction;
- Condition No. 77 Directional Drilling;
- Condition Nos. 78 87 Fill and S poils;
- Condition Nos. 88 95 Turbidity and Siltation; and
- Condition Nos. 95 122 Equipment Access, Pollution, Sedimentation and Litter.

Other Applicable Regulations

Many of the construction BMPs required by the RWQCB through the NPDES storm water regulations help minimize erosion and sediment in storm water discharges into Receiving Waters (See Section 4.5, Water Quality for details). Implementation of these BMPs for utility line projects would therefore help reduce sediment loading into San Diego Creek and Newport Bay.

Impact Analysis Conclusion

Construction and maintenance of utility line projects under the proposed SAMP/WSAA Process would not be expected to substantially deplete groundwater supplies or interfere with groundwater recharge, substantially alter the existing drainage pattern of a site or area, substantially increase the rate or amount of surface runoff nor create hydraulic obstructions that could result in flooding, create or contribute runoff which would exceed the capacity of existing or planned storm water drainage systems, place housing within a 100-year flood hazard area, nor expose people or structures to a significant risk from flooding. No significant impacts are anticipated because any activities authorized under the new SAMP/WSAA Process would be subject to conditions of the RGP or LOP, and WSAA Process and other agency regulatory permit programs. Therefore potential hydrologic, erosion and sedimentation impacts from construction and maintenance of utility lines under the proposed SAMP/WSAA Process would be considered less than significant.



Mitigation Measures

No mitigation measures are needed since no significant hydrologic, erosion and sedimentation impacts are expected from utility line projects.

Level of Significance After Mitigation

No significant impacts.

Flood Control Facilities

Flood control facilities are located within or near jurisdictional waters. These facilities are designed and constructed in accordance with County hydrologic design standards to protect life and property against flooding, stabilize channels against lateral migration or downcutting, and manage sediment loads. Construction of flood control facilities generally requires soil excavation, fill and compaction. Sometimes lining with concrete or other armoring product is involved, or bank stabilization measures are added. Maintenance typically involves periodic dredging of accumulated sediments in channels, basins outfall and intake structures, culverts and other structural features of the conveyance system, as well as periodic removal of vegetation to restore the original basin and channel design capacity and configuration. These activities may also require temporary stream diversion, dewatering operations, and installation of temporary access roads and work areas.

Temporary Impacts

Temporary impacts could include a short-term change in hydrologic or geomorphic characteristics of the stream channel during certain flow conditions affecting the rate of erosion and sedimentation. Also uncontrolled erosion and sedimentation into the stream channel can increase the sediment load in the Watershed (indirect impact).

Permanent Impacts

New or improved flood control facilities can result in permanent loss of aquatic habitat from removal of riparian vegetation and replacement with channel armoring or other structures. The activities can also result in permanent alteration to channel hydrology and/or hydraulic characteristics due to channel reconfiguration, which can accelerate or decelerate flows, redirect flow paths, or disrupt channel profiles resulting in an increase in erosion or sedimentation (indirect impact).

Engineered basins (detention, retention or debris) intentionally disrupt the hydrologic and/or sediment balance within a drainage system. Engineered basins can accumulate sediment loads during low flow periods, reducing sediment supply to downstream reaches and increasing channel erosion potential. During periods of high flow, the basins can act as sources of sediment load, and previously accumulated deposition can be re-suspended and transported downstream, potentially exacerbating sedimentation problems. Regular maintenance of detention, retention and debris basins is necessary to maintain their proper function.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities. In addition, otherwise permissible activities could not be issued an LOP if they would: (a) substantially alter a compensatory mitigation site; (b) involve flood-control related conversions of soft-bottom channels to concrete-lined channels; or (c) result in the channelization of any major stream system such as Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek. Such

activities would require review under an SIP process and individual SAA with additional NEPA/CEQA review and 404(b)(1) analysis.

Other Applicable Regulations

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities. Also, adherence to the flood control requirements of Orange County's Flood Control Design Manual (County of Orange 2000) or other municipal flood control design manuals would ensure proper design of flood control facilities to control flooding and sediment discharges in downstream channels of the Watershed including San Diego Creek and Upper Newport Bay.

Impact Analysis Conclusion

Overall, construction and maintenance of flood control facilities would not be expected to substantially deplete groundwater supplies or interfere with groundwater recharge; substantially increase the rate or amount of surface runoff nor create hydraulic obstructions that could result in flooding; create or contribute runoff which would exceed the capacity of existing or planned storm water drainage systems; place housing within a 100-year flood hazard area; nor expose people or structures to a significant risk from flooding. The aquatic resource impact restrictions and general conditions of the Corps RGP and LOP and the Department's Level 1 - 3 SAA templates and other applicable flood control regulations would reduce potential impacts. New or improved flood control facilities could substantially alter the existing drainage pattern of a site or area, but all designs would be in accordance with locally approved drainage plans and with the Orange County Flood Control Design Manual or other municipal flood control design manuals to control downstream flooding and sedimentation impacts. Additionally, under the SAMP/WSAA Process, compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve hydrologic function in overall in the Watershed in comparison to existing Corps and Department permitting programs. Therefore, potential impacts to hydrology, erosion and sedimentation from construction and maintenance of flood control facilities under the proposed SAMP/WSAA Process would be considered less than significant.

Mitigation Measures

No mitigation measures are needed since no significant hydrologic, erosion and sedimentation impacts are expected.

Level of Significance after Mitigation

No significant impacts.

Road Crossings including Bridges and Culverts

The proposed SAMP/WSAA Process provides a comprehensive permitting process for bridges, at-grade crossings and culverts across jurisdictional drainages within the Watershed, as described in Section 4.2.3

Temporary Impacts

Construction activities could include placement of temporary coffer dams, boring, dredging, and fills for construction and access. During construction of crossings, temporary impacts to channel hydrology and surface flows would be expected from the work required in the channel. Temporary impacts could be associated with diversion or retention of flows away from the construction area, including increased sedimentation in retention areas and increased erosion along temporary diversion paths.

Temporary loss of aquatic habitat in and adjacent to the watercourse could occur during construction in, and adjacent to, the channel.

Permanent Impacts

Permanent loss of aquatic habitat in and adjacent to the watercourse could occur in the long-term from placement of structural features in and adjacent to the channel. Depending on the design and location, construction of a crossing has the potential to narrow and deepen a drainage channel. The resulting effect can be localized channel scour, as well as flow and sediment that backs-up in the channel. Culverts typically reduce the channel cross-sectional area locally, which tends to slow upstream flows, increasing sedimentation upstream of the crossing, and increasing erosion potential downstream of the crossing. All road crossings would be designed and constructed in accordance with the Orange County Flood Control Design Manual (County of Orange 2000) to minimize potential for channel scour, upstream flooding and downstream sedimentation.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for road crossing involving bridges and culverts across jurisdictional areas.

Other Applicable Regulations

The discussion under Category 1 (Utility Lines) is applicable for road crossings. Also, adherence to the flood control requirements of Orange County's Flood Control Design Manual (County of Orange 2000) or other municipal flood control design manuals would ensure proper design of road crossings to control flooding and sediment discharges in downstream channels of the Watershed.

Impact Analysis Conclusion

Overall, construction and maintenance of road crossings across jurisdictional waters would not be expected to substantially deplete groundwater supplies or interfere with groundwater recharge, substantially increase the rate or amount of surface runoff nor create hydraulic obstructions that could result in flooding; create or contribute runoff which would exceed the capacity of existing or planned storm water drainage systems, place housing within a 100-year flood hazard area, nor expose people or structures to a significant risk from flooding. The aquatic resource impact restrictions and general conditions of the Corps RGP and LOP and the Department's Level 1 - 3 SAA temmplates (of the WSAA Process) and other applicable regulations would help minimize potential impacts. New or improved bridges and culverts could substantially alter the existing drainage pattern of a site or area, but all designs would be in accordance with locally-approved drainage plans and with the Orange County Flood Control Design Manual or other municipal flood control design requirements to control downstream flooding and sedimentation impacts.

Additionally, under the SAMP/WSAA Process, the compensatory mitigation and restoration program would target mitigation/restoration to areas of the Watershed that provide the most benefit to the ecosystem function (including hydrologic function), instead of emphasizing on-site restoration, so that ultimately the SAMP/WSAA Process, in comparison to existing case-by-case permitting, would result in increased ecosystem integrity overall in the Watershed.

Therefore, under the proposed SAMP/WSAA Process, potential impacts to hydrology, erosion and sedimentation from construction and maintenance of road crossings including bridges and culverts would be considered less than significant.

Mitigation Measures

No mitigation measures are needed since no significant hydrology, erosion and sedimentation impacts are expected.

Level of Significance after Mitigation

No significant impacts.

Land Development for Residential, Commercial, Industrial, Institutional and Recreational Uses

Land development activities permitted under the SAMP/WSAA Process would include residential, commercial, industrial, institutional and recreational uses as well as attendant features. Land development typically requires grading and excavation for construction access, building pads, roads and culverts, paving operations, and boring and trenching for utility, sewer and storm drain installation. These activities may result in discharge of fill or encroachment into stream channels, wetlands or unlined agricultural drainages and the redirecting of surface runoff into underground storm drains, vegetation clearing, temporary stream diversion, and dewatering operations.

Temporary Impacts

Construction of land development projects can have temporary erosion and sedimentation impacts to streams and channels primarily from vegetation clearing, grading and excavation activities if not properly controlled. This increase in sedimentation can create downstream (indirect impacts) to San Diego Creek and Upper Newport Bay.

Permanent Impacts

Grading required for building pads and streets would alter the existing drainage patterns of a project site, although site drainage would be designed in accordance with the Orange County Hydrology and Flood Control Design Manual and approved by the local municipality. Permanent fills in some natural drainages and/or agricultural ditches would likely occur. Storm flows would be redirected to underground storm drains or above ground channels. Land development projects could create several indirect impacts to downstream hydrology. For example, new development would increase the amount of impervious surface area (paved areas and buildings), thus decreasing infiltration of rainfall and increasing runoff to local drainages, San Diego Creek and ultimately to Upper Newport Bay. Subsequent increased volumes and velocity of storm flows could create erosion and sedimentation in downstream earthen channels, including San Diego Creek and Upper Newport Bay. Under certain circumstances, development could also result in a reduction in the amount of available sediment for transport. Storm flows could impact the sediment-carrying capacity by eroding a downstream channel. These changes have the potential to permanently impact downstream channels and ultimately hydrologic integrity. In addition, the reduction in pervious surface area would reduce the volume of water available for groundwater recharge (indirect impact).

The SAMP/WSAA Process reduces or eliminates floodplain encroachment as these areas are avoided and potential impacts from land development are minimized via SAMP/WSAA Process mitigation/restoration requirements. Thus, no significant impacts to floodplain values are anticipated. Within the aquatic resource integrity areas, floodplain values are expected to increase in both quality and extent, with new riparian corridors planned to connect previously disconnected areas.

New development projects would be planned and designed in accordance with local municipal polices and ordinances to prevent future flood hazards. No new housing projects would be located within a 100year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. Also, most remaining new development in the Watershed would be located inland and upstream of coastal areas and would not be expected to expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding of a levee or dam or inundation or mudflow, because new construction would be built in accordance with applicable flood control requirements.

New development that would be authorized under the Corps LOP and Department's WSAA Process would be subject to CEQA review by the local permitting agency. At that time, site-specific drainage and any potential flood hazard issues would be identified.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for land development.

Other Applicable Regulations

New development may change drainage patterns and/or increase surface runoff, however, new storm drainage systems would be designed in accordance with the Orange County Hydrology Manual and Flood Control Design Manual (County of Orange 2000). Adherence to these design standards would ensure proper conveyance of storm flows and minimize the potential for flooding on-site and downstream. Furthermore, existing downstream drainage facilities that are not of sufficient size to receive increased runoff or address flows associated with a change in drainage pattern would be redesigned in accordance with design specifications referenced in the Orange County Flood Control Design Manual to properly convey storm flows and control potential flooding and sedimentation in downstream channels.

Many local jurisdictions in the Watershed have polices and regulations to help minimize flood hazards. For example, the City of Newport Beach has established a Risk Reduction Program which is intended to provide the maximum reasonable mitigation of natural physical hazards to life and property in Newport Beach. The following policies have been established for flood hazards:

- The City shall endeavor to restrict future development in areas of high flood hazard until it can be shown that the risk is or can be mitigated.
- The City shall support regional planning efforts toward the control of flood risk from the San Diego Creek by monitoring existing programs and when appropriate joining in the endeavors of various jurisdictions to lessen potential flood hazard.
- The City shall require flood hazard studies as an integral portion of all environmental impact reports, with detailed flood hazard mitigation measures for all projects in potential flood hazard areas.

With regard to erosion and sedimentation control, California General Permit for Storm Water Discharges Associated with Construction Activities (Order No. 99-08-DWQ) requires that projects involving one acre or greater must prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) to help minimize erosion and sediment in storm water discharges to local drainage channels. (See Section 4.5, Water Quality for details).

Additional local requirements to control post-development storm water volumes and velocity are set forth in the MS4 NPDES storm water permit (Order No. R8-2002-0010, NPDES No. CAS618030, currently under renewal). Among the numerous requirements, this permit requires local jurisdictions (permittees) to incorporate watershed protection principles and policies in their General Plan or related documents (e.g. Development Standards, Zoning Codes, Conditions of Approval, and Development Project Guidance) to ensure such policies are implemented during the land development process. Examples of the types of principles and policies incorporated into local general plans are:

- Minimize changes in hydrology;
- Incorporate controls, including structural and non-structural BMPs to mitigate the projected increases in flows;
- Ensure that post-development runoff rates and velocities from a site have no significant adverse impact on downstream erosion and stream habitat;
- Minimize the quantity of storm water directed to impermeable surfaces and the MS4s;
- Maximize the percentage of permeable surfaces to allow more percolation of storm water into the ground;
- Establish development guidelines for areas particularly susceptible to erosion and sediment loss; and
- Revise their current grading/erosion control ordinances in order to reduce erosion caused by new development or significant re-development.

These new general plan policies are implemented through new development standards required by the MS4 NPDES storm water permit. Now, new development in the County and cities must minimize the effects of urbanization on hydrology by incorporating praticable programs and policies including "Site Design BMPs". Site Design BMPs involve, among other measures, minimizing the amount of new impervious surface area and allowing for more infiltration of runoff. These BMPs would help decrease the volume and velocity of flows from a new development site, thus minimizing the potential for erosion at the site and in unlined channels downstream, as well as sediment deposition into downstream Receiving Waters. These BMPs would also help reduce some loss of infiltration to groundwater.

The 2003 Orange County DAMP (Section 7) and the municipal Local Implementation Plans (LIPs) within the Watershed require all new development and significant redevelopment projects to implement a Water Quality Management Plan (WQMP) that specifies BMPs to control post-construction urban runoff and storm water pollution. The goal of the WQMP is to ensure that new development and significant redevelopment control pollutant loads and urban runoff flow rates and velocities with the use of appropriate site design, source control and treatment control BMPs. The goal may be achieved through watershed-based structural treatment controls, in combination with site-specific BMPs. WQMPs for new development projects in the Watershed would be submitted to local jurisdictions for review and approval. Orange County's Model WQMP, contains procedures for identifying potential impacts to a channel's hydrologic regime and provides steps to minimize the impacts of urbanization on site hydrology, urban

runoff flow rates or velocities and pollutant loads. The goal may be achieved through watershed-based structural treatment controls, in combination with site-specific BMPs.

Impact Analysis Conclusion

Although land development may alter the existing drainage pattern of a site or area and increase the rate or amount of surface runoff, any potential significant impact to surface and groundwater hydrology would be mitigated to a level considered less than significant through the implementation of local drainage and flood control design requirements, site design BMPs required by the MS4 NPDES Permit as well as the aquatic resource impact restrictions and general conditions required in the LOP, RGP and/or WSAA Process. Thus, implementation of the SAMP/WSAA Process for land development projects would not be expected to substantially deplete groundwater supplies or interfere with groundwater recharge; create hydraulic obstructions that could result in flooding; create or contribute runoff which would exceed the capacity of existing or planned storm water drainage systems; place housing within a 100-year flood hazard area; or expose people or structures to a significant risk from flooding.

Additionally, under the SAMP/WSAA Process, the compensatory mitigation and restoration program would target mitigation/restoration to areas of the Watershed that provide the most benefit to the ecosystem function (including hydrologic function), instead of emphasizing on-site restoration, so that ultimately the SAMP/WSAA Process, in comparison to existing case-by-case permitting, would result in increased ecosystem integrity overall in the Watershed. Therefore, under the proposed SAMP/WSAA Process, potential impacts to hydrology, erosion and sedimentation from new land development would be considered less than significant.

Mitigation Measures

No mitigation measures are needed since no significant hydrology, erosion and sedimentation impacts are expected.

Level of Significance after Mitigation

No significant impacts.

Stormwater Treatment and Management Facilities

Stormwater treatment and management facilities, as described in Section 4.2.3, would typically be located within or near jurisdictional waters. These facilities are designed to capture urban runoff and smaller storm flows for treatment and subsequent return to surface water or infiltration to groundwater. Construction of such facilities would include dredging, trenching, temporary stream diversion, dewatering operations, channel desilting, grading and installation of temporary access roads and work areas. Maintenance may involve vegetation management and removal, and dredging of accumulated sediments and potentially contaminated soil to restore the basin and channel design capacity and configuration. Maintenance activities may also involve excavation of accumulated sediments in outfall and intake structures, culverts and other structural features of the conveyance system to maintain design capacity.

Temporary Impacts

Construction activities generally require soil excavation, fill and compaction which could lead to a temporary increase in erosion and sedimentation to downstream channels if not properly controlled.

Maintenance activities such vegetation management and dredging would generally be temporary and involve short-term disruption of hydrologic, erosion and sedimentation characteristics of disturbed areas.

Permanent Impacts

Storm water treatment and management facilities would typically be designed and constructed in accordance with the treatment BMP standards outlined in the model WQMP of the County DAMP (or other model WQMP adopted by local jurisdictions) to help minimize potential effects on site hydrology and runoff flow rates or velocities. These permanent structures are sometimes lined with concrete or other armoring product, or bank stabilization measures are added. Construction of these facilities could result in permanent loss of aquatic habitat from removal of riparian vegetation and replacement with channel armoring or other structures. The activities could also result in permanent alteration to channel hydrology and/or hydraulic characteristics due to channel reconfiguration.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities.

Other Applicable Regulations

The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities.

Impact Analysis Conclusion

The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities.

Mitigation Measures

No mitigation measures are needed since no significant hydrology, erosion and sedimentation impacts are expected.

Level of Significance after Mitigation

No significant impacts

Habitat Restoration and Enhancement Projects

Habitat restoration and enhancement projects are typically located in jurisdictional areas to fulfill their functions in restoring and/or improving wetland/riparian habitat to increase wildlife habitat and hydrologic functions and values. As under existing Corps/Department permitting programs, construction and maintenance of habitat restoration and enhancement projects may include clearing and grading, channel reconfiguration, installation of check dam features, vegetation management and removal, sediment removal, temporary stream diversion, dewatering operations, and installation of temporary access roads and work areas.

Temporary Impacts

During construction of habitat restoration projects, temporary sedimentation to downstream channels may occur due to potential clearing and grading activities, if not properly controlled. Stream diversion and

dewatering operations during both temporary construction and maintenance can disrupt the erosion/sedimentation balance of the local system.

Permanent Impacts

The purpose of habitat restoration and enhancement projects is to restore and/or improve wetland/riparian habitat and hydrologic functions and values. No permanent hydrologic, erosion and sedimentation impacts would be expected.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion of applicable conditions under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement projects.

Other Applicable Regulations

The discussion under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement projects.

Impact Analysis Conclusion

The discussion under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement projects.

Mitigation Measures

No mitigation measures are needed since no significant impacts are expected.

Level of Significance after Mitigation

No significant impacts.

Fire Abatement and Vegetative Fuel Management Activities

Fire abatement and vegetative fuel management activities that could be permitted under the SAMP/WSAA Process may involve thinning of vegetation, clearing of brush, and installing construction access roads and work areas. This work may occur within or adjacent to waters that are under the jurisdiction of the Corps and the Department.

Temporary Impacts

Impacts from the vegetation clearing and thinning for fire abatement and vegetative fuel management purposes would be generally be minor and could include short-term disruption of erosion and sedimentation characteristics of disturbed areas. Natural flow paths could be diverted and a temporary increase in runoff and erosion rates could occur creating temporary erosion and sedimentation into nearby riparian areas and downstream channels.

Permanent Impacts

No permanent impacts on hydrology, erosion and sedimentation would be expected.

Applicable General Conditions of WSAA Process

Under the proposed SAMP/WSAA Process, fire abatement and vegetative fuel management activities would be regulated under the WSAA Process only. In many cases, this activity would not be regulated by the Corps since the Corps does not regulate the removal of vegetation with hand tools. However, the Department has no such restriction and therefore, the discussion of applicable WSAA Process conditions

(Level 1 - 3 SAA templates) under Category 1 (Utility Lines) is applicable for fire abatement and vegetative fuel management activities.

Impact Analysis Conclusion

Overall, fire abatement and vegetative fuel management activities in the Watershed would not be expected to substantially deplete groundwater supplies or interfere with groundwater recharge; substantially increase the rate or amount of surface runoff nor create hydraulic obstructions that could result in flooding; nor create or contribute runoff which would exceed the capacity of existing or planned storm water drainage systems. Therefore, potential impacts to hydrology, erosion and sedimentation from these activities under the proposed SAMP/WSAA Process would be considered less than significant.

Mitigation Measures

No mitigation measures are needed since no significant impacts to hydrology, erosion and sedimentation are expected.

Level of Significance after Mitigation

No significant impacts.

4.5 WATER QUALITY

Consistent with federal requirements under 33 CFR 320.4(d) and FGC Section 1600 *et seq.*, this section evaluates the potential for regulated activities under the SAMP/WSAA Process to affect the quality of waters of the U.S. and state jurisdictional waters, and evaluates compliance with applicable effluent limitations and water quality standards.

4.5.1 Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this analysis, the proposed SAMP/WSAA Process would be considered to have a significant water quality impact if it would:

- Violate any water quality standards, waste discharge requirements or established TMDLs, or otherwise substantially degrade water quality; or
- Create or contribute runoff that would provide substantial additional sources of polluted runoff.

Topics listed in Appendix G overlap with those found within the 404(b)(1) Guidelines. Table 4-54 shows the overlap.

Table 4-54. Comparison of Corps 404(b)(1) Guidelines and CEQA Appendix G.

11Topics	404(b)(1) Guidelines	Appendix G^
Water Quality	230.10 (b 1-2; c 1-3)	VIII (a, f)
	Subpart C	

^ Roman numerals relate to the text of Appendix G.

4.5.2 Impacts

This section begins with an evaluation of the consistency of the proposed SAMP/WSAA Process with the numerous state and federal water quality policies and regulations. This evaluation is followed by the programmatic impact evaluation of the regulated activities.

Consistency of SAMP/WSAA Process with Existing Water Quality Policies and Regulations

Tables 4-65 through 4-87 demonstrate the consistency of the SAMP/WSAA Process with existing water quality policies and regulations described previously. As the tables indicate, implementation of the SAMP/WSAA Process (e.g., Corps RGP, LOPs and the Department's Level 1 - 3 SAA templates of the WSAA Process) would have little or no effect on how existing water quality regulations and policies would apply to regulated activities of the SAMP/WSAA Process. Additionally, the SAMP/WSAA Process would neither conflict nor be inconsistent with existing water quality regulations and policies.

 Table 4-65.
 Consistency of Proposed RGP with Existing Water Quality Policies/Regulations

Existing Policy/ Regulation	Consistency Determination
RWQCB Basin Plan	The RGP is consistent. The RGP would not replace or obviate any beneficial uses or water quality objectives of the Basin Plan (including the CTR).
Beneficial Uses/Water	The RGP contains conditions to help minimize impacts to beneficial uses and water quality objectives. Maintenance activities authorized under this
Quality Objectives	RGP would be temporary, limited to less than 0.5 acres of impact to waters of the U.S. and limited to areas of low ecosystem integrity. Activities
	would be subject to the RGP condition that requires the applicant to obtain 401 certification and subject to other federal and state BMP requirements to
	control pollutants in runnoff. Also, compensatory mitigation required by the RGP would offset any impacts to levels that are less than significant.
	Therefore, the RGP is not expected adversely impact beneficial uses and water quality objectives of the Basin Plan.
TMDLs	The RGP is consistent. The RGP will not replace or obviate any requirements of the TMDLs. Dischargers in the Watershed would still be
	required to comply with requirements of IMDL implementation plans (including WDRs). Because this RGP will only authorize temporary
	impacts to waters of the U.S. that are less than U.S acres, potential discharges of sediments, nutrients, bacteria, and other toxic substances
	currently regulated under TMDLs would be minimal and controlled by conditions of the ROP, w SAA Process, and BMP requirements of other state and federal water quality regulations.
NDDES Storm Water	State and rederal water quality regulations. The PCP is consistent. The PCP will not replace or obviate any requirements of the state NPDES General or Industrial permits or the NPDES MS4
Permits/DAMP	Permits or the DAMP. Activities would be subject to the RGP condition that requires the applicant to obtain 401 certification and subject to other
T CHIRLS/ D'AWI	federal and state BMP requirements to control pollutants in runnoff. The RGP would not result in irrevocable commitments that prevent the proper
	implementation of required BMPs or adherence to effluent limitations under an NPDES permit. Public (municipal) and private activities authorized
	under this RGP would remain subject to requirements of NPDES storm water permits and would still need to comply with requirements of the DAMP.
General NPDES	The RGP is consistent. The RGP will not replace or obviate any requirements of the proposed General NPDES Permit/Waste Discharge Requirements
Permit/WDRs for Short-Term	for Short-Term Groundwater Discharges and De Minimus Wastewater Discharges. Some of the activities authorized under the RGP could involve
Groundwater Discharges and	dewatering and groundwater discharges and/or de minimus wastewater discharges, and would be expected to comply with the requirements of this
De Minimus Wastewater	General NPDES permit.
Discharges	
401 Water Quality	The RGP is consistent. As with all Section 404 general permits, the Corps will need to obtain 401 water quality certification and WDRs for this
Certification/WDRs	RGP (or any activity authorized thereunder) to ensure authorized activities to discharge dredged and fill material are consistent with the State's water
	quality standards and criteria. This RGP would authorize temporary impacts to waters of the U.S. that are less than 0.5 acres and located in areas of
	low ecosystem integrity. The RGP contains conditions to help minimize potential impacts to water quality in addition to BMP requirements of
	existing federal, state and local water quality regulations. Also, compensatory mitigation required by the RGP would offset any potential impacts to
	levels that are less than significant. Through the 401 certification process, the RWQCB is likely to provide additional conditions to help further
C. I.D. 1	minimize potential impacts.
General Discharge	The RGP is consistent. The RGP would authorize only temporary impacts to waters of the U.S. of less than 0.5 acres in areas of low ecosystem
Pronibitions	integrity. This KOP would not authorize releases of toxic substances or metals, pesticides, PCBs, mercury compounds, radioactive substances, or other
	pollutarity in excess of the California Code of Regulations, and in fact contains conditions to control discharges of pollutarity into Receiving Waters, in addition to PMDs required by ovisting federal state and local regulations.
	addition to Divir's required by existing rederal, state and local regulations.

Draft Final Program EIS/EIR for the San Diego Creek Watershed SAMP/WSAA Process

Existing Policy/ Regulation	Consistency Determination
Antidegradation Policy	The RGP is consistent. The RGP would not significantly affect present or probable future beneficial uses and would not result in degraded water
	quality overall in the San Diego Creek Watershed. Under this RGP, impacts to waters of the U.S. would be temporary, confined to less than 0.5
	acres and would be located within areas of low water quality integrity. Because no permanent impacts would be authorized under this RGP, no
	permanent degradation would occur. Because impacts are confined to a small area, any temporary degradation would be minimized. Because this
	RGP would apply to areas with lower functioning aquatic resources, the amount of higher quality resources subject to degradation would be small.
	Activities would be subject to the RGP condition that requires the applicant to obtain 401 certification and subject to other federal and state BMP
	requirements to control pollutants in runnoff. Further, mitigation required by the RGP would offset any impacts to levels that are less than significant.
Table 4-76.
 Consistency of Proposed LOP with Existing Water Quality Policies/Regulations

Existing Policy/ Regulation	Consistency Determination				
RWQCB Basin Plan	The LOP is consistent. The LOP would not replace or obviate any beneficial uses or water quality objectives of the Basin Plan (including the				
Beneficial Uses/Water Quality	CTR). For impacts authorized outside aquatic resource integrity areas, there is a low likelihood for significant impacts due to: 1) the low quality of				
Objectives	the resources in question; 2) required consultation with resource agencies; and 3) general conditions and compensatory mitigation required as part				
	of the LOP that would help offset potential impacts to beneficial uses. For impacts authorized inside aquatic resource integrity areas, there is low				
	likelihood of significant impacts occurring due to: 1) restriction on temporary impacts for maintaining established structures only; 2) the small size				
	of authorized permanent impacts (0.1 acre); 2) prohibition of stream channelization or storm drain conversion for five major stream systems; 3)				
	required coordination with the resource agencies, and 4) general conditions and compensatory mitigation requirements of the LOP to offset				
	potential impacts to beneficial uses. Nevertheless, permitted activity would be expected to be in conformance with the Basin Plan because of				
	The LOD is consistent. The LOD would not replace an explicit autorization by the KWQCB.				
TMDLS	The LOP is consistent. The LOP would not replace of obviate any requirements of the TMDLs. Dischargers in the watersned would still be				
	regulation reductions in sediment and nutrient loads via the conversion of agricultural land to urban development. Potential discharges of				
	sediments, nutrients, hacteria, and other toxic substances would be controlled by conditions of the Corns LOP and BMP requirements of other				
	state and federal water quality regulations.				
NPDES Storm Water	The LOP is consistent. The LOP would not replace or obviate any requirements of the NPDES storm water permits (including MS4 Permits) or the				
Permits/DAMP	DAMP/LIP. The LOP includes conditions to help minimize impacts on water quality. The LOP would not result in irrevocable commitments that				
	prevent the proper implementation of required BMPs or adherence to effluent limitations under an NPDES permit. Public (municipal) and private				
	activities authorized under this LOP would remain subject to requirements of NPDES storm water permits and would still need to comply with				
	requirements of the DAMP.				
General NPDES	The LOP is consistent. The LOP would not replace or obviate any requirements of the General NPDES Permit/Waste Discharge Requirements for				
Permit/Waste Discharge	Short-Term Groundwater Discharges and <i>De Minimus</i> Wastewater Discharges. Some of the activities authorized under the LOP could involve				
Requirements for Short-Term	dewatering and groundwater discharges and/or <i>de minimus</i> wastewater discharges, and would be expected to comply with the requirements of this				
Groundwater Discharges and	General NPDES permit.				
De Minimus Wastewater					
Discharges					
401 water Quality	The LOP is consistent. The Corps would not apply for a 401 water quality certification or wDRs for this LOP, as the extent of potential impacts				
Certification/ w DKs	certification/WDRs from the RWOCB outside the SAMP/WSAA Process. Authorized activities would need to comply with conditions of the Corps.				
	LOP to control water quality along with BMP requirements of other state and federal water quality regulations. Also, compensatory mitigation				
	required by the LOP would offset notential impacts to levels that are less than significant. Through the 401 process, the RWOCB would likely				
	require additional conditions to further minimize potential water quality impacts.				
General Discharge	The LOP is consistent. This LOP would not authorize releases of toxic substances or metals, pesticides, PCBs, mercury compounds, radioactive				
Prohibitions	substances, or other pollutants in excess of the California Code of Regulations, and in fact contains conditions to control discharges of pollutants into				
	Receiving Waters, in addition to existing BMPs required by federal, state and local water quality regulations.				
Antidegradation Policy	The LOP is consistent. The LOP would not significantly affect present or probable future beneficial uses and would not result in degraded water				
	quality overall in the Watershed. Determination of the effects on beneficial uses and water quality degradation would be made on a case-by-case				
	basis. If the LOP is issued outside aquatic resource integrity areas, degradation would not be substantial to the Watershed ecosystem overall;				

Existing Policy/ Regulation	Consistency Determination			
	impacts would be further minimized after coordination with the resource agencies. If the LOP is issued in aquatic resource integrity areas, there is			
	established structures only; no stream channelization or storm drain conversion in five major stream systems, and required consultation with the			
	resource agencies. Implementation of various water quality conditions in the LOP and BMPs required by other federal/state water quality			
	that are less than significant.			

 Table 4-87.
 Consistency of Proposed WSAA Process with Existing Water Quality Policies/Regulation

Existing Policy/ Regulation	Consistency Determination
RWQCB Basin Plan	The WSAA Process is consistent. The WSAA Process would not replace or obviate any beneficial uses or water quality objectives of the Basin
Beneficial Uses/Water Quality	Plan (including the CTR). The WSAA Process will not result in significant impacts due to: 1) compensatory mitigation required as part of the
Objectives	WSAA Process that would help offset potential impacts to beneficial uses; and 2) WSAA Process conditions to help avoid, minimize and mitigate
	any potential significant impacts to water quality and beneficial uses. Nevertheless, permitted activity would be expected to be in conformance
	with the Basin Plan because of required consultation with the resource agencies and explicit authorization by the RWQCB.
TMDLs	The WSAA Process is consistent. The WSAA Process would not replace or obviate any requirements of the TMDLs. Dischargers in the
	Watershed would still be required to comply with requirements of TMDL implementation plans (including WDRs). Some authorized activities
	under the WSAA Process could result in reductions in sediment and nutrient loads via the conversion of agricultural land to urban development.
	Potential discharges of sediments, nutrients, bacteria, and other toxic substances would be controlled by conditions of the WSAA Process and
	BMP requirements of other state and federal water quality regulations.
NPDES Storm Water	The WSAA Process is consistent. The WSAA Process would not replace or obviate any requirements of the NPDES storm water permits
Permits/DAMP	(including MS4 Permits) or the DAMP/LIP. The WSAA Process contains conditions to help minimize impacts on water quality. The WSAA
	Process would not result in irrevocable commitments that prevent the proper implementation of required BMPs or adherence to effluent limitations
	under an NPDES permit. Public (municipal) and private activities authorized under the WSAA Process would remain subject to requirements of
	NPDES storm water permits and would still need to comply with requirements of the DAMP.
General NPDES	The WSAA Process is consistent. The WSAA Process would not replace or obviate any requirements of the General NPDES Permit/Waste
Permit/Waste Discharge	Discharge Requirements for Short-Term Groundwater Discharges and <i>De Minimus</i> Wastewater Discharges. Some of the activities authorized
Requirements for Short-Term	under the WSAA Process could involve dewatering and groundwater discharges and/or <i>de minimus</i> wastewater discharges, and would be expected
Groundwater Discharges and	to comply with the requirements of this General NPDES permit. WSAA Process conditions pertaining to water quality as well as compensatory
Discharges	mugation required by the wSAA Process would onset any potential impacts to levels that are less than significant.
401 Water Quality	The WSAA Presses is consistent. The WSAA Presses would not replace or obviets the need for compliance under Section 401, which is tighted
401 water Quality	Section 404 compliance requirements. Authorized activities would be required to comply with conditions of the WSAA Process to control water
Certification/ w DKs	quality along with BMP requirements of other state and federal water quality regulations. Also, compensatory mitigation required by the WSAA
	Process would offset notential impacts to levels that are less than significant. Through the 401 process the RWOCB would be expected to require
	additional conditions to further minimize potential impacts to water quality
General Discharge	The WSAA Process is consistent. The WSAA Process would not authorize releases of toxic substances or metals pesticides PCBs mercury
Prohibitions	compounds radioactive substances or other pollutants in excess of the California Code of Regulations, and in fact contains conditions to control
	discharges of pollutants into Receiving Waters, in addition to existing BMPs required by federal, state and local water quality regulations.

Existing Policy/ Regulation	Consistency Determination				
Antidegradation Policy	The WSAA Process is consistent. The WSAA Process would not significantly affect present or probable future beneficial uses and will not result in degraded water quality overall in the Watershed. Determination of the effects on beneficial uses and degradation of water quality would be made on a case-by-case basis. If the WSAA Process is authorized in areas outside of aquatic resource integrity areas, the amount of higher quality resources subject to degradation would be small, and impacts would be further minimized after coordination with the resource agencies. If the WSAA Process is authorized within aquatic resource integrity areas, there is low likelihood of degradation due to the small size of allowable impacts and required consultation with the U.S. EPA, USFWS, the Department and the RWQCB. Implementation of various water quality				
	conditions specified in the WSAA Process and BMPs required by other federal and state water quality regulations would further minimize impacts to water quality. Also, compensatory mitigation required by the WSAA Process would also offset any impacts to levels that are less than significant.				

Programmatic Impact Analysis of Regulated Activities

The following programmatic impact analysis outlines potential impacts to water quality from authorization of temporary and permanent discharges of dredged or fill material to waters of the U.S. under the Corps RGP and LOP, as well as temporary and permanent impacts to the Department's jurisdiction under the WSAA Process. The regulated activities that would be permitted under the SAMP/WSAA Process are similar to those that would otherwise be permitted on a case-by-case basis under existing Section 404 and Section 1600 *et seq.* regulatory programs. As such, potential water quality impacts from these regulated activities would be expected to be similar in nature to those authorized under the existing Corps Section 404 and FGC Section 1600 *et seq.* regulatory programs. However, the SAMP/WSAA Process was established based on a holistic, Watershed-wide evaluation of aquatic resources from which permit conditions, compensatory mitigation and targeted restoration requirements were developed to help maintain and improve the Watershed ecosystem integrity (including water quality integrity) over the existing case-by-case permitting programs.

The SAMP/WSAA Process represents a comprehensive planning program for the location and extent of potential aquatic resource impacts, compensatory mitigation and restoration so that impacts to the Watershed as a whole are targeted to areas which would not substantially alter the baseline functions (i.e., areas of low ecological integrity), while areas of high integrity are avoided, maintained or improved to the extent practicable. Therefore, potential water quality impacts of regulated activities under the SAMP/WSAA Process would be expected to be similar or even less detrimental to the Watershed overall, in comparison to existing permitting programs, and in fact may ultimately result in an improvement in Watershed ecosystem integrity, including water quality and beneficial uses.

Utility Lines (Construction and Maintenance)

As with existing Section 404 and Section 1600 *et seq.* permitting programs, construction and maintenance of utility lines that would be permitted under the SAMP/WSAA Process could affect streambeds and/or result in discharges of dredged or fill material into jurisdictional waters. The discharges may result from required grading, excavation, boring, backfill, and/or bedding, temporary stream diversion, dewatering operations, temporary construction access roads and work areas.

Temporary Impacts

Construction and maintenance of utility lines can have temporary impacts on water quality primarily from uncontrolled erosion and sedimentation into Receiving Waters. Other effects may occur as a result of the following factors: a change in vegetation affecting water quality (e.g., by affecting pollutant removal capability, stream shading or bank stability); potential discharge of construction-related pollutants (e.g., concrete, waste oil solvents, debris, etc., spilled, leaked or transported via storm runoff into Receiving Waters); and discharge of dewatered groundwater that may contain high-levels of nitrates, phosphorous, selenium and other naturally occurring pollutants as well as pesticides from previous agricultural activities in the area.

Permanent Impacts

The vast majority of new utility lines in the Watershed would service new developments and, therefore, most potential impacts associated with new utility lines would be accounted for in the land development category, discussed later in this section. No new structures outside the extent of land development activities are expected to be built within or adjacent to riparian habitat.

Applicable General Conditions of the RGP, LOP, and WSAA Process

Utility projects would be subject to either the Corps RGP or LOP and the Department's WSAA Process. For those projects that cannot meet the requirements of RGP, LOP or Level 1 - 3 SAA templates of the WSAA Process, project applicants would need to file for a Corps SIP and Department individual streambed alteration agreement.

The Corps proposed Maintenance RGP authorizes discharges of dredged or fill materials, outside aquatic resource integrity areas, resulting in temporary impacts up to 0.5 acres of which only 0.1 acre may be vegetated with native riparian and/or wetland vegetation. This RGP contains several general conditions that address potential water quality impacts. These conditions are listed below and detailed in Table 2-4 of Section 2.1.2.3.

- Condition No. 5 Soil Erosion and Siltation;
- Condition No. 6 Equipment;
- Condition No. 7 Suitable Material;
- Condition No. 8 Management of Water Flows;
- Condition No. 10 Preventive Measures;
- Condition No. 11 Staging of Equipment; and
- Condition No. 17 Water Quality (401 Water Quality Certification).

The Corps would issue an LOP for temporary impacts within aquatic resource integrity areas only for: 1) the purpose of maintaining established structures (and permanent impacts up to 0.1 acres); 2) would not result in stream channelization/storm drain conversion for five major stream systems in aquatic resource integrity areas including Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek and Serrano Creek; 3) would only apply to projects with a small overall footprint; and 4) would not substantially alter a compensatory mitigation site. LOP conditions that address water quality are similar to those of the Maintenance RGP and include the following (see Table 2-3 of Section 2.1.2.3 for details)

- Condition No. 4 Soil Erosion and Siltation;
- Condition No. 5 Equipment;
- Condition No. 6 Suitable Material;
- Condition No. 7 Management of Water Flows;
- Condition No. 9 Preventive Measures;
- Condition No. 10 Staging of Equipment; and
- Condition No. 17 Water Quality (401 Water Quality Certification).

The Corps would issue LOPs for impacts to waters of the U.S. outside of aquatic resource integrity areas for applicants who can demonstrate impact avoidance and minimization was achieved to the extent practicable and resulting changes in low integrity areas would only have a minor effect on Watershed integrity. LOP procedures apply to those projects that do not qualify for the RGP. As part of the LOP process, an application must be submitted outlining the methods that would be used to avoid, minimize, or mitigate adverse impacts to water quality at the project site including BMPs to be used during project implementation to control siltation and erosion. A mitigation plan in accordance with the compensatory mitigation requirements of the LOP must also be prepared that effectively addresses unavoidable impacts to waters of the U.S. and the goal of no net loss of wetlands and functional integrity units.

The Department's WSAA Process also contains compensatory mitigation requirements and numerous conditions that would further help avoid, minimize and mitigate any significant or potentially significant water quality impacts. Applicable conditions contained in the SAA Templates Master Conditions List (of the WSAA Process) are as follows: (see Appendix D for full descriptions of the conditions):

- Condition No. 43 Exotic Vegetation Eradication Control;
 - Condition No. 77 Directional Drilling;
- Condition Nos. 77 87 Fill and Spoils;
- Condition Nos. 88 95 Turbidity and Siltation; and
- Condition Nos. 96 122 Equipment Access, Pollution, Sedimentation and Litter.

Other Applicable Water Quality Regulations

•

As with existing case-by-case permitting, many utility line projects would be regulated under other agency water quality regulations. For example, construction activities involving one acre or more are required to prepare and implement a SWPPP in accordance with the SWRCB's General Permit for Storm Water Discharges associated with Construction Activity (Water Quality Order No. 99-08-DWQ) to minimize erosion and sediment and other potential pollutants in storm water and non-storm water discharges. This SWPPP must detail the erosion and sediment controls (BMPs) to be used during construction as well as proposed local post-construction erosion and sediment BMPs. In developing these control practices, a discharger must consider a full range of erosion and sediment controls such as detention basins, straw bale dikes, silt fences, earth dikes, brush barriers, velocity dissipation devices, drainage swales, check dams, subsurface drain, pipe slope drain, level spreaders, storm drain inlet protection, rock outlet protection, sediment traps, temporary sediment basins, or other controls.

The MS4 NPDES permit for Orange County (Order No. R8-2002-0010, currently under renewal) also requires implementation of erosion and sediment control BMPs for construction projects, as administered through Section 8 of the 2003 Orange County DAMP with BMP guidance provided in the Orange County Storm Water Program Construction Runoff Guidance Manual, 2004). Under the MS4 NPDES permit, each local jurisdiction must review erosion control and BMP implementation plans and conduct site inspections to ensure proper implementation, maintenance and effectiveness of BMPs.

The General Permit for short-term groundwater discharges and *de minimus* wastewater discharges to surface waters within the Watershed (Order No. R8-2004-0021) would help further control the transport of nutrients and other pollutants to Receiving Waters of the Watershed. Finally, the RWQCB would issue a 401 water quality certification or WDRs that would contain further requirements to control water quality from the permitted dredge and fill activity.

Impact Analysis Conclusion

Overall, construction and maintenance of utility lines would not be expected to violate any water quality standards, waste discharge requirements, established TMDLs, or otherwise substantially degrade water quality, nor create or contribute runoff that would provide substantial additional sources of polluted runoff given the aquatic resource impact restrictions and general conditions in the RGP, LOP WSAA Process and other agency regulatory permit programs that help control water quality. Further, under the SAMP/WSAA Process, the compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve water quality, including beneficial uses, overall in the Watershed in comparison to existing Corps and Department permitting programs. Therefore, potential impacts to water quality from construction and maintenance of utility lines under the proposed SAMP/WSAA Process would be considered less than significant.

Mitigation Measures

No mitigation measures are needed since no significant impacts to water quality are expected.

Level of Significance after Mitigation

No significant impacts.

Flood Control Facilities (Construction and Maintenance)

Drainage and flood control facilities are located within or near waters under the jurisdiction of the Corps and the Department. As under existing Corps/Department permitting programs, construction of these facilities that could be permitted under the SAMP/WSAA Process may involve soil excavation, removal, compaction, and sometimes concrete-lining and/or placement of bank stabilization measures in channels. Maintenance activities typically involve periodic dredging of accumulated sediments in channels, basins, outfall and intake structures, culverts and other structural features to maintain the design capacity and configuration of the flood control facility. Maintenance also involves periodic removal of vegetation to restore the design capacity. These activities may also require temporary stream diversion, dewatering operations, installation of temporary access roads and work areas.

Temporary Impacts

Flood control construction and maintenance can have temporary water quality impacts from erosion and sedimentation into Receiving Waters if not properly controlled. Other effects on water quality may occur as a result of the following factors: potential discharge of construction-related pollutants (e.g., concrete, waste oil, solvents, debris, etc) spilled, leaked or transported via storm runoff into Receiving Waters; and discharge from groundwater dewatering that may contain high levels of nitrates, phosphorous or pesticides from past agricultural activities as well as selenium and other naturally occurring pollutants in the area.

Permanent Impacts

Conversion of some or all sections of a natural, riparian drainage course into a concrete flood control structure could adversely affect a designated beneficial use, such as warm freshwater habitat (WARM), wildlife habitat (WILD), biological habitats of special significance (BIOL), rare, threatened or endangered species (RARE), if proper compensatory mitigation is not required and implemented. Other effects on water quality may occur from vegetation removal affecting stream shading or bank stability and pollutant removal capacity.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities. In addition, otherwise permissible activities cannot be issued via an LOP if they would: (a) substantially alter a compensatory mitigation site; (b) involve flood-control related conversions of soft-bottom channels to concrete-lined channels; or (c) result in the channelization of any major stream system such as Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek, and Serrano Creek. Such activities would require a review under an SIP process with additional NEPA/CEQA review and 404(b)(1) analysis.

Other Applicable Water Quality Regulations

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities. Additionally, under the Orange County municipal NPDES storm water program, the County and local cities implement drainage facility inspection and maintenance activities as part of the municipal facilities program requirements to ensure flood control facilities are inspected for non-storm water discharges and are regularly maintained to control accumulation of sediment and debris.

Impact Analysis Conclusion

The discussion under Category 1 (Utility Lines) is applicable for flood control facilities.

Mitigation Measures

No mitigation measures are needed since no significant impacts to water quality are expected.

Level of Significance after Mitigation

No significant impacts.

Road Crossings including Bridges, and Culverts

Construction of road crossings including bridges and culverts across or within jurisdictional waters can be necessary to meet local and regional circulation needs associated with continual development of the Watershed. Bridges may span the watercourse or be constructed with one or more piers depending on bridge length. As under existing Corps/Department permitting programs, construction and routine maintenance of at-grade crossings, box culverts, pipe culverts, and bridges that would be permitted under the SAMP/WSAA Process may include placement of coffer dams, boring to install piers, dredging and fills for access, compacting and/or filling, vegetation management and removal, temporary stream diversion, dewatering operations, installation of temporary access roads and work areas, and paving operations.

Temporary Impacts

Temporary water quality impacts from construction of bridges and culverts may include discharges of sediment and debris (e.g., green waste, construction waste, paving materials), nitrates, phosphorous, and other naturally occurring pollutants (from dewatering operations) into Receiving Waters during short-term construction and maintenance periods.

Permanent Impacts

Construction of a new road crossing within or over a drainage course may require removal of riparian vegetation and habitat that may adversely affect a designated beneficial use, such as WARM, WILD, BIOL, RARE, if proper compensatory mitigation is not required and implemented. Other effects on water quality may occur from vegetation removal affecting stream shading or bank stability, and pollutant removal capacity.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for road crossings.

Other Applicable Water Quality Regulations

The discussion under Category 1 (Utility Lines) is applicable for road crossings.

Impact Analysis Conclusion

The discussion under Category 1 (Utility Lines) is applicable for road crossings.

Mitigation Measures

No mitigation measures are needed since no significant impacts to water quality are expected.

Level of Significance after Mitigation

No significant impacts.

Land Development for Residential, Commercial, Industrial, Institutional and Recreational Uses

Land development activities permitted under the SAMP/WSAA Process would include residential, commercial, industrial, institutional and recreational uses as well as attendant features. Land development would typically require vegetation clearing, grading and excavation for construction access, building pads, roads and culverts; boring and trenching for utility, sewer and storm drain installation; and paving operations. These activities may result in discharge of fill or encroachment into stream channels, wetlands or unlined agricultural drainages, redirecting of surface runoff into underground storm drains, temporary stream diversion and dewatering operations.

Temporary Impacts

Construction of residential, commercial, industrial, institutional and recreational use projects and attendant features can have temporary impacts on water quality primarily from uncontrolled erosion and sedimentation into Receiving Waters. Other effects may occur as a result of the following factors: a change in vegetation affecting water quality (e.g., by affecting pollutant removal capability, stream shading or bank stability); potential discharge of construction-related pollutants (e.g., concrete, waste oil

solvents, debris, etc., spilled, leaked or transported via storm runoff into Receiving Waters); and discharge of dewatered groundwater that may contain high-levels of nitrates, phosphorous, selenium and other naturally occurring pollutants as well as pesticides from previous agricultural activities in the area.

Permanent Impacts

Land development would result in increased impervious surfaces draining new sources and types of polluted runoff in the Watershed during wet and dry weather, if not properly controlled by BMPs. Typical pollutants in storm water and non-storm water discharges from developed areas include metals, petroleum hydrocarbons, sediment from construction activities, nutrients, pesticides, bacteria, and litter. Land development may result in discharges of dredged or fill material into drainage courses, some of which may contain riparian habitat. This could potentially affect a designated beneficial use, such as WARM, WILD, BIOL, and RARE, if proper compensatory mitigation is not required and implemented.

Most of the remaining new development in the Watershed would occur on lands previously used for agriculture. Nutrients, such as nitrate and phosphorus, sediment, and toxic constituents from pesticides can be present in high concentrations in agricultural runoff. Irrigation return flows from agricultural crops and from several commercial nurseries in the Watershed were identified in the nutrient TMDL as the predominate sources of nutrients to Newport Bay. In many cases, when agricultural areas are converted to residential, commercial and industrial uses, the nutrient and sediment load to downstream Receiving Waters is reduced.

Applicable General Conditions of LOP and WSAA Process

Under the proposed SAMP/WSAA Process, land development activities would be regulated under the LOP and WSAA Process. For those projects that cannot meet the requirements of the RGP or LOP, project applicants would need to file for a Corps SIP and Department individual SAA. The LOP and WSAA Process discussions under Category 1 (Utility Lines) are applicable for the land development category.

Other Applicable Water Quality Regulations

The discussion under Category 1 (Utility Lines) is applicable for land development activities. Also, the cities and county have adopted grading ordinances requiring construction practices that limit erosion and sedimentation. The ordinances typically require that project proponents prepare erosion control plans, obtain a grading permit and implement and maintain erosion and sediment control BMPs.

With regard to post-construction water quality, the 2003 Orange County DAMP and the LIPs developed by the municipalities within the Watershed require all new development and significant redevelopment projects to develop and implement a WQMP specifying BMPs that will control post-construction urban runoff and storm water pollution. The goal of the WQMP is to ensure that new development and significant redevelopment control pollutant loads and urban runoff flow rates and velocities with the use of appropriate site design, source control and treatment control BMPs. WQMPs for new development projects in the Watershed would be submitted to local jurisdictions for review and approval. Among the numerous required BMPs to be implemented, it is expected that the major new development projects in the Watershed would have water quality control basins, vegetated swales, hydrodynamic separation systems, or similar controls located on-site to treat runoff from the new development area, or would participate in the RWQCB-approved regional treatment program (e.g. Natural Treatment System) that would reduce pollutant loading to San Diego Creek and Newport Bay.

Impact Analysis Conclusion

Whether permitted under the SAMP/WSAA Process or under current permitting procedures, new land development in the Watershed has the potential to significantly impact water quality of San Diego Creek and Newport Bay from uncontrolled erosion and sedimentation during construction and also potentially increase the discharge of pollutants in uncontrolled urban and storm water runoff including metals, petroleum hydrocarbons, nutrients, pesticides, bacteria, and litter. Since sediment, nutrient, fecal coliform and toxics TMDLs have been established for San Diego Creek and Newport Bay, the potential exists for a violation of a TMDL and the potential to provide a substantial increase in additional sources of polluted runoff. However, given the aquatic resource impact restrictions and general conditions in the LOP and WSAA Process as well as BMP requirements of other agency programs that help control pre- and post-construction water quality, the potential to substantially degrade water quality would be minimized. Many of the areas under current development and proposed new development in the Watershed has or will participate in the NTS regional treatment program designed to help reduce pollutant loading in the Watershed and help meet the TMDLs for San Diego Creek and Newport Bay.

Further, under the SAMP/WSAA Process, compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve water quality, including beneficial uses, overall in the Watershed in comparison to existing Corps and Department permitting programs. Implementation of the SAMP Strategic Mitigation Plan would target mitigation at sites that provide the greatest functional lift to the Watershed ecosystem integrity, which includes water quality integrity. The Mitigation Coordination Program would address long-term management of mitigation sites to ensure their long-term health and function in the Watershed. Therefore, given the proposed SAMP/WSAA Process and the water quality requirements of other agency programs, potential significant impacts to water quality from new land development would be reduced to less than significant.

Mitigation Measures

No mitigation measures are needed since potential significant impacts to water quality are expected to be reduced to less than significant with requirements of the SAMP/WSAA Process and other agency programs to control water quality.

Level of Significance after Mitigation

No significant impacts.

Stormwater Treatment and Management Facilities

Stormwater treatment and management facilities, such as constructed treatment wetlands, water quality treatment basins and infiltration basins, capture urban runoff and smaller storm water flows for treatment and subsequent return to surface water or infiltration to groundwater. As under existing Corps/Department permitting programs, construction of such facilities under the SAMP/WSAA Process would include dredging, trenching, temporary stream diversion, dewatering operations, channel desilting, grading and installation of temporary access roads and work areas. Maintenance may involve vegetation management and removal, and dredging of accumulated sediments and potentially contaminated soil.

Temporary Impacts

Construction of storm water management and treatment facilities may temporarily increase the amount of sediment from dredging and grading activities as well as nitrates, phosphorous and selenium from dewatering operations that could be released into Receiving Waters, if not properly controlled. Other potential impacts may include potential discharge of construction-related pollutants (e.g., concrete, waste oil solvents, debris, etc) spilled, leaked or transported via storm runoff into Receiving Waters. Maintenance involving dredging of potentially contaminated soil could potentially release pollutants in storm water discharges if not properly controlled in accordance with state and/or locally approved operation and maintenance procedures.

Permanent Impacts

Stormwater treatment facilities, such as constructed treatment wetlands and water quality treatment basins, capture urban runoff and storm water flows for treatment and subsequent return to surface water or infiltration to groundwater. Since these projects provide treatment of runoff, they have beneficial effects on Receiving Water quality over the long-term. Constructed treatment wetlands such as the proposed NTS system are expected to help meet TMDLs in the Watershed including nutrients, pathogens, total copper, lead, zinc and selenium.

Potential impacts to groundwater quality would be minimized due to treatment control BMP siting requirements of the DAMP/LIPs that impose restrictions on the use of infiltration BMPs to protect groundwater quality (DAMP Section 7.II – 3.3.4). Also, infiltration of storm water to groundwater can be prevented as necessary either by the presence of dense clayey soils or by use of liners in constructed wetlands or water quality treatment basins (BonTerra Consulting, 2004).

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities.

Other Applicable Water Quality Regulations

The discussion under Category 1 (Utility Lines) is applicable for storm water treatment and management facilities.

Impact Analysis Conclusion

Overall, construction and maintenance of storm water treatment and management facilities in the Watershed would not be expected to violate any water quality standards, waste discharge requirements or established TMDLs, or otherwise substantially degrade water quality, nor create or contribute runoff that would provide substantial additional sources of polluted runoff given the aquatic resource impact restrictions and general conditions in the RGP, LOP, and Level 1 - 3 SAA templates of the WSAA Process as well as other agency regulatory permit programs that help control pre- and post-construction water quality. Proper operation of storm water management and treatment facilities would in fact provide beneficial effects to the impaired water bodies (San Diego Creek and Newport Bay) by reducing pollutant loads in urban and storm runoff that drains to these Receiving Waters.

Further, under the SAMP/WSAA Process, compensatory mitigation and targeted restoration requirements would be expected to maintain and ultimately improve water quality, including beneficial uses, overall in the Watershed in comparison to existing Corps and Department permitting programs. Therefore, potential impacts to water quality from construction and maintenance of storm water treatment and management facilities under the proposed SAMP/WSAA Process would be considered less than significant.

Mitigation Measures

No mitigation measures are needed since no significant impacts to water quality are expected.

Level of Significance after Mitigation

No significant impacts.

Habitat Restoration and Enhancement Projects

Habitat restoration projects are typically located in jurisdictional areas to fulfill their functions in restoring and/or improving wetland/riparian habitat to increase wildlife habitat and hydrologic functions and values. As under existing Corps/Department permitting programs, construction and maintenance of habitat restoration and enhancement projects may include clearing and grading, channel reconfiguration, installation of check dam features, vegetation management and removal, sediment removal, temporary stream diversion, dewatering operations, and installation of temporary access roads and work areas.

Temporary Impacts

During construction of habitat restoration projects, temporary sedimentation impacts to Receiving Water quality may occur due to potential clearing and grading activities, if not properly controlled. Stream diversion and dewatering operations during both construction and maintenance can disrupt the erosion/sedimentation balance of the local system. These activities may also increase the amount of sediment and debris (e.g., green waste, construction waste) nitrates, phosphorous and selenium (from dewatering operations) released into the Watershed if proper control measures are not implemented.

Permanent Impacts

The purpose of habitat restoration and enhancement projects is to restore and/or improve wetland/riparian habitat and hydrologic functions and values. Although not specifically designed for water quality treatment, these projects can help filter pollutants in urban and storm runoff, thereby providing a beneficial effect on water quality. Also, the restoration and/or enhancement of riparian habitat can help improve beneficial uses in the Watershed such as WARM, WILD, BIOL, and RARE.

Applicable General Conditions of RGP, LOP, and WSAA Process

The discussion of applicable conditions under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement projects.

Other Applicable Water Quality Regulations

The discussion under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement projects.

Impact Analysis Conclusion

The discussion under Category 1 (Utility Lines) is applicable for habitat restoration and enhancement projects.

Mitigation Measures

No mitigation measures are needed since no significant impacts to water quality are expected.

Level of Significance after Mitigation

No significant impacts.

Fire Abatement and Vegetative Fuel Management Activities

Fire abatement and vegetative fuel management activities that could be permitted under the SAMP/WSAA Process may involve thinning of vegetation, clearing of brush, and installing construction access roads and work areas. This work may occur within or adjacent to waters that are under the jurisdiction of the Corps and the Department.

Temporary Impacts

Water quality impacts from the vegetation clearing and thinning for fire abatement and vegetative fuel management purposes would be minor and include some short-term disruption of erosion and sedimentation characteristics of disturbed areas. Some erosion and sedimentation into nearby riparian areas may occur during work activities.

Permanent Impacts

No permanent impacts on water quality would be expected.

Applicable General Conditions of WSAA Process

Under the proposed SAMP/WSAA Process, fire abatement and vegetative fuel management activities would be regulated under the WSAA Process only. In many cases, this activity would not be regulated by the Corps since the Corps does not regulate the removal of vegetation with hand tools. However, the Department has no such restriction and therefore, the discussion of applicable Level 1 - 3 SAA template conditions (of the WSAA Process) under Category 1 (Utility Lines) is applicable for fire abatement and vegetative fuel management activities.

Impact Analysis Conclusion

Overall, fire abatement and vegetative fuel management activities in the Watershed would not be expected to violate any water quality standards, waste discharge requirements or established TMDLs, or otherwise substantially degrade water quality, nor create or contribute runoff that would provide substantial additional sources of polluted runoff given the aquatic resource impact restrictions and general conditions in the WSAA Process. Therefore, potential impacts to water quality from these activities under the proposed SAMP/WSAA Process would be considered less than significant.

Mitigation Measures

No mitigation measures are needed since no significant impacts to water quality are expected.

Level of Significance after Mitigation

No significant impacts.

4.6 OTHER RESOURCES AND ISSUES

In evaluating the SAMP/WSAA Process, the Corps must balance the benefit that may be reasonably expected to accrue from permitted actions under the SAMP/WSAA Process against their reasonably foreseeable detriments. Therefore, additional "public interest review factors" have been considered in establishing the SAMP/WSAA Process. These factors include cultural resources, geology/soils, land use, transportation/circulation, air quality, noise, visual resources, recreation, socioeconomics, public health and safety, water supply and conservation, agricultural resources and floodplain values. As discussed earlier in Section 4.1.1, permitting of regulated activities under the SAMP/WSAA Process would not, in most cases, produce direct impacts to these public interest review factors since these factors generally cover non-jurisdictional resources in the greater Watershed area and would occur later in time than the direct effect. However, the Corps/Department permitting actions may indirectly affect these resources of the greater Watershed. These factors would likely be evaluated in more detail in other CEQA/NEPA documents required as part of the project approval process of other regulatory and/or land use agencies.

4.6.1 Agricultural Resources

Significance Thresholds

In determining whether impacts to agricultural resources are significant, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. For the purpose of this analysis, the SAMP/WSAA Process may be determined to have a significant agricultural resource impact if it would:

- (a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- (b) Conflict with existing zoning for agricultural use, or a Williamson Act contract; or
- (c) Involve other changes in the existing environment which due to their location or nature, could result in conversion of Farmland, to non-agricultural use.

The proposed SAMP/WSAA Process is a watershed-specific permitting program for the issuance of Section 404 permits and Section 1600 *et seq.* streambed alteration agreements based on an assessment of the functions and values of aquatic resources in the Watershed. Under the proposed SAMP/WSAA Process, the Corps and the Department would permit temporary and permanent impacts to Corps and Department's jurisdictional waters for seven categories of activities including land development, construction of bridges, and public facilities/utilities. Adherence to the general conditions of the SAMP RGP, LOP, and Level 1 - 3 SAA templates (of the WSAA Process) would be required along with the SAMP mitigation framework. The regulated activities that would be permitted under the SAMP/WSAA Process are similar to those that would otherwise be permitted on a case-by-case basis under existing Section 404 and Section 1600 *et seq.* regulatory programs. As such, any potential agricultural resource impacts from these regulated activities would be expected to be similar in nature to those authorized under the existing Corps Section 404 and FGC Section 1600 *et seq.* regulatory programs.

Direct Impacts

Implementation of the SAMP/WSAA Process would not result in direct adverse impacts to local agricultural resources in the Watershed, as the SAMP/WSAA Process is a regulatory system that authorizes discharges of dredged and fill materials into Corps and Department jurisdictional waters.

Indirect Impacts

Authorization of certain regulated activities under the SAMP/WSAA Process such as new land development, could indirectly affect agricultural resources, if the permit allows conversion of Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use or it conflicts with existing zoning for agricultural use or a Williamson Act contract. The undeveloped land in the Watershed that is proposed for new development is no longer designated agricultural preserve under the Williamson Act since contracts were not renewed. Thus, no significant indirect impacts to agricultural preserves would be expected from permitting of land development activities under the proposed SAMP/WSAA Process. Most of the unique farmlands and farmlands of statewide importance are located in the southern foothills of the Santiago Hills and along the northern foothills of the San Joaquin Hills. Conversion of these or any other agricultural areas would be subject to the regulatory approval of the local municipality, and thus subject to CEQA and/or NEPA review outside of this document. Land development would be subject to the policies and objectives in the Resources Element of the Orange County General Plan as well as the General Plans for some jurisdictions within the Watershed (e.g., the cities of Orange, Irvine, and Tustin). These General Plans contain objectives and policies that promote the wise management of existing agricultural lands while still recognizing that such uses are temporary.

For example, one objective from the City of Irvine General Plan is *Objective L-10: Permanent Agriculture*, which reads as follows: "Encourage the maintenance of agriculture in undeveloped areas of the City until the time of development, and in areas not available for development." The City has six policies to support its objectives, including "Encourage and support federal and state legislation proposed for the purpose of preservation of agricultural lands which are compatible with the City's goals and objectives" and "Allow for conversion of interim and permanent agricultural uses to development to provide land for the construction of housing units consistent with the Land Use and Housing Elements".

Implementation of other regulated activities besides land development under the proposed SAMP/WSAA Process would be expected to have minimal or no impact on agricultural resources.

Impact Analysis Conclusion

Implementation of the SAMP/WSAA Process would not directly convert farmlands listed as prime, unique or of statewide importance to non-agricultural uses; or conflict with existing zoning for agricultural use, or a Williamson Act contract; or involve other changes in the existing environment which due to their location or nature could result in the conversion of Farmland to non-agricultural use. Indirect effects to agricultural resources from Corps/Department permit authorization under the SAMP/WSAA Process would be fully evaluated in CEQA documents by the local land use agency and subject to the General Plan policies, and zoning ordinances. Therefore, implementation of the SAMP/WSAA Process would not result in significant impacts to agricultural resources.

Mitigation Measures

No mitigation measures are need since no significant agricultural resource impacts are identified.

Level of Significance After Mitigation

No significant impacts.

4.6.2 Air Quality

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this analysis, the proposed SAMP/WSAA Process would be considered to have a significant air quality impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

In addition to the criteria established by CEQA, the SCAQMD has established specific significance thresholds for the areas within their jurisdiction, as criteria to determine whether or not air quality impacts from implementing proposed projects are considered to be significant. If project-specific emissions exceed any of the criteria in Table 4-98 they would be considered significant. All feasible mitigation measures would be identified and implemented to reduce significant impacts to the maximum extent feasible.

Mass Daily Thresholds					
Pollutant	Construction	Operation			
NOx	100 lbs/day	55 lbs/day			
VOC	75 lbs/day	55 lbs/day			
PM10	150 lbs/day	150 lbs/day			
Sox	150 lbs/day	150 lbs/day			
СО	550 lbs/day	550 lbs/day			
Lead	3 lbs/day	3 lbs/day			
Toxic Ai	Toxic Air Contaminants (TACs) and Odor Thresholds				
TACs	Maximum Incremental	Cancer Risk ≥ 10 in 1 million			
(including carcinogens	Hazard Index ≥	1.0 (project increment)			
and non-carcinogens)	Hazard Index ≥ 3.0 (facility-wide)				
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402				
Am	bient Air Quality for Criteria Po	llutants ¹			
NO2	SCAQMD is in attainment;	D is in attainment; project is significant if it causes or			
	contributes to an exceedance of the following attainment standards:				
1-hour average	0.25 ppm (state)				
annual average	0.053 ppm (federal)				
PM10					
24-hour average	10.4 μ g/m ³ (recommended for construction) ²				
	$2.5 \mu g/m^3$ (operation)				
annual geometric average	$1.0 \mu g/m^3$				
annual arithmetic mean	$20 \ \mu g/m^3$				
Sulfate					
24-hour average	1 ug/m^3				
CO	SCAQMD is in attainment; project is significant if it causes or				
	contributes to an exceedance of the following attainment standards:				
1-hour average	20 ppm (state)				
8-hour average	9.0 ppm (state/federal)				

Table 4-98. SCAQMD Air Quality Significance Thresholds

¹ Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated. ² Ambient air quality threshold based on SCAQMD Rule 403. lbs/day = pounds per day; ppm = parts per million; ug/m³ = microgram per cubic meter

As stated in Section 4.6.2, no scientifically verified or regulatory significance thresholds have been established for GHG emissions. Nonetheless, it is recognized that activities associated with construction and development may contribute to cumulative GHG emissions.

Direct Impacts

Implementation of the SAMP/WSAA Process would not result in direct adverse impacts to air quality in the Watershed, as the SAMP/WSAA Process is a regulatory program that authorizes discharges of dredged and fill materials to jurisdictional waters. The SAMP/WSAA Process itself does not directly generate emissions.

Indirect Impacts

Air quality impacts are typically associated with either construction or operational emissions associated with the proposed project. Construction emissions occur during grubbing, site grading, and construction of buildings and infrastructure. Construction emissions are temporary and only occur for a short-duration.

Operational emissions include on-site stationary emissions from operating equipment or processes and off-site mobile emissions from worker vehicles and trucks delivering and picking up products.

The proposed SAMP/WSAA Process requires applicants to seek permit/agreement approvals for construction and/or maintenance of projects in jurisdictional areas that could potentially generate emissions (both short-term construction and long-term operational). The SAMP/WSAA Process itself does not directly generate emissions. The projects that would be initiated and implemented once approvals are obtained through the SAMP/WSAA Process may ultimately be responsible for generating short-term and long-term emissions (e.g. construction activities and operational emissions). The types of activities within the Corps scope of analysis that would be authorized under the RGP, LOP procedures, WSAA Process would be temporary in nature and/or confined to the immediate project vicinity. Each project would be evaluated on an individual basis through a CEQA and/or NEPA review process, independent of the Corps/Department review and permit process, to determine the amount of emissions associated with the project. If these emissions exceed the significance criteria then feasible mitigation measures shall be implemented to reduce the impacts to a level considered less than significant. In addition, each project would be required to examine the potential for cumulative air quality impacts on a local and regional basis.

Indirectly, the regulated activities permitted under the SAMP/WSAA Process would result in short-term construction activities that would potentially generate exhaust emissions from diesel equipment and fugitive dust from grading activities. An assessment of potential construction-related and mobile source emissions for individual projects cannot be undertaken at this time, because the variables associated with calculating emissions requires knowing details of project construction. This information can only be known at the time a specific project is proposed. Standard mitigation measures promulgated by the SCAQMD, imposed at the local approval level, for dust control and diesel emissions can reduce these potential impacts to a less than significant level.

It should be noted that some permits/agreements issued under the proposed SAMP/WSAA Process would result in projects creating long-term air quality impacts such as increased vehicle traffic associated with new land development, emissions from flood control, bridge, utility equipment, and other types of maintenance activities. Post-construction activities, new stationary sources from expansion, and indirect mobile source emissions associated with future projects are considered to be outside the Corps and Department's scope of analysis. The post-construction, operational phase of future projects may result in project occupancy and operation-associated air pollutant emissions generated by both consumption of electricity and natural gas and by the operation of on-site vehicles. The Corps and the Department must depend on the project-specific CEQA process to mitigate for post-construction stationary source and indirect mobile source emissions of criteria pollutants. An assessment of potential long-term air quality impacts requires project-specific information such as the projected increase in vehicle traffic. This type of information would be available once a specific project is proposed. Mitigation measures to reduce any potential impacts would be imposed at the local approval level.

Regulated activities that generate increases in fossil fuel consumption (e.g., combustion of gasoline, diesel, etc.), have been found to contribute to the increase in atmospheric levels of greenhouse gas (GHG) emissions. The indirect impacts from implementation of regulated activities under the proposed

SAMP/WSAA Process would be an incremental contribution of construction-related vehicle and equipment emissions and mobile source emissions. The GHGs primarily associated with emissions from the activities in the Watershed are carbon dioxide, methane and nitrous oxide.

Carbon dioxide is an odorless, colorless natural GHG. Natural sources include the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (man-made) sources of carbon dioxide are from burning coal, oil, natural gas, and wood. For the Watershed, the primary source of carbon dioxide is oil from construction equipment and mobile source (vehicle) emissions. Nitrous oxide is a colorless GHG and is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes such as fossil fuel-fired power plants (not present in this Watershed) and vehicle emissions also contribute to its atmospheric load. Methane is a flammable gas and is the main component of natural gas. A natural source of methane is from the anaerobic decay of organic matter. Other sources are from landfills and fermentation of manure and cattle.

The short-term construction emissions and long-term mobile source emissions would be expected to occur in this Watershed with or without the proposed SAMP/WSAA Process. An assessment of GHG emissions associated with the regulated activities cannot be undertaken, because project-level details are unknown at this time, and any attempt to quantify GHG emissions from future regulated activities would be speculative. Individual projects to be permitted under the SAMP/WSAA Process will undergo projectspecific CEQA or NEPA evaluation at the local level, and as appropriate, will include a more detailed evaluation of GHG emissions quantifying the extent of impacts, including GHG emissions, and setting forth specific mitigation appropriate to that project.

Applicable General Condition of the LOP

The Corps, as part of their General Conformity Review determined that in general, construction and maintenance activities regulated under the RGP and LOP would result in a *de minimus* increase in direct mobile source and stationary source emissions (See also Section 10.1.5). The Corps does acknowledge that certain projects that would be eligible for authorization under the LOP could have direct mobile source emissions and/or stationary source (e.g. fugitive dust) emissions in exceedance of the *de minimus* levels, or could have activities resulting in indirect mobile source or stationary source emissions within the continuing authority of the Corps. However, it is expected that many, if not all of the projects with long-term indirect impacts from mobile source and stationary source emissions would be included in the baseline inventory of the applicable State Implementation Plan (SIP). Nevertheless, the Corps has proposed the following LOP condition (Condition #21) to minimize potential adverse affects on air quality:

"No activity is authorized that causes or contributes to any new violation of National Ambient Air Quality Standards, increases the frequency or severity of any existing violation of such standards, or delays timely attainment of any such standard or interim emission reductions, as described in the applicable California State Implementation Plan for the South Coast Air Basin. As part of the Corps application package, the applicant shall submit an air quality emission and impact analysis for the proposed activity if the project would result in long-term or permanent stationary (point or area) source or indirect mobile source emissions, or if the proposed activity would result in area source and direct mobile source emissions that exceed the annual de minimus emissions thresholds for any criteria air pollutant or its precursors."

Impact Analysis Conclusion

Regulated activities permitted under the SAMP/WSAA Process would result in potential short-term and long-term impacts on air quality from construction vehicle/equipment emissions and operational emissions. In most cases, projects permitted under the RGP and LOP would result in only *de minimus* increases in emissions but would still be required to submit an air quality emissions and impact analysis report for any project that would result in emissions that exceed the annual *de minimus* emissions thresholds for any criteria air pollutant or its precursors. Additionally, many projects would be evaluated on an individual basis through a CEQA and/or NEPA review process, independent of the Corps/Department SAMP/WSAA Process review process. During this separate CEQA/NEPA review process, the amount of emissions generated by a project would be determined, and if these emissions exceed the significance criteria, feasible mitigation measures would be required to reduce air quality impacts to a level considered to be less than significant.

Mitigation Measures

It is generally beyond the Corps and the Department's statutory limits of authority to require the implementation of mitigation measures for post-construction, operational air quality impacts of a built project. During the project approval process, independent of the SAMP/WSAA Process, local land use authorities or other regulatory agencies can require a variety of air quality mitigation measures depending on the type and extent of project impacts. Example mitigation measures include but are not limited to:

To control PM10 during construction:

- Water excavated soil piles hourly or cover with temporary coverings;
- Maintain equipment and vehicle engines in good condition and in proper tune;
- Cease grading operations during periods when winds exceed 25 mph;
- Moisten excavated soil prior to loading on to trucks;
- Cover all loads of dirt leaving the site or leave sufficient freeboard capacity in truck to prevent fugitive dust emissions en route to disposal site;
- Replace ground cover on construction sites when it is determined that the site will be undisturbed for lengthy periods; and
- Sweep streets at the end of the day if substantial visible soil material is carried over to adjacent streets.

To reduce diesel and other vehicle emissions:

- Turn off equipment when not in use for more than 5 minutes;
- Schedule construction activities that affect traffic flow on adjoining streets to off-peak hours to the extent possible;
- Ensure that whenever feasible, commercial truck traffic is diverted from local roadways to offpeak periods;
- Install electric-powered vehicle power supply units in residential and commercial units; and
- Implement appropriate transportation control measures recommended by SCAQMD and SCAG.

The types of mitigation measures to control GHG emissions, particularly carbon dioxide emissions from land development activities include:

- Development should be consistent with "smart growth" principles including locating housing and jobs so as to reduce vehicle miles traveled;
- Development should include a transportation demand management program that incorporates features to promote the use of public transit, and accommodates bicycle and pedestrian pathways;
- New projects should be designed to reduce energy consumption and promote energy efficiency through the use of energy saving features such as lighting, insulation, HVAC technology, windows, heating technology, roofing and other building materials;
- New development shall ensure that the layout of the site and building orientation make the best use of natural light, heating, and cooling potential;
- New development shall incorporate landscaping materials, including trees, to reduce heat associated with asphalt and to provide shade;
- New development shall include a plan to recycle construction materials and shall include features to promote on-site recycling; and
- During construction, diesel vehicles shall be low diesel emission vehicles or use cleaner fuel such as low sulfur diesel, or shall include retrofitting of older equipment with emission control devices.

These types of mitigation measures could be adopted by the local agencies in approving individual projects.

Level of Significance After Mitigation

No significant direct impacts from individual projects are known at this time. Although the potential for indirect cumulative impacts cannot be conclusively determined at this time, the potential for future projects to contribute to the effects of global GHG emissions may be considered cumulatively significant and unavoidable.

4.6.3 Cultural Resources

Significance Thresholds

The National Historic Preservation Act (NHPA) of 1966 established the Advisory Council on Historic Preservation and State Historic Preservation Officers (SHPO) to assist federal agencies to consider the effects of an action on cultural resources (prehistoric and historic resources) in or eligible for listing in the National Register of Historic Places (NRHP). The administering agency, the Advisory Council on Historic Preservation, has authored regulations implementing Section 106 located in 36 Code of Federal Regulations (CFR) Part 800, *Protection of Historic Properties* (revised January 11, 2001).

The Corps must consider the potential direct and indirect effects of a project on historic properties within the area of potential effect (APE) to the degree the impacts are related to the Corps regulatory authority. Under the Section 106 requirements, for each permit action, the Corps evaluates archeological data about the potential for historic properties to be located within the APE for significance to determine if archeological resources are present and if they are eligible for listing in the national register. The Corps must consider all historic sites potentially eligible at first under Section 106, until they are determined eligible or ineligible. Then, if they are eligible for the National Register and the Corps determines an effect would occur as a result of the permit action, then appropriate mitigation is identified through Section 106 consultation with the SHPO.

In accordance with consultation under Section 106 of the NHPA the following procedures are required for a permit action to demonstrate NHPA compliance if the action has the potential to affect historic properties: (1) identification of significant resources that may be affected by an undertaking; (2) assessment of project impacts on those resources; and (3) development and implementation of mitigation measures to offset or eliminate adverse impacts. The Section 106 review includes consultation with SHPO, interested Native American Indian tribes, local governments, and other interested parties.

Under CEQA Section 15064.5, a project potentially would have significant impacts if it would cause substantial adverse change in the significance of:

- 1. An historical resource, i.e. a cultural resource eligible to the California Register of Historic Resources (CRHR);
- 2. An archaeological resource (defined as a unique archaeological resource which does not meet CRHR criteria);
- 3. A unique paleontological resource or unique geologic feature (i.e. would directly or indirectly destroy a site);
- 4. Human remains (i.e. would disturb or destroy burials); or
- 5. A non-unique archaeological or paleontological resource is given no further consideration, other than the simple recording of its existence by the lead agency.

A property that is eligible for the NRHP is also eligible for the CRHR. Criteria for listing historical resources in the CRHR are consistent with those developed by the National Park Service (NPS) for listing historical resources in the NRHP, but have been modified for state use in order to include a range of historical resources which better reflect the history of California. Criteria applied to evaluate properties for the NRHP are listed in the Code of Federal Regulations Title 36 Part 60. Criteria applied to evaluate properties for the CRHP are listed in the California Resources Code Chapter 14 part 4852.

Direct Impacts

The SAMP/WSAA Process would authorize temporary and permanent discharges of dredged or fill material into waters of the U.S. under the Corps RGP and LOP, as well as temporary and permanent impacts to the Department's jurisdiction under the WSAA Process. Activities in the areas under Corps and Department jurisdiction could directly impact cultural resources. The potential for such impacts and mitigation are covered in the discussion below.

Indirect Impacts

The seven categories of regulated activities that could be authorized under the proposed SAMP/WSAA Process may involve land disturbance and therefore could directly and/or indirectly affect unknown cultural resources. However, the Watershed is a mostly disturbed landscape and it is not expected that construction and maintenance activities permitted under the SAMP/WSAA Process would result in adverse effects to significant historic properties. Within the urbanized portions of the Watershed, preliminary determinations indicate that all but one of the areas of the Watershed are without archaeological or historical sites warranting protection by the NHPA. It was determined that one archaeological site does exist within the Watershed that could have been affected by an anticipated project, but that project has since undergone evaluation and was permitted under an SIP and individual SBAA. Appropriate mitigation measures were undertaken and this project is currently under construction. Implementation of regulated activities under the SAMP/WSAA Process would not impact the identified resource and implementation of the SAMP/WSAA Process would not require Section 106 consultation for that site.

Regulations stipulate that when the lead agency finds that either no historic properties are present, or historic properties are present but the undertaking would have no effect upon them, then the lead agency shall make a "no historic properties affected" determination (36 CFR Part 800.4[d]). If the lead agency finds that there are historic properties which may be affected by the undertaking, the lead agency would make a "historic properties affected" determination. Specifically, if archaeological resources are discovered on a particular project site requiring a Corps authorization and within the Corps APE, the Corps, in coordination with the SHPO, would evaluate the cultural resource for eligibility for listing in the NRHP pursuant to the NHPA.

Applicable Requirements and Conditions of the Corps RGP and LOP

As part of the LOP application, the Corps requires evidence of compliance with Section 106 of NHPA. Once the application information is received, the Corps would coordinate with the SHPO to ensure compliance with NHPA. Additionally, both the LOP and RGP contain the following General Condition (Condition No. 20) to ensure compliance with NHPA prior to any permit authorization:

"No activity that may affect historic properties listed, or eligible for listing, in the NRHP is authorized until the Corps has complied with the NHPA. If the proposed activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the NRHP, and shall not begin the activity until notified by the Corps that the requirements of the NHPA have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the SHPO and the NRHP".

Other Applicable Conditions

Although the local jurisdictions within the Watershed are nearly built-out and the majority of the land within the jurisdictions has been disturbed, there still remains the possibility for development and redevelopment of existing land uses at some time in the future. The goals, policies and implementation measures in the General Plans for the local jurisdictions generally include provisions for the identification and protection of any archaeological or paleontological resource in the event any are discovered in the future. For example, the City of Laguna Hills (1994) has developed a strategy and a goal for recognizing archaeological and paleontological sites as nonrenewable resources. In particular, the City's goal indicates that site-specific studies to assess impacts and make recommendations for appropriate mitigation would be required for new projects developed in areas known to have archaeological and/or paleontological resources.

Impact Analysis Conclusion

Implementation of the SAMP/WSAA Process would not cause substantial adverse change in the significance of a historical property; an archaeological resource; a unique paleontological resource; or human remains in the Watershed, as the SAMP/WSAA Process is a regulatory system that authorizes discharges of dredged and fill materials in jurisdictional waters. Future impacts or demands on cultural resources cannot be specifically determined in this programmatic document. However, the Corps RGP and LOP conditions would ensure all requirements of NHPA are satisfied prior to any permit approval, thus reducing any potential cultural resource impacts to below a level of significance. Further, individual projects covered under the SAMP/WSAA Process would undergo separate CEQA and/or NEPA review, at which time potential impacts to unknown cultural resources and potential impacts on existing cultural resources would be determined, along with appropriate mitigation measures. Thus, implementation of the SAMP/WSAA Process is not expected to result in significant impacts to cultural resources.

Mitigation Measures

The following are example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce project-specific cultural resources impacts to less than significant. These are examples and do not represent an exhaustive list.

- Prior to project approval, a detailed archaeological report shall be prepared to address the potential for encountering archaeological resources at a project site. The report will provide recommendations to prevent degradation of archaeological resources such as site avoidance and data recovery.
- In the event that buried cultural materials or deposits are found during construction, work in that vicinity shall be stopped immediately until an assessment can be made by a certified archaeologist.
- Should human remains be encountered, work in the vicinity shall be halted and the County Coroner shall be notified immediately. If the remains are determined to be historic or prehistoric or Native American, the Coroner shall contact the SHPO and the Native American Heritage Commission.

Level of Significance After Mitigation

No significant impacts.

4.6.4 Floodplain Values

Floodplain impacts are discussed in Section 4.4 Hydrology, Erosion and Sedimentation.

4.6.5 Geology/Soils

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts to geologic resources/soils may be considered significant. For purposes of this analysis, the SAMP/WSAA Process may be determined to have a significant impact on geologic resources/soils if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving;
- Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42) resulting in:
 - Strong seismic ground shaking;
 - Seismic-related ground failure, including liquefaction;
 - Landslides; or
 - Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Direct Impacts

The SAMP/WSAA Process would authorize temporary and permanent discharges of dredged or fill material into waters of the U.S. under the Corps RGP and LOP, as well as temporary and permanent impacts to the Department's jurisdiction under the WSAA Process. This new regulatory process would not directly involve construction of habitable structures. Accordingly, the SAMP/WSAA Process would not directly result in exposure of people to potential strong seismic ground shaking, landslides, or liquefaction.

Indirect Impacts

The permitting processes of the SAMP/WSAA Process would allow for new development and infrastructure projects in accordance with the requirements and general conditions of the SAMP/WSAA Process. Therefore, as with all new development in seismically active Southern California, future development permitted under the SAMP/WSAA Process (as under existing case-by-case permitting) has

the potential to expose people and structures to strong seismic ground shaking in the event a major earthquake occurs along any one of the active faults in the region, or landslides from development on hillsides. As with existing case-by-case permitting individual development and infrastructure projects would be required to undergo separate CEQA review as part of the local agency approval process to address seismic issues in project designs. Future development would be regulated under requirements of the California Building Code, Alquist Priolo Special Studies Zone Act, City/County land use policies and zoning, and plan-specific mitigation measures. Additional geotechnical studies would be performed to develop final seismic design recommendations. Future projects would be constructed to meet seismic design requirements for ground shaking specified in the project-specific design documents. Proper design and construction of the project components would reduce impacts from ground shaking. Therefore, potential indirect impacts from strong seismic ground shaking and landslides for activities regulated under the SAMP/WSAA Process permitting procedures would be considered less than significant.

Permitting of development and infrastructure in accordance with the proposed SAMP/WSAA Process would result in grading, excavation, boring, trenching, cut and fill activities, soil compaction, and possible import or export of fill material. These activities could result in erosion of soil if not properly controlled. Projects would be required to follow approved grading and erosion control plans, construction SWPPPs, water quality management plans, and proposed conditions of the RGP, LOP, WSAA Process that address erosion and sedimentation (See also discussion in Section 4.4, Water Quality). Additionally, projects would undergo individual CEQA review to address project-specific erosion and geologic concerns. Therefore, impacts of regulated activities under the proposed SAMP/WSAA Process on soil erosion and other geologic conditions would be considered less than significant.

The expansion potential of the soils in the project study area varies from moderate to very high. Expansive soils could cause structures to fail, presenting a risk of structural loss, injury, or death. As stated above, individual development and infrastructure projects permitted under the SAMP/WSAA Process would be required to undergo separate CEQA review. Projects could be required to follow special engineering techniques such as using reinforced steel in foundations, using drainage control devices, and/or over-excavating and backfilling with nonexpansive soil during construction activities to minimize the risk of structural loss, injury, or death. Potential impacts are considered less than significant.

Future projects in the Watershed would be served by sewer systems, not septic systems. However, if necessary, projects would be required to examine project-specific soil conditions as part of the local development approval process, to determine whether soils can support the use of septic tanks or other disposal systems. No impacts on soils are anticipated.

Since there are no known mineral resources in the Watershed that are of value to the region and the state, no impacts to mineral resources are anticipated by the approval of regulated activities under the proposed SAMP/WSAA Process.

Mitigation Measures

Example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific geology/soils impacts to less than significant are listed below. These are examples for a variety of different projects and do not represent an exhaustive list.

- Prior to the design and construction of a future project, a comprehensive geotechnical evaluation, including subsurface exploration and laboratory testing shall be conducted to identify any potential geologic and geotechnical hazards, such as expansive soils, landslides, slope instability, and identify measures to minimize risks to future development.
- All new structures must be designed in accordance with the latest seismic design provisions outlined in future geotechnical reports and specified in the latest Building Codes adopted by the local jurisdiction.
- Prior to issuance of a grading permit, detailed geotechnical and hydrology reports shall be prepared prior to any development approval or grading activities. These reports shall specifically address erosion control and surface runoff for both construction and long-term operations at the site.
- Erosion and sediment control measures shall be implemented as required by the local and state agencies, and in accordance with local grading and water quality ordinances.
- Where trenching is necessary on steep slopes, erosion control measures such as trench plugs, water bars or baffles will be placed on the trench.
- Place temporary sediment barriers at the base of slopes adjacent to all road or waterbody crossing where vegetation has been disturbed to prevent sediment migration off-site. Barriers will remain in place until revegetation measures are judged successful.

Upon completion of an underground utility, pipeline or drain, the alignment and working space will be recontoured to approximate original contours. Recontouring to natural lines and grades will be accomplished without disruption to any adjacent undisturbed habitat.

Level of Significance After Mitigation

No significant impacts anticipated.

4.6.6 Land Use

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts to land use may be considered significant. For purposes of this analysis, the SAMP/WSAA Process may be determined to have a significant land use impact if it would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation with an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- Conflict with any applicable HCP or NCCP.

Impacts

The SAMP/WSAA Process establishes a watershed-specific permitting program to approve temporary and permanent discharges of dredged and fill material into waters of the U.S. pursuant to CWA Section 404 as well as alterations to lakes and streambeds pursuant to FGC Section 1600 *et seq.* in accordance with numerous general conditions and a mitigation framework designed to improve ecosystem function in the Watershed over the long-term. The SAMP/WSAA Process is not a land use-planning document that designates areas for certain land uses nor does it establish restrictions on land use. Therefore, the SAMP/WSAA Process would not result in direct conflicts with existing land use plans, policies or regulations of any land use agency in the Watershed including the regional NCCP/HCP for Central/Coastal Orange County. Likewise the SAMP/WSAA Process would not physically divide an established community since it is a permitting program to regulate discharges of dredged and fill materials and to establish a mitigation/restoration program for the long-term enhancement of the Watershed ecosystem. See also Section 11 for a general plan consistency determination.

For the seven categories of regulated activities that would be eligible for authorization under the RGP, impacts to land use would be minimal. Such activities would be associated with small maintenance projects, resulting in temporary construction impacts to a small area located in a mostly degraded landscape. For regulated activities eligible for the LOP, potential impacts on land use would vary depending on if the project is located in an aquatic resource integrity area. Projects eligible for the LOP in aquatic resource integrity areas would generally be small such as a single family home, recreational trail or utility substation, since permanent impacts to aquatic resources cannot exceed 0.1 acres under the LOP. These minor projects would not likely have a significant impact on land use. Outside aquatic resource integrity areas, most regulated activities would be eligible for the LOP, but they cannot substantially alter a compensatory mitigation site or involve flood-control related conversions of soft bottom channels to concrete-lined channels or channelization of the five major stream systems on the Watershed. Many of these projects would be subject to independent CEQA review by the local land use agency for project approval. During this review process, projects would be evaluated for potential conflicts with designated land uses and policies and appropriate mitigation and conditions would be identified to avoid or minimize such land use impacts.

Table 4-109 summarizes the total land area of each municipality within the Watershed and how much of that land has been identified as aquatic resource integrity area, subject to greater regulatory review by the Corps and the Department and greater requirements for avoidance, impact minimization and compensatory mitigation. As stated previously, future projects located in aquatic resource integrity areas are not precluded from construction, development, maintenance or other regulated activities. Projects in these areas are ineligible for the RGP, but applicants may seek coverage under the LOP on a conditional basis if there projects do not result in permanent impacts to waters of the U.S. that exceed 0.1 acres, and do not result in stream channelization in five of the major stream systems of the Watershed. The LOP requires interagency coordination and more requirements for avoidance of high quality aquatic resources. Proposed projects in the aquatic resource integrity areas that do not meet the LOP requirements may still apply for a permit under the Corps SIP process. As Table 4-109 indicates, most of the aquatic resource integrity areas are located within the County of Orange, followed by the cities of Irvine and Newport

Beach. Some of these aquatic resource integrity areas are located within the Central-Coastal NCCP/HCP Reserve System areas (See Figure 2-4 in Section 2.1.1.4)

		Total Acreage of Aquatic	Percent of Total	
Municipality	Total Acreage within San	Resource Integrity Areas	Watershed Acreage within	
winnerpairty	Diego Creek Watershed	within Municipal	Aquatic Resource Integrity	
		Boundary	Areas	
County of Orange	25719.7	9625.4	37.4%	
City of Irvine	29110.1	5894.3	20.2%	
City of Laguna Hills	775.7	22.8	2.9%	
City of Laguna Woods	1033.4	11.4	1.1%	
City of Lake Forest	4384.9	347.6	7.9%	
City of Newport Beach	3031.0	883.7	29.2%	
City of Orange	1210.7	163.8	13.5%	
City of Santa Ana	3650.8	0	0.0%	
City of Tustin	7091.2	175.8	2.5%	
Total	76007.5	17124.8		

Table 4- 10 9.	Acreage of	Aquatic	Resource	Integrity	Areas by	v Municir	bal Jurisdi	iction
						,		

Source: Corps of Engineers, 2004

Regarding the NCCP/HCP, of the 17,133 acres identified as aquatic resources and their contributing upland areas of influence, 12,408 acres (72%) fall within the boundaries of the NCCP Reserve system. Most of the aquatic resources, including ephemeral streams and riparian habitat found within the NCCP Reserve system are located within aquatic resource integrity areas. Areas identified as aquatic resource integrity areas also extend beyond the boundaries of the NCCP Reserve system as shown in Figure 2-4.

The SAMP does not conflict with the goals and policies of the NCCP or its continued implementation and resource protection function. In fact, the NCCP and SAMP/WSAA Process have many similar goals and objectives, but the two planning processes focus on different aspects of the environment. The SAMP/WSAA Process actually may strengthen the NCCP by including conditions regarding riparianoriented species, such as the least Bell's vireo, and providing strengthened review process for the conservation, restoration, and rehabilitation of aquatic resources located within and adjacent to the NCCP areas. The SAMP/WSAA Process includes prioritization for connecting currently disconnected NCCP areas (e.g., linking the northern and southern portions of the Watershed). The SAMP/WSAA Process was developed in coordination with NCCP stakeholders to ensure the compatibility of the two plans. SAMP consistency with the NCCP/HCP is discussed further in Section 10.1.

Impact Analysis Conclusion

No significant impacts to land use are anticipated since implementation of the SAMP/WSAA Process does not preclude implementation of local General Plans or polices, or the NCCP/HCP. Rather, the SAMP/WSAA Process requires a more detailed level of review under CWA Section 404 and FGC Section 1600 *et seq.* than under the existing Corps and Department permitting framework and potentially more opportunities for avoidance and enhancement in aquatic resource integrity areas. The SAMP/WSAA Process would not physically divide an established community; conflict with any applicable land use plan, policy or regulation; or conflict with any applicable habitat conservation plan or natural community conservation plan. Future projects that would be permitted under the SAMP/WSAA Process would be

subject to independent CEQA review by the local land use agency to determine potential impacts to land use plans and polices. Mitigation measures, if needed, would be identified by the land use agency to minimize potential impacts.

Mitigation Measures

No mitigation measures are needed since no significant impacts to land use have been identified in this programmatic document.

Level of Significance After Mitigation

No significant impacts.

4.6.7 Noise

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts to noise may be considered significant. For purposes of this analysis, the SAMP/WSAA Process may be determined to have a significant noise impact if it would create:

- An exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- An exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Direct Impacts

The SAMP/WSAA Process involves the establishment of a watershed-specific regulatory system for the issuance of CWA Section 404 permits (RGP and LOP) and Section 1600 *et seq.* streambed alteration agreements (WSAA Process). Under the proposed SAMP/WSAA Process, the Corps and the Department would permit temporary and permanent impacts to jurisdictional waters from seven categories of activities such as construction of bridges, land development, and public facilities/utilities in accordance with the SAMP/WSAA Process conditions and mitigation framework. The SAMP/WSAA Process itself does not generate noise, as it only authorizes discharges into jurisdictional waters, and therefore, no direct noise impacts would occur from permit approvals under the SAMP/WSAA Process.

Indirect Impacts

The proposed SAMP/WSAA Process requires applicants to seek permit approvals for construction and/or maintenance of projects in jurisdictional areas that could potentially generate noise (both short-term construction and long-term operational) in the greater Watershed area. As stated above, the program itself does not directly generate noise. The projects which would be initiated and implemented once approvals are obtained through the SAMP/WSAA Process may ultimately be responsible for generating short-term and long-term increases in the ambient noise environment.

The primary source of increased short-term noise associated with permitted activities is construction including grading and excavation for individual sites, and operation of construction vehicles and equipment. The greatest potential for noise impacts occurs when construction activities are directly adjacent to sensitive receptors (i.e., residences, hospitals, day care centers, schools, churches, and libraries). A detailed assessment of construction noise impacts would be prepared at the time a specific project is proposed, because this assessment requires specific project information that is unknown at this time such as equipment to be used, volume of materials to be moved, number of workers required, construction schedule, and location of sensitive receptors. Construction noise impacts generally can be mitigated with standard noise mitigation measures and compliance with local noise ordinances.

Indirectly, long-term increases in the ambient noise environment of the Watershed would be created by post-construction residential, commercial, and industrial land development projects and other facility/utility projects that could be permitted under the SAMP/WSAA Process. Each project would be evaluated on an individual basis through a CEQA and/or NEPA review process, independent of the Corps/Department review and permit process, to determine the anticipated increase in ambient noise levels associated with the individual project. If these increases have the potential to create significant impacts, then mitigation measures would be identified to help reduce impacts to a level of insignificance.

Other Local Regulatory Conditions

Several municipal ordinances are in place to help control project noise impacts. Some examples are described below:

- The Orange County Codified Ordinance Division 6 (Noise Control) states that construction activities are generally restricted to between 7:00 a.m. and 8:00 p.m. from Monday through Saturday. No construction activity is permitted on Sundays and Federal holidays. Construction noise during the allowed construction time periods is exempted from the noise level provisions in the noise control ordinance.
- The City of Irvine Noise Ordinance exempts construction activities from the noise level limits during specific hours of the day. Noise generating construction activities are permitted during the hours between 7:00 a.m. and 7:00 p.m. Monday through Friday, 9:00 a.m. to 6:00 p.m. on Saturday, and at no time on Sundays or national holidays (unless a temporary waiver is requested and granted). Any construction occurring within 500 feet of residential area has the potential to exceed the Noise Ordinance limits and should only occur during the time periods specified by the Noise Ordinance. Failure to comply with the Noise Ordinance could result in potentially significant fines.

Construction activities would be required to comply with the above or similar noise ordinances. Therefore, potential construction impacts would not be expected to have a significant impact. However, as stated previously, future CEQA/NEPA studies for individual projects would be conducted to address specific short-term construction and long-term operational noise impacts.

Impact Analysis Conclusion

Implementation of the SAMP/WSAA Process would not be expected to expose persons to or generate noise levels in excess of standards established in the local general plan; expose persons to or generate excessive groundborne vibration or groundborne noise levels; create a substantial increase in ambient noise levels in the project vicinity; or create a substantial temporary or periodic increase in ambient noise

levels in the project vicinity. Future projects permitted under the SAMP/WSAA Process would be evaluated in a separate CEQA review process as part of local agency project approval to determine potential for significant short-term or long-term noise impacts in the Watershed. It is expected that appropriate mitigation, as needed, would be identified by the local lead agency to reduce potential impacts to less than significant.

Mitigation Measures

The following are example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific construction and operational noise impacts to less than significant. These are examples and do not represent an exhaustive list.

- Construction equipment and materials transport shall be required to conform to the provisions in the County's Noise Ordinance (7:00 a.m. to 8:00 p.m., weekdays, including Saturday, or any time on Sunday or a Federal holiday). All equipment shall be operated in the quietest manner practicable. The contractor will be required to comply with local noise control ordinances.
- Material stockpiles and/or vehicle staging areas shall be located as far as practicable from dwellings.
- Operating equipment such as pumps, generators and other such stationary equipment will be enclosed in insulating shelters to limit noise levels in areas near dwellings.

Level of Significance After Mitigation

No significant impacts are anticipated.

4.6.8 Public Health and Safety

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. For purposes of this analysis, the SAMP/WSAA Process may be determined to have a significant impact to public health and safety if it would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
 - fire protection;
 - police protection; and
 - other public facilities
- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Direct Impacts

The proposed SAMP/WSAA Process is watershed-specific permitting program for issuance of Section 404 permits and Section 1600 *et seq.* streambed alteration agreements. Under the proposed SAMP/WSAA Process, the Corps and the Department would permit temporary and permanent impacts to jurisdictional area from seven categories of activities including construction and maintenance of bridges, land development, and public facilities/utilities in accordance with the SAMP/WSAA Process requirements, general conditions and mitigation framework. The SAMP/WSAA Process is a regulatory program to replace existing case-by-case permitting to help reduce impacts to high quality aquatic resources and to restore and enhance the ecosystem of the Watershed overall. No direct impacts on public health and safety are expected from implementation of the SAMP/WSAA Process.

Indirect Impacts

As with existing case-by-case permitting, some regulated activities that could be permitted under the SAMP/WSAA Process, such as land development in the Watershed, would generate new residential, commercial and industrial land uses with their associated increases in residential population and commercial/industrial activities. This increase can have minor indirect effects on public health and safety, as the new population in the area would increase demand for: 1) existing fire and police services; and 2) utilities service systems such as sewerage, natural gas, electricity, and telephone/cable services. The increase residential population and commercial/industrial activities would also generate a minor increase in household and commercial/industrial hazardous waste in the area.

Other categories of regulated activities, in particular storm water treatment and management facilities and flood control facilities may pose a risk to public health and safety from potential vectors in areas of stagnant water. Various vector control measures coordinated with OCVCD are typically incorporated into the maintenance/management plans for these facilities to reduce potential vector risks to less than significant levels. Water safety may be another potential impact when facilities are located in urban areas with public access and filled with seasonal, deep standing water. Signage and fencing can help reduce public safety risks.

While there may be some potential for indirect effects on public health and safety risk from permitting of the regulated activities (indirect effects), risks of future projects cannot be specifically determined in this programmatic document. Instead, each project would be evaluated on an individual basis through a CEQA and/or NEPA review process, independent of the Corps/Department review and permit process, to determine the anticipated impacts to public health and safety. If an impact is identified as potentially

significant through the project-specific CEQA process, then mitigation measures would be identified as required by that process to help reduce the impact to below of a level of significance. Thus, implementation of the SAMP/WSAA Process is not expected to result in significant impacts to public health and safety.

Mitigation Measures

The following are example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific public health and safety impacts to less than significant. These are examples and do not represent an exhaustive list.

- Develop and implement a vector and pest control plan, in coordination with OCVCD, that provides vector abatement methods (e.g. application of Bti and mosquito fish stocking), and long-term monitoring and assessment to evaluate the effectivness of the control methods;
- Plant vegetation to minimize access into shallow or open water and riparian areas of facilities, such as constructed wetlands for storm water treatment;
- Place fencing around shallow and open water areas; and
- Provide signage around facilities to warn the public of potential water safety and/or vector risks.

Level of Significance after Mitigation

No significant impacts.

4.6.9 Recreation

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. For purposes of this analysis, the SAMP/WSAA Process may be determined to have a significant impact to recreational resources if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- Include recreational facilities or require the construction or expansion of recreational facilities that may have an adverse physical effect on the environment.

Direct Impacts

The proposed SAMP/WSAA Process would not directly affect local and regional parks, hiking and biking trails in the Watershed and other recreational facilities because the SAMP/WSAA Process is a watershed-specific permit program to replace the existing case-by case permitting program for issuance of Section 404 permits and Section 1600 *et seq.* streambed alteration agreements. Under the proposed SAMP/WSAA Process, the Corps and the Department would permit temporary and permanent impacts to jurisdictional areas from the construction and maintenance of bridges, land development, and public facilities/utilities in accordance with a Watershed-specific permit program administered by the Corps and the Department. Although the SAMP/WSAA Process identifies certain areas as aquatic resource integrity areas, the SAMP/WSAA Process does not prohibit development of new recreational resources.
The land development category of SAMP/WSAA Process covers recreational uses such as neighborhood parks/playing fields, golf courses, park administrative buildings, and attendant features such as parking lots, driveways, and local access roads (recreational land development projects). Temporary and permanent impacts of recreational land development projects have been addressed in the land development discussions throughout this document. In general, implementation of the SAMP/WSAA Process would result in greater avoidance and impact minimization in aquatic resource integrity areas, which in many cases correspond with existing Central-Coastal NCCP/HCP Reserve areas as well as regional or wilderness park areas. Identification of aquatic resource integrity areas does not preclude existing recreational uses, associated maintenance activities, or future recreational land development projects in these areas. Any proposed recreational land development projects in aquatic resource integrity areas, with over 0.1 acre of impact to native vegetation would not be eligible for the Corps LOP, but would be subject to review under the Corps SIP process and may be required to obtain a standard streambed alteration agreement from the Department. Management measures under the proposed SAMP/WSAA Process Mitigation Coordination Program would need to be coordinated with NCCP and/or park management to ensure compatibility. No significant impacts on existing recreational resources would be expected.

In addition to recreational land development projects, the Watershed contains numerous bikeways and hiking/riding trails. A number of existing bikeways and trails are proposed for extension in the Watershed, some of which closely parallel or cross major drainages. These include: Borrego Canyon Bikeway; Hicks Canyon Riding/Hiking Trail and Bikeway; Jeffrey Road Bikeway; and San Diego Creek Bikeway. Construction of proposed bike/hiking trail extensions as well as long-term trail maintenance activities that could affect the bed, bank or channel of a streambed and/or require removal of vegetation would be regulated by the Department. These activities could also be regulated by the Corps if a project requires dredge and/or fill into jurisdictional waters. Temporary impacts during construction and maintenance could include short-term disturbance of riparian and other native vegetation (until restoration is completed); temporary disturbance of wildlife inhabiting or breeding in the area; dust; noise; and potential disruption of traffic flow if near a major roadway. Permanent impacts could include loss of native vegetation and riparian habitat; potential, minor increases in storm runoff (from paved bike trails); some wildlife disturbance from trail users and their domestic pets; and possibly influx of non-native plant species.

Proposed extensions of bike trails and hiking trails requiring Corps and/or Department permits and are located within aquatic resource integrity areas could be permitted under the proposed SAMP LOP if: 1) a trail/bikeway project does not result in permanent impacts to native vegetation greater than 0.1 acres; 2) would not result in stream channelization of the five major stream channels (Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, San Diego Creek and Serrano Creek); and 3) would not substantially alter an existing compensatory mitigation site. Otherwise, such projects would require evaluation under a Corps SIP and Department standard streambed alteration agreement, subject to individual avoidance, minimization, and compensatory mitigation requirements. Trail maintenance activities (temporary impacts) could be permitted under the Corps proposed RGP if located outside an aquatic resource integrity area, or the LOP in aquatic resource integrity areas, and for the purpose of maintaining an established trail. These permit requirements as well as General Conditions of the LOP, RGP, and Level 1 - 3 SAA templates of the WSAA Process would reduce impacts to less than significant.

In some cases, projects could require independent CEQA review by the local lead agencies and would address project-specific impacts and any needed mitigation measures.

Indirect Impacts

As with existing case-by-case permitting, some regulated activities that could be permitted under the SAMP/WSAA Process (such as residential land development) could generate an increased need for new recreational facilities, and/or increase usage at existing recreational facilities, which could be considered an indirect effect. Additional demands for recreational facilities cannot be specifically determined in this programmatic document. Therefore, individual projects covered under the SAMP/WSAA Process would undergo separate CEQA review, at which time impacts to recreational facilities would be determined, along with appropriate mitigation, as necessary. Municipalities of the Watershed have recreation and park planning goals and policies listed in their general plans, and have implemented strategies to provide local park facilities and recreation areas that are appropriate for the individual neighborhoods and communities within their respective jurisdictions. Thus, implementation of the SAMP/WSAA Process is not expected to result in significant impacts to these resources.

In addition to land development activities, other regulated activities such as construction and maintenance of utilities, bridges, flood control facilities, could temporarily disturb existing recreational areas if construction and/or maintenance occurs within or directly adjacent to a neighborhood, regional or wilderness park. For example, a park user may experience a temporary degradation in the recreation experience from increased noise, increased dust, and change in visual character. Also, local access could be temporarily interrupted or impeded. These disturbances would be limited to the short-term construction period. The principal long-term, (indirect effect) of the regulated activities on existing recreational facilities may be the change in aesthetic qualities (e.g. permanent removal of vegetation, installation of rip rap, construction of a new culvert or new bridge). Individual projects covered under the SAMP/WSAA Process would be determined, along with appropriate mitigation, as necessary. Thus, implementation of the SAMP/WSAA Process is not expected to result in significant impacts to these resources.

Impact Analysis Conclusion

Implementation of the SAMP/WSAA Process would not be expected to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Through adherence to park and recreation strategies developed by the local land use permitting jurisdiction, along with adherence to the Corps RGP and LOP and the Department's general conditions, where required, potential impacts to recreation resources would be considered less than significant.

Mitigation Measures

No mitigation measures are needed since no significant recreational impacts have been identified.

Level of Significance After Mitigation

No significant impacts.

4.6.10 Socioeconomics

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. For purposes of this analysis, the SAMP/WSAA Process may be determined to have a significant socioeconomic impact if it would:

- Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Direct Impacts

The proposed SAMP/WSAA Process would not directly affect socioeconomic conditions in the Watershed because the SAMP/WSAA Process is a Watershed-specific permit program to replace the existing case-by case permitting for issuance of Section 404 permits and Section 1600 *et seq.* streambed alteration agreements. Under the proposed SAMP/WSAA Process, the Corps and the Department would permit temporary and permanent impacts to jurisdictional waters from specific regulated activities such as construction and maintenance of culverts, bridges, flood control facilities, utilities and as development of land in accordance with a watershed-specific permit program.

Construction of flood control facilities, bridges, culverts, utility projects and new land development projects under the SAMP/WSAA Process would not physically divide an established community nor displace substantial numbers of residents. Construction activities would take place in existing or planned development areas within the Watershed in accordance with approved local land use plans, County MPAH, and local agency capital improvement plans. There are no known major planned projects in the Watershed that would be expected to divide any existing community or displace local residents.

Indirect Impacts

As with existing case-by-case permitting, future land development permitted under the proposed SAMP/WSAA Process would indirectly increase housing in the Watershed, and thus, indirectly induce population growth. Planned growth would occur in accordance with the general plans and housing elements of the local jurisdictions. Housing opportunities would be developed to support growing job opportunities and projected population increases to meet the City of Irvine's RHNA (City of Irvine 1999), which would encourage future populations to reside and work in Irvine. Residential development projects would help meet housing demand based on job and population growth projections. Land development would also result in some new industrial, commercial/retail development projects, in accordance with the general plans and economic policies of the local jurisdictions. These developments would generate income for the area, which would also be considered an indirect, beneficial effect on socioeconomic conditions. Further, construction jobs for land development projects would increase jobs and income for the local economy. In summary, land development projects would induce planned population growth and would create beneficial effects on the socioeconomic conditions in the Watershed, including the opportunity to meet housing projection needs and help increase income in the County.

Additional demands for housing and the growth in population cannot be specifically determined in this programmatic document. However, individual projects covered under the SAMP/WSAA Process would undergo separate CEQA review, at which time potential socioeconomic impacts would be determined, along with appropriate mitigation, as necessary. Thus, implementation of the SAMP/WSAA Process is not expected to create in significant adverse socioeconomic impacts in the Watershed.

Mitigation Measures

No mitigation measures are needed since no significant socioeconomic impacts have been identified.

Level of Significance After Mitigation

No significant impacts.

4.6.11 Transportation/Circulation

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. For purposes of this analysis, the SAMP/WSAA Process may be determined to have a significant traffic impact if it would:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections);
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access;
- Result in inadequate parking capacity; or

• Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Direct Impacts

The SAMP/WSAA Process involves the establishment of a watershed-specific permitting system for the issuance of CWA Section 404 permits (RGP and LOP) and Section 1600 *et seq.* streambed alteration agreements (i.e., Level 1 - 3 SAA templates of the WSAA Process) to replace existing case-by-case permitting. Under the proposed SAMP/WSAA Process, the Corps and the Department would authorize temporary and permanent impacts to jurisdictional areas from seven categories of activities such as construction of bridges, land development, and public facilities/utilities in accordance with the SAMP/WSAA Process conditions and mitigation framework. The SAMP/WSAA Process itself does not generate traffic, as it only authorizes discharges into jurisdictional waters, and therefore, no direct traffic impacts would occur from permit approvals under the SAMP/WSAA Process.

Indirect Impacts

The proposed SAMP/WSAA Process requires applicants to seek permit approvals for construction and/or maintenance of regulated activities in jurisdictional areas. In consideration of indirect effects of the regulated activities, once approvals are obtained through the SAMP/WSAA Process, some of the activities would be responsible for increasing traffic to the local and regional street system of the Watershed, both in the short-term construction phase and long-term operational phase.

Short-term construction and/or maintenance activities associated with each regulated activity could potentially generate short-term traffic impacts in various locations of the Watershed. The primary source of increased short-term traffic is construction worker vehicles traveling to and from the construction site and truck traffic associated with soil import/export from a site. Specific construction activities, level of activity, and the location of construction activity could continually change throughout the course of project development. Because of the different phases of construction, no single location would experience a long-term increase in traffic. Maintenance and operation activities for any of the regulated activities would result in additional traffic from maintenance workers traveling to the various sites within the Watershed. These maintenance activities would generate short-term, mostly minimal increases in traffic, and could temporarily disrupt traffic flow if maintenance activities require work in the street rightof-way. However, no significant impacts would be expected. A detailed assessment of construction traffic impacts would be prepared at the time a specific project is proposed, because this evaluation requires information that depends on project details unknown at this time including the volume of any materials to be moved, the number of workers required for the project, the duration of the construction, the exact month of construction, and the potential for overlap in construction schedules. As a result, construction-related traffic impacts would have to be calculated and evaluated on an individual basis, by project, to determine the level of significance. Construction traffic impacts generally can be mitigated with standard mitigation measures such as implementation of a construction management traffic plan.

Long-term, land development projects permitted under the SAMP/WSAA Process would be expected to generate increases in local traffic volumes from new residential, commercial and industrial projects, and could require the addition and/or expansion of local roads to meet local and regional circulation needs. New roads would be planned in accordance with the County MPAH and local general plans. Specific circulation patterns and roadways would incorporate all applicable civil engineering and city/county fire

department standards to ensure that hazardous design features are avoided and adequate emergency access and parking capacity would be provided. Such projects would be required to prepare individual traffic impact studies. Local land use agencies within the Watershed have established goals that ensure circulation plans conform to applicable environmental quality standards (County of Orange 2004). Some of the objectives associated with these plans require the developer to conduct alignment studies such that roads are planned and developed in a manner which minimizes impacts associated with crossing of flood plains or drainage courses; wildlife and open space areas. Each project would be required to undergo separate CEQA review, at which time mitigation measures, if necessary, would be determined. Thus, implementation of the SAMP/WSAA Process is not expected to result in significant traffic impacts.

Additionally, the proposed SAMP/WSAA Process would not conflict with adopted policies, plans, or programs supporting alternative transportation.

Mitigation Measures

The following are example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific construction and long-term operational traffic impacts to less than significant. These are examples and do not represent an exhaustive list.

- Coordinate traffic lane closures with the County of Orange and appropriate local police and fire departments;
- Provide adequate safety provisions (e.g., signage, traffic cones, flags) as needed to identify construction work areas;
- Prohibit construction related vehicles from parking on residential streets;
- Require construction equipment staging to occur on the project site to minimize disruption to local streets;
- Require delivery of construction equipment and materials to the project site during off-peak travel periods (9:00 a.m. 4:00 p.m.); and
- Develop and implement a traffic management plan (TMP) approved by the local lead agency that contains a traffic study to determine traffic impacts and necessary traffic improvements as well as a other various means to manage project-related traffic and transportation access to and from the project site.

Level of Significance After Mitigation

No significant impacts.

4.6.12 Visual Resources

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. For purposes of this analysis, the SAMP/WSAA Process may be determined to have a significant impact to visual resources if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or

• Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Direct Impacts

Activities in areas under Corps and Department jurisdiction could directly impact visual resources. The potential for such impacts and mitigation are covered in the discussion below.

Indirect Impacts

Projects permitted under the SAMP/WSAA Process may direct and/or indirectly affect visual resources in the Watershed in the short-term and in the long-term. Short-term construction associated with the installation of bridges, public facilities/utilities and land development would cause various disturbances to landforms from grading, excavation, stockpiling, and filling. The presence of construction equipment such as large trucks, bulldozers and other vehicles at a construction site would create a visual impact in the construction zone. Additionally, grading of hillsides may be visible from a broader area of the Watershed, thus creating a more substantial visual impact. In general, these short-term construction impacts are considered adverse, but not significant, because they would be temporary and mostly localized, and because construction activities including hillside grading are not uncommon in the region.

Long-term visual changes are associated with permanently altering the natural topography, demolishing buildings and structures and constructing new buildings and structures. The significance of visual effects is very subjective and depends upon the degree of alteration, the scenic quality of the area disturbed, the sensitivity of the viewers, and the viewer perception of the features in the viewshed.

Most remaining new development in the Watershed would result in the conversion of remaining tracts of agricultural land and former MCAS El Toro lands into suburban residential, commercial and open space/park uses similar to the majority of existing development in the Watershed. Such areas are located in the northern and eastern portions of the Watershed. This conversion would alter the visual character of localized areas, and also impact views of surrounding Sanitago and San Joaquin Hills in some locations. However, new residential and commercial development would be planned and designed in accordance with the existing suburban/urban character of the area, and would not be expected to produce a significant visual change in the Watershed overall, though some local areas could experience significant visual impacts (both in terms of obstruction of views and change in visual character). Also, scenic views of rural and natural areas from Sand Canyon, Jeffrey Road, Culver Drive and Laguna Canyon Road may be impacted as well. New land development would also introduce new sources of light and glare. However, light that would be generated would be typical of urban development, and would not substantially affect views in this area either at night or during the day. Typical development standards required by local zoning ordinances would address the issue of light and glare. To ensure visual compatibility and enhancement of the surrounding environment, new development projects covered under the SAMP/WSAA Process would be subject to a separate CEQA review process, at which time, specific project impacts would be identified. If needed, mitigation measures would be developed under the separate CEQA review process to help reduce visual impacts to less than significant levels.

Proposed bridges would generally occur in undeveloped areas across drainage channels and would potentially cause a visual disruption of the waterway's linear form and the scenic background. These construction activities also introduce a new man-made visual feature and could contrast sharply with the natural visual elements of the drainage and surrounding area. Streambed stabilization could potentially consist of rip-rap along the undeveloped banks, which would add man-made features to an existing

natural feature. Bridge development and streambed stabilization measures would alter the existing visual character of the site and its surroundings, however, the requirements of the SAMP/WSAA Process, which will protect and enhance the aquatic and riparian ecosystem in the Watershed, would ensure that no long-term, substantial degradation of the visual character or quality of any site and its surrounding would result. Other regulated activities such as flood control and utility maintenance activities would not substantially affect the existing scenic environment, and most such activities would be short-term. Individual projects would be required to undergo separate CEQA review. At that time, potential significant visual resource impacts and appropriate mitigation measures would be determined by the local lead agency.

Mitigation Measures

The following are example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific visual impacts. These are examples and do not represent an exhaustive list.

- A landscape plan prepared by a licensed landscape architect shall be submitted to the local lead agency for review and approval to ensure landscape designs meet local requirements and are compatible with the surrounding landscape.
- A street lighting plan shall be prepared for review and approval by the local lead agency specifying the amount, location, height and intensity of street lighting, limited to the minimum necessary for public safety, to reduce the potential light and glare and incident spillover into adjacent properties and open space.
- To minimize visual impacts from utility and flood control projects such as water tanks, pump stations, sediment and flood detention basins, the following techniques shall be considered and implemented as appropriate: minimize visual impacts through partial burying of tanks or reservoirs, berming or filling in around the perimeter or use of landscaping that is compatible in appearance with adjoining natural open space areas. Revegetate slopes associated with access roads with native vegetation.

Level of Significance After Mitigation

No significant impacts.

4.6.13 Water Supply and Conservation

Significance Thresholds

Under CEQA, the lead agency must determine if any potential impacts may be considered significant. For purposes of this analysis, the SAMP/WSAA Process may be determined to have a significant impact to water resources if it would:

• Require new or expanded water entitlements and resources to serve the project.

Direct Impacts

The SAMP/WSAA Process involves the establishment of a watershed-specific permitting system for the issuance of 404 permits and streambed alteration agreements. Under the proposed SAMP/WSAA Process, the Corps and the Department would authorize temporary and permanent impacts to jurisdictional areas from the construction and maintenance of bridges, land development, and public facilities/utilities in accordance with the SAMP/WSAA Process procedures. Implementation of the SAMP/WSAA Process

would not result in direct impacts to the local water supply, as the SAMP/WSAA Process is a regulatory system that authorizes discharges of dredged and fill materials to jurisdictional areas, and replaces the existing case-by-case permitting.

Indirect Impacts

As with existing case-by-case permitting, some regulated activities that could be permitted under the SAMP/WSAA Process, such as land development for residential, commercial industrial, institutional and recreational facilities, may result in increased water consumption in the region, an indirect impact to water supply. Specific increases in water consumption and demand for imported water and local groundwater cannot be determined in this programmatic document. IRWD, the major water supply agency serving the Watershed has projected future water demand based on build-out of local land use general plans and has demonstrated its ability to provide adequate supply through projected build-out in 2025 and beyond to 2030 (IRWD 2005). IRWD's methods for increasing available supply include increase use of local groundwater, improvements in conservation efficiency, and expansion of recycled water use. No new or expanded entitlements would be required.

Existing state and local policies have been established to help address potential impacts to water supply. For example, Senate Bill No. 221¹ and Senate Bill No. 610², which were enacted in 2002, require new development to meet certain criteria and provide substantial evidence of available water supplies in the event of drought. Specifically, SB 221 prohibits approval of a tentative map, or a parcel map, or a development agreement for a subdivision of property of more than 500 dwelling units, unless the legislative body of a city or county provides written verification from the applicable public water system that a sufficient water supply is available, or, in addition, a finding is made by the local agency that sufficient water supplies are, or will be, available prior to project completion. SB 610 requires public water systems to prepare Water Supply Assessments for projects that require either an EIR or amendments to general or specific plans.

Additionally, the County of Orange (2004) requires will-serve letters from water purveyors prior to approval or extension of approval of tentative tract maps. This provides assurance that the responsible water agencies are capable of coordinating delivery through construction of necessary facilities. Furthermore, the County of Orange General Plan Land Use Element provides for the phasing of development consistent with the adequacy of public services and facilities. In the case of water supply facilities, the absolute necessity of water service to development will ensure adequate incremental water capacity.

Thus, local and state requirements would help ensure the adequacy of the public water supply for a project has been addressed before the project is approved. Therefore, any potential water supply impact associated with a future project permitted under the SAMP/WSAA Process would be mitigated in accordance with local and state requirements to a level considered less than significant.

Mitigation Measures

None needed since no significant water supply and conservation impacts are anticipated.

¹ Text of Bill is available at <u>http://www.groundwater.water.ca.gov/docs/sb_221_bill_20011009_chaptered.pdf</u>.

Level of Significance after Mitigation

No significant impacts.

5.0 EVALUATION OF ALTERNATIVES

5.1 NEPA AND CEQA REQUIREMENTS

The alternatives to the proposed SAMP/WSAA Process were developed in accordance with both NEPA and CEQA requirements for analysis of a reasonable range of project alternatives.

NEPA requirements for alternatives analysis (40 CFR 1502.14) direct federal agencies to:

- Consider a range of alternatives that could accomplish the project purpose and need and present the alternatives in comparative form to define the issues and provide a clear basis for decision makers and the public to choose among options.
- Explore rigorously and evaluate objectively a reasonable range of alternatives. If alternatives have been eliminated from detailed study, the EIS must briefly discuss the reasons they were eliminated. The range of alternatives is project specific, depending on the nature of the proposal and the facts and circumstances of the project.
- Analyze each alternative to a degree that is substantially similar to the analysis afforded the Proposed Action.
- Identify the "Environmentally Preferable" alternative from the range of alternatives considered. This alternative is considered to be the one that best promotes the environmental policy expressed in NEPA.
- Include a "no action" alternative.

The CEQA Guidelines [Article 9, Section 15126(d)] require an evaluation describing a range of reasonable alternatives "which would reasonably attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives." Specific elements to consider are:

- **Purpose.** "The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects on the project, even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly." [Section 15126 (d)(1)]
- **Reasonable Range of Alternatives.** The EIR is required to include alternatives that "could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the significant effects." [Section 15126(d)(2)]
- Evaluation. The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison of the proposed project. If an alternative to the proposed project results in significant effects (in addition to those caused by the proposed project), the significant effects of the alternatives shall be discussed but in less detail than the significant effects on the project as proposed. [Section 15126(d)(3)]
- No Project. A "no project" alternative must be evaluated with the impact. If the "no project" alternative is not the environmentally superior alternative, the EIR is required to identify an environmentally superior alternative among the other alternatives. [Section 15126(d)(4)]

• **Rules of Reason.** The "rule of reason", which required that the EIR sets forth only those alternatives that are necessary to permit a reasoned choice, governs the required range of alternatives to be included in an EIR. An EIR must examine in detail only the alternatives "that the lead agency determines could feasibly attain most of the basic objectives of the project." In addition, "the range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making." [Section 15126(d)(5)]

The range of alternatives addressed in this Program EIS/EIR includes alternatives that are specifically required under state and federal law. The alternatives may or may not contribute to achieving the goals and objectives of the proposed SAMP/WSAA Process project as discussed in Section 5.4. The four selected alternatives to the proposed SAMP/WSAA Process are: 1) No Project/No Federal Action (Existing Case-by-Case Permitting); 2) Complete Avoidance (No Permits Issued); 3) Avoidance Except for Bridges and Utilities (Limited Permitting); and 4) General Plan Build-out (Permitting Under the Existing Regulatory Process). Descriptions of the scope and conceptual basis of these alternatives are provided in Sections 2.2. Section 5.2 below identifies environmental impacts of each alternative. Section 5.3 provides a comparison of the alternatives.

5.2 PROGRAMMATIC ASSESSMENT OF ALTERNATIVES

This section presents a programmatic impact assessment of each alternative organized by environmental topic area. The description of each alternative is presented in Section 2.2 and not repeated herein. The CEQA significance thresholds used for the proposed SAMP/WSAA Process impact analysis in Section 4 are applicable for the alternatives impact analysis presented herein, and referenced accordingly to avoid repetition. Future individual projects that would be permitted under the SAMP/WSAA Process would be subject to local environmental review and approval requirements. Project specific impacts would be evaluated at that time.

5.2.1 Aquatic, Riparian and Wetland Habitats

Significance thresholds under CEQA are provided in Section 4.2.1.

5.2.1.1 Alternative 1: No Project Alternative (Existing Case-by-Case Permitting)

The type of temporary and permanent impacts (including both direct and indirect impacts) for the seven categories of regulated activities described for the proposed SAMP/WSAA Process in Section 4.2.2 would be similar under Alternative 1. In general, most remaining land development and other activities in the Watershed would consist of residential and commercial projects with some industrial, institutional, and recreational uses (local and regional parks including open space areas, trails, playing fields, golf courses, administrative buildings). Attendant features to most of these uses would include local roads, parking lots, driveways, utilities, and storm water management systems. Land development would typically require vegetation clearing, grading and excavation for construction access, building pads, roads, and culverts; boring and trenching for utility, sewer and storm drain installation; and paving operations. These activities may result in discharge of fill or encroachment into stream channels, wetlands or unlined agricultural drainages, redirecting of surface runoff into underground storm drains,

temporary stream diversion, and dewatering operations. Impacts from land development activities have the greatest potential for permanent impacts at the riparian reach and watershed scales.

Edge effects from adjacent activities during and after construction may indirectly impact the integrity of wetland and riparian areas. Other indirect impacts may be the introduction of invasive, non-native plants; domesticated animals; increased storm water runoff downstream; hydromodification; and wetland type change (i.e., one habitat type to another, such as willow riparian to cattail marsh). Modifying within channel and/or downstream hydrology may result in channel incision, which in turn may isolate floodplains by reducing the ability of flood flows to reach floodplain areas. Floodplain isolation has many ecological impacts such as recruitment limitation, establishment of upland vegetation, and reduced functional integrity. Such indirect impacts may be addressed through conditions required by the current regulatory programs in place in the Watershed, yet taken together these impacts may result in increased cumulative impacts as compared to the proposed SAMP/WSAA Process.

No Implementation of SAMP/WSAA Process

In the long-term, this alternative scenario would result in adverse impacts on riparian habitat and federally protected wetlands in the Watershed overall, because of the following: (a) impacts would not be focused in areas containing low quality aquatic resources (at the Watershed scale); (b) impacts would not be avoided in high quality habitat (aquatic resource integrity areas); and (c) a Strategic Mitigation Plan and Mitigation Coordination Program would not be established to allow for holistic (at the Watershed scale) planning of restoration areas to restore and enhance ecosystem function. In addition, the overall, incremental impacts may not be fully mitigated via traditional mitigation approaches. Mitigation under this alternative would not be designated in a comprehensive, ecosystem-based manner. As such, the mitigation (while offsetting the acreage) would be less effective for addressing Watershed functional losses. Although impacts would likely be reduced to less than significant for single projects through the existing permitting requirements, significant cumulative impacts to wetlands and riparian areas may occur without any Watershed-level planning. Further details regarding the relative merits of the SAMP/WSAA Process in comparison to the current regulatory program (i.e., Alternative 1) is discussed in Section 2.1.6 (Beneficial Effects of the Proposed SAMP Permitting/WSAA Process in Comparison to the Current Permitting/Agreement Process) and summarized in Tables 2-15 and 2-16 of Section 2.1.6.

Applicable Federal and State Regulations that Minimize Impacts

Regulated activities under this alternative would be required to comply with the state and federal policies and regulations, as applicable, to address potential impacts to sensitive species and their habitats located within aquatic and upland areas of the Watershed. General conditions associated with Section 404 permits, Section 401 water quality certifications, and streambed alteration agreements would require mitigation and applicable BMPs to minimize downstream hydrologic and water quality impacts. Considering cumulative impacts at a Watershed scale, mitigation under this scenario may be insufficient to compensate for impacts, given the high failure rate of mitigation projects in Orange County (e.g., Sudol and Ambrose 2002) that may be attributed to a lack of strategic placement and implementation of mitigation projects. Also, as future projects are implemented, the quantity and quality of mitigation sites would decrease the options for applicants looking to compensate for impacts.

Mitigation Measures

No mitigation measures are needed for project level impacts since potential significant impacts to aquatic, wetland and riparian habitats would be expected to be reduced to less than significant with requirements of state and local wetland permitting programs.

To mitigate for significant cumulative impacts, the Corps and the Department would need to adopt a comprehensive watershed-wide avoidance and mitigation program, with permitting based on aquatic resource integrity, such as proposed by the SAMP/WSAA Process.

Level of Significance After Mitigation

With the adoption of a comprehensive avoidance and mitigation program, like the SAMP/WSAA Process, potentially significant cumulative impacts would be reduced to less than significant.

5.2.1.2 Alternative 2: Complete Avoidance (No Permits Issued)

This alternative is described in detail in Section 2.2.2

This alternative scenario would not result in direct significant impacts on riparian habitat and federally protected wetlands because jurisdictional areas would be avoided. The result is expected to include a continuation of existing acreage of riparian habitat and riparian ecosystem functions over the entire Watershed. Although direct impacts are avoided, runoff from development in adjacent upland areas may result in indirect downstream impacts such as hydro-modification (relates to hydrologic integrity), water quality degradation (relates to water quality integrity), and sedimentation (relates to water quality and habitat integrity). These impacts may change the ability of downstream aquatic resources to serve various functions which maintain riparian ecosystem integrity (Smith 2000, 2003). These potential impacts would be minimized by the implementation of BMPs, and would ensure that indirect impacts to aquatic resources would be mitigated to a level considered less than significant. Under this alternative, no mitigation would be required for direct impacts because no direct impacts are anticipated to occur with respect to the placement of fill material (Corps and Department issue), above-ground modification of habitat (Department issue), or shading impacts (i.e., blocking sunlight for plants; Department issue).

No Implementation of SAMP/WSAA Process

As there would be no SAMP/WSAA Process in place, future mitigation/restoration projects would not be strategically targeted to accomplish elements of the proposed restoration plan. In fact, restoration projects would not be allowed to occur as these would require authorization from the Corps and Department. With no priority to restore riparian areas that may support sensitive species and provide connectivity between upland conservation areas, the long-term sustainability of riparian-dependent species may slowly degrade over time.

Mitigation Measures

No mitigation measures are needed since no significant impacts to aquatic, wetland, and riparian habitats are anticipated. However, a long-term restoration program would be needed to ensure the sustainability of riparian-dependent species in the Watershed over time.

Level of Significance After Mitigation

Less than significant.

5.2.1.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

The type of temporary and permanent impacts (including both direct and indirect impacts) for the roads and utility line categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.3) would be similar under Alternative 3. However, the extent of impacts would be greater under this alternative than the proposed project because this alternative does not include Watershed-specific avoidance and minimization measures.

Construction of road crossings, bridges, and culverts across or within jurisdictional waters and streambeds would be necessary to meet local and regional circulation needs associated with continual development of the Watershed, as specified in the County Master Plan of Arterials and Highways (MPAH). Bridges may span the watercourse, be constructed with one or more piers depending on bridge length, or be constructed over culverts. As under existing Corps/Department permitting programs, construction and routine maintenance activities of at-grade crossings, box culverts, pipe culverts, and bridges may include grading, excavation, compacting and/or filling, vegetation clearing and management, temporary stream diversion, dewatering operations, installation of temporary access roads and work areas, channel desilting, and road paving operations.

Temporary impacts on aquatic, wetland, and riparian habitat functions may occur from direct habitat disturbance and/or removal, or indirect impacts from erosion, sedimentation, and hydrologic changes. The necessity for channel and/or bank stabilization may result in temporary impacts, assuming the design includes buried, un-grouted rip-rap, buried structures, or bioengineering elements. Streams may be diverted during work within these areas, preventing natural flooding or saturation of soils. Construction activities may increase the potential for invasive, exotic plant species to colonize the sites. The removal of vegetation may temporarily reduce the ability of these areas to assimilate nutrients from upstream and adjacent activities, as well as provide channel/bank stability against erosion. Shading of available sunlight may impact areas located directly under bridges because shading limits the amount and quality of riparian habitat and wetlands that would normally be present in the absence of bridges. Plant species adapted to low-light conditions, such as those adapted to living under a closed riparian forest canopy, would be expected to persist.

Long-term, indirect impacts may include subtle changes in downstream hydrology, which may in turn impact riparian areas from channel incision and/or unnatural scouring. Changes in flooding extent and timing may affect the persistence of riparian plants by reducing the frequency of recruitment events (i.e., new plants colonizing areas from seed or vegetation fragments). Remaining future bridge and culvert projects in the Watershed may serve to reduce the hydrologic and habitat connectivity of riparian reaches. Fragmentation impacts could be addressed through proper design elements (e.g., large culverts to allow wildlife passage, or bioengineering solutions such as un-grouted rip-rap).

Bridge construction activities would typically be associated with future land development activities; and the Watershed is almost fully built-out. It is anticipated that recovery from temporary impacts at one

particular site would be completed before impacts would occur in another location. Thus, multiple temporary impacts occurring at the same time are unlikely. These activities are usually completed in a relatively small area within a single riparian reach. Thus, no further degradation of the hydrologic, water quality, or habitat functions of affected riparian areas would be expected overall in the Watershed. The temporary nature of these impacts would not reduce the acreage of aquatic, wetland, and riparian resources in the Watershed.

No Implementation of SAMP/WSAA Process

Under Alternative 3, individual projects would not be evaluated and permitted based on ecosystem integrity, so no increased avoidance or minimization of impacts in areas of high habitat integrity would occur. As a result, this alternative would be less protective of the Watershed's habitat function than the proposed SAMP/WSAA Process. Compensatory mitigation would not be accomplished strategically under a Strategic Mitigation Plan and Mitigation Coordination Program as proposed under the SAMP/WSAA Process. Accordingly, future mitigation/restoration projects would not be strategically targeted to accomplish elements of the proposed restoration plan relating to habitat that supports sensitive species. With no priority to restore riparian areas that may support sensitive species and provide connectivity between upland conservation areas, the long-term sustainability of riparian-dependent species could slowly degrade over time.

Applicable Federal and State Regulations that Minimize Impacts

Regulated activities under this alternative would be required to comply with the state and federal policies and regulations, as applicable, to address potential impacts to sensitive species and their habitats located within aquatic and upland areas of the Watershed. General conditions associated with Section 404 permits, Section 401 water quality certifications, and streambed alteration agreements would require mitigation and applicable BMPs to minimize downstream hydrologic and water quality impacts. Therefore, no significant adverse impacts are expected to occur.

Mitigation Measures

No mitigation measures are needed since no significant impacts have been identified. However, a longterm restoration program would be needed to ensure the sustainability of riparian-dependent species in the Watershed over time.

Level of Significance After Mitigation

Less than significant.

5.2.1.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas; therefore land development could occur in accordance with the existing city and County General Plans, zoning codes and with full development of the MPAH. The type of temporary and permanent impacts (including both direct and indirect impacts) for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.3) as well as Alternative 1 would be similar under Alternative 4. However, the extent of impacts would be greater under this alternative than the proposed project as more land acreage in jurisdictional and upland areas would likely be developed.

Permanent impacts could include conversion of all or part of a natural, riparian drainage course into a concrete flood control channel, culvert, or permanent fill for land development which could adversely affect the habitat functions of downstream riparian areas, if proper compensatory mitigation is not required and implemented (direct effects). Under Alternative 4, construction activities could require removal of entire drainages from the Watershed, or placement of drainages in underground storm drains. Such activities would effectively remove all functions from these habitats. Other effects on aquatic resources could occur from vegetation removal affecting stream shading, bank stability and pollutant removal capacity. Land development would result in an increase in impervious surfaces draining new sources and types of polluted runoff in the Watershed during wet and dry weather, if not properly controlled by BMPs (indirect effect).

Some projects may include features that could help reduce impacts below significance through compensatory mitigation, although projects that require removal or relocation of large portions of riparian reaches would result in a significant impact. On the Watershed scale, the magnitude of impacts that are possible under this alternative could lead to significant cumulative impacts to aquatic, wetland, and riparian resources. The discussion in Section 2.1.6 (beneficial effects of the proposed SAMP Permitting Program/WSAA Process in comparison to the current permitting program) would also be applicable for comparison of the proposed project to Alternative 4.

No Implementation of SAMP/WSAA Process

Under Alternative 4, individual projects would not be evaluated and permitted based on ecosystem integrity. Thus, no increased avoidance or minimization of impacts in areas of high habitat integrity would occur. As a result, this alternative would be less protective of the Watershed's habitat function than the proposed SAMP/WSAA Process. Compensatory mitigation would not be accomplished strategically under a Strategic Mitigation Plan and Mitigation Coordination Program as proposed under the SAMP/WSAA Process. Accordingly, future mitigation/restoration projects would not be strategically targeted to accomplish elements of the proposed restoration plan, such as habitat restoration to support sensitive species.

Applicable Federal and State Regulations that Minimize Impacts

Regulated activities under this alternative would be required to comply with applicable state and federal policies and regulations to address potential impacts to sensitive species and their habitats located within aquatic and upland areas of the Watershed. General conditions associated with Section 404 permits, Section 401 water quality certifications, and streambed alteration agreements would require mitigation

and applicable BMPs to minimize downstream hydrologic, water quality and habitat impacts. Under this alternative, areas protected under the NCCP program would remain in conservation. Other existing local and state regulations to control water quality, such as compliance with NPDES requirements (e.g. construction and municipal storm water permits) would help minimize potentially significant water quality impacts.

Mitigation Measures

For significant cumulative impacts, the Corps and the Department would need to adopt a comprehensive watershed-wide avoidance and mitigation program, with permitting based on aquatic resource integrity, such as proposed by the SAMP/WSAA Process.

Level of Significance After Mitigation

With the adoption of a comprehensive avoidance and mitigation program, like the SAMP/WSAA Process, potentially significant cumulative impacts would be reduced to less than significant.

5.2.2 Biological Resources Including Threatened and Endangered Species

Significance thresholds under CEQA are provided in Section 4.3.1.

5.2.2.1 Alternative 1: No Project Alternative (Existing Case-by-Case Permitting)

The type of temporary and permanent impacts to federally- and state-listed species and their habitat for the seven categories of regulated activities discussed in Section 4.3.2 would be similar under Alternative 1. Land development, utility line construction and maintenance, and other activities would be permitted under the current regulatory program and would include residential, commercial, industrial, institutional and recreational uses. Activities would typically require vegetation clearing, grading and excavation for construction access, building pads, roads and culverts; boring and trenching for utility, sewer and storm drain installation; and paving operations. These activities may result in discharge of fill or encroachment into stream channels, wetlands or unlined agricultural drainages, redirecting of surface runoff into underground storm drains, temporary stream diversion and dewatering operations.

Temporary impacts could result from the construction activities including temporary construction access roads and construction staging areas. Such impacts would include temporary disturbance to native upland and riparian habitats and the federally and state-listed species that occupy them. Temporary impacts can also affect species and their upland and riparian habitats resulting from required grading, stockpiling, trenching, temporary stream diversion, dewatering operations, temporary construction access roads, and work areas. Construction activities can have indirect impacts on listed species such as from construction noise. In addition, downstream effects on aquatic habitat may result from the following factors: potential discharge of construction-related pollutants (e.g., concrete, waste oil solvents, debris, etc spilled, leaked or transported via storm runoff into downstream areas); or temporary change in hydrologic or geomorphic characteristics of the water body during certain flow conditions affecting the rate of downstream erosion and sedimentation. Construction of residential, commercial, industrial, institutional, and recreational features or over a drainage course may require the permanent removal of upland and riparian habitat that would permanently affect sensitive species. In addition, large land development activities may

permanently disrupt migration corridors and make it difficult or impossible for wildlife to pass through or around a large development.

Several indirect impacts to sensitive species can occur following completion of land development projects. For example domestic pets (in particular cats) from a new residential neighborhood can be predators that kill wildlife once they gain access to native habitats. The federally-listed coastal California gnatcatcher may be particularly vulnerable to such threats. Additionally, increased human activity from new residential neighborhoods can disturb sensitive species in their habitat and discourage species re-occupation. Post-construction noise, such as from traffic serving new development may affect sensitive wildlife located nearby. Increased night lighting has also been known to adversely impact sensitive aquatic habitat may continue post-construction resulting from increases in urban and storm water runoff. For individual projects, many such impacts would be discussed in detail in separate CEQA documents required by local agencies.

No Implementation of SAMP/WSAA Process

Under the No Project alternative, individual projects would not be evaluated and permitted based on ecosystem integrity, so no increased avoidance or minimization of impacts in areas of high habitat integrity would occur. As a result, this alternative would be less protective of the Watershed's habitat function than the proposed SAMP/WSAA Process. Compensatory mitigation would not be accomplished strategically under a Strategic Mitigation Plan and Mitigation Coordination Program as proposed under the SAMP/WSAA Process. Accordingly, future mitigation/restoration projects would not be strategically targeted to accomplish elements of the proposed restoration plan relating to habitat that supports sensitive species.

Many of the strategies would serve to complement the existing NCCP Reserve System; thus, without the SAMP/WSAA Process the existing NCCP would remain the key habitat protection mechanism in place. The NCCP covers upland species, but does not include riparian species such as the least Bell's vireo. With no priority to restore riparian areas that may support sensitive species and provide connectivity between upland conservation areas, the long-term sustainability of riparian-dependent species may degrade over time.

Applicable Federal and State Regulations that Minimize Impacts

Regulated activities under this alternative would be required to comply with the following state and federal policies and regulations, as applicable, to address potential impacts to sensitive species and their habitats located within aquatic and upland areas of the Watershed. These are reviewed in more detail in Section 4.3.2.

Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP): As described previously in this document, the Central and Coastal Orange County NCCP/HCP provides for the regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development growth. The NCCP/HCP was developed to provide adequate mitigation for impacts to the California gnatcatcher and other Identified Species' habitat. The Department and USFWS

developed the NCCP/HCP that provides coverage under Section 10 of FESA and CESA to those who are signatory to the NCCP/HCP. The NCCP Central and Coastal sub-region extends within the Watershed. Qualifying applicants within the Watershed seeking coverage under the SAMP/WSAA Process can continue to utilize the NCCP/HCP process for authorizing the take of a listed species, including the federally listed coastal California gnatcatcher.

Sections 7 and 10 of the FESA: As described previously in this document, the FESA prohibits activities that adversely affect any federally threatened or endangered species or species proposed for such listing or their designated critical habitats. The FESA also establishes a process for consultation and evaluation by the USFWS of proposed federal projects. Through the consultation process and specific provisions for habitat preservation, the FESA provides federal protection for species and habitat diversity, especially in cases where habitat loss has caused species endangerment. Sections 7 and 10 of the FESA would continue to be utilized as needed for the purpose of authorizing take of a listed species. The Corps may undergo a Section 7 or 10 consultation with the USFWS as part of the permitting process should they choose to do so. Four federally listed species are found or are potentially present in the Watershed: the coastal California gnatcatcher, the least Bell's vireo, southwestern willow flycatcher, and the Riverside fairy shrimp. Of the four species, only the California gnatcatcher has critical habitat designations that are in effect over portions of the Watershed.

California Endangered Species Act (CESA): As described previously in this document, the CESA establishes a state policy to conserve, protect, restore, and enhance threatened and endangered species and their habitats designated by the State of California. If the Department determines that a project would jeopardize a designated species or adversely modify its essential habitat, the Lead Agency must implement Department's alternatives to avoid jeopardy. CESA includes exceptions to the alternatives requirement and applies only to state-approved projects. Private projects do not require consultation under the Act. However, taking is still prohibited without a permit pursuant to Section 2081 of the FGC. Given the general conditions, as well as the requirements of the NCCP, FESA and CESA, activities within the Watershed would not be expected to create a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the Department or USFWS. Also, activities would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

In this Watershed sensitive upland species include the coastal California gnatcatcher and sensitive riparian species include the least Bell's vireo and southwestern willow flycatcher. Any future activities in the Watershed affecting the gnatcatcher or other upland species would likely be covered under the NCCP. Impacts to riparian species would be addressed and mitigated through the Section 7 consultation process between the Corps and USFWS.

Given the applicable regulatory requirements, potential impacts to biological resources would be avoided or reduced to a less than significant level.

Mitigation Measures

None needed since no significant impacts are identified. However, a long-term restoration program would be needed to ensure the sustainability of riparian-dependent species in the Watershed over time.

Level of Significance After Mitigation

Less than significant.

5.2.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under this alternative, no permitting of impacts in jurisdictional areas would occur. Build-out of the full MPAH would not occur and remaining acreage available for development would be reduced. No bridges, culverts, flood control facilities or other in-channel structures could be built, thereby reducing the potential for impacts to riparian-dependent species. Under this alternative, land development and other activities would not encroach into existing drainage courses thereby maintaining the existing habitat function of the Watershed. However, no Strategic Mitigation Plan or Mitigation Coordination Program would be implemented, and thus no targeted restoration would occur in the Watershed to increase habitat function of reaches that support, or have the potential to support, sensitive species.

No significant direct impacts to riparian-dependent species would be expected since no permits would be issued for activities in jurisdictional areas. Indirect impacts to these species may occur through hydrologic and water quality changes due to increased urban runoff. Potential impacts to upland species may occur as development would be restricted to upland areas. Future applicants would be required to comply with the NCCP, and potentially the FESA and CESA if a given project would affect a species not directly covered by the NCCP.

No Implementation of SAMP/WSAA Process

The discussion under Alternative 1 is applicable for this alternative.

Other Applicable Federal and State Regulations that Minimize Impacts

The discussion under Alternative 1 is applicable for this alternative. The NCCP and Section 10 process would require applicants to comply with the FESA and CESA.

Mitigation Measures

No mitigation measures are needed since no significant impacts to biological resources are anticipated. However, a long-term restoration program would be needed to ensure the sustainability of ripariandependent species in the Watershed over time.

Level of Significance After Mitigation

Less than significant.

5.2.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

The type of temporary and permanent impacts to federally- and state-listed species and their habitat for two of the seven categories of regulated activities discussed in Section 4.3.2 would be similar under Alternative 3. Under this alternative, the construction and maintenance of roads, bridges, and utility lines would be authorized through the current regulatory programs.

As with existing Corps/Department permitting programs, construction and maintenance of bridges and utility lines could affect streambeds and/or result in discharges of dredged or fill material into jurisdictional waters, including habitat occupied by sensitive species. In addition to impacts to riparian areas, these activities could impact adjacent upland areas that may also support sensitive species and/or habitat upon which sensitive species rely. The discharges may result from required grading, excavation, boring, backfill, temporary stream diversion, dewatering operations, temporary construction access roads and work areas. Construction activities could temporarily displace sensitive wildlife and remove habitat. Human activity would cause most sensitive wildlife species to avoid an area until the disturbance conditions are eliminated. During temporary ground disturbing activities, less mobile wildlife species and plant life would be eliminated if located within the project footprint. Impacts to wildlife species are expected to be of limited duration. Noise generated during construction and maintenance of utility lines can have an indirect impact on listed wildlife species during the temporary work period. Noise can cause sensitive wildlife species to avoid an area until the disturbance conditions are eliminated. Bird populations and other mobile species would retreat from an area until after construction was complete. In addition, noise can cause potential disruption of breeding activities including nest abandonment for one or more seasons. Sensitive species that may be adversely affected by noise include the coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher.

In addition, downstream effects (indirect impacts) may result from a potential discharge of constructionrelated pollutants (e.g., concrete, waste oil, solvents, debris, etc) spilled, leaked or transported via storm runoff into habitat that may be inhabited or used by listed sensitive species. Construction of new utility projects may include downstream hydromodification and the influx of exotic plant species. These indirect impacts could, over time, reduce the sustainability of riparian areas and in turn affect the longterm habitat use by listed species.

Potential impacts to upland species may occur as development would be restricted to upland areas. Impacts to upland areas would be similar in nature to those addressed in Section 4.3.2. Future applicants would still have to comply with the NCCP, and potentially the FESA and CESA if a given project would affect a species not directly covered by the NCCP. For riparian species, if a project seeking authorization from the Corps would affect a listed species, then the Corps would conduct a Section 7 Consultation with the USFWS.

No Implementation of SAMP/WSAA Process

The discussion under Alternative 1 is applicable for this alternative.

Other Applicable Federal and State Regulations that Minimize Impacts

The discussion under Alternative 1 is applicable for this alternative. The NCCP and Section 7 process would require applicants to comply with the FESA and CESA. Any potential impacts as discussed above would be mitigated to a less than significant level through these regulatory programs and processes.

Mitigation Measures

No mitigation measures are needed since no significant impacts to biological resources are anticipated. However, a long-term restoration program would be needed to ensure the sustainability of ripariandependent species in the Watershed over time.

Level of Significance After Mitigation

Less than significant.

5.2.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas; therefore land development could occur in accordance with the existing city and County General Plans, zoning codes and with full development of the MPAH. The type of temporary and permanent impacts (including both direct and indirect impacts) for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.3) as well as Alternative 1 would be similar under Alternative 4. However, the extent of impacts would be greater under this alternative as more land acreage in jurisdictional and upland areas would likely be developed.

In general, land development and other activities permitted under the SAMP/WSAA Process would include residential, commercial, industrial, institutional and recreational uses as well as attendant features to most uses. Impacts would typically include vegetation clearing, grading and excavation for construction access, building pads, roads and culverts; boring and trenching for utility, sewer and storm drain installation; and paving operations. These activities may result in discharge of fill or encroachment into stream channels, wetlands or unlined agricultural drainages, redirecting of surface runoff into underground storm drains, temporary stream diversion and dewatering operations. Construction may require the permanent removal of upland and riparian habitat that would permanently affect sensitive species. In addition, large land development activities may permanently disrupt migration corridors and make it difficult or impossible for wildlife to pass through or around a large development. Anticipated temporary and indirect impacts would be similar to those for Alternative 1.

Some projects may include features that could help reduce impacts below significance through compensatory mitigation, although projects that require removal or relocation of large portions of riparian reaches would result in a significant adverse impact. In addition, as this alternative allows for the possibility of increased density of projects throughout the Watershed, the likelihood of permanent losses of riparian and upland habitats is increased; thus, habitat areas critical for the maintenance of listed species would decline in amount and quality. On the Watershed scale, the magnitude of impacts that are possible under this alternative may lead to significant cumulative impacts to listed species and their habitats.

No Implementation of SAMP/WSAA Process

The discussion under Alternative 1 is applicable for this alternative.

Other Applicable Federal and State Regulations that Minimize Impacts

The discussion under Alternative 1 is applicable for this alternative. The NCCP and Section 7 process would require applicants to comply with the FESA and CESA. Given the applicable regulatory requirements, potential project-level impacts to biological resources would be avoided or reduced to a less than significant level.

Mitigation Measures

To mitigate for significant cumulative impacts, the Corps and the Department would need to adopt a comprehensive watershed-wide avoidance and mitigation program, with permitting based on aquatic resource integrity, such as proposed by the SAMP/WSAA Process.

Level of Significance After Mitigation

With the adoption of a comprehensive avoidance and mitigation program, like the SAMP/WSAA Process, potentially significant cumulative impacts would be reduced to less than significant.

5.2.3 Hydrology, Erosion and Sedimentation

Significance thresholds under CEQA are provided in Section 4.4.1.

5.2.3.1 Alternative 1: No Project Alternative (Existing Case–by-Case Permitting)

The type of temporary and permanent hydrologic impacts for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.3) would be similar under Alternative 1. These impacts would generally include modified site runoff characteristics (direct effect), potential increase in erosion and sedimentation in downstream receiving waters (indirect effect), and some minor changes to groundwater recharge from increase in pervious surfaces (indirect effect). The Corps' Section 404 Permit and Department's Section 1600 streambed alteration agreement (i.e., Level 1 – 3 SAA templates of the WSAA Process) would include some general conditions to help reduce erosion and sedimentation. Other existing local and state regulations to control erosion and sedimentation (erosion control BMPs, site design BMPs, local grading ordinances) as described in Section 4.3 would be applicable and would help minimize adverse hydrologic impacts and downstream erosion and sedimentation for individual projects to less than significant levels. In addition, bridges and other inchannel construction such as for flood control would be designed in accordance with local requirements to minimize channel scour, upstream flooding and sedimentation in accordance with local and state requirements.

Under the No Project alternative, individual projects would not be evaluated and permitted based on ecosystem integrity, so no increased avoidance or minimization of impacts in areas of high hydrologic integrity would occur. As a result, this alternative would be less protective of the Watershed's hydrologic function than the proposed SAMP/WSAA Process and could result in greater potential for hydromodification and downstream erosion and sedimentation. Mitigation would not be accomplished strategically under a Strategic Mitigation Plan and Mitigation Coordination Program as proposed under

the SAMP/WSAA Process. Accordingly, future mitigation/restoration projects would not be strategically targeted to maintain and enhance the hydrologic function of the Watershed, so no cumulative benefits to the Watershed would be achieved under this alternative.

Mitigation Measures

None needed since no significant impacts are identified.

Level of Significance After Mitigation

Less than significant.

5.2.3.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under this alternative, no permitting of impacts in jurisdictional areas would occur including both construction and maintenance activities. Build-out of the full MPAH would not occur and remaining acreage available for development would be reduced. Additionally, most flood control construction and maintenance activities would not be allowed under this alternative.

With respect to land development activities in upland areas, this alternative would result in a decrease in the amount of impervious surface area, thereby resulting in reduced potential for hydrologic, sedimentation and erosion impacts into downstream receiving waters. No bridges, culverts, flood control facilities or other in-channel structures could be built, thereby reducing the potential adverse effects on channel stability during both the short-term construction phase and long-term operational phase.

Development would not encroach into existing drainage courses thereby maintaining the existing hydrologic function of the Watershed. However, no Strategic Mitigation Plan or Mitigation Coordination Program would be implemented, and thus no targeted restoration would occur in the Watershed to increase hydrologic function in the long term and ultimately provide a cumulative benefit to the Watershed's hydrologic regime.

No significant direct impacts to existing hydrologic function would be expected since no permits would be issued for activities in jurisdictional areas. Most likely, hydrologic effects including alteration of surface runoff, erosion, sedimentation and groundwater recharge characteristics would be minimized overall in the greater Watershed area, given that the acreage of upland areas available for development would be reduced. As discussed in Section 2.2.2, this alternative assumes all future land development in upland areas would be set back from jurisdictional areas by a minimum of 135 feet to avoid indirect impacts to the hydrologic, water quality, or habitat integrity of aquatic resources within the Watershed. As with existing case-by-case permitting, future projects in the Watershed would be required to implement existing erosion control and other best management practices (BMPs) required by local, state and federal agencies to control site runoff, erosion and sedimentation. Also, development in upland areas would be required to comply with the existing Orange County Hydrology and Flood Control Design Manual to properly manage storm water flows and prevent downstream flooding impacts. No BMPs or storm water control measures requiring a Corps or Department permit could be permitted however. Most such features would have to be implemented on–site and/or in upland areas. No significant impacts would be expected under this alternative with respect to land development activities.

However, potential significant impacts to some flood control facilities would be expected, as existing and planned flood control projects in jurisdictional areas could neither be constructed nor maintained. Flood control capacity of such facilities would eventually be exceeded as vegetation and sediment in channels and/or basins could not be removed or dredged. The long-term resulting effect would be a significant increase in potential flood hazards throughout the Watershed. No mitigation measures would be available to reduce this potential significant impact.

Mitigation Measures

Without a permitting program that allows flood control improvements and maintenance, no mitigation measures are available to reduce potential significant flood hazard impacts.

Level of Significance After Mitigation

Significant flood hazard impacts.

5.2.3.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

Under Alternative 3, the Corps and the Department would issue Section 404 Permits and Section 1600 SAAs allowing for temporary and permanent impacts associated with construction and maintenance of bridges and utility lines. No activities, apart from such bridge and utility construction and maintenance, would be authorized in jurisdictional areas. Most flood control construction and maintenance activities would not be allowed under this alternative. Build-out of the full MPAH would be possible, however, any land development requiring fill in jurisdictional areas would not be allowed.

Under this alternative impacts to riparian drainages could occur without regard to the hydrologic integrity of the resources. Compensatory mitigation for jurisdictional impacts would not be in accordance with a Strategic Mitigation Plan, and thus, the overall hydrologic integrity of the Watershed would not be enhanced under this alternative and no cumulative hydrologic benefits to the Watershed would be achieved.

As with existing case-by-case permitting, bridge and utility construction in jurisdictional areas would affect the hydrologic characteristics in the impacted areas, including potential increases in stream flow rates and volumes as well as potential for bank instability and channel scour from bridge pilings. Potential changes could increase downstream channel erosion and sedimentation. However, as with existing case-by-case permitting, development under this alternative would be subject to the design requirements of the Orange County Flood Control Design Manual as well as local and state requirements to control erosion and sedimentation. No significant adverse impacts would be expected.

This alternative would allow for more land development in upland areas as compared to Alternative 2, and thus, greater changes to the existing hydrologic regime would be expected, including increased surface runoff from developed areas and potential increases in erosion and sedimentation in downstream channels (indirect impacts). As with all alternatives, future projects in the Watershed would be required to implement existing erosion control and other best management practices (BMPs) required by local, state and federal agencies to control erosion, sedimentation and site runoff. This would include compliance with general conditions of the Corps and Department's Section 404 Permits and Section 1600

SAAs that contain requirements to control erosion and sedimentation. Also, development in upland areas would be required to comply with the existing Orange County Hydrology and Flood Control Design Manual to properly manage storm water flows and prevent potential downstream flooding impacts. No significant impacts would be expected under this alternative with respect to land development activities.

Potential significant impacts to flood control facilities in jurisdictional areas would be expected, as existing and planned flood control projects in jurisdictional areas could neither be constructed nor maintained. Flood control capacity of existing facilities would eventually be exceeded as vegetation and sediment in channels and basins could not be removed or dredged. The long-term resulting effect would be a significant increase in potential flood hazards in the Watershed. Without a permitting program to allow these improvements, no mitigation measures would be available to reduce this potential significant impact.

Mitigation Measures

No mitigation measures have been identified to reduce potential significant flood hazard impacts.

Level of Significance After Mitigation

Significant flood hazard impacts.

5.2.3.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas. Therefore land development could occur in accordance with the existing city and County General Plans, zoning codes, and with full development of the MPAH. Existing and planned flood control facilities could be constructed and maintained under this alternative.

The type of temporary and permanent hydrologic impacts (including both direct and indirect impacts) for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.3) as well as Alternative 1 would be similar under Alternative 4. However, the extent of impacts would be greater as more land acreage in jurisdictional and upland areas would likely be developed under this alternative.

As discussed under Alternative 1, the types of impacts would generally include modified site runoff characteristics, potential increase in erosion and sedimentation in downstream receiving waters, and some decreases in groundwater recharge. Existing federal, state, and local regulations to manage site runoff and control erosion and sedimentation would be applicable and would help reduce potential adverse hydrologic impacts to less than significant levels. Bridges and other in-channel construction such flood control facilities would need to be designed to minimize channel scour, upstream flooding, and sedimentation in accordance with local and state requirements.

Unlike the proposed SAMP/WSAA Process, individual projects would not be evaluated and permitted based on ecosystem integrity, so no increased avoidance or minimization of impacts in areas of high hydrologic integrity would occur. As a result, this alternative would be less protective of the Watershed's hydrologic function, and could result in greater potential for hydromodification and downstream erosion and sedimentation. Mitigation would not be accomplished strategically under a Strategic Mitigation Plan and Mitigation Coordination Program as proposed under the SAMP/WSAA Process. Accordingly, future mitigation/restoration projects would not be strategically targeted to maintain and enhance the hydrologic function of the Watershed, so no cumulative benefits to the Watershed would be achieved under this alternative.

Mitigation Measures

None needed since no significant impacts are identified.

Level of Significance After Mitigation

Less than significant.

5.2.4 Water Quality

Significance thresholds under CEQA are provided in Section 4.5.1.

5.2.4.1 Alternative 1: No Project Alternative (Existing Case-by-Case Permitting)

The type of temporary and permanent water quality impacts (both direct and indirect) for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.4) would be similar under Alternative 1. Temporary impacts would generally include erosion and sedimentation into downstream receiving waters if not properly controlled; potential discharge of construction-related pollutants spilled, leaked or transported via storm runoff into receiving waters; and discharge from groundwater dewatering that may contain high levels of nitrates, phosphorous or pesticides from past agricultural activities as well as selenium and other naturally occurring pollutants in the area (indirect effects). Permanent impacts could include conversion of all or part of a natural, riparian drainage course into a concrete flood control channel, culvert, or permanent fill for land development which could adversely affect a designated beneficial use, such as warm freshwater habitat (WARM); wildlife habitat (WILD); biological habitats of special significance (BIOL); or rare, threatened or endangered species (RARE) if proper compensatory mitigation is not required and implemented (direct effects). Other effects on water quality may occur from vegetation removal affecting stream shading or bank stability and pollutant removal capacity. Land development would result in increased impervious surfaces draining new sources and types of polluted runoff in the Watershed during wet and dry weather, if not properly controlled by BMPs (indirect effect).

The Corps' Section 404 Permit and Department's Section 1600 streambed alteration agreement would include general conditions to help control erosion, sedimentation and other pollutants in site runoff during construction. Other existing local and state regulations to control water quality, such as compliance with CWA Section 404 and NPDES requirements (construction and municipal storm water permits) as described in Section 4.4 would be applicable and would help minimize potentially significant water quality impacts.

Under the No Project alternative, individual projects would not be evaluated and permitted based on ecosystem integrity, so no increased avoidance or minimization of impacts in areas of high water quality integrity would occur. As a result, this alternative would be less protective of the Watershed's water quality function than the proposed SAMP/WSAA Process. Compensatory mitigation would not be accomplished strategically under a Strategic Mitigation Plan and Mitigation Coordination Program as proposed under the SAMP/WSAA Process. Accordingly, future mitigation/restoration projects would not be strategically targeted to maintain and enhance water quality function of the Watershed, so no cumulative benefits to the Watershed would be achieved under this alternative.

Mitigation Measures

No mitigation measures are needed since potential significant impacts to water quality are expected to be reduced to less than significant with requirements of state and local agency programs to control water quality.

Level of Significance After Mitigation

Less than significant.

5.2.4.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under this alternative, no permitting of impacts in jurisdictional areas would occur. Build-out of the full MPAH would not occur and remaining acreage available for development would be reduced. This alternative would not result in any change to existing water quality conditions, and thus would avoid potential water quality impacts and any needed mitigation. No bridges, culverts, flood control facilities or other in-channel structures could be built, thereby reducing the potential short-term construction-related water quality impacts as well as permanent impacts to beneficial uses from conversion of riparian drainages.

Under this alternative, land development and other activities would not encroach into existing drainage courses thereby maintaining the existing water quality function of the Watershed. However, no Strategic Mitigation Plan or Mitigation Coordination Program would be implemented, and thus no targeted restoration would occur in the Watershed to increase water quality function in the long term and ultimately provide a cumulative benefit to downstream water quality.

No significant direct impacts would be expected since no permits would be issued for activities in jurisdictional areas. Potential indirect water quality impacts from development in upland areas would generally include increases in imperious surface areas draining new sources and types of polluted runoff in the Watershed during wet and dry weather, if not properly controlled by BMPs. However, such increases would be reduced overall given that upland areas available for development would be reduced under this alternative. As discussed in Section 2.2.2, this alternative assumes all future land development in upland areas would be set back from jurisdictional areas by a minimum of 135 feet to avoid indirect impacts to the ecosystem integrity of aquatic resources within the Watershed. As with existing case-by-case permitting, future projects in the Watershed would be required to implement BMPs required by existing local, state, and federal agencies to control pollutants in construction and post-development site runoff. Potential impacts would be reduced to less than significant.

Mitigation Measures

No mitigation measures are needed since no significant impacts to water quality are anticipated.

Level of Significance After Mitigation

Less than significant.

5.2.4.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

Under Alternative 3, the Corps and the Department would issue Section 404 Permits and Section 1600 SAAs allowing for temporary and permanent impacts associated with construction and maintenance of bridges and utility lines. No activities, apart from such bridge and utility construction and maintenance, would be authorized in jurisdictional areas. Build-out of the full MPAH would be possible, however, any land development requiring fill in jurisdictional areas would not be allowed. Under this alternative, impacts to riparian drainages could occur without regard to the water quality integrity of the resources. Further, compensatory mitigation for jurisdictional impacts would not be in accordance with a Strategic Mitigation Plan, and thus, overall water quality integrity of the Watershed would not be enhanced under this alternative, and no cumulative benefits to the Watershed would be achieved.

As with existing case-by-case permitting, bridge and utility construction in jurisdictional areas could impact water quality from erosion and sedimentation into downstream waters if not properly controlled during construction. However, as with all alternatives, construction activities would be subject to state and local requirements to control sedimentation and other construction-related pollutants in site runoff. Direct permanent impacts could include conversion of all or part of a natural, riparian drainage course into a culvert or bridge, which could adversely affect a designated beneficial use, such as warm freshwater habitat (WARM); wildlife habitat (WILD); biological habitats of special significance (BIOL); or rare, threatened or endangered species (RARE). These potential impacts, however, would be mitigated with proper compensatory mitigation that would be required under current regulations.

This alternative would allow for more land development in upland areas as compared to Alternative 2, and thus greater increases in impervious surface area and potentially greater increases in pollutants loads to receiving waters of the Watershed (indirect effect). Most future projects in the Watershed would be subject to the NPDES storm water permit requirements to control pollutants in dry and wet weather runoff from newly developed areas, as discussed in Section 4.5. Thus, potentially significant water quality impacts would be reduced to less than significant.

Mitigation Measures

No mitigation measures are needed since no significant impacts have been identified.

Level of Significance After Mitigation

Less than significant.

5.2.4.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas; therefore land development could occur in accordance with the existing city and County General Plans, zoning codes and with full development of the MPAH. The type of temporary and permanent hydrologic impacts (including both direct and indirect impacts) for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.3) as well as Alternative 1 would be similar under Alternative 4. However, the extent of impacts would be greater under this alternative as more land acreage in jurisdictional and upland areas would likely be developed.

As discussed under Alternative 1, temporary impacts would generally include erosion and sedimentation into downstream receiving waters if not properly controlled; potential discharge of construction-related in storm water discharge draining to local receiving waters; and discharge from groundwater dewatering that may contain high levels of fertilizers or pesticides from past agricultural activities as well as selenium and other naturally occurring pollutants in the area (indirect effects). Permanent impacts could include conversion of all or part of a natural, riparian drainage course into a concrete flood control channel, culvert, or permanent fill for land development which could adversely affect a designated beneficial use, if proper compensatory mitigation is not required and implemented (direct effects). Other effects on water quality may occur from vegetation removal affecting stream shading or bank stability and pollutant removal capacity. Land development would result in increased impervious surfaces draining new sources and types of polluted runoff in the Watershed during wet and dry weather, if not properly controlled by BMPs (indirect effect). Nevertheless, potentially significant impacts could occur given that San Diego Creek and Newport Bay are impaired bodies. Existing regulatory programs would help mitigate potential impacts.

The Corps' Section 404 Permit and Department's Section 1600 streambed alteration agreement would include some general conditions to help control erosion, sedimentation, and other pollutants in site runoff during construction. Other existing local and state regulations to control water quality, such as compliance with CWA Section 404 and NPDES requirements (construction and municipal storm water permits) as described in Section 4.4 would be applicable and would help minimize potentially significant water quality impacts

Unlike the proposed SAMP/WSAA Process, individual projects would not be evaluated and permitted based on ecosystem integrity, so no increased avoidance or minimization of impacts in areas of high water quality integrity would occur. As a result, this alternative would be less protective of the Watershed's water quality function, and could result in greater potential for downstream water quality impacts to San Diego Creek and Newport Bay. Mitigation would not be accomplished strategically under a Strategic Mitigation Plan and Mitigation Coordination Program as proposed under the SAMP/WSAA Process. Accordingly, future mitigation/restoration projects would not be strategically targeted to maintain and enhance the water quality function of the Watershed, so no cumulative water quality benefits to the Watershed would be achieved under this alternative.

Mitigation Measures

None needed since no significant water quality impacts are expected.

Level of Significance After Mitigation

Less than significant.

5.2.5 Other Resources

Permitting of regulated activities under any of the alternatives would not, in most cases, produce direct impacts to the public interest review factors discussed herein in Section 5.2.5, since these factors generally cover non-jurisdictional resources in the greater Watershed area and would occur later in time than the direct effect. However, the Corps/Department permitting actions may indirectly affect these resources of the greater Watershed. As discussed in the following sections, most of these factors would likely be evaluated in more detail in other CEQA/NEPA documents required as part of the project approval process of other regulatory and/or land use agencies.

5.2.5.1 Agricultural Resources

Significance thresholds under CEQA are provided in Section 4.6.1.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case–by-Case Permitting)

As with the proposed SAMP/WSAA Process authorization of regulated activities under the existing Corps and Department permitting programs could indirectly affect agricultural resources, if permits result in the conversion of Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use or it conflicts with existing zoning for agricultural use or a Williamson Act contract. As discussed in Section 4.6.1, most of the remaining undeveloped land in the Watershed that is proposed for new development is no longer designated agricultural preserve under the Williamson Act since contracts were not renewed. Additionally, any new development that would be located in areas designated unique farmlands and farmlands of statewide importance (primarily located in the southern foothills of the Santiago Hills and along the northern foothills of the San Joaquin Hills) would be subject to the regulatory approval of the local municipality. Land development would be subject to the policies and objectives in the Resources Element of the Orange County General Plan as well as the General Plans for some jurisdictions within the Watershed (e.g., the cities of Orange, Irvine, and Tustin). These General Plans contain objectives and policies that promote the wise management of existing agricultural lands while still recognizing that such uses are temporary. Thus, no significant indirect impacts to agricultural preserves would be expected.

Mitigation Measures

None required since no significant agricultural resource impacts are anticipated.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under Alternative 2, regulated activities in jurisdictional areas would not be permitted. New land development requiring fill in jurisdictional drainages, or culverts or bridges in jurisdictional areas for road development could not occur. Total remaining developable acreage in the Watershed would be reduced in comparison to existing case-by-case permitting, and would occur in upland areas not requiring new bridges/culverts across jurisdictional drainages. As with the proposed SAMP/WSAA Process and Alternative 1, no significant impacts to agricultural resources would be expected given that there are no remaining agricultural preserves, and that any development in areas designated unique farmlands and farmlands of statewide importance would be subject to the regulatory approval of the local municipality, and thus subject to a separate environmental review process.

Mitigation Measures

None required since no significant agricultural resource impacts are anticipated.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

Under Alternative 3, the Corps and the Department would issue Section 404 Permits and Section 1600 SAAs allowing for temporary and permanent impacts associated with construction and maintenance of bridges and utility lines. No activities, apart from such bridge and utility construction and maintenance, would be authorized in jurisdictional areas. Under this alternative, more remaining developable acreage could be permitted than under Alternative 2, since new development in upland areas requiring bridges or culverts for access could be allowed. However, no other regulated activities such as land development that require discharge of dredge or fill in jurisdictional areas would be permitted.

As with the proposed SAMP/WSAA Process and Alternative 1, no significant impacts to agricultural resources would be expected given that there are no remaining agricultural preserves and that any development in upland areas designated unique farmlands and farmlands of statewide importance would be subject to the regulatory approval of the local municipality.

Mitigation Measures

None needed since no significant adverse impacts to agricultural resources are expected.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas. Therefore remaining build-out of the Watershed could occur in accordance with the existing city and County General Plans, zoning codes, and

with full development of the MPAH. Potential for agricultural resource impacts would be greater under this alternative as more land acreage in jurisdictional and upland areas could potentially be developed. However, no remaining agricultural preserves would be impacted, and full build-out including development in areas designated unique farmlands and farmlands of statewide importance would be subject to the policies and objectives in the Resources Element of the Orange County General Plan as well as the General Plans for some jurisdictions within the Watershed (e.g., the cities of Orange, Irvine, and Tustin). These General Plans contain objectives and policies that promote the wise management of existing agricultural lands while still recognizing that such uses are temporary. Thus, no significant indirect impacts to agricultural resources would be expected.

Mitigation Measures

No mitigation measures are needed since no significant agricultural resource impacts have been identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2 Air Quality

Significance thresholds under CEQA are provided in Section 4.6.2.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case-by-Case Permitting)

Impacts

The type of short-term construction and long-term operational air quality impacts for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.6.2) would be similar under Alternative 1. Temporary construction activities would generate emissions of criteria pollutants and GHGs due to the use of diesel and gasoline powered equipment, earthmoving activity, and vehicular/truck travel (indirect effects). Long-term, post-construction (indirect) mobile source emissions of criteria pollutants and GHGs could be generated primarily from increases in vehicle traffic associated with new development along with increased emissions associated with increased energy consumption. Standard mitigation measures promulgated by SCQAMD for dust control and diesel emissions would be required if needed, to reduce potential impacts to less than significant levels.

Mitigation Measures

As stated in Section 4.6.2, it is generally beyond the Corps' and the Department's statutory limits of authority to require the implementation of mitigation measures for post-construction, operational air quality impacts of a built project. During the project approval process, local land use authorities or other regulatory agencies can require a variety of air quality mitigation measures depending on the type and extent of project impacts. Example mitigation measures, as discussed in Section 4.6.2 include various construction practices to control PM10 and measures to control diesel and other vehicle emissions. The types of mitigation measures to control GHG emissions, particularly carbon dioxide emissions from land development activities, as discussed in Section 4.6.2, involve public transit-oriented development to reduce traffic increases, and building design criteria to control carbon output. Other standard measures to reduce transportation emissions such as use of alternative fuels, would help limit increases in GHG

emissions. In addition, regulations are ongoing to control emissions, specifically from construction vehicles (e.g. engines) and equipment. Cleaner engines and cleaner fuels are intended to reduce overall emissions, and specifically GHG emissions.

Level of Significance After Mitigation

No significant direct impacts from individual projects are known at this time. Although the potential for indirect cumulative impacts cannot be conclusively determined at this time, the potential for future projects to contribute to the effects of global GHG emissions may be considered cumulatively significant and unavoidable.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under Alternative 2, regulated activities in jurisdictional areas would not be permitted. Thus, total remaining developable acreage in the Watershed would be reduced in comparison to existing case-by-case permitting, and would occur in upland areas not requiring new bridges/culverts across jurisdictional drainages. With the reduction in allowable construction and maintenance activities, short-term construction emissions and long-term emissions of criteria pollutants and GHGs from vehicle fuel and energy consumption would be reduced.

Mitigation Measures

See discussion in Section 5.2.6.1 above.

Level of Significance After Mitigation

No significant impacts known at this time.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

No activities, apart from bridge and utility construction and maintenance, would be authorized in jurisdictional areas. Under this alternative, more remaining developable acreage could be permitted than under Alternative 2, since bridges allowing access to upland areas could be permitted. However, no other regulated activities, including land development in jurisdictional areas would be permitted.

With some reduction in construction and maintenance activities for most regulated activities, short-term construction emissions (construction equipment and vehicles) and long-term emission of criteria pollutants and GHGs from operation of vehicles and energy consumption would be reduced

Mitigation Measures

See discussion in Section 5.2.6.1 above.

Level of Significance After Mitigation

No significant impacts known at this time.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas. Therefore land development could occur in accordance with the existing city and County General Plans, zoning codes, and with full development of the MPAH. The type of short-term construction and long-term operational air quality impacts for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.6.2) as well as Alternative 1 would be similar under Alternative 4. However, the extent of impacts would be greater under this alternative as more land acreage in jurisdictional and upland areas would likely be developed.

As discussed under Alternative 1, temporary impacts would generally include increased emissions of criteria pollutants and GHGs due to the use of diesel and gasoline powered equipment, earthmoving activity, and vehicular/truck travel (indirect effects). Long-term, post-construction (indirect) mobile source emissions of criteria pollutants and GHGs would be generated primarily from increases in vehicle traffic associated with new development along with increased emissions associated with increased energy consumption.

Cumulative development from full build-out of the general plans would contribute criteria pollutants to the Basin, which is currently a non-attainment area for O3, PM2.5 and PM10, and in violation of air quality standards. As a result, implementation of Alternative 4, build-out of the Watershed could result in indirect significant cumulative impacts to regional air quality. Additionally, the increase in GHG emissions would result in the incremental contribution to cumulative GHG emissions and global warming.

Mitigation Measures

See discussion in Section 5.2.6.1 above.

Level of Significance After Mitigation

No significant direct impacts from individual projects are known at this time. Although the potential for indirect cumulative impacts cannot be conclusively determined at this time, the potential for future projects to contribute to the effects of global GHG emissions may be considered cumulatively significant and unavoidable

5.2.5.3 Cultural Resources

Significance thresholds under CEQA are provided in Section 4.6.3.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case-by-Case Permitting)

Under the No Project Alternative, no watershed-based planning and permitting would be undertaken by the Corps and Department. Construction and maintenance activities that involve impacts to jurisdictional areas within the Watershed would continue to be considered on a case-by-case basis as is currently done by the Corps and Department. The type and extent of cultural resource impacts from the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.6.3) would be similar under Alternative 1. The regulated activities would likely involve land disturbance, and therefore could
affect unknown cultural resources. However, the Watershed is a mostly a disturbed landscape and it is not expected that construction and maintenance activities would result in significant effects to cultural resources.

Projects requiring a Corps SIP would require evidence of compliance with Section 106 of the National Historic Preservation Act (NHPA). These regulations stipulate that when the lead agency finds that either no historic properties are present, or historic properties are present but the undertaking would have no effect upon them, then the lead agency shall make a "no historic properties affected" determination (36 CFR Part 800.4[d]). If the lead agency finds that there are historic properties which may be affected by the undertaking, the lead agency would make a "historic properties affected" determination. Specifically, if archaeological resources are discovered on a particular project site requiring a Corps authorization and within the Corps APE, the Corps, in coordination with the SHPO, would evaluate the cultural resource for eligibility for listing in the NRHP pursuant to the NHPA.

Mitigation Measures

Example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce project-specific cultural resources impacts to less than significant are described in Section 4.6.3.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under Alternative 2, regulated activities in Corps and Department jurisdictional areas would not be permitted. Therefore, no direct impacts to cultural resources would occur in jurisdictional areas. Remaining developable acreage in the Watershed would be reduced under this alternative since bridges and/or culverts needed to provide access to upland areas (as planned in the County MPAH) would not be permitted. Potential cultural resources impacts, if any, from development and other activities in upland areas, would be reduced under this alternative.

Mitigation Measures

See example mitigation measures discussed in Section 4.6.3.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

No activities, apart from bridge and utility construction and maintenance, would be authorized in jurisdictional areas. Under this alternative more remaining developable acreage could be permitted than under Alternative 2, since bridges providing access to upland areas would be allowed. However, no other regulated activities, including land development in jurisdictional areas would be permitted.

Bridge and utility line construction would involve land disturbance, and therefore could affect unknown cultural resources that may be present in jurisdictional areas. However, the Watershed is a mostly a

disturbed landscape and it is not expected that such construction and maintenance activities would result in significant effects to cultural resources. Any bridge or utility project requiring a Corps SIP would require evidence of compliance with Section 106 of the NHPA.

With regard to indirect effects in upland areas, remaining developable acreage in the Watershed would be slightly reduced under this alternative since any development in upland areas requiring fill in jurisdictional areas would not be permitted. Therefore, potential indirect effects on cultural resources would be slightly reduced. Individual projects would be evaluated under a separate environmental review process at which time the local lead agency would determine any potential direct or indirect effects on cultural resources, if any, would be needed to reduce impacts.

Mitigation Measures

See example mitigation measures discussed in Section 4.6.3.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas. Therefore land development could occur in accordance with the existing city and County General Plans, zoning codes, and with full development of the MPAH. While land in the Watershed is mostly a disturbed landscape, regulated activities could uncover unknown cultural resources. The extent of potential direct and indirect impacts to cultural resources would be greater under this alternative, as compared to the proposed SAMP/WSAA Process and Alternative 1 as more land acreage in jurisdictional and upland areas would likely be developed. As discussed in Alternative 1, projects requiring a Corps SIP would require evidence of compliance with Section 106 of the NHPA.

Mitigation Measures

See example mitigation measures discussed in Section 4.6.3.

Level of Significance After Mitigation

Less than significant.

5.2.5.4 Flood Hazards and Floodplain Values

See Section 5.2.3, Hydrology, Erosion and Sedimentation.

5.2.5.5 Geology/Soils

Significance Thresholds

Significance thresholds under CEQA are provided in Section 4.6.5.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case-by-Case Permitting)

The types of potential direct and indirect geology and soil impacts for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.6.5) would be similar under

Alternative 1. Permitting of activities in jurisdictional and upland areas would require grading, excavation, boring, trenching, cut and fill activities, soil compaction, and possible import or export of fill material. These activities could result in erosion of soil if not properly controlled. Projects would be required to follow approved grading and erosion control plans, construction storm water pollution prevention plans (SWPPPs), water quality management plans, and specific conditions of the Corps permit and Department streambed alteration agreement that address erosion and sedimentation.

New development and infrastructure projects that could be permitted under Alternative 1 would be subject to the same seismic groundshaking facing all new and existing development projects in seismically-active Southern California. Future development would be regulated under requirements of the California Building Code, Alquist Priolo Special Studies Zone Act, City/County land use policies and zoning, and project-specific requirements to address seismic issues as well as other potential soil instability issues. As required by State and local codes, additional geotechnical studies would be performed to develop final seismic design recommendations as well as recommendations to address potential landslides and expansive soils if needed. Future projects would be constructed to meet seismic design requirements for ground shaking and other potential geologic hazards in accordance with State and local codes. Proper design and construction of the project components would minimize potential impacts.

Mitigation Measures

Example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific geology/soils impacts to less than significant are listed in Section 4.6.5.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under Alternative 2, regulated activities in Corps and Department jurisdictional areas would not be permitted. Therefore, soils and other geological resources in jurisdictional areas would not be directly affected. Remaining developable acreage in the Watershed would be reduced under this alternative since bridges and/or culverts needed to provide access to upland areas (as planned in the County MPAH) would not be permitted. Therefore, the extent of potential seismic and other geologic hazards from development of habitable structures in upland areas would be reduced under this alternative.

Mitigation Measures

See example mitigation measures discussed in Section 4.6.5.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

No activities, apart from bridge and utility construction and maintenance, would be authorized in jurisdictional areas. Under this alternative more remaining developable acreage could be permitted than under Alternative 2, since bridges providing access to upland areas would be allowed. However, no other regulated activities, including land development in jurisdictional areas would be permitted.

Bridge and utility line construction in jurisdictional areas could create soil erosion in channels if not properly designed and constructed. Projects would be subject to the design standards of the Orange County Flood Control Design Manual (County of Orange 2000) to minimize potential for channel scour. Land development activities in upland areas would be required to follow approved grading and erosion control plans, construction SWPPPs, water quality management plans, and specific conditions of the Corps permit and Department streambed alteration agreement that address erosion and sedimentation.

With regard to indirect effects in upland areas, remaining developable acreage in the Watershed would be slightly reduced under this alternative since any development in upland areas requiring fill in jurisdictional areas would not be permitted. Therefore, potential indirect effects on habitable (seismic groundshaking, landslide potential, expansive soils) would be slightly reduced.

Mitigation Measures

See example mitigation measures described in Section 4.6.5.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas. Therefore land development could occur in accordance with the existing city and County General Plans, zoning codes, and with full development of the MPAH. The extent of potential direct and indirect impacts to soil and geologic resources as described in Alternative 1 could be slightly greater under this alternative, as slightly more acreage in jurisdictional and upland areas would likely be developed. Therefore, potentially more habitable structures could be built, subject to seismic groundshaking and other potential geological hazards. Individual projects would be subject to the design requirements discussed in Section 4.6.5 to reduce any potential impacts to less than significant.

Mitigation Measures

See example mitigation measures described in Section 4.6.5.

Level of Significance After Mitigation

Less than significant.

5.2.5.6 Land Use

Significance thresholds under CEQA are provided in Section 4.6.6.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case–by-Case Permitting)

No direct impacts to land use would be expected under Alternative 1. Activities, including land development that require a Corps or Department permit for discharges of dredged or fill material into jurisdictional waters would continue to be considered on a case-by-base basis without a watershed-based plan that considers ecosystem integrity. No direct effect on existing land use plans, policies or regulations of any land use agency in the Watershed including the regional NCCP/HCP for Central/Coastal Orange County would occur. Similarly, no established communities would be physically divided based on the existing case-by-case permitting process.

Mitigation Measures

No mitigation measures are needed since no significant land use impacts have been identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under Alternative 2, regulated activities in Corps and Department jurisdictional areas would not be permitted. Remaining developable acreage in the Watershed would be reduced under this alternative since some areas of otherwise developable land would not be permitted if it required fill in jurisdictional areas or bridges and/or culverts in jurisdictional areas to provide access. However, most of the Watershed is nearly built-out or permitted, and thus no major land use impacts would be anticipated. No conflicts with the NCCP/HCP would be anticipated.

Mitigation Measures

None needed since no significant land use impacts were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

Under Alternative 3, regulated activities in Corps and Department jurisdictional areas would not be allowed except for construction and maintenance of bridges and utility lines. Some remaining developable acreage in the Watershed would likely be reduced under this alternative since some areas of otherwise developable land would not be permitted if it required fill in jurisdictional areas. No conflicts with the NCCP/HCP would be anticipated.

Mitigation Measures

None needed since no significant land use impacts were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 allows for full build-out of the local general plans for jurisdictions in the Watershed. Development could occur without specific requirements for avoidance of jurisdictional areas or areas of high ecosystem integrity. For comparative purposes, Alternative 4 would result in a greater intensity of land development and other infrastructure construction and maintenance activities as compared to Alternative 1, existing case by-case permitting. No direct impacts to land use as specified in the local general plans would be expected. No established communities would be divided, and no impacts to the existing NCCP/HCP areas would be anticipated.

Mitigation Measures

No mitigation measures are required since no significant land use impacts were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.7 Noise

Significance thresholds under CEQA are provided in Section 4.6.7.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case-by-Case Permitting)

The type of short-term construction and long-term operational noise impacts for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.6.2) would be similar under Alternative 1. The primary source of increased short-term noise associated with regulated activities is construction including grading and excavation for individual sites, and operation of construction vehicles and equipment. The greatest potential for noise impacts occurs when construction activities are directly adjacent to sensitive receptors (i.e., residences, hospitals, day care centers, schools, churches, and libraries). Indirectly, long-term increases in the ambient noise environment of the Watershed would be created by post-construction residential, commercial, and industrial land development projects and other facility/utility projects that could be permitted under the SAMP/WSAA Process permitting procedures.

Several municipal ordinances are in place to help control project noise impacts, as described in Section 4.6.7. Compliance with these noise ordinances would help reduce potential noise impacts.

Mitigation Measures

Section 4.6.7 contains a list of example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific construction and operational noise impacts to less than significant.

Level of Significance After Mitigation

No significant impacts anticipated.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under Alternative 2, regulated activities in jurisdictional areas would not be permitted. Thus, total remaining developable acreage in the Watershed would be reduced in comparison to existing case-by-case permitting, and would occur in upland areas not requiring new bridges/culverts across jurisdictional drainages. With the reduction in allowable construction and maintenance activities, short-term increases in the ambient noise environment from construction activities would be reduced. Long-term increases in noise from stationary sources (residential, commercial, industrial developments) as well as traffic noise from new development (mobile sources) would be reduced, as less land development would be generated under this alternative.

Mitigation Measures

See example mitigation measures listed in Section 4.6.7.

Level of Significance After Mitigation

No significant impacts anticipated.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

No activities, apart from bridge and utility construction and maintenance, would be authorized in jurisdictional areas. Under this alternative, more remaining developable acreage could be permitted than under Alternative 2, since bridges allowing access to upland areas would be allowed. However, no other regulated activities, including land development in jurisdictional areas would be permitted.

With some reduction in construction and maintenance activities for most regulated activities, short-term construction noise and long-term noise impacts from new development and associated traffic would be reduced in comparison to the proposed SAMP/WSAA Process and existing case-by-case permitting.

Mitigation Measures

See example mitigation measures listed in Section 4.6.7.

Level of Significance After Mitigation

No significant impacts anticipated.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas; therefore land development could occur in accordance with the existing city and County General Plans, zoning codes and with full development of the MPAH. The type of short-term construction and long-term noise impacts for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.6.2) as well as Alternative 1 would be similar under Alternative 4. However, the extent of impacts would be greater under this alternative as more land acreage in jurisdictional and upland areas would likely be developed.

As discussed under Alternative 1, temporary impacts would generally include increased noise from grading and construction activities. Indirectly, long-term, post-construction noise from new development and associated vehicle traffic would be increased. Individual projects would be required to undergo separate environmental review by the local lead agency to determine project-specific and cumulative impacts. Mitigation measures would be identified to reduce potential impacts.

Mitigation Measures

See example mitigation measures listed in Section 4.6.7.

Level of Significance After Mitigation

No significant impacts anticipated.

5.2.5.8 Public Health and Safety

Significance thresholds under CEQA are provided in Section 4.6.8.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case–by-Case Permitting)

The type of indirect impacts for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.6.8) would be similar under Alternative 1. Permitting of land development activities would indirectly generate new residential, commercial, and industrial land uses with their associated increases in residential population and commercial/industrial activities. This increase can have minor indirect effects on public health and safety. New population in the area would increase demand for existing fire and police services as well as demands on existing utilities such as sewerage systems, natural gas, electricity and telephone/cable services, but would unlikely require the construction of major new facilities since most of the Watershed is now nearly built-out. New residential, commercial/industrial land uses would generate a minor increase in household and commercial/industrial hazardous waste in the area, but not beyond the level that could be handled by existing waste management operators. Storm water treatment and management facilities as well as flood control facilities may pose a risk to public health and safety from potential vectors in areas of stagnant water. Various vector control measures coordinated with Orange County Vector Control District (OCVCD) are typically incorporated into the maintenance/management plans for these facilities to reduce potential vector risks. Thus, no significant impacts to public health and safety would be anticipated under Alternative 1.

Mitigation Measures

Example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific public health and safety impacts to less than significant are listed in Section 4.6.8.

Level of Significance after Mitigation

Less than significant.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under Alternative 2, regulated activities in Corps and Department jurisdictional areas would not be permitted. Remaining developable acreage in the Watershed would be reduced under this alternative since bridges and/or culverts needed to provide access to upland areas (as planned in the County MPAH) would not be permitted. Additionally, any other types of infrastructure projects requiring dredged or fill in jurisdictional waters would not be permitted, such as flood control construction or maintenance activities or storm water management facilities. Overall, the potential for public health and safety impacts would be reduced under this alternative, as fewer increases in population would place less demand on fire and police services and utilities, and generation of commercial/industrial hazardous waste would be reduced.

Mitigation Measures

None needed since no significant public health and safety impacts are identified.

Level of Significance after Mitigation

Less than significant.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

Under Alternative 3, remaining developable acreage in the Watershed would be reduced under this alternative as compared to existing case-by-case permitting and many flood control construction and maintenance activities as well as storm water management facilities could not be permitted. Overall, the potential for public health and safety impacts would be reduced under this alternative as fewer increases in population would place less demand on fire and police services and utilities, and generation of commercial/industrial hazardous waste would be reduced. However, the reduction in potential impacts would be less than under Alternative 2.

Mitigation Measures

None needed since no significant public health and safety impacts are identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas. Therefore land development could occur in accordance with the existing city and County General Plans, zoning codes, and with full development of the MPAH. Additionally, all other regulated activities could be permitted including bridges, culverts, flood control and storm water management facilities. The types of indirect impacts to public health and safety as described in Alternative 1 would be similar, though perhaps to a slightly greater extent under Alternative 4.

Mitigation Measures

See discussion of example mitigation measures in Section 4.6.8.

Level of Significance After Mitigation

Less than significant.

5.2.5.9 Recreation

Significance thresholds under CEQA are provided in Section 4.6.9.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case–by-Case Permitting)

Case-by-case permitting of regulated activities could temporarily impact portions or small areas of existing recreational facilities, such as parks, hiking or biking trails if regulated activities take place within or adjacent to such facilities. Temporary impacts could include increased noise, increased dust, and change in visual character. Also, local access to certain areas could be temporarily interrupted or impeded. Long-term impacts could include change in aesthetic qualities (e.g. permanent removal of vegetation, installation of rip rap, construction of a new culvert or new bridge). Also, some regulated activities such as land development for residential uses could generate an increased need for new recreational facilities, and/or increase usage at existing recreation and park planning goals and policies listed in their general plans, and have implemented strategies to provide local park facilities and recreation areas that are appropriate for the individual neighborhoods and communities within their respective jurisdictions. Thus, no significant adverse recreation impacts are expected under Alternative 1.

Mitigation Measures

No mitigation measures are needed because no significant impacts to recreational resources were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under this alternative, no activities requiring dredge or fill in jurisdictional areas could be permitted including land development, bridges, and flood control facilities. No direct impacts to existing recreational facilities would be expected. Also, with reduced land area available for development activities, as compared to the proposed SAMP/WSAA Process, a smaller increase in residential population would occur, thereby reducing the demand on existing recreational parks and trails (smaller indirect effect). No significant impacts would be expected.

Mitigation Measures

No mitigation measures are needed because no significant impacts to recreational resources were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

Under this alternative, only bridges and utilities would be permitted in jurisdictional areas. Fewer potential impacts to recreational facilities (e.g. temporary construction impacts, long-term change in visual character) would be expected as compared to the proposed SAMP/WSAA Process since fewer areas could be developed. With a reduction in land area available for development, smaller increase in residential population would occur, thereby reducing the demand on existing recreational parks and trails. No significant impacts would be expected.

Mitigation Measures

No mitigation measures are needed because no significant recreation impacts were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas; therefore, full build out of the MPAH along with land development would occur in accordance with the applicable General Plans and zoning codes. of jurisdictions in the Watershed. Also, all other regulated activities in jurisdictional areas could be fully permitted.

Under Alternative 4, the types of temporary construction impacts and long term aesthetic impacts to existing recreational facilities would be similar to the proposed SAMP/WSAA Process. However, the extent of recreational use impacts could be slightly greater since potentially more residential development in jurisdictional and upland areas could built-out under this Alternative, placing a greater demand on existing recreational facilities. Local municipalities in the Watershed have recreation and park planning goals and policies listed in their general plans, and have implemented strategies to provide local park facilities and recreation areas that are appropriate for the individual neighborhoods and communities within their respective jurisdictions. No significant adverse recreational impacts are expected.

Mitigation Measures

No mitigation measures are needed because no significant impacts to recreational resources were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.10 Socioeconomics

Significance thresholds under CEQA are provided in Section 4.6.10.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case–by-Case Permitting)

As with the proposed SAMP/WSAA Process, future land development permitted on case-by-case basis would indirectly increase housing in the Watershed, and thus, indirectly induce population growth. Planned growth would be expected to occur in accordance with the general plans and housing elements of the local jurisdictions and be consistent with SCAG growth projections. An increase in housing could be considered an indirect, beneficial effect as residential development projects would help meet housing demand based on job and population growth projections. Land development would also result in short-term construction jobs and would bring new industrial, commercial/retail development projects to the area, in accordance with the general plans and economic policies of the local jurisdictions. These developments would generate income for the Watershed, which would also be considered an indirect, beneficial effect on socioeconomic conditions. No significant adverse socioeconomic impacts in the Watershed would be expected.

Mitigation Measures

No mitigation measures are needed because no significant socioeconomic impacts were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under this alternative, no activities requiring dredge or fill in jurisdictional areas could be permitted including land development, bridges, and flood control facilities. Compared to the proposed SAMP/WSAA Process, this alternative would provide fewer socioeconomic benefits to the Watershed as fewer increases in development would occur. Opportunities for new housing to meet planned growth and economic projections would be reduced. Also fewer jobs would be generated. However, no significant impacts to socioeconomic conditions would be expected.

Mitigation Measures

No mitigation measures are needed since no significant socioeconomic impacts have been identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

Under this alternative, only bridges and utilities would be permitted in jurisdictional areas. Planned development that would result in jurisdictional impacts could not be developed. As a result, fewer beneficial socioeconomic impacts would be expected as compared to the proposed SAMP/WSAA Process since fewer areas could be developed with residential housing and other types of development that could generate economic benefits and help meet planned growth for the Watershed. However, no significant impacts would be expected.

Mitigation Measures

No mitigation measures are needed because no significant socioeconomic impacts were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas; therefore land development could occur in accordance with the existing city and County General Plans, zoning codes and with full development of the MPAH. Slightly more acreage in jurisdictional and upland areas could be developed under this alternative as compared to the proposed SAMP/WSAA Process and existing case-by-case permitting. Accordingly, more residential housing and other types of development would generate greater economic benefits for cities in the Watershed and help meet planned growth. No significant impacts would be expected.

Mitigation Measures

No mitigation measures are needed because no significant socioeconomic impacts were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.11 Transportation/Circulation

Significance thresholds under CEQA are provided in Section 4.6.11.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case-by-Case Permitting)

The type of short-term construction and long-term operational impacts for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.6.11) would be similar under Alternative 1. Temporary construction and maintenance activities would result in additional worker traffic in various locations of the Watershed. Construction and maintenance activities would generate short-term, mostly minimal increases in traffic, and could temporarily disrupt traffic flow if activities require work in the street right-of-way. Long-term, land development projects permitted under existing case-by-base basis would be expected to generate increases in local traffic volumes from new residential, commercial and industrial projects, and could require the addition and/or expansion of local roads to meet local and regional circulation needs. New roads would be planned in accordance with the County MPAH and local general plans. Although it is not possible to identify the traffic impacts of a

project without a specific project proposal, it is possible that certain projects may result in potentially significant traffic impacts that would require mitigation.

Mitigation Measures

Example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific traffic/circulation impacts to less than significant are listed in Section 4.6.11.

Level of Significance After Mitigation

No significant impacts anticipated.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under the Complete Avoidance Alternative, regulated activities that would encroach on federal and state jurisdictional waters would not be permitted including construction and maintenance of flood control facilities, utilities, bridges. Remaining build-out of the Watershed under the local general plans would not occur and full development of the County MPAH would not occur. This could substantially affect the ability to provide access through several of the currently undeveloped City and County areas within the Watershed, a potentially significant impact. Alternative 2 would result in some new residential and office/industrial development within the Watershed; however, development acreage would be significantly less than the proposed SAMP/WSAA Process and existing case-by-base permitting. Short-term construction and maintenance-related traffic would be reduced as would long term traffic generated from new development. Although it is not possible to identify the traffic impacts of a project without a specific project proposal, it is possible that certain projects may result in potentially significant traffic impacts that would require mitigation.

Mitigation Measures

See example mitigation measures listed in Section 4.6.11.

Level of Significance After Mitigation

Potentially significant impacts.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

Under this alternative, only bridges and utilities would be permitted in jurisdictional areas. Planned development that would result in jurisdictional impacts could not be developed. Construction and maintenance of flood control facilities could not occur. Land development in jurisdictional areas could not be built. Traffic from construction and maintenance activities and new development would be reduced as compared to the SAMP/WSAA Process and existing case-by-case permitting. Individual projects would be subject to environmental review by the local lead agency. No significant traffic impacts would be expected.

Mitigation Measures

See example mitigation measures in Section 4.6.11.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas; therefore, regulated activities including and land development within the cities and County planning areas within the Watershed would occur in accordance with the applicable City and County General Plans and zoning codes with full development of the MPAH.

Minor increases in traffic for construction and maintenance activities would generally be similar to the proposed SAMP/WSAA Process and existing case-by-case permitting. This alternative would result in long-term increases in traffic associated with new development, and could be slightly greater than the proposed SAMP/WSAA Process and existing case-by-case permitting. Although it is not possible to identify the traffic impacts of a project without a specific project proposal, it is possible that certain projects may result in potentially significant traffic impacts that would require mitigation.

Mitigation Measures

See discussion of example mitigation measures in Section 4.6.11.

Level of Significance After Mitigation

No significant impacts anticipated.

5.2.5.12 Visual Resources

Significance thresholds under CEQA are provided in Section 4.6.12.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case-by-Case Permitting)

The types of potential visual resource impacts for the seven categories of regulated activities described for the proposed SAMP/WSAA Process (Section 4.6.12) would be similar under Alternative 1. Short-term construction associated with the installation of bridges, public facilities/utilities, and land development would cause various disturbances to landforms from grading, excavation, stockpiling, and filling. The presence of construction equipment and vehicles at a construction site would create a visual impact in the construction zone. Additionally, grading of hillsides may be visible from a broader area of the Watershed. In general, short-term construction impacts are considered adverse, but not significant, because they would be temporary and mostly localized, and because construction activities including hillside grading are not uncommon in the region.

Long-term visual changes are primarily associated with permanently altering the natural topography and constructing new buildings. Most remaining new development in the Watershed would result in the conversion of remaining tracts of agricultural land and former MCAS El Toro lands into suburban residential, commercial, and open space/park uses similar to the majority of existing development in the

Watershed. This conversion would alter the visual character of localized areas, and also impact views of surrounding Santiago and San Joaquin Hills from some locations including several major streets such as Sand Canyon, Jeffrey Road, Culver Drive, and Laguna Canyon Road. However, new residential and commercial development would be planned and designed in accordance with the existing suburban/urban character of the area, and would not be expected to produce a significant adverse visual change in the Watershed overall, though some local areas could experience significant, adverse impacts (both in terms of obstruction of views and change in visual character).

New land development would also introduce new sources of light and glare. However, light that would be generated would be typical of urban development, and would not substantially affect views in this area either at night or during the day. Typical development standards required by local zoning ordinances would address the issue of light and glare.

Bridge development and streambed stabilization measures (e.g. rip rap) in a natural drainage channel would alter the existing visual character of the drainage and its surroundings, resulting in a potential indirect impact, depending on visual accessibility. Other regulated activities such as flood control and utility maintenance activities would not substantially affect the existing scenic environment, and most such activities would be short-term.

Mitigation Measures

Example mitigation measures that could be required by local lead agencies during a separate CEQA review process to reduce any project-specific visual impacts to less than significant are listed in Section 4.6.12.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under Alternative 2, regulated activities in Corps and Department jurisdictional areas would not be permitted. As a result, fewer areas would be available for new land development, as well as bridge, flood control, and utility construction and maintenance, thus minimizing the extent of short-term and long-term visual change in the Watershed overall. Conversion of undeveloped agricultural and hillside land into new residential or commercial/industrial development would produce adverse visual impacts, however, the aesthetic character would be consistent with existing development in the Watershed, and therefore no significant visual resource impacts would be expected.

Mitigation Measures

See example mitigation measures listed in Section 4.6.12.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

No activities, apart from bridge and utility construction and maintenance, would be authorized in jurisdictional areas. Under this alternative more remaining developable acreage could be permitted than under Alternative 2, since bridges providing access to upland areas would be allowed. However, no other regulated activities, including land development in jurisdictional areas would be permitted. As a result, fewer areas would be available for new land development, thus minimizing the extent of short-term and long-term visual change in the Watershed overall. Conversion of undeveloped agricultural and hillside land into new residential or commercial/industrial development would produce adverse visual impacts. However, the aesthetic character would be consistent with existing development in the Watershed, and therefore no significant visual resource impacts would be expected.

Bridge development and streambed stabilization measures (e.g. rip rap) in a natural drainage channel would alter the existing visual character of the drainage and its surroundings, resulting in an indirect adverse impact, depending on visual accessibility.

Mitigation Measures

See example mitigation measures in Section 4.6.12.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas; therefore land development could occur in accordance with the existing city and County General Plans, zoning codes and with full development of the MPAH. The extent of short-term and long term visual impacts as described in Alternative 1 could be greater under this alternative, as slightly more acreage in jurisdictional and upland areas would likely be developed. Visual changes in the Watershed and potential obstruction of views could be potentially significant in some localized areas.

Mitigation Measures

See example mitigation measures in Section 4.6.12.

Level of Significance After Mitigation

Potentially significant unavoidable indirect impacts in some localized areas.

5.2.5.13 Water Supply and Conservation

Significance thresholds under CEQA are provided in Section 4.6.13.

5.2.5.2.1 Alternative 1: No Project Alternative (Existing Case–by-Case Permitting)

As with the proposed SAMP/WSAA Process, some regulated activities that could be permitted under existing case-by-case permitting (No Project Alternative), such as land development for residential, commercial industrial, institutional and recreational facilities, may result in increased water consumption in the region, an indirect impact to water supply. IRWD, the major water supply agency serving the Watershed has projected future water demand based on build-out of local land use general plans and has demonstrated its ability to provide adequate supply through projected build-out in 2025 and beyond to 2030 (IRWD 2005). No new or expanded entitlements would to be required.

As discussed in Section 4.6.13, existing state and local policies have been established to help address potential impacts to water supply. These include Senate Bill No. 221 and Senate Bill No. 610 which generally require new development to meet certain criteria and provide substantial evidence of available water supplies in the event of drought. Additionally, the County of Orange (2004) requires will-serve letters from water purveyors prior to approval or extension of approval of tentative tract maps. This provides assurance that the responsible water agencies are capable of coordinating delivery through construction of necessary facilities. Furthermore, the County of Orange General Plan Land Use Element provides for the phasing of development consistent with the adequacy of public services and facilities. In the case of water supply facilities, the absolute necessity of water service to development will ensure adequate incremental water capacity.

Thus, local and state requirements would help ensure the adequacy of the public water supply for a project has been addressed before the project is approved. Therefore, no significant adverse water supply impacts are anticipated.

Mitigation Measures

No mitigation measures are needed because no significant impacts to water supply were identified

Level of Significance after Mitigation

Less than significant.

5.2.5.2.2 Alternative 2: Complete Avoidance (No Permits Issued)

Under this alternative, no activities requiring dredge or fill in jurisdictional areas could be permitted including land development, bridges, and flood control facilities. Compared to the proposed SAMP/WSAA Process, this alternative would result in less land development overall, and therefore, less demand on existing water supplies. No adverse impacts would be expected. Local and state requirements would help ensure the adequacy of the public water supply for a project has been addressed before the project is approved. Therefore, no significant adverse impacts are expected.

Mitigation Measures

No mitigation measures are needed because no significant impacts to water supply were identified

Level of Significance After Mitigation

Less than significant.

5.2.5.2.3 Alternative 3: Avoidance Except for Bridges and Utility Lines

Under this alternative, only bridges and utilities would be permitted in jurisdictional areas. Planned development that would result in jurisdictional impacts could not be developed. Compared to the proposed SAMP/WSAA Process and Alternative 1, this alternative would result in less land development overall, and therefore, less demand on existing water supplies. No adverse impacts would be expected. Local and state requirements would help ensure the adequacy of the public water supply. Therefore, no significant adverse impacts are expected.

Mitigation Measures

No mitigation measures are needed because no significant impacts to water supply were identified.

Level of Significance After Mitigation

Less than significant.

5.2.5.2.4 Alternative 4: General Plan Build-out without Avoidance

Alternative 4 requires no avoidance of jurisdictional areas; therefore land development could occur in accordance with the existing city and County General Plans, zoning codes and with full development of the MPAH. Slightly more acreage in jurisdictional and upland areas could be developed under this alternative as compared to the proposed SAMP/WSAA Process and existing case-by-case permitting. Accordingly, more residential housing and other types of development would be constructed that would increase demand on local water supplies. IRWD has projected future water demand based on build-out of local land use general plans and has demonstrated its ability to provide adequate supply through projected build-out in 2025 and beyond to 2030 (IRWD 2005). No new or expanded entitlements would to be required.

Additionally, local and state requirements as discussed in Section 4.6.13 would help ensure the adequacy of the public water supply for a project has been addressed before the project is approved. Therefore, no significant adverse impacts are expected.

Mitigation Measures

No mitigation measures are needed because no significant impacts to water supply were identified.

Level of Significance After Mitigation

Less than significant.

5.3 COMPARISON OF ALTERNATIVES

Table 5-1 provides a summary of projected environmental impacts of the four alternatives in comparison to the proposed SAMP/WSAA Process.

Impact Area	Alternative No. 1 No Project/No Federal Action (Existing Case-by-Case Permitting)	Alternative No. 2 Complete Avoidance (No Permits Issued)	Alternative No. 3 Avoidance Except for Bridges & Utility Lines (Limited Permitting)	Alternative No. 4 General Plan Build-out Without Avoidance (Full Permitting)
Aquatic, Wetland & Riparian Habitats	Greater/PSC	Similar (fewer impacts, but no coordinated restoration) /LTS	Similar (fewer impacts, but no coordinated restoration) /LTS	Greater/PSC
Biological Resources, including Threatened & Endangered Species	Greater/LTS	Similar (fewer impacts but no coordinated restoration) /LTS	Similar (fewer impacts but no coordinated restoration) /LTS	Greater/PSC
Hydrology, Erosion and Sedimentation	Greater/LTS	Greater (flood hazards)/PS (flood hazards).	Greater (flood hazards)/PS (flood hazards).	Greater/LTS
Water Quality	Greater/LTS	Similar/(fewer impacts, but no coordinated mitigation program/LTS	Similar/(fewer impacts, but no coordinated mitigation program/LTS	Greater/PSC
Agricultural Resources	Similar/LTS	Similar/LTS	Similar/LTS	Greater/LTS (indirect)
Air Quality	Similar/LTS	Similar/LTS	Similar/LTS	Greater/PS (indirect)
Cultural Resources	Similar/LTS	Similar/LTS	Similar/LTS	Greater/LTS
Floodplain Values	See Hydrology, Erosion and Sedimentation	See Hydrology, Erosion and Sedimentation	See Hydrology, Erosion and Sedimentation	See Hydrology, Erosion and Sedimentation
Geology/Soils	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS
Land Use	Similar/LTS	Greater/PS	Greater/PS	Similar/LTS
Noise	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS
Public Health and Safety	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS
Recreation	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS
Socioeconomics	Similar/LTS	Greater/LTS	Greater/LTS	Similar/LTS
Transportation	Similar/LTS	Greater/PS (full MPAH could not be built)	Similar/LTS	Similar/LTS
Visual Resources	Greater/LTS	Similar/LTS	Similar/LTS	Greater/PS (indirect; in localized areas)
Water Supply and Conservation	Similar/LTS	Less/LTS	Less/LTS	Greater/LTS

Table 5-1 Comparison of Alternatives to the Proposed SAMP/WSAA Process

Legend

Less = Impact of alternative is projected to be less than impact of proposed SAMP/WSAA Process

Similar = Impact of alternative is projected to be equivalent to impact of the proposed SAMP/WSAA Process

Greater = Impact of alternative is projected to be greater than impact of the proposed SAMP/WSAA Process

LTS = Less than significant impact

PS = Potentially significant impact unless mitigation incorporated

PSC = Potentially significant cumulative impact

5.4 Environmentally Superior Alternative and Least Environmentally Damaging Practicable Alternative

NEPA Section 1505.2(b) requires that an EIS specify the alternative or alternatives which were considered to be environmentally preferable from the range of alternatives considered. The environmentally preferable alternative is the alternative that will best promote national environmental policy as expressed in NEPA. Generally, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources (CEQ, 1981). CEQA requires the identification of an environmentally superior alternative. Specifically, CEQA Section 15126.6(e)(2) states that if the environmentally superior alternative is the No Project Alternative, then the EIR shall also identify an environmentally superior alternative among the other alternatives.

Alternative 2, Complete Avoidance, would appear to be the environmentally preferred alternative/environmentally superior alternative, since under Alternative 2 no permits could be issued for impacts to waters of the U.S. and streambeds anywhere in the Watershed regardless of resource integrity. Therefore, future impacts to aquatic, wetland, and riparian habitats; threatened and endangered species; hydrology; and water quality would not occur, and the Watershed would remain in its present condition. Additionally, no future indirect impacts would occur from long-term implementation of regulated activities in the Watershed, such as traffic, noise, and air emission increases, changes in visual character and scenic views, impacts to public health and safety, and impacts to recreational, agricultural, and cultural resources. However, under this alternative, there would be no strategic mitigation/restoration to enhance aquatic habitats in the Watershed. The Watershed would remain in its present condition which would likely entail continued degradation of certain low quality jurisdictional areas from uncontrolled urban and storm runoff, incised channels, uncontrolled erosion and sedimentation, and spread of invasive exotic plants (e.g. Arundo). Additionally, potential flood hazards in the Watershed would increase since no maintenance of flood control channels (e.g. vegetation clearing) would be permitted. This could be a significant impact as stated in Section 5.2.3.2.

In contrast, while the proposed permitting procedures of the SAMP/WSAA Process would authorize impacts to low quality areas and require the avoidance and minimization of impacts in aquatic resource integrity areas, it also includes a Strategic Mitigation Plan and Mitigation Coordination Program to enhance the integrity of the Watershed and help ensure long-term management of aquatic resources. Also, the proposed SAMP/WSAA Process, unlike Alternative 2, would not prohibit flood control maintenance activities, and thus, would help minimize potential flood hazards. Therefore, on balance the SAMP/WSAA Process is determined to be the environmentally superior alternative/environmentally preferable alternative over the long-term in comparison to all alternatives.

For more information, including a discussion of practicability of alternatives, see Appendix E, which identifies the Least Environmentally Damaging Practicable Alternative (LEDPA) per the requirements of CWA Section 404(b)(1) Guidelines.

6.0 CUMULATIVE EFFECTS

6.1 REGULATORY BACKGROUND

The Council on Environmental Quality (CEQ) issued guidelines that give consideration to cumulative effects (or impacts) on the socio-economic and biophysical environment (e.g., CEQ, 1997). Cumulative impacts may be defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions" (CEQ, 1978).

The *CEQA Guidelines* Section 15130 requires that an EIR discuss "cumulative impacts of a project when the project's incremental effect is cumulatively considerable." "Cumulatively considerable" means the incremental effects of a project are considerable when viewed in combination with the effects of "past, present, and probable future projects" or in relation to "a summary of projections contained in an adopted general plan or related planning document" [Cal. Code Regs., Title 14 Section 15130(b)(1)(A)(B)]. A cumulative impact is defined as an impact which is created as "a result of a combination of the project together with other projects causing related impacts" [Cal. Code Regs., Title 14, section 15130(a)(1)]. Pursuant to *CEQA Guidelines*, a project's contribution to a significant impact can be less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure designed to alleviate the cumulative impact, or if the impact is *de minimus* [Cal. Code Regs., Title 14 Section 15130(a)].

6.2 APPROACH TO CUMULATIVE IMPACT ANALYSIS

The approach to the cumulative impact analysis is similar to the approach used for analysis of the proposed SAMP/WSAA Process in Section 4. This programmatic cumulative impacts analysis is structured to cover:

- a) Direct cumulative impacts of all future regulated activities in Corps/Department jurisdictional areas of the Watershed combined; and
- b) Indirect impacts in the greater Watershed area, including upland areas, associated with long-term future build-out of the Watershed. The indirect impacts would occur later in time and are not specifically authorized by the regulatory program. Most of the future, individual projects that could result in indirect cumulative effects would require separate environmental review and approval by the local permitting agency.

Section 4.1.2 discusses these differences in detail.

The programmatic cumulative impact analysis for indirect effects based on build-out of general plans for the jurisdictions in the Watershed and includes unincorporated Orange County and the cities of Irvine, Santa Ana, Tustin, Newport Beach, Orange, Lake Forest, Laguna Hills and Laguna Woods. The general plans of these cities and the County of Orange are the primary plans governing growth and development at the local level. These plans are discussed in Section 10 of this document. Unincorporated Orange County comprises a substantial portion of the northern part of the Watershed and should achieve first generation build-out sometime after the year 2020. Approximately 38 percent of the Watershed is within the City of Irvine and over 60 percent of the City is developed. Approximately 3,608 acres of the City of

Santa Ana are within the southeastern part of the Watershed; however most of this area is essentially built-out. The entire City of Tustin is located within the Watershed and the City estimates full build-out by 2020. The largest remaining undeveloped area in the City is MCAS Tustin, which is located in the center of the Watershed. This area is currently undergoing some redevelopment with residential and commercial uses. The City of Newport Beach forms the south/southwestern boundary of the Watershed and has approximately 2,966 acres within the Watershed, most of which is already built-out. Approximately 1,041 acres of the City of Orange are located within the northeastern portion of the Watershed and the City is currently 95 percent developed. Approximately 5,296 acres of the City of Lake Forest are located in the eastern portion of the Watershed. Most of the City is built out; however, some remaining areas within the Watershed (northwestern portion of the City) are being planned for new residential, commercial and neighborhood park uses. The City of Laguna Hills has approximately 758 acres located within the Watershed and is almost completely built-out. Within the City of Laguna Woods, approximately 1,033 acres is located within the Watershed, and is mostly built-out.

The time frame for the cumulative impact analysis extends until the year 2020, the timeframe over which most of the planned developments described in the various general plans would occur. The geographic scope of the cumulative impact analysis is generally the Watershed since the proposed SAMP/WSAA Process would not be applicable to any other Watershed riparian ecosystem. (e.g. have any opportunity to produce cumulative effects in any other watershed). However, for some environmental topic areas, such as air quality and traffic, the boundaries of effect are beyond the Watershed and are discussed in terms of the larger, regional setting.

6.3 **PROGRAMMATIC CUMULATIVE IMPACT ANALYSIS**

6.3.1 Aquatic, Wetland and Riparian Habitats

Direct Effects

One of the major concepts in formulating and implementing the SAMP/WSAA Process is to reduce potential cumulative impacts of future regulated activities in the Watershed (see Sections 1 and 2). The permitting and mitigation framework elements of the proposed SAMP/WSAA Process are based on a Watershed-wide evaluation of aquatic resources to allow for greater avoidance in aquatic resource integrity areas and targeted mitigation/restoration to enhance the Watershed ecosystem. By design, implementation of all future regulated activities in the Watershed under the proposed SAMP/WSAA Process would not be expected to produce significant cumulative impacts to aquatic, wetland and riparian habitats of the Watershed. The SAMP/WSAA Process is a Watershed-specific permit program allows for more informed permit decisions to avoid or minimize impacts in high quality areas and a mitigation framework that allows for no net loss in acres and functional integrity (e.g. no net loss of riparian habitat acreage and aquatic resource function), thus, reducing the potential for cumulative impacts overall as compared to existing case-by-case permitting. Furthermore, the restoration plan specified in the Strategic Mitigation Plan is designed to improve functional integrity in low and medium quality areas, so that in the long-term, the Watershed's riparian ecosystem is maintained and enhanced. Therefore, the SAMP/WSAA Process would ultimately produce a cumulative benefit to the Watershed's aquatic, wetland and riparian habitats.

The SAMP/WSAA Process and mitigation framework would provide greater opportunities for avoidance of high and medium quality habitat areas (aquatic resource integrity areas). Impacts to low quality areas, such as unvegetated drainages, degraded riparian areas or previous agricultural sites, that are consistent with the SAMP/WSAA Process (and current water quality planning; see water quality sub-section below), would likely result in insignificant or no cumulative impacts in the Watershed. Also, overall effects of impacts to these lower quality drainages would be reduced because the SAMP/WSAA Process identifies future restoration and enhancement opportunities for low quality areas that are essential for habitat and hydrologic connectivity, endangered species habitat, or other functions. The frequency of SAMP/WSAA Process-consistent activities authorized within aquatic resource integrity areas would be less than for authorizations in lower quality areas. Thus, high to medium quality riparian areas would likely be impacted by relatively few projects with minor to insignificant impacts that would be mitigated under the SAMP mitigation framework and Strategic Mitigation Plan. Overall, designation of aquatic resource integrity areas would help ensure a thorough permit evaluation and appropriate mitigation to reduce cumulative impacts to aquatic resources in the Watershed.

The proposed permitting process includes revocation of some NWPs, a new RGP and new LOPs, and Watershed-based permit restrictions, conditions and mitigation policies. To qualify for the new permitting program, project proponents must demonstrate consistency with the SAMP/WSAA Process. If compliance is not demonstrated, or if a project constitutes a substantial impact within certain channels or to previously established mitigation sites, then the project would have to be evaluated through a Corps SIP.

Indirect Effects

The programmatic cumulative impact analysis for indirect effects is based on future land development and maintenance activities that could be permitted under the proposed SAMP/WSAA Process. The primary indirect cumulative effects of the SAMP/WSAA Process, when considered with build-out within the upland areas within the Watershed, would be the loss of: 1) open space; 2) buffer widths along riparian corridors; 3) habitat of sensitive or special status wildlife species; and 4) some regional movement corridors that support migratory avian species. Routine maintenance activities (e.g., for flood control) or an increase in the proximity of residential development to riparian and upland areas, may indirectly affect riparian ecosystems through edge effects, influx of non-native plants and domesticated animals (e.g., cats and dogs), and light from streets and buildings. Other indirect effects are discussed in the water quality and hydrology sections below. For example, hydromodification (i.e., the increased peak flow and duration of base flows), may result in channel incision which may in turn disconnect flood flows from the floodplain area. In time, the riparian areas found on floodplains and terrace positions along these incised streams may dry out and favor upland, invasive plants. These effects may serve to initially increase diversity (non-native species added to the pool of native species), but over time may result in a decrease of diversity (reduction in native species diversity while a few non-native species persist).

Many of these potential indirect cumulative impacts would be reduced or eliminated through the implementation of the RGP/LOP/WSAA Process general conditions and mitigation policies. As discussed above in direct effects, most anticipated activities will be conducted in areas already subject to ongoing maintenance, areas of reduced habitat quality (and therefore not included in the aquatic resource integrity areas), or include benign or beneficial activities such as restoration projects. Overall, the

RGP/LOP/WSAA Process general conditions, mitigation policies, and the identification of (and thus avoidance of) aquatic resource integrity areas would serve to reduce cumulative, indirect effects on riparian and wetland habitats to a level considered less than significant.

6.3.2 Biological Resources, Including Threatened and Endangered Species

Direct Effects

By design, implementation of all future regulated activities in the Watershed under the proposed SAMP/WSAA Process would not be expected to produce significant cumulative impacts to biological resources, including threatened and endangered species present in (or adjacent to) jurisdictional areas of the Watershed. The SAMP/WSAA Process is a Watershed-specific permit program that offers greater opportunities to avoid and minimize impacts to aquatic resources including riparian habitats occupied by endangered species as well as riparian drainages that serve as migration corridors. The SAMP/WSAA Process includes a mitigation framework that allows for no net loss in acres and functional integrity (e.g. no net loss of riparian habitat acreage and aquatic resource function); thus, reducing the potential for cumulative biological impacts in the Watershed overall as compared to existing case-by-case permitting.

One of the major concepts in formulating and implementing the SAMP/WSAA Process is to reduce potential cumulative impacts of future regulated activities in the Watershed that could not be done under existing case-by-case permitting. For example, the SAMP tenets, the central guiding concepts for identifying aquatic resource integrity areas of the Watershed, include: "Protect Riparian Areas and Associated Habitats Supporting Federally- and State-listed Sensitive Species and Their Habitats" and "Maintain, Protect, Restore Diverse and Continuous Corridors" (See Section 2.1.1.3). These two tenets acknowledge the importance of connectivity with upland habitats that support sensitive species, the need to provide adequate buffers from adjacent activities, and the riparian corridor's ability to connect and enhance biological diversity across the Watershed. Additionally, the Corps restoration plan (Smith and Klimas, 2004) includes a set of criteria that are consistent with the SAMP tenets. The criteria help prioritize restoration sites for implementation as compensatory mitigation sites and attain the greatest functional improvement per unit of effort. Two of the restoration criteria, re-iterated by the USFWS, include: "Restore connectivity between aquatic resources located in the NCCP Reserve System"; and "Restore reaches with federally or state-listed species (endangered, threatened, or species of special concern)." These criteria, plus four others, were used to prioritize mitigation sites to be implemented as part of the SAMP/WSAA Process Strategic Mitigation Plan to help maintain and enhance ecosystem function in the Watershed. Also, increased connectivity would re-establish wildlife movement corridors, especially between the Watershed's northern and southern NCCP reserve areas. Thus, as the SAMP/WSAA Process is designed as an aquatic resource protection program for the entire Watershed, to be utilized for regulated activities over the next 20 years, it serves to cumulatively reduce biological resource impacts, in comparison to existing case-by-case permitting, by seeking to minimize aquatic resource impacts in key habitat areas that are important to sensitive plant and wildlife species. Thus, no significant direct cumulative impacts on biological resources including threatened and endangered species would be expected.

An important component of the SAMP/WSAA Process is that riparian habitats (and buffers) are expected to increase in both area and quality as riparian reaches are created, restored and enhanced. This increase would provide the continued existence and expansion of riparian habitat as compared to current

conditions. The proposed linkages between the northern and southern portions of the Watershed would also allow for expansion and migration of species, especially riparian-obligate species.

With regard to upland habitats, namely coastal sage scrub and California Gnatcatcher habitat areas, cumulative impacts to these areas have been addressed in the NCCP agreement (1996) between the resource agencies and NCCP participants. Implementation of the SAMP/WSAA Process would not affect the NCCP agreement. The remaining undeveloped areas designated for residential development in the northern part of the Watershed are mainly replacing agricultural land uses (e.g., avocado orchards), and are not expected to result in large losses of gnatcatcher habitat. In the southern portion of the Watershed, the remaining undeveloped areas designated for residential development are located in areas dominated by non-native grasslands. Thus, a major loss of habitat for gnatcatcher is not expected.

Cumulative effects on listed species may occur from future activities that do not meet the criteria of the SAMP/WSAA Process. These activities would proceed through a SIP process "outside of" the SAMP/WSAA Process, and would include a separate Section 7 consultation if the Corps determines that any future project "may affect" listed species. The Section 7 process would be especially important where a future activity could have a direct affect on species within an aquatic resource integrity area. Under these circumstances, the Section 7 process generally would ensure that potential biological resource impacts are avoided or mitigated. Limited cumulative direct effects on biological resources, including threatened and endangered species may occur as could be expected with existing case-by-case permitting.

Indirect Effects

The programmatic cumulative impact analysis for indirect effects is based on future activities that could be permitted under the proposed SAMP/WSAA Process in combination with full build-out of the general plans for the nine jurisdictions (e.g., cities, County of Orange) in the Watershed. The primary indirect cumulative effects of the SAMP/WSAA Process, when considered with build-out of the general plans in upland areas within the Watershed, would be the loss of: 1) open space; 2) vegetation important to raptors; 3) habitat of sensitive or special status wildlife species; and 4) some regional movement corridors that support migratory avian species. Routine maintenance activities (e.g., for flood control) or an increase in the proximity of residential development to riparian and upland areas, may indirectly affect wildlife species through edge effects, influx of non-native plants and domesticated animals (e.g., cats and dogs), and light from streets and buildings. These effects may serve to initially increase diversity (nonnative species added to the pool of native species), but over time may result in a decrease of diversity (reduction in native species diversity while a few non-native species persist).

Specifically, if listed species migrate and populate new riparian (or upland) habitats in the vicinity of future activities, or if maintenance activities occur near known locations of sensitive species, the Corps would coordinate with the USFWS according to a Programmatic Biological Opinion. In addition, the RGP/LOP/WSAA Process general conditions, mitigation policies, and the identification of priority habitat segments for mitigation/restoration would serve to reduce cumulative effects on fish and wildlife, including listed species, to a level considered less than significant.

6.3.3 Hydrology, Erosion and Sedimentation

Direct Effects

Combined implementation of all regulated activities (e.g. utility lines, road crossings, flood control facilities, land development, etc) in jurisdictional areas of the Watershed could be expected to increase runoff in the Watershed, alter drainage characteristics, and increase erosion and sedimentation to receiving waters including San Diego Creek and Newport Bay, both of which have experienced long-term problems with erosion and sedimentation. Section 4.4.2 discusses these types of impacts in detail.

As discussed in Section 6.3.1 one of the major concepts in formulating and implementing the SAMP/WSAA Process is to reduce cumulative impacts of future regulated activities in the Watershed, including hydrological impacts. The proposed SAMP/WSAA Process and mitigation framework is based on a Watershed-wide evaluation of aquatic resources to allow for greater avoidance in aquatic resource integrity areas, which includes areas of high and medium hydrologic integrity, and targeted mitigation/restoration to enhance the Watershed ecosystem, including hydrologic function. By design, implementation of all future regulated activities in jurisdictional areas of the Watershed under the proposed SAMP/WSAA Process would not be expected to result in significant cumulative hydrological impacts. The SAMP/WSAA Process, a Watershed-specific permit program, offers greater opportunities to avoid or minimize impacts in areas of high and medium hydrologic integrity and a mitigation framework that allows for no net loss in functional integrity, thus, reducing the potential for significant cumulative hydrologic impacts in the Watershed overall as compared to existing case-by-case permitting.

Furthermore, the SAMP/WSAA Process mitigation framework and SAMP Strategic Mitigation Plan are designed to improve functional integrity in low quality areas, so that in the long-term, the Watershed's riparian ecosystem, including streams and floodplains is maintained and enhanced. Therefore, implementation of regulated activities permitted under the SAMP/WSAA Process program and subject to the SAMP/WSAA Process mitigation policies and programs would not be expected to result in direct significant cumulative impacts in the Watershed. In fact, long-term implementation of the SAMP/WSAA Process Strategic Mitigation Plan and Mitigation Coordination Program could ultimately be expected to produce a cumulative benefit to the Watershed's hydrological conditions in the long-term, as compared to existing case-by-case permitting.

The proposed permitting process includes revocation of some NWPs, and a new RGP and LOP that contain Watershed-based permit restrictions (impact acreage thresholds), general conditions and mitigation policies to help reduce impacts to the Watershed's riparian ecosystem. To qualify for the new permitting program, project proponents must demonstrate consistency with the SAMP/WSAA Process which would help reduce impacts to below a level of significance (along with compliance with other local, state and federal requirements to control flooding, erosion and sedimentation). If compliance is not demonstrated, or if a project constitutes a substantial impact within certain channels or to previously established mitigation sites, then the project would have to be evaluated through a Corps SIP, and potential impacts would be addressed in that process.

Indirect Effects

As with existing case-by-case permitting, the primary indirect cumulative effects of the SAMP/WSAA Process regulated activities, when considered with full build-out of the local General Plans including

upland areas of the Watershed, would be alterations in drainage patterns, increases in impervious areas and increased site runoff, which could contribute to steam bank erosion and siltation. This would result in potential impacts to existing drainage facilities and downstream receiving waters, such as San Diego Creek and Newport Bay.

An increase in impervious areas can contribute to higher runoff rates and volumes. An increase in runoff can exceed conveyance capacities of existing facilities, contribute to downstream flooding and raise the 100-year flood elevation. However, County and City regulations established for FEMA compliance would minimize or prevent any increase in flood elevation. Furthermore, the existing municipal NPDES permit requirements as prescribed in the Orange County DAMP prevents the discharge of storm water at rates greater than existing conditions, thereby helping to minimize stream bank erosion and streambed siltation.

Grading activities associated with development may alter existing drainage patterns as well as watercourses. Potential impacts would be minimized through compliance with grading permit requirements imposed by the jurisdictions within the Watershed prior to construction. Alterations in drainage patterns that could increase bank erosion or flow rates would be mitigated through compliance with the state construction general NPDES storm water permit and Orange County DAMP requirements to control erosion in construction and post-construction runoff. These regulations applied to new development projects, in conjunction with the existing sediment control programs in the Watershed (discussed in Section 3.3.2), and requirements of the SAMP/WSAA Process would reduce potentially significant cumulative impacts in Watershed to less than significant.

6.3.4 Water Quality

Direct Effects

Combined implementation of all regulated activities in jurisdictional areas of the Watershed could be expected to increase pollutant loading in downstream receiving waters including San Diego Creek and Newport Bay, both of which are classified as impaired water bodies and have been assigned several TMDLs by the RWQCB. Section 4.5.2 discusses these types of impacts in detail.

As discussed in Section 6.3.1 one of the major concepts in formulating and implementing the SAMP/WSAA Process is to reduce potential cumulative impacts of future regulated activities in the Watershed, including water quality impacts. The proposed SAMP/WSAA Process permitting and mitigation framework is based on a Watershed-wide evaluation of aquatic resources to allow for greater avoidance in aquatic resource integrity areas (which includes areas of high and medium water quality integrity) and targeted mitigation/restoration to enhance the Watershed ecosystem, including water quality function. By design, implementation of all future regulated activities in jurisdictional areas of the Watershed under the proposed SAMP/WSAA Process would not be expected to result in significant cumulative water quality impacts in the Watershed. Unlike existing case-by case permitting, the SAMP/WSAA Process, as Watershed-specific permit program offers greater opportunities to avoid or minimize impacts in areas of high and medium water quality integrity and a mitigation framework that allows for no net loss in functional integrity, thus, reducing the potential for significant cumulative water quality impacts in the Watershed overall.

Furthermore, the restoration plan specified in the Strategic Mitigation Plan is designed to improve functional integrity in low quality areas, so that in the long-term, the Watershed's riparian ecosystem, including water quality of receiving waters. Therefore, regulated activities under the SAMP/WSAA Process would not be expected to result in direct significant cumulative impacts in the Watershed and could ultimately be expected to produce a cumulative benefit to the Watershed's water quality conditions in the long-term, as compared to existing case-by-case permitting.

The proposed permitting process includes revocation of some NWPs and a new RGP and new LOP that contain Watershed-based permit restrictions (impact acreage thresholds), general conditions and mitigation policies to help reduce impacts to the Watershed's riparian ecosystem. To qualify for the new permitting program, project proponents must demonstrate consistency with the SAMP/WSAA Process which would be expected to reduce impacts to below a level of significance (along with compliance with other local, state and federal regulations to control water quality). If compliance is not demonstrated, or if a project constitutes a substantial impact within certain channels or to previously established mitigation sites, then the project would have to be evaluated through a Corps SIP, and potential impacts would be addressed in that process.

Indirect Effects

As with existing case-by-case permitting, the primary indirect cumulative effects of the SAMP/WSAA Process regulated activities when considered with full build-out of the General Plans in upland areas of the Watershed, would be increases in pollutant loading to Receiving Waters during and after construction of new land development projects.

As discussed in Section 4.5.2 under the land development category, temporary water quality impacts from residential, commercial, industrial, institutional and recreational use projects and attendant features can have temporary impacts on water quality primarily from uncontrolled erosion and sedimentation into Receiving Waters. Other effects may occur as a result of the following factors: a change in vegetation affecting water quality (e.g., by affecting pollutant removal capability, stream shading or bank stability); potential discharge of construction-related pollutants (e.g., concrete, waste oil solvents, debris, etc spilled, leaked or transported via storm runoff into Receiving Waters); and discharge of dewatered groundwater that may contain high-levels of nitrates, phosphorous, selenium and other naturally occurring pollutants as well as pesticides from previous agricultural activities in the area.

In the long-term, full build-out of the Watershed would result in increased impervious surfaces draining new sources and types of polluted runoff in the Watershed during wet and dry weather. Typical pollutants in storm water and non-storm water discharges from developed areas include metals, petroleum hydrocarbons, sediment from construction activities, nutrients, pesticides, bacteria, and litter.

Existing local, state regulations to control the discharge of pollutants in pre and post-construction site runoff (i.e., NPDES permits, DAMP/LIP programs, as discussed in Section 4.5.2) would apply to future projects in the Watershed to reduce potential water quality impacts to downstream receiving waters. Full build-out of the Watershed would be expected to include full build-out of the NTS program, designed to help reduce pollutants in urban runoff throughout the Watershed and help achieve the San Diego Creek and Newport Bay TMDLs. Long-term maintenance and monitoring of the NTS and other project-specific water quality treatment controls would be required to ensure proper operation and function of these

systems to remove pollutants in runoff. Thus, the indirect cumulative effects in the long-term would be reduced to a less than significant level.

6.3.5 Other Topic Areas

The remaining environmental topic areas (also referred to as the public interest review factors) generally cover non-jurisdictional resources in the greater Watershed area, and therefore no direct cumulative impacts would be expected. Impacts in these areas, if any, would only occur indirectly as a result of the permitted actions, primarily through land development. As discussed in Section 4.1.2 of this document, these impacts are considered indirect because they would occur later in time and further removed in distance (e.g. upland areas, not within the jurisdiction of the Corps or the Department).

Implementation of all regulated activities under the SAMP/WSAA Process combined with full build-out of the general plans in the Watershed would not be expected to produce significant indirect cumulative impacts to most of the public interest review factors, including cultural resources, geology/soils, land use, noise, recreation, socioeconomics, visual resources, and water supply/conservation. However, potentially significant indirect cumulative impacts could occur on a more regional basis to air quality and transportation/circulation systems. Potential indirect cumulative impacts of each public interest review factor are analyzed programmatically in the following subsections.

6.3.5.1 Agricultural Resources

Implementation of all regulated activities under the proposed SAMP/WSAA Process combined with full build-out of the general plans in the Watershed would not result in significant cumulative impacts to agricultural resources in the Watershed or the county. In Orange County, 4,191 acres of land, which includes 1,128 acres of important farmland, were converted to urban uses between 2002 and 2004. Also, a total of 2,113 acres of agricultural land were reclassified to urban land by the Farming and Monitoring Mapping Program (California Department of Conservation, 2006). Moreover, 2,088 acres of "other" land, neither built-up nor used for agriculture, such as low-density "ranchettes," or brush and timberlands unsuitable for grazing, were classified as urban (California Department of Conservation, 2006).

In the Watershed, the amount of land available for agricultural production is rapidly diminishing. Currently, less than six percent of the Watershed is comprised of agricultural fields. These lands are generally located in the foothills of the Santiago Hills, north and west of former MCAS El Toro. Some minor areas of agricultural still remain in the southern portion of the Watershed mostly south of the 405 Freeway and east of Laguna Canyon Road. These areas are planned to be converted to residential and commercial/industrial uses within the next 10-20 years. Future build-out in the region as determined by the general plans would continue the pattern of replacing agriculture with urban land uses. As indicated in the Resources Element of the Orange County General Plan, this land use conversion is typical of Orange County, and thus, the cumulative impact would not be considered significant within the Watershed or county.

6.3.5.2 Air Quality

Under the proposed SAMP/WSAA Process, the Corps and the Department would permit temporary and permanent impacts to jurisdictional waters from road crossings, land development, flood control facilities, utilities and other activities in accordance with a Watershed-specific permit program administered by the

Corps and the Department. The major air quality impacts associated with SAMP/WSAA Process regulated activities and projected growth in the Basin include pollutant emissions from short-term construction vehicles, equipment and grading activities, and long-term emissions due to energy consumption and motor vehicle use (mobile sources). Construction impacts are considered short-term and would be mitigated using appropriate measures as required by the SCAQMD and local agencies. Increased energy consumption and motor vehicle emissions (long-term impacts) may contribute to exceedances of the SCAQMD significance criteria. Furthermore, the Basin is currently in non-attainment for O3, PM10, and PM2.5. Cumulative development from build-out of the regional general plans as well as regulated activities authorized by the SAMP/WSAA Process would contribute criteria pollutants to the Basin, which is currently a non-attainment area, and in violation of air quality standards. As a result, implementation of the SAMP/WSAA Process combined with full build-out of the Watershed could result in indirect significant cumulative impacts to regional air quality. The types of mitigation measures that could be required by the local lead agency during project-specific CEQA and NEPA evaluations are provided in Section 4.6.2, Air Quality. The goal of such measures would be to reduce incremental project-level impacts to regional air quality to below a level of significance.

With regard to global warming and emissions of GHGs, some have argued that any project can cumulatively contribute GHG emissions through its individual incremental contribution combined with the cumulative increase of all other natural and anthropogenic sources of GHG emissions. For this project, there are no direct construction or operational aspects of the proposed SAMP/WSAA Process permitting and mitigation program that would generate GHG emissions, since the proposed SAMP/WSAA Process is a Watershed-specific regulatory program to replace existing case-by-case permitting. Any short-term construction activities and long-term operational activities would occur indirectly as a result of implementation of projects permitted under the proposed SAMP/WSAA Process, and would therefore, only indirectly contribute to an increase in GHG emissions, as described in Section Therefore, land development, infrastructure projects and other regulated activities in this 4.6.2. Watershed permitted under the SAMP/WSAA Process combined with other future land development and infrastructure projects in the South Coast Air Basin and beyond will incrementally contribute to cumulative GHG emissions and global warming. The types of mitigation measures that could be required by local lead agencies during project-specific CEQA and NEPA evaluations are provided in Section 4.6.2, Air Quality.

6.3.5.3 Cultural Resources

Implementation of the SAMP/WSAA Process in conjunction with expected build-out under the general plans has the potential to cumulatively impact cultural resources. Grading activities associated with future projects could uncover previously unknown cultural resources. Any project seeking permit coverage under the Corps LOP procedures must provide evidence of compliance with Section 106 of NHPA. Additionally, both the LOP and RGP contain a general condition (Condition No. 20) to ensure compliance with NHPA prior to any permit authorization (See Section 4.6.3). Therefore, no significant indirect cumulative impacts to cultural resources would be expected.

6.3.5.4 Floodplain Values

See Section 6.3.3, Hydrology, Erosion and Sedimentation.

6.3.5.5 Geology and Soils

Implementation of regulated activities under the SAMP/WSAA Process combined with full build-out of the Watershed under the local general plans could result in substantial amounts of grading, cut and fill activities, soil compaction, and possible import or export of fill material in various locations throughout the Watershed. Individual projects would be required to follow approved grading and erosion control plans, construction storm water pollution prevention plans, water quality management plans, and, proposed conditions of the RGP, LOP, and WSAA Process that address erosion and sedimentation. Combined implementation of these various measures would reduce potential cumulative impacts to less than significant levels.

6.3.5.6 Land Use

Implementation of all regulated activities under the SAMP/WSAA Process in combination with full build-out under the local general plans would not be expected to create significant cumulative impacts on land use in the Watershed. The SAMP/WSAA Process is not a land use planning document that designates areas for certain land uses. Rather, the SAMP/WSAA Process establishes a Watershed-specific permitting program to approve discharges of dredged and fill material into waters of the U.S. pursuant to Clean Water Act Section 404 as well as alterations to lakes and streambeds pursuant to California Fish and Game Code Section 1600 *et seq.* The proposed SAMP/WSAA Process allows planned economic uses (primarily land development) to be permitted within the Watershed provided that sensitive aquatic resources are avoided and mitigated to the extent practicable.

Combined with future build-out, regulated activities under the SAMP/WSAA Process would contribute to a cumulative increase in urbanization of the Watershed. This increased urbanization within the Watershed would proceed in accordance with the general plans of the local jurisdictions in the Watershed. These plans contain policies, implementation measures and programs designed to ensure that future development would be compatible with existing and planned land uses, proceed in an orderly fashion, and contribute to the goals and objectives for land use. Future planned development would be reviewed for consistency with the adopted land use plans and policies of the local jurisdictions in accordance with CEQA, the State Zoning and Planning Law, and the State Subdivision Map Act, all of which require findings of plan and policy consistency prior to land use and entitlement approvals. Therefore, potential cumulative land use impacts would not be considered significant.

6.3.5.7 Noise

Future regulated activities under the proposed SAMP/WSAA Process combined with full build-out under the local general plans would generate an increase in the ambient noise environment of the Watershed. The major indirect noise impacts associated with SAMP/WSAA Process regulated activities and projected growth in the Watershed include increased short-term construction noise from grading activities and construction vehicles, and long-term noise increases associated with commercial, industrial, and residential land development including roads and other public infrastructure. Sensitive receptors located in close proximity to construction activities would be potentially impacted. However, future construction and development in the Watershed is not expected to result in cumulatively significant impacts in the ambient noise environment due to noise controls required by municipal codes for the jurisdictions within the Watershed and other noise mitigation measures that would be required by local jurisdictions as discussed in Section 4.6.7.

6.3.5.8 Public Health & Safety

Implementation of regulated activities under the SAMP/WSAA Process in conjunction with build-out of the general plans would generate new residential, commercial, and industrial land uses with their associated increases in residential population and commercial/industrial activities. Because the Watershed in now nearly built-out, it is not expected that new facilities for fire and police would be required, nor would major new facilities be needed to accommodate increased demand on sewerage, natural gas, electricity and telephone/cable services. Also, minor expected increases in household and commercial/industrial waste could be accommodated by the existing waste operators. Therefore, potential cumulative impacts to public health and safety would not be considered significant.

6.3.5.9 Recreation

Combined implementation of all regulated activities under the SAMP/WSAA Process along with full build-out of the local general plans would result in population increases in the Watershed, thus indirectly increasing use and demand of existing local, regional, and wilderness parks. However, future build out would be regulated by local land use authorities requiring preservation and development of parks and other recreational uses to accommodate population growth. Therefore, potential cumulative impacts to recreational resources would not be considered significant.

Additionally, the SAMP/WSAA Process seeks to avoid and minimize impacts in aquatic resource integrity areas. Some aquatic resource integrity areas may be located within recreational areas (e.g., regional parks and wilderness parks). However, designation as an aquatic resource integrity area does not preclude planned future park uses/recreational facilities in these areas.

6.3.5.10 Socioeconomics

Combined implementation of all regulated activities under the SAMP/WSAA Process along with full build-out of the local general plans would result in an increase in jobs, housing and associated residential population. The increase in residential population could be substantial, but would be in accordance with the planned population growth projected by the general plans. The increase in jobs and housing would create beneficial effects on the socioeconomic conditions in the Watershed, including the opportunity to meet housing demand and help increase income in the County. These increases would provide a cumulative benefit to the socioeconomic conditions in the Watershed. It is not anticipated that future build-out would displace existing housing or people, necessitating replacement structures. Thus, no significant cumulative impacts are expected.

6.3.5.11 Transportation/Circulation

Combined implementation of the regulated activities under the proposed SAMP/WSAA Process along with full build-out of the local general plans and associated roads could result in significant, indirect cumulative increases in traffic in the region. This includes both short-term construction traffic and long-term traffic associated with new residential, commercial, and other development projects. While new or expanded roads would be constructed to accommodate new development, in accordance with the MPAH, the increase in traffic volumes could result in potentially significant cumulative impacts to local streets and regional arterials within the Watershed and beyond. The types of mitigation measures that could be required by local lead agencies to reduce potential significant impacts are discussed in Section 4.6.11.

6.3.5.12 Visual Resources

As with existing case-by-case permitting, implementation of regulated activities under the SAMP/WSAA Process along with future build-out of the Watershed may contribute indirectly to cumulative visual impacts within the Watershed. Short-term construction activities, primarily grading activities would cause various disturbances to the existing landforms from a potentially broad area of the Watershed, while the presence of construction vehicles and equipment at a construction site would create a visual impact in the local construction zone. In general, short-term construction impacts would not be cumulatively significant since projects would not likely occur simultaneously.

However, long-term visual changes could create an indirect cumulative impact, resulting from permanently altering the natural topography and placing residential, commercial, industrial structures as well as man-made parks and trails on previously vacant or natural undeveloped land. The significance of visual effects is subjective and depends upon the degree of alteration, the scenic quality of the area disturbed, the sensitivity of the viewers, and the viewer perception of the features in the viewshed.

Most remaining development in the Watershed would result in the conversion of remaining tracts of agricultural land and former MCAS El Toro lands into suburban residential, commercial, and open space/park uses similar to the majority of existing development in the Watershed. Such areas are located in the northern and eastern portions of the Watershed. This conversion would alter the visual character of localized areas, and also impact views of surrounding Santiago and San Joaquin Hills in some locations. However, new residential and commercial development would be planned and designed in accordance with the existing suburban/urban character of the area, and would not be expected to produce a significant visual change in the Watershed overall, though some local areas could experience significant visual impacts (both in terms of obstruction of views and change in visual character). Also, scenic views of rural and natural areas from Sand Canyon, Jeffrey Road, Culver Drive, and Laguna Canyon Road may be impacted as well. New land development would also introduce new sources of light and glare. However, light that would be generated would be typical of urban development, and would not substantially affect views in this area either at night or during the day. Typical development standards required by local zoning ordinances would address the issue of light and glare.

Mitigation measures that could be required by local lead agencies to reduce impacts are discussed in Section 4.6.12.

6.3.5.13 Water Supply and Conservation

Implementation of regulated activities under the SAMP/WSAA Process in conjunction with full build-out of the general plans in the Watershed would result in increased demand for water supplies in the region. This increased demand is dependent on net increases in population, square footage of new development, and intensity of uses. Implementation of Senate Bill No. 610 and Senate Bill No. 221 requires that a Water Supply Assessment (WSA) be prepared for new development activities (See Section 4.6.13). The WSA relies on water supply information from the local water districts, which includes IRWD for this Watershed. The WSA would be used to assure that adequate water supplies are available for development, without significant impacts on either groundwater or surface water resources within and beyond the Watershed boundaries. Therefore, no significant cumulative impacts to water supply and conservation activities are anticipated.

10.0 CONSISTENCY WITH REGIONAL AND LOCAL PLANS

NEPA requires that the federal lead agency identify possible conflicts between the proposed action and the objectives of state and local land use plans and policies. In addition, potential inconsistencies with local plans should be described, along with actions that the federal agency would take to avoid this inconsistency. Under the provisions of CEQA Guidelines Section 15125(b), an EIR must discuss any inconsistencies between the proposed project and applicable general plans and regional plans.

The SAMP/WSAA Process is a Watershed (landscape-level) approach to preserving and managing sensitive aquatic resources while allowing economic uses to be permitted within the Watershed consistent with the requirements of federal law (CWA Section 404) and state code (FGC Section 1600 *et seq.*). State and federal waters, including wetlands, have been identified in the Watershed, and to the extent feasible, have been avoided. Unavoidable impacts to aquatic resources will be minimized and fully mitigated according to the SAMP Permitting Program/WSAA Process and mitigation framework.

In this section, the SAMP/WSAA Process is evaluated for consistency with the Orange County Central and Coastal Natural Community Conservation Plan (NCCP), the Corps Watershed Management Plan (Corps 2001a,b), SCAG Growth Vision Report (2004), Orange County Transportation Authority Master Plan of Arterial Highways (2005); County of Orange General Plan (2005), and City of Irvine General Plan (1999, 2005, 2006). This section also discusses SAMP/WSAA Process consistency with other municipal general plans of the Watershed.

10.1 NATURAL COMMUNITY CONSERVATION PLAN (NCCP) / HABITAT CONSERVATION PLAN (HCP)

10.1.1 Background

The County's Natural Community Conservation Plan (NCCP) / Habitat Conservation Plan (HCP) is a program designed to provide long-term regional protection of the natural vegetation and wildlife diversity of the region while allowing compatible land use and appropriate development to occur. In April 1996, the Orange County Board of Supervisors adopted the Central-coastal Subregion NCCP/HCP program. The Reserve System identified within the NCCP/HCP preserves approximately 18,500 acres of open space designed to function as a multiple-habitat system. The Reserve System restricts the kinds of permitted uses to protect long-term habitat values. Residential, commercial, and industrial uses are prohibited, as are new active recreational uses outside already-disturbed areas. However, the NCCP/HCP does allow for non-habitat uses that would need to be sited in the Reserve System, such as infrastructure facilities including roads, flood control, sanitary landfills, utilities, and water storage. New recreational facilities would be allowed in locations compatible with habitat protection based on the understanding that recreational use is subordinate to habitat protection within the Reserve. The primary goal of the NCCP/HCP is to protect and manage habitat supporting a broad range of plant and animal populations that are found within the Central and Coastal Subregion. To accomplish this goal, the NCCP/HCP creates a subregional habitat Reserve System and implements a coordinated program to manage biological resources within the habitat preserve. Creating a defined Reserve System provides certainty to the public and affected landowners with respect to the location of future development and open space within the subregion.

10.1.2 Relation to the proposed SAMP/WSAA Process

As described in Section 3.2.2, the NCCP/HCP provides for the regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development growth. This approach provides an alternative to "single species" conservation through the formulation of regional, natural community-based, and habitat protection programs. The NCCP/HCP was developed to provide adequate mitigation for impacts to the California gnatcatcher and other Identified Species' habitat. The Department and USFWS developed the NCCP/HCP that provides coverage under Section 10 of FESA and CESA to those who are signatory to the NCCP/HCP. The NCCP Central and Coastal sub-region extends within the Watershed. As under the existing Corps/Department permitting, qualifying applicants within the Watershed seeking coverage under the SAMP/WSAA Process can continue to utilize the NCCP/HCP process for authorizing the take of a listed species, including the federally listed coastal California gnatcatcher. The SAMP's long-term conservation elements include a suite of policies and measures for aquatic resource management. Among these are an adaptive management framework and the requirement/recommendation for buffers. These measures also serve to coordinate the SAMP/WSAA Process with the existing NCCP reserve system. The two plans, one focused on upland species (NCCP) and one focused on riparian resources (SAMP/WSAA Process), are complementary approaches to protecting and enhancing habitats used by listed species.

The NCCP established a habitat reserve system for native habitat. The focus of the NCCP is to protect target sensitive species, such as the coastal California gnatcatcher. Of the 17,125 17,137 acres identified as aquatic resource integrity areas, including aquatic resources and their contributing upland areas of influence, 12,408 acres or 72% fall within the boundaries of the NCCP Reserve system. With regard to the Watershed's aquatic resources omitted from coverage under the NCCP, some already lie within the NCCP Reserve (and other open space areas and have been afforded some level of site protection independent of the SAMP/WSAA Process). For instance, 521 acres or 67% of the high and medium integrity riparian habitat (also identified as an aquatic resource integrity area) are located within the NCCP Reserve system. However, the SAMP/WSAA Process would conserve an additional 248 259 acres of high and medium integrity riparian habitat. Other riparian habitat is located in non-NCCP designated open space areas, including the City of Irvine's Open Space Preserve, and UCI's San Joaquin Freshwater Marsh Preserve.

Consistency Determination: The NCCP and SAMP/WSAA Process have many similar goals and objectives. The SAMP/WSAA Process is expected to strengthen the NCCP by including conditions regarding riparian-oriented species, such as the least Bell's vireo, and providing a process for the conservation, restoration, and rehabilitation of aquatic resource integrity areas located within and adjacent to the NCCP areas. Much of the aquatic resource integrity areas of the Watershed are located within the NCCP area; thus, the two planning processes cover similar areas, but focus on different aspects of the environment (riparian versus upland). The SAMP/WSAA Process also includes prioritization for connecting currently isolated NCCP areas (e.g., linking the northern and southern portions of the Watershed).
There are several federally listed species including (but not limited to) the coastal California gnatcatcher and the least Bell's vireo, and two previously designated critical habitats within the Watershed, including those for the coastal California gnatcatcher and the Riverside fairy shrimp. The Corps has informally consulted with the USFWS to ensure any future impacts to federally listed species, or their critical habitat, are not adverse. With this Draft EIS/EIR, the Corps has initiated formal consultation for the SAMP/WSAA Process in a letter pursuant to Section 7 of the ESA. Therefore, due to the proposed RGP, LOP, and WSAA Process conditions relating to projects within aquatic resource integrity areas, mitigation sites and those affecting listed species, the SAMP/WSAA Process is consistent with the NCCP.

10.2 NEWPORT BAY / WATERSHED MANAGEMENT PLAN

10.2.1 Background

The Committee on Public Works, House of Representatives, adopted a resolution in May 8, 1964, authorizing federal monies for the study of the Santa Ana River Basin and Orange County Streams, California. In addition, specific directive language was provided by Congress within the Conference Report on H.R. 2203, Energy and Water Development Appropriations Act, 1998, (House of Representatives - September 26, 1997), under General Investigations. The conference agreement stated: "...for the Corps of Engineers to undertake a reconnaissance study for management of the Newport Bay/Watershed in the interest of environmental preservation and restoration, water quality and sediment control, and the avoidance or minimization of undesirable impacts resulting from urbanization and other present and future Watershed activities".

The Baseline Conditions Report (F-3 Milestone; Corps 2001a,b) was the first report in a series of deliverables for the Watershed that led to a Feasibility Study, Final Feasibility Report and a Watershed Management Plan. The Baseline Conditions Report summarizes the findings, results, and data collected for the baseline (existing) conditions pertaining to hydrology, hydraulics, sedimentation, groundwater, geology, soils, economics, and the environmental setting of the Watershed. Some of the data presented in this report have been used in the preparation of the baseline sections of this Draft EIS/EIR.

The Corps, in conjunction with the County of Orange, and other stakeholders, conducted the Feasibility Study for the Watershed (F-4 Milestone) that is being used to prepare the comprehensive Watershed Management Plan (hereafter, Plan). The goal of the Feasibility Study was to maintain and/or improve the health of the Watershed. The Feasibility Study addressed restoration opportunities, and identified measures that would strike a balance between the need for economic development and the need to preserve valuable Watershed (and Newport Bay) resources.

The Corps prepared a draft Plan (F-4 Milestone; Corps 2004, Public Draft; Corps 2005b,c). The final plan will be completed and submitted with the Draft Feasibility Report (F-5 Milestone). The Watershed Management Plan is intended to provide a decision-making framework within which specific structural projects, non-structural projects, and local activities will be identified, and BMPs and other relevant information will be included. The Plan will be the overall blueprint for Watershed improvement activities. Measures that are part of the Plan, but fall outside of the Corps mission, can be implemented by other interested local, state, and federal agencies.

10.2.2 Relation to the proposed SAMP/WSAA Process

The Plan will cover topics outside the scope of the proposed permitting and mitigation programs of the SAMP/WSAA Process. The Plan considers (a) the social, economic, and environmental aspects of the Watershed, and (b) the mechanisms required to "incentivize and enable" desired actions. The Plan includes topics such as data management, design of natural and built environments, policy, finance, and communication (Corp, 2004). The proposed SAMP/WSAA Process, developed by the Regulatory Division of the Corps, focuses on a new permitting process and mitigation program for projects requiring Corps authorization for proposed activities in the Watershed. Many local-level concerns related to water resources and current water quality problems, may not be directly addressed by the SAMP/WSAA Process, and thus may be addressed through the parallel process involving the Corps Planning Division and County of Orange.

Both the Plan and the SAMP/WSAA Process have been developed by the Corps of Engineers Los Angeles District and have been designed to complement each other. Most significantly, both documents have been created with the other in mind. Given that the Corps has limits to the level of Watershed management it can require through the regulatory process, both documents provide an outline for how the regulatory process can support a comprehensive resource management process, and how communities and agencies can successfully implement and benefit from broad-based Watershed management efforts.

Additionally, it is anticipated that a Mitigation Coordination Program administrator (proposed as one concept for future management in the Watershed) could compete for and obtain non-regulatory related monies to acquire conservation lands, conduct public education and outreach activities, and/or conduct specific non-mitigation, restoration activities within the aquatic resource integrity areas. Funding sources may include, but are not limited to existing and future grant programs, federal, state, and local watershed restoration funding, bond monies, or conservation fees collected by local land use authorities. Additionally, ecosystem restoration projects determined by the Corps to have federal interest may be eligible for receiving federal monies administered by the Corps. The Corps Newport Bay Watershed Management Plan (2005c) identifies a number of revenue-generation strategies that could be adopted by a Mitigation Coordination Program administrator.

Consistency Determination: Coordination of Participating Applicants at the SAMP/WSAA Process stakeholder meetings, Newport Bay Watershed Management Committee meetings, and internal meetings between staff of the Corps planning and regulatory branches, have ensured compatibility between the two plans. The proposed SAMP/WSAA Process overlaps with the Plan by providing delineation and functional assessment data, restoration planning and site prioritization, and mitigation policies. Many projects identified in the Corps Restoration Plan (Smith and Klimas, 2004) may eventually be implemented through the finance and communication aspects of the Plan. It is expected that implementation of the SAMP/WSAA Process will not constrain or eliminate activities encouraged by the Plan such as future restoration, water quality, or other related projects (Corps, 2005 b,c).

10.3 COUNTY OF ORANGE GENERAL PLAN

Unincorporated Orange County comprises a substantial portion of the Watershed. The Orange County General Plan Land Use Element (LU-3-1) states, "The final portions of the available land within the

County will achieve first generation build-out sometime after the year 2020, varying somewhat by geographic area." It should be noted that Orange County considers build-out in conceptual terms only, as redevelopment and intensification will continue after all developable land has been used (Corps, 2001).

The Santiago Hills overlook the Watershed from the north and provide the largest remaining block of open space in the Watershed. These hills are largely protected from future development under the NCCP/HCP agreement. The Frank R. Bowerman Landfill is located north of SR-241 in the Bee Canyon area, surrounded by NCCP reserve areas. The estimated closure date of the landfill is 2053. Upon closure, it is anticipated that the landfill site would be converted to a recreational facility. Much of the remaining land to the east and west of the landfill will be incorporated into the Limestone-Whiting Ranch Wilderness Park in the future (Corps, 2001). Thus, few County areas in the Watershed remain available for future development.

10.3.1 Land Use Element

The Land Use Element of the General Plan contains 13 policies, applicable to all geographic areas of unincorporated Orange County were adopted to guide short- and long-term planning and development. Of the thirteen policies, only two are applicable to the environmental topic areas of the SAMP/WSAA Process. These include Policy 8 – Enhancement of the Environment, and Policy 13 – Urban Storm Water Runoff Regulations. Two additional county programs are applicable to the SAMP/WSAA Process and include the Environmental Review Process and the NCCP (see Section 11.1, above). The consistency of the proposed SAMP/WSAA Process with these applicable policies and programs in the County's General Plan is addressed below.

- Land Use Element, Policy 8: Enhancement of the Environment. To guide development so that the quality of the physical environment is enhanced.
- Land Use Element, Policy 13: Urban and Storm Water Runoff Regulations. Established for the reduction of water pollution. Updated objectives that respond to water pollution regulations in the Santa Ana RWQCB include:
 - Limit disturbances to natural water bodies and drainage systems; conserve natural areas; protect slopes and channels; and minimize impacts from storm water and urban runoff on the biological integrity of natural drainage systems and water bodies.
 - Look for opportunities that minimize changes in hydrology and pollutant loading; mitigate projected increases in pollutant loads and flows by incorporating structural and non-structural BMPs; ensure that post-development runoff rates and velocities from a site have no significant adverse impact on downstream erosion and stream habitat; seek to minimize the quantity of storm water directed to impermeable surfaces and the MS4s; and maximize the percentage of permeable surfaces to allow more percolation of storm water into the ground.
 - Look for opportunities to preserve wetlands, riparian corridors, and buffer zones and establish
 reasonable limits on the clearing of vegetation from the project sites.
 - Encourage the use of water quality wetlands, biofiltration swales, watershed-scale retrofits when such measures would be effective and are technically and economically feasible.
 - As appropriate, provide for permanent measures to reduce storm water pollutant loads in storm water conveyed from development sites.

- Establish guidelines for areas particularly susceptible to erosion and sediment loss.
- Establish a Condition of Approval such that permanent water quality treatment BMPs are adequately constructed, operated, and maintained throughout the life of a project.

Consistency Determination: Policy 8 ensures that all land use activities enhance the physical environment while recognizing the need for economic development. This policy also establishes the preservation of those environmental resources that have been identified as high value resources. The SAMP/WSAA Process is consistent with Policy 8 of the Orange County General Plan because the purpose of the SAMP/WSAA Process is to provide for reasonable economic development with the protection and long-term management of sensitive aquatic resources. To the extent feasible, federal waters of the U.S., including wetlands, are avoided and unavoidable impacts to aquatic resources are minimized and fully mitigated under the SAMP/WSAA Process. The SAMP/WSAA Process is consistent with Policy 13 because the SAMP/WSAA Process is a management plan designed to protect aquatic resources and includes LOP and RGP general conditions to minimize impacts to water quality. Authorizations under the SAMP will require certification under CWA Section 401 to ensure water quality standards are maintained. Furthermore, the objectives listed above are consistent with the eight SAMP Tenets, which are guiding principles that achieve the goal of protecting the biological, chemical, and physical integrity of the waters of the U.S. and avoiding impacts to fish and wildlife.

Resource Element

The Resource Element of the County of Orange General Plan (Chapter VI) includes six components with policies that pertain to the management and conservation of resources. Of the six components that make up this Element, three components: Natural Resources, Water Resources, and Open Space are applicable to the SAMP/WSAA Process. The consistency of the proposed SAMP/WSAA Process with the Resource Element's policies in the County's General Plan is addressed below.

- Resources Element, Goals, Objectives and Policies: Natural Resources Component, Goal 3, Policy 5: Landforms. To protect the unique variety of significant landforms in Orange County through environmental review procedures and community and corridor planning activities.
- Resources Element, Goals, Objectives and Policies: Water Resources Component, Goal 1, Policy 5: Water Quality. To protect water quality through management and enforcement efforts.
- Resources Element, Goals, Objectives and Policies: Water Resources Component, Goal 1, Policy 6: Intergovernmental Coordination. To encourage and support a cooperative effort among all agencies towards the resolution of problems and the utilization of opportunities in the planning and management of water resources.

• Resources Element, Goals, Objectives and Policies: Open Space, Goal 3, Policies. To encourage the conservation of open space lands, which prevent erosion, siltation, flood, and drought, and to discourage the early conversion of open space to some other land use. To ensure the wise use of County resources by identifying, planning, or assisting in the planning for and assuming management responsibility when appropriate for open space areas used for the managed production of resources including, but not limited to, forest lands, rangeland, agricultural lands, and areas of economic importance for the production of food or fiber; areas required for recharge of groundwater basins; tidelands, beaches, bays, estuaries, marshes, rivers, and streams, which are important for the management of commercial fisheries and for beach sand replenishment; and areas containing mineral deposits.

Consistency Determination: The goals and policies of the Resource Element are directed at ensuring that as urbanization increases an adequate supply of all necessary resources will be available to meet the County's growing needs. Overall, the SAMP/WSAA Process is consistent with the policies indicated in the Resource Element because the policies guide and direct local government decision-making in resource-related matters and also facilitate coordination with regional, state, and federal policies and programs. The Resource Element recognizes the need for economic development, but also establishes guidelines that promote development while providing protection and long-term management of the County's resources. The SAMP/WSAA Process provides similar guidance for future management and protection of aquatic resources in the Watershed.

Specifically, elements of the proposed action that parallel those of the Resource Element include the maintenance and restoration of: diverse and contiguous riparian corridors; hydrologic, water quality, and habitat integrity of riparian habitat; floodplain connection and sediment regimes; and headwater areas. In addition, the SAMP/WSAA Process involves an assessment of the functions and values of aquatic resources in the entire Watershed, and the establishment of a watershed-specific permitting system for issuance of 404 permits and streambed alteration agreements, as well as the identification of aquatic resource integrity areas.

The Safety Element

The Safety Element in the County of Orange General Plan presents policies related to potential and identified hazards and their associated safety considerations along with mitigation and the implications for development. The Natural Hazards component discusses flood and seismic/geologic hazards and is applicable to the SAMP/WSAA Process. The consistency of the proposed SAMP/WSAA Process with the Safety Element policies in the County's General Plan is addressed below.

Chapter IX: Safety Element, Goals, Objectives and Policies: Flood Hazards. The goals and objectives of this section provide a strategy for addressing and mitigating potential flood hazards.

- **Policy 6:** To limit erosion and sediment transport from development areas to bays and harbors.
- **Policy 7:** To permit reasonable movement of sediment to the open ocean for beach sand replenishment through remedial measures.
- **Policy 10:** To monitor and evaluate studies of the uses of non-structural alternatives, including more compatible land use planning adjacent to watercourses for flood control purposes.

• **Policy 12:** To create design criteria, which minimizes or mitigates impacts associated with crossing floodplains by development.

Consistency Determination: The goals and policies of the Safety Element provide a strategy for addressing and mitigating potential flood hazards while allowing development within the unincorporated areas of the County. The proposed project is consistent with these goals and policies because the purpose of the SAMP/WSAA Process is to provide for reasonable economic development and the protection and long term management of sensitive aquatic resources. To the extent feasible, federal waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated. For areas outside of aquatic resource integrity areas, the applicable Mitigation Policies and General Conditions, along with applicable BMPs would limit adjacent and downstream impacts. Thus, the SAMP/WSAA Process is consistent with the Safety Element's goals and policies associated with minimizing erosion and sedimentation impacts in proposed development areas in the County of Orange. The SAMP Tenets (Section 2.1.1.3) which guided the Corps and Department in SAMP/WSAA Process development and help meet the objectives of the CWA and FGC include measures such as: 1) maintain and/or restore sediment sources and transport equilibrium; and 2) maintain and/or restore floodplain connection. These processes are important for the long-term sustainability of riparian habitat in the Watershed.

10.4 ORANGE COUNTY TRANSPORTATION AUTHORITY MASTER PLAN OF ARTERIAL HIGHWAYS

The Orange County Master Plan of Arterial Highways (MPAH) (2005) establishes an Orange Countywide roadway network intended to ensure coordinated transportation system development among local jurisdictions in Orange County. The primary purpose of the MPAH is to describe an arterial highway system that effectively serves existing and adopted future land uses in both incorporated and unincorporated areas of Orange County. As the administrator of the MPAH map, OCTA is responsible for maintaining the integrity of the MPAH map through coordination with cities and the County. Consistency with the MPAH is essential to the integrity of a functional, regional highway network. It ensures that each city and the County implement the same base transportation network using similar standards and assumptions. Consistency with the MPAH is also required for local agencies to be eligible for the Orange County Combined Transportation Funding Programs.

To aid in establishing consistency among plans, all jurisdictions are encouraged to use common land use assumptions and travel demand projections. OCTA facilitates the use of these common assumptions through administration of the Orange County Transportation Analysis Model (OCTAM), which was previously maintained by the County of Orange. OCTA established goals and policies to serve as countywide guidelines and provide direction to local agencies for implementing the MPAH. The goals and policies are based on the regional policies found in the County of Orange General Plan Transportation Element. A goal is a general expression of County-wide values and is abstract in nature. A policy is a specific statement that guides decision-making. The following goal and policies from the MPAH are relevant to water and aquatic resources being regulated by the SAMP/WSAA Process or environmental policies in general.

Goal: Provide an Arterial Highway System that Supports Land Use Policies of the County and Cities. **Policies:** The MPAH will establish a coordinated arterial highway system that is in balance with the General Plan Land Use Elements of the County and cities. OCTA will monitor local agencies to ensure that the arterial highway system is implemented in a manner that supports the implementation of adopted overall land use policies and that is consistent with financing capabilities. OCTA will provide guidance for the development of subarea traffic models used by local jurisdictions to determine the quantitative impacts of land use decisions on the circulation system, so as to be consistent with OCTAM.

Consistency Determination: The SAMP/WSAA Process proposes an alternative permitting and mitigation program for the Watershed; as such, it does not preclude any road construction and maintenance activities (see Section 4.6.11). Any proposed roadway project requiring a Corps permit would need to meet the terms and conditions of the SAMP/WSAA Process; any project not meeting the criteria would proceed through the SIP process. Also, the proposed SAMP/WSAA Process's goal of allowing reasonable economic development (which includes roads) while protecting sensitive resources is consistent with the MPAH. The OCTA proposes to allow development of arterial highways that are in balance with the General Plan Land Use Elements of the jurisdictions within the Watershed. Because the SAMP/WSAA Process is consistent with these general plan elements (as described in Section 11.3), the proposed SAMP/WSAA Process would also be considered consistent with the MPAH.

10.5 Southern California Association of Governments

The SCAG region covers more than 38,000 square miles that include the counties of Orange, Los Angeles, Ventura, Riverside, San Bernardino and Imperial. SCAG's Growth Vision Report (June, 2004) presents the comprehensive Growth Vision for the SCAG region and provides an analysis of the Growth Vision scenario. It also discusses the modeled impacts and effects the Growth Vision scenario is likely to have on Southern California.

The SCAG report indicates that although multi-family housing construction has increased in Orange County during the last few years, it still has not kept up with population growth. The increase in construction of townhomes also suggests that there are housing types that are becoming more in demand. While townhomes account for only 18 percent of the region's multi-family units, they accounted for more than 40 percent of the growth in multi-family housing built from 1990 and 2000. The SCAG report found that the gap in unmet demand for greater housing diversity will continue to grow without a regional long-term planning effort. In particular, the housing need for new employees entering the work force and senior housing must be addressed if the region is going to sustain economically viable and healthy communities.

Regarding land supply, the SCAG report states that the region does face a severe limit on the amount of undeveloped land suitable for development. The Coastal Basin of Los Angeles and Orange Counties, along with San Fernando Valley, is home to 77 percent of the region's jobs and 71 percent of its population. Under current general plans, capacity on vacant land accommodates only 238,000 households. This relates to only 29 percent of the SCAG 2030 growth projection for this area could be accommodated through new development on vacant land.

With limited undeveloped land, SCAG found that developed land will become increasingly important in accommodating growth. On a regional basis, infill, or new development in already developed areas, will be the method used to construct nearly half of the new housing. With the Growth Vision alternative, the Riverside and San Bernardino High Desert modeling zones absorb the most greenfield development – new development on vacant land. Ventura and Orange Counties have the least development on vacant land. Furthermore, with the Growth Vision alternative, Orange County absorbs almost half (46 percent) of

its households through infill. High percentages of infill development indicate that a larger proportion of growth is occurring where development has already occurred before, through recycling of older buildings.

In their Growth Vision report, SCAG recognized that open space is integral to the health of communities. In an effort to address this issue, SCAG developed a principle to promote sustainability for future generations. The guidelines associated with the sustainability principle and that are relevant to water and aquatic resources being regulated by the SAMP/WSAA Process or environmental policies in general are presented below:

- Preserve rural, agricultural, recreational, and environmentally sensitive areas;
- Focus development in urban centers and existing cities;
- Develop strategies to accommodate growth that use resources efficiently, eliminate pollution, and significantly reduce waste; and
- Utilize "green" development techniques.

Consistency Determination: As stated throughout this document, the SAMP/WSAA Process is a Watershed (landscape-level) approach to preserving and managing sensitive aquatic resources while allowing economic uses to be permitted within the Watershed consistent with the requirements of federal law (CWA Section 404) and state code (FGC Section 1600 *et seq.*). Economic uses include land development for residential, commercial, industrial, and institutional development necessary to accommodate planned population and economic growth for the region. As the SAMP/WSAA Process is a watershed-specific permitting program to replace existing case-by-case permitting in the Watershed, it does not present a conflict with SCAG's vision for growth and sustainability principles in the Growth Vision Report. The SAMP/WSAA Process accommodates planned growth while managing and enhancing high integrity aquatic resources and promoting the long-term ecosystem function of the Watershed.

10.6 CITY OF IRVINE GENERAL PLAN

The City of Irvine encompasses 45 square miles and is the largest jurisdiction that lies completely within the Watershed. Approximately 29,156 acres, or 38 percent of the Watershed, is within the City of Irvine. Approximately 60 percent of the City is currently developed.¹ The City of Irvine estimates full build-out by 2040. The northern edge of the City boundary, towards the Santiago Hills, is unincorporated County land and within the City's Sphere of Influence.

The City of Irvine's General Plan represents the long-range vision of the City. It is a comprehensive statement of Irvine's development and preservation policies for all geographic areas of the City and its sphere of influence, and the relationships between social, financial, environmental, and physical characteristics.

The following objectives from the City of Irvine General Plan are relevant to water and aquatic resources being regulated by the SAMP/WSAA Process or environmental policies in general.

¹ It is noted that a large area within the central portion of Irvine is proposed for the Orange County Great Park. The SAMP/WSAA Process is consistent with the Great Park concept because of inter-agency coordination, the planned restoration of riparian corridors through the site (CBA 2003, 2004), and the possible use as a mitigation bank.

- Objective L-2: Biotic Resources, Policy (b), Resource Areas 6 and 13: Development as shown on the Land Use Element diagram will be allowed in Marsh Area 6 and Habitat Area 13 in recognition of the dedication of similar resources in the Preservation Areas. Development areas located within Areas 6 and 13 shall not be subject to any preservation, protection, requirements, measures, or mitigations set forth in the Master Environmental Assessment (MEA) for these areas except that riparian/wetland habitat adversely impacted by such development will be mitigated in accordance with procedures established in an open space management and conservation plan.
- Objective L-2: Biotic Resources, Policy (b), Resource Area 28: Development as shown on the Land Use Element diagram will be allowed in Buffer Area 28 provided that any significant adverse development impacts on habitat in Riparian/Wetland Area 9 will be mitigated. The final mitigation measures shall be established in an open space management and conservation plan. Such mitigation measures shall be developed with consideration for the type and resilience of the habitat, the specific type and design of development, and the effect of natural and man-made barriers in the area.
- Objective L-2: Biotic Resources, Policy (d): Mitigation banks in the San Joaquin Marsh may be created for selected development in the City and its sphere of influence. That portion of the preservation area in San Joaquin Marsh subject to the Habitat Enhancement and Wetlands Program (approximately 85 acres) will be dedicated to the University of California Natural Reserve System in accordance with the program. Portions of the preservation area in San Joaquin Marsh not subject to the above program may be used as a mitigation bank for development impacts in development areas adjacent to the marsh and in other locations throughout the City. Riparian habitat within development areas may be modified subject to applicable state and federal regulatory requirements of the United States Fish and Wildlife Service, Army Corps of Engineers and the California Department of Fish and Game and mitigation for such modification may be accomplished off site within the San Joaquin Marsh.
- Objective L-2: Biotic Resources, Policy (e): Maintain significant riparian areas in preservation areas as natural corridors and sources of shelter, water, and food for wildlife, except where required for infrastructure.
- **Objective L-2: Biotic Resources, Policy (g):** Allow the enhancement of habitat areas, particularly riparian habitat, in all preservation areas as mitigation for any development impacts in other areas. Promote agreements between the California Department of Fish and Game and the landowner to accomplish the creation of new habitat in preservation areas consistent with applicable standards and procedures.

Consistency Determination: The SAMP/WSAA Process is consistent with these policies because it proposes no net loss of acreage and functions of waters of the U.S. With implementation of the SAMP/WSAA Process, the goal of the no net loss can be accomplished through avoidance, minimization of impacts, and compensatory mitigation, as proposed in the SAMP mitigation framework and required by the Section 404(b)(1) Guidelines. The SAMP/WSAA Process is consistent with this policy because it proposes to maintain/protect/restore diverse and contiguous riparian corridors and allow for the continued functioning of downstream riparian ecosystems.

• **Objective L-5:** Geophysical Resources, Policy (a): Promote the development of a flood control channel to handle projected flood waters of the San Diego and Peters Canyon Washes. Where practicable, require that the channel be a natural swale channel with grass or other natural

planting as an integral part of its design as opposed to a concrete design. Ensure environmental impact reports for future development to consider impacts to waterways. Pursue waterway preservation policies while considering drainage, water conservation, storage, and flood control purposes. Promote the development of all lakes and reservoirs for the public use and do not allow residential development at their edge. Study, where possible and practicable, the appearance and ecology of certain existing natural drainage channels to determine which channels or portions of the channels, conservation measures shall be applied to. Channels or portions of channels determined to be suitable for preservation purposes may be modified to enhance their ecology, long term viability and maintenance. Those channels or portions of channels shall be integrated into the design of the surrounding development. Minimize alterations of major creek courses and bottoms. Allow no net loss quantity or quality of surface and subsurface water flow into the San Joaquin Marsh.

• **Objective L-5:** Geophysical Resources, Policy (b): Develop grading standards which reflect sensitivity to land form, habitat, Watershed protection, and appropriate land use intensities.

Consistency Determination: The SAMP/WSAA Process is consistent with these policies because it proposes the following: No net loss of acreage and functions of waters of the U.S.; maintain/protect/restore hydrologic, water quality, and habitat integrity of riparian ecosystems; the protection of headwater areas. The Tenets relating to sediment regime and floodplain connection also address the physical aspects of watershed integrity.

- **Objective L-8:** Preservation Areas, Policy (d): Permit land form, vegetation, and drainage modifications pursuant to all allowable uses except in riparian vegetation areas.
- **Objective L-8:** Preservation Areas, Policy (e): Ensure that riparian vegetation is not significantly modified, except as necessary to provide fire protection, access roads, and flood control, drainage, water, sewer, and utility facilities, and except where habitat is to be enhanced as part of a mitigation program approved by the California Department of Fish and Game.
- **Objective L-8:** Preservation Areas, Policy (g): Participate in cooperative efforts with federal, state, and county agencies and land owners in planning and preserving regionally significant conservation and open space areas within the City and its sphere of influence (Lomas Ridge, Bommer and Shady Canyons, and San Joaquin Marsh).
- **Objective L-8:** Preservation Areas, Policy (I): Maintain significant riparian areas within preservation areas as natural corridors, sources of shelter, and water for wildlife.
- **Objective L-8:** Preservation Areas, Policy (k): Preserve and enhance the San Joaquin Marsh as a habitat resource and mitigation bank through implementation of the "San Joaquin Marsh Habitat Enhancement and Wetlands Creation Program" (See Biotic Resources Program Objective L-2, policy (d).

Consistency Determination: The SAMP/WSAA Process is consistent with these policies because it proposes to maintain/protect/restore: diverse and contiguous riparian corridors; hydrologic, water quality, and habitat integrity of waters of theU.S and state jurisdictional waters; and protect riparian areas and associated habitats supporting state and federally listed species. Many areas within the Watershed with high and medium integrity ratings were defined as "aquatic resource integrity areas." Although not a direct conservation mechanism, resources with this designation are subject to greater regulatory oversight, protective conditions and mitigation. The SAMP/WSAA Process provides a framework for pre-

application coordination between agency staff, land owners, and project proponents who seek authorization from the Corps and Department.

• **Objective L-12: Water, Policy (b):** Study, where possible and practicable, the appearance and ecology of certain existing natural drainage channels to determine which channels, or portions of the channels, to which conservation measures shall be applied. Channels or portions of channels determined to be suitable for preservation purposes may be modified to enhance their ecology, long term viability, and maintenance. Those channels or portions of channels shall be integrated into the design of the surrounding development.

Consistency Determination: The SAMP/WSAA Process is consistent with these policies because it proposes the following: no net loss of acreage and functions of waters of the U.S; maintain/protect/restore hydrologic, water quality, and habitat integrity of riparian ecosystems; and protection of headwater areas. The Tenets relating to sediment regime and floodplain connection also address the physical aspects of watershed integrity. The terms and conditions of the LOP, RGP, and WSAA Process address water quality concerns, and a Section 401 water quality certification is required to demonstrate compliance with state water quality standards.

10.7 UNIVERSITY OF CALIFORNIA, IRVINE LONG RANGE DEVELOPMENT PLAN (UCI LRDP)

The primary purpose of the UCI LRDP is to provide a guide for the physical development of the UCI campus. Components of the LRDP include a development plan designed to meet UCI's academic and institutional objectives as well as a land use map to guide the siting of future development. The UCI campus consists of approximately 1,470 acres and is located in the southern portion of the City of Irvine and is adjacent to the City of Newport Beach. Over 50 percent of the campus is currently developed or undergoing development. Most development has occurred in the central campus, while development of the outer campus areas is ongoing. The undeveloped areas consist of rolling topography covered with naturalized grasses, with pockets of native vegetation and wildlife habitat occurring throughout the outer campus. The LRDP is accompanied by a program EIR in conformance with CEQA. The EIR contains detailed discussion of UCI's existing environmental setting, potential environmental impacts of the LRDP, and proposed mitigation measures.

Nine land use categories are associated with the LRDP. Recreation and Open Space is one of the nine land use categories included in the LRDP. This land use category is relevant to water and aquatic resources being regulated by the SAMP/WSAA Process and is described below:

- Recreation and Open Space The recreation and open space system for the campus is comprised of several components: the UCI Open Space Reserve; a network of open space corridors; community parks; athletic/recreational facilities; and the buffer area to the San Joaquin Freshwater Marsh. Approximately 430 acres (30 percent) of the campus will be dedicated to recreation and open space, excluding open space located within residential neighborhoods and building landscaping.
- **Open Space Reserve** The Open Space Reserve is located south of the central academic core between the University Hills faculty/staff housing community and the West Campus Research Park. This area contains the majority of Coastal Sage Scrub habitat on campus and provides an

on-campus location for teaching and research related to Coastal Sage Scrub and ecological restoration within this habitat.

- **Open Space Corridors** The LRDP contains a significant network of open space corridors consisting of Aldrich Park, greenbelts, buffer zones, and habitat corridors. These linkages provide a passive open space network for the campus community, including: pedestrian and bike trails; habitat corridors consistent with campus and regional habitat planning objectives; and buffers between UCI land uses. The corridors within the outer campus in particular will provide opportunities for habitat linkages and will be developed with appropriate native plantings. Specific areas of this network are enlisted in the regional NCCP Program.
- San Joaquin Marsh The San Joaquin Freshwater Marsh is an important site for teaching, research, and public education. The Marsh is owned and operated by the UCNRS. Although not part of the UCI campus, the contiguity of the Marsh to the campus makes it a vital element in the UCI open space network. The LRDP includes a marsh open space buffer area located between proposed development on the North Campus and the Marsh Reserve, as described in a 1989 MOU between UCI and the UCNRS. This MOU addresses the buffer's width and configuration.

Consistency Determination: In their LRDP, UCI proposes remaining campus development while protecting resources such as the CSS habitat and open space corridors. Providing buffers around these areas and maintaining consistency with campus and regional habitat planning objectives guarantee preservation and protection of these resources. The San Joaquin Marsh will be protected through the MOU between UCI and the UCNRS. The Tenets, terms, and conditions associated with the SAMP/WSAA Process (as well as other provisions discussed in Section 11.6) are consistent with the UCI LRDP, and are not expected to restrict the overall approach of the LRDP.

10.8 OTHER MUNICIPAL GENERAL PLANS

The general plans of the remaining municipalities of the Watershed include city of Santa Ana (1998, 2005), city of Tustin (1993, 2005), city of Newport Beach (2006a,b), city of Orange (2004, 2005), city of Lake Forest (1994, 2004, 2006), city of Laguna Hills (1994a,b; 2005), and city of Laguna Woods (2003, 2005). SAMP/WSAA Process consistency with these plans is discussed below.

Consistency Determination: Overall, the SAMP/WSAA Process is consistent with future development presented in these local general plans because projects that could cause significant aquatic resource impacts would be required by the particular jurisdiction to modify the project to avoid the impact, or require mitigation measures to reduce the impact. Also, many of the permits that may be issued as a result of the SAMP/WSAA Process are for projects or activities previously considered in the general plans. Table 10-1 (provided at the end of this section) was prepared to help streamline and summarize the consistency analysis for each relevant policy and objective of these general plans. Specifically the relevant municipal general plan policies are compared with the SAMP Tenets. The Tenets are fully described in Section 2.1.1.3. These Tenets are as follows (with abbreviations used in table):

- No net loss of acreage and functions of waters of the U.S. and/or streambed -A/F
- Maintain/restore hydrologic, water quality, and habitat integrity of waters of the U.S. and/or streambed -INT
- Protect headwater areas -HDW

- Maintain/protect/restore diverse and contiguous riparian corridors -RP COR
- Maintain and/or restore floodplain connection -FP CON
- Maintain and/or restore sediment sources and transport equilibrium -SED
- Maintain adequate buffer for the protected riparian corridors -BFR
- Protect riparian areas and associated habitats supporting state and federally listed endangered, threatened and sensitive species, and their associated critical habitats -SPP

10.8.1 City of Santa Ana

Approximately 3,608 acres of the City of Santa Ana are within the southeastern portion of the Watershed. The City currently has an estimated build-out date of 2010; however, the portion of the City within the Watershed is essentially fully built-out. Within the Watershed area land uses include industrial, commercial, residential, and open space. The industrial designation applies to area developed with industrial and manufacturing uses and the commercial area is intended for business and professional offices; retail and service establishments; vocational, cultural, and entertainment uses; and vocational schools. Policies from the City of Santa Ana General Plan are relevant to water quality, habitat integrity, and aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1 displays consistencies between the Santa Ana General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.2 City of Tustin

The entire City, approximately 7,087 acres, is located within the Watershed. The Tustin General Plan policies emphasize balanced, compatible, and complementary development in addition to the revitalization/redevelopment of older and historic areas (City of Tustin, 2001). The City of Tustin estimates full build-out of the City by 2020. The largest remaining planned development project in the city is MCAS Tustin, which is located west of Jamboree Road and north of Barranca Parkway in the center of the Watershed. Portions of the MCAS Tustin have already been developed or are currently being redeveloped with residential, commercial, and school uses. Several policies from the City of Tustin General Plan are relevant to water quality, habitat integrity, and aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1 summarizes consistencies between the Tustin General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.3 City of Newport Beach

The City of Newport Beach forms the south/southwestern boundary of the Watershed. Existing land uses are primarily residential neighborhoods and commercial areas, as well as marine industrial uses. Since the 1,414-acre Bonita Canyon area has been annexed from Irvine and is now within the City of Newport Beach, the City now represents 2,966 acres within the Watershed. This portion of the City within the Watershed is characterized by light industrial and commercial uses in the vicinity of John Wayne Airport, and residential in the Bonita Canyon area (City of Newport Beach, 1998).

As mandated by the California Coastal Act, the City of Newport Beach is required to periodically update information on the sensitive biological resources as part of their Local Coastal Program. In 2003 the City conducted a study (Coastal Resources Management and Chambers Group, 2003) to update information on sensitive biological resources and their general plan elements. To protect those habitats and associated plants and wildlife, the City has designated the most ecologically valuable areas as Environmentally Sensitive Habitat Areas (ESHAs). Nineteen ESHAs are located in the coastal zone and are addressed in

the Biological Appendix of the Coastal Land Use Plan (Chambers Group, 2002). Nine ESHAs fall within the city limits of Newport Beach and within the City's sphere of influence and are located outside the coastal zone. If development is proposed within or adjacent to an ESHA, it must meet strict criteria: (1) that the development is resource-dependent, and (2) that any development adjacent to an ESHA must be sited to prevent significant degradation to the ESHA. The ESHAs located outside of the coastal zone include: Bonita Canyon Watershed, San Joaquin Reservoir, Arroyo Park, Coyote Canyon, MacArthur Boulevard and Bison Avenue, MacArthur Boulevard and San Miguel Avenue, MacArthur Boulevard and San Joaquin Hills Road, Spyglass Hill, and Non-Coastal Buck Gully.

In their General Plan (City of Newport Beach, 2006), the City has established a series of policies to promote the marine environment of the community, to preserve and enhance the unique natural beauty and quality of the harbor and ocean front areas, and to provide for the public use and enjoyment of the bay and ocean waters and their shorelines consistent with sound conservation principles. Table 10-1 summarizes consistencies between the Newport Beach General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.4 City of Orange

The City of Orange is currently 95 percent developed (Corps 2001). Approximately 1,041 acres of the City are located within the northeastern portion of the Watershed. Within the Watershed, the uses are residential (primarily single family units) and related greenbelts, and a small amount of commercial services.

The City of Orange General Plan contains goals, policies, and programs which are intended to guide land use and development decisions in the 21st century. Such goals include maintaining a balanced inventory of housing in Orange, promoting commercial enterprise, and preservation of open space resources. The Open Space and Conservation element of the City's General Plan is concerned with identifying the City's open space and natural resources and establishing goals and policies directed toward managing these resources for the long-term benefit of the community.

According to their General Plan (City of Orange, 2004), the residents recognize the benefits natural resources provide to the community. Clean air and water are vital to ensure the protection of public health. Plant and wildlife resources enrich the urban setting by providing changes in scenery and environment. Similarly, passive open space, such as landscaped medians or natural ridgelines, gives the community a sense of physical space. Also, the preservation of some open space areas (floodplains, steep hillsides) is necessary to protect public safety. Based on this, the City plans to carry out a number of resource conservation strategies while at the same time allowing development. The policies and goals established by the City ensure the preservation of water resources, biotic resources, and passive open space. Several goals from the Open Space and Conservation Element of the City of Orange General Plan are relevant to aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1 displays consistencies between the City of Orange General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.5 City of Lake Forest

Lake Forest (City and sphere) consists of approximately 10,775 acres. Of this, approximately 5,296 acres is located in the eastern portion of the Watershed and is largely developed. The City's total land area,

including its sphere of influence, is composed of: 37 percent residential uses, 29 percent open space, 17 percent commercial, 8 percent light industrial, 5 percent transportation facilities, and 4 percent public facilities. The City's General Plan policies emphasize establishing the City's identity, developing preincorporated Planned Communities, and phasing new development that is compatible with the community (City of Lake Forest, 1994). Industrial development continues to occur to the north and south of SR-241 in the northern portion of the city. Full build-out is anticipated to occur prior to 2020 (Corps, 2001).

Some of the proposed SAMP/WSAA Process regulated activities, such as land development, will occur within the City of Lake Forest. As such, they are subject to the General Plan policies of the City of Lake Forest. These objectives, policies and implementation measures from the Open Space and Conservation elements of the City of Lake Forest General Plan are relevant to aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1 displays the consistencies between the City of Lake Forest General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.6 Laguna Hills

The City of Laguna Hills is almost completely built out. Approximately 758 acres of the City are located within the Watershed. Approximately 51.8 percent of the City is composed of Planned Community developments with their own specific development standards. Overall, the City is deficient in community facilities such as active parks and community centers. The General Plan addresses several land use issues, including the need to 1) unify land uses in and around the Laguna Hills Mall and Saddleback Memorial Hospital, and 2) increase the overall intensity of the nonresidential uses along the I-5 Freeway corridor. The General Plan focuses primarily on the maintenance of the City's residential neighborhoods (City of Laguna Hills 1994). Full build-out of the City is estimated to occur between 2010 and 2015 (Corps, 2001).

Some of the proposed SAMP/WSAA Process regulated activities and their associated land development projects may occur within the City of Laguna Hills. As such, they are subject to the General Plan policies of the City of Laguna Hills. These policies are relevant to aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1, below displays the consistencies between the City of Laguna Hills General Plan strategies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.7 Laguna Woods

The City of Laguna Woods was incorporated in March 1999. The City's General Plan and Housing Element were adopted in October 2002, with an amendment to the General Plan approved in July 2003 (personal communication, City of Laguna Woods, 2003). Within the Watershed, the City is developed with a variety of residential and commercial uses and a golf course. Approximately 1,033.4 acres of the City is located within the Watershed. Some of the proposed SAMP/WSAA Process regulated activities, such as land development may occur within the City of Laguna Woods. As such, they are subject to the General Plan policies of the City of Laguna Woods. These objectives, policies and implementation measures from the Open Space and Conservation Elements of the City of Laguna Woods General Plan are relevant to water and aquatic resources being regulated by the SAMP/WSAA Process or environmental policies in general. Table 10-1 displays the consistencies between the City of Laguna Woods General Plan policies and the eight SAMP/ Tenets described in Section 2.1.1.3.

Municipal General Plan Policies	SAMP Tenets							
•						8		
	A/F	INT	HDW	RIP COR	FP CON	SED	BFR	SPP
Santa Ana								
Protect sensitive land uses		Х		Х			Х	Х
Revise zoning regulations to strengthen		37	37	37			37	37
buffers between land uses		Х	Х	Х			Х	Х
Protect public health, safety and welfare								
through effective management of natural		Х	Х	Х			Х	Х
resources								
Preserve, maintain and properly use natural	x	x	x	x	x	x	x	x
and cultural resources		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		1		74		Λ
Preserve and enhance the aesthetic and								
environmental quality of the community for		Х	Х	Х	Х			Х
the enjoyment of all residents								
Integrate natural and cultural resource								
protection measures into land use and		Х	Х	Х	Х	Х	Х	Х
development activities								
Minimize loss of natural aesthetic, historic,	v	v	v	v	v	v	v	v
archaeological and paleontological resources	А	А	А	А	А	А	А	Χ
Use provisions of the open space plan as								
means to achieve applicable conservation		v	v	v	v		v	v
objectives		Λ	Λ	Λ	Λ		Λ	Λ
Preserve vegetation along watercourse								
channels	Х	Х	Х	Х				Х
Implement open space provisions that								
encourage multiple use of natural resources	Х	х		Х			Х	Х
such as waterways								
Develop incentives in the zoning code to								
encourage protection and enhancement of		Х	Х	Х	Х		Х	Х
natural, cultural and historic resources								
Participate in greenbelt and channel								
improvement plans for the Santa Ana River		v	v	v	v		v	v
and Santiago Creek which aim to preserve		Λ	Λ	Λ	Λ		Λ	Λ
natural vegetation								
Tustin								
Environmental Compatibility		Х						
Flood Control Improvements					Х	Х	Х	
Peter's Canyon Wash		Х			Х	Х		
Water Quality		Х			Х	Х	Х	
Biological Resource Restoration	Х	Х		Х				Х
Natural Community Conservation Plan								Х
Protection of Biological Resources								Х
Development in environmental study areas		Х						Х
Use of buffers							Х	
Wetland Protection	Х	Х						Х

Table 10-1. Consistency of SAMP Tenets with Relevant Policies ofMunicipal General Plans

Municipal General Plan Policies	SAMP Tenets							
•	1 2 3 4 5 6 7 8				8			
	A/F	INT	HDW	RIP COR	FP CON	SED	BFR	SPP
Newport Beach								
Enhancement and protection of water quality of all natural water bodies	Х	X	Х	Х	Х	Х	Х	
Water pollution prevention	Х		Х		Х	Х	Х	
Natural water bodies	Х							
Natural wetlands	Х	Х						
Restoring natural hydrologic conditions	Х		Х		Х	Х		
Terrestrial and marine resource protection	Х	Х	Х	Х			Х	Х
Development in environmental study areas		Х	Х	Х				
Use of buffers							Х	
Wetland Protection	Х	Х		Х	Х	Х	Х	Х
Orange								
Preventing Environmental Pollution		Х	Х		Х	Х	Х	
Preservation of Significant Environmental	v	v	v	v			v	v
Resources	Λ	Λ	Λ	Λ			Λ	Λ
Preservation of Visual and Aesthetic	v		v	v			v	v
Resources	Л		Λ	Λ			Λ	Λ
Lake Forest								
Conserve and protect natural plant and animal communities		Х		Х				Х
Conserve and protect important Watershed		Х	Х	Х			Х	Х
Laguna Hills								
Protection of Significant Environmental	Х	X		Х			Х	
Establish Open Space Responsibility and								
Liability							Х	Х
Recognize Sensitive Biological Features		X					Х	Х
Wetlands Alteration	Х	X						X
Protection of Water Resources	Х	Х			X	Х		
Biological Resources		Х						Х
Stormwater Management and Flooding		Х	Х		Х	Х	Х	
Laguna Woods								
Preserve and enhance the environment		X	X	X			Х	Х
Protect existing riparian and wildlife habitats	Х	X	X	X	Х	Х	X	X
Cooperate with other cities, governmental		1			ĺ			
units, and private organizations in protecting natural resources of area-wide or regional		X	Х	Х				Х
Reduce water pollution		v			x	x	x	
Reduce water pollution		Λ			Λ	Λ	Λ	

Table 10-1. Consistency of SAMP Tenets with Relevant Policies of Municipal General Plans (continued)

Municipal General Plan Policies	SAMP Tenets							
	1	2	3	4	5	6	7	8
	A/F	IN T	HD W	RIP COR	FP CON	SED	BFR	SPP
Cooperate with governmental agencies at the local, County, and State level in attaining established goals for surface and receiving water quality		Х	Х		Х	Х	Х	
Enforce provisions of the NPDES to reduce pollutant run-off into natural and storm drain systems		Х	Х		Х	Х	Х	
Develop and implement BMPs as specified by the City Local Implementation Plan to minimize, to the maximum extent practicable, non- stormwater runoff and pollution from entering Aliso Creek, the Laguna Lakes and other sensitive receiving water		X	Х		X	Х	X	

Table 10-1. Consistency of SAMP Tenets with Relevant Policies of Municipal General Plans (continued)

8.0 OTHER FEDERAL AND STATE IMPACT CONSIDERATIONS

8.1 SHORT TERM USES VERSUS LONG TERM PRODUCTIVITY

The CEQ's NEPA Guidelines requires that an analysis of potential environmental impacts include a discussion of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity of the human environment. Under CEQA, a lead agency is required to find that a project could have significant effect on the environment when, among other conditions, the project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals [CEQA Guidelines Section 15065(a)(2)].

Section 4 contains a discussion of potential impacts from seven activity categories that may be authorized under the proposed SAMP Permitting Program/WSAA Process. The short-term uses of the land that may result directly or indirectly from these authorizations are not expected to impact the long-term productivity of aquatic resources in the Watershed. The proposed RGP, LOP and WSAA Process contain impact acreage restrictions and numerous general conditions to help minimize impacts to riparian and wetland habitats, hydrology and water quality, so that degradation to the ecosystem integrity of the Watershed is minimized overall.

The SAMP/WSAA Process is regulatory program and mitigation framework designed to conserve and enhance the aquatic, wetland, and riparian habitats of the Watershed while allowing for reasonable economic development and necessary infrastructure construction and maintenance. The SAMP/WSAA Process is based on a comprehensive assessment of the Watershed's aquatic resources to allow for more informed permit decision-making that better protects aquatic resource integrity areas and targets mitigation/restoration in areas that will enhance the aquatic ecosystem over the long-term. The SAMP Permitting Program/WSAA Process would replace existing case-by-case permitting and would allow for more regulatory predictability for projects that impact aquatic resources. As such, the proposed activities in the Watershed are expected to contribute to (and sustain in the long term) the local economy through the construction and maintenance of residential/commercial/industrial development, infrastructure, and new restoration projects throughout the Watershed.

8.2 IRRETRIEVABLE OR IRREVERSIBLE COMMITMENT OF RESOURCES

The proposed SAMP/WSAA Process involves issuance of a Corps RGP and LOP and a Department WSAA Process as well as the associated Strategic Mitigation Plan and Mitigation Coordination Program. The SAMP/WSAA Process would not directly result in a physical change in the environment. Land development, road construction and other infrastructure projects would be expected to occur as proposed in local general plans, MPAH, local capital improvement projects, etc. The SAMP/WSAA Process would not increase or decrease the amount of land development or infrastructure construction and maintenance that is anticipated for the Watershed, and thus does not directly involve irretrievable and irreversible uses of land, water, and natural resources including building materials. Construction and maintenance impacts would occur regardless of whether the SAMP/WSAA Process is implemented.

Indirectly, however, future activities that may be approved under the SAMP Permitting Program/WSAA Process would result in conversion of agricultural and undeveloped land to residential, commercial and industrial uses and neighborhood parks. Development and subsequent occupation of additional homes and businesses would require additional amounts of natural resources. This land use conversion would create irreversible environmental changes in the local area. Natural resources that would be utilized during construction and operation of these developments include building materials such as lumber, fossil fuels and water. In addition, as individual developments occur, there would be an irreversible loss of open space and some loss of wildlife, native plant habitat, further degradation of ambient air quality and further increase in local and regional traffic. Although these resource commitments and environmental changes would occur gradually, their combined loss would be considered irreversible, as an indirect result of the SAMP/WSAA Process.

However, the SAMP/WSAA Process represents greater opportunities for avoidance of aquatic resource integrity areas and targeted restoration that would help maintain and improve the ecosystem function in the Watershed in the long term. These aquatic resources would be maintained for the duration of the SAMP/WSAA Process. Therefore, while the loss of some resources would be irretrievable, the SAMP/WSAA Process aims to maintain and restore high value aquatic resources which could be considered a beneficial long-term effect for the Watershed's aquatic ecosystem.

8.3 Environmental Justice Impacts

8.3.1 Federal Environmental Justice Requirements

Environmental justice refers to the concept that minority or low-income populations should not be disproportionately exposed to environmental hazards. EO 12898 directs each federal agency "to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations"¹

8.3.2 State Environmental Justice Requirements

In 1999, the State of California enacted legislation² establishing environmental justice as an aspect of state law. California law defines environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." Under this law, the CalEPA, identified as the coordinating agency in state government for environmental justice programs, developed a draft environmental justice mission statement during 2001. In designing its mission statement, the law indicates that CalEPA shall, among other things, "Promote enforcement of all health and environmental statutes within its jurisdiction in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations of the state." It is recognition of this state law and the principles of environmental justice that issues in this section are addressed pursuant to both federal requirements and the requirements of CEQA.

¹ Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, EO 12898, February 11, 1994.

² Public Resources Code Section 72000-72001.

8.3.3 Study Area Demographics

The Environmental Justice analysis contained herein was based on updated demographic information from the 2000 U.S. Census data.

The majority of residents within the study area are non-Hispanic Whites, with Hispanics and Americans of Asian descent forming the second and third largest ethnic and racial groups, respectively (U.S. Census Bureau, 2003). The cities of Irvine and Santa Ana support a larger population of minority groups than the other portions of the Watershed (Corps, 2001). The racial and ethnic composition in Irvine in 2000 is presented in Table 8-3-1. Data for the County are provided for comparative purposes³.

	City of	f Irvine	County of Orange		
Race/Ethnicity	Number	% of Total	Number	% of Total	
White	87,354	61.1	1,844,652	64.8	
Asian	42,672	29.8	386,785	13.6	
Hispanic or Latino (of any race) ⁴	10,539	7.4	875,579	30.8	
Black or African American	2,068	1.4	47,649	1.7	
American Indian and Alaskan Native	257	0.2	19,906	0.7	
Native Hawaiian and Other Pacific Islander	194	0.1	8,938	0.3	

Table 8.3-1. Race and Ethnicity - 2000

Non-Hispanic White persons are the majority group in Irvine. In 2000, approximately 60 percent of Irvine's population was White, compared to 65 percent countywide. Hispanics are the County's second largest racial/ethnic group, representing 31 percent of the population in 2000. In comparison, only 7 percent of the Irvine residents were Hispanics. The Orange County General Plan indicates that international migration will account for a major portion of net migration, including undocumented immigration to the extent that it continues.

8.3.4 Low Income Composition

The 2000 Census reported on household income earned during 1999. Table 8-3-2 displays the household income data for Irvine and Orange County⁵.

	City of Irvine	County of Orange
Median Household Income	\$72,057	\$58,820
Per Capita Income	\$32,196	\$25,826
Persons below poverty, percent	9.1%	10.30%

Table 8.3-2. Household Income 1999

8.3.5 Impacts

The SAMP/WSAA Process involves the establishment of a watershed-specific permitting system for the issuance of CWA Section 404 permits and Section 1600 et seq. streambed alteration agreements. The program also establishes a Strategic Mitigation Plan and Mitigation Coordination Program to target mitigation and restoration in areas that will provide the most functional benefit to the riparian ecosystem

³ http://factfinder.census.gov/servlet/SAFFFacts

⁴ Includes White, Black and Asian persons who identify themselves as being of Hispanic origin.

⁵ http://www.census.gov/main/www/popunder.html

of the Watershed, and provide for long-term management of the riparian ecosystem. Under the proposed SAMP/WSAA Process, the Corps and the Department would permit temporary and permanent impacts to waters of the U.S. from the construction of bridges, land development, and public facilities/utilities in accordance with a long-term permit program administered by the Corps and Department. The watershed-specific permitting program and mitigation elements would replace existing case-by-case permitting

No significant impacts on low-income or minority populations are anticipated by implementation of the SAMP/WSAA Process and mitigation program elements. The proposed SAMP/WSAA Process, applicable to future regulated activities requiring dredge and fill in jurisdictional waters, would be in effect equally throughout the Watershed, and would not create disproportionately high and adverse human health or environmental effects on minority populations and low-income populations of the Watershed.

8.4 FLOODPLAIN EXECUTIVE ORDER

EO 11988 (Floodplain Management) states "Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities... If an agency has determined to, or proposes to, conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains." The SAMP/WSAA Process provides several examples where the sustainability of floodplains have been considered and addressed to help comply with EO 11988.

For example, the SAMP tenets (the overarching, guiding principles for the Watershed based on the LLFA) include: "*Maintain or Restore Floodplain Connection*" (see Section 2.1.1.3). This tenet acknowledges that:

"high integrity riparian reaches have active floodplains that flood on a regular basis. This overbank flooding is vital for maintaining sediment regimes and allowing for native habitat, including the recruitment of riparian plant species. It also allows interchange of biotic materials and nutrients between the active floodplain and the active channel, allowing for transport of detritus and nutrients to downstream areas and maintaining ecosystem processes".

This tenet is carried forth in the restoration goals (detailed in the SAMP Strategic Mitigation Plan) that seek to restore and enhance the hydrologic connectivity of riparian habitat located on floodplains in the Watershed. Additionally, the data gathered in the PLD and LLFA, upon which the SAMP/WSAA Process permitting and mitigation framework are based, provided for the identification of high and medium quality floodplain areas, and serve as one basis for permit analysis and decision-making for future regulated activities in the Watershed.

The regulated activities analyzed in Section 4 of this EIS/EIR include flood control maintenance activities, although some unknown, future flood control projects may not be consistent with the natural and beneficial values element of this EO. These flood control activities may protect human safety, health and welfare from flooding events. These protections will be considered in the decision making process for future permits, along with its location in relation to aquatic resource integrity areas. Section 4 includes an impact analysis of the SAMP/WSAA Process on riparian habitats and floodplain values. Section 5 discusses alternatives to the proposed SAMP/WSAA Process, and together with Appendix E (Compliance

with the 404(b)(1) Guidelines) provides justification that the proposed SAMP/WSAA Process is the LEDPA. Given these various provisions of the SAMP/WSAA Process and evaluations in this Program EIS/EIR, the SAMP/WSAA Process is considered consistent with EO 11988.

8.5 WETLAND EXECUTIVE ORDER - NO NET LOSS

EO 11990 (Protection of Wetlands) states, "Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities." Federal agencies are required to avoid undertaking or providing assistance for new construction located in wetlands unless there is no practicable alternative. The SAMP/WSAA Process contains compensatory mitigation policies that require no net loss in wetland acres and functions.

This order requires federal agencies to "...avoid to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct and indirect support of new construction in wetlands wherever there is a practicable alternative..."

The SAMP/WSAA Process contains numerous protections that are expected to result in no net loss, and even a net gain, of wetlands in the Watershed. The permitting program has relevant conditions adapted for this Watershed, some NWPs are to be revoked, and the new mitigation framework for the Watershed includes a no net loss provision. The SAMP Strategic Mitigation Plan (based in part on Smith and Klimas [2002]) provides that sufficient restoration opportunities exist to ensure no net loss. Thus, it is anticipated that any functional losses will be adequately mitigated.

The mitigation policies of the proposed RGP and LOP permit program include:

- **Mitigation Sequencing.** This includes required avoidance and minimization to the maximum extent practicable. The SAMP/WSAA Process has already provided for the avoidance of high and medium quality wetland areas. [Sources: Stakeholder coordination, Smith 2003]
- **Prioritization of Mitigation Sites.** Mitigation will be performed according the Watershed restoration goals of the SAMP Strategic Mitigation Plan. Mitigation sites will aid in connecting isolated wetlands to the other riparian areas, as well as providing habitat for riparian dependant species. [Sources: Smith 2003, Smith and Klimas (2002)]
- **Recommended Restoration.** Mitigation will be required to be in conformance to the provisions of the SAMP Strategic Mitigation Plan that relate to site selection and design criteria [Sources: Smith and Klimas (2002)]
- Conformance with the LAD Mitigation and Monitoring Requirements. All mitigation must be consistent with these guidelines dated April 19, 2004, and any applicable regional conditions for the NWP not revoked by the SAMP/WSAA Process. [Sources: Corps 2004]
- No Net Loss of Acreage and Functions. Acreage and functions should not be reduced within the Watershed on a program level. All permanent impacts should be mitigated at a minimum 1:1 ratio (for low quality elements and those who perform mitigation before impacts), and a proposed functional mitigation tool developed by the Corps will use the LLFA data to arrive at a no net loss in functions (e.g. hydrologic, water quality, and habitat integrity indices) as well as acreage of wetlands. [Sources: Proposed Mitigation Policy]

Although a state agency is not subject to this EO requirement, the Department's mitigation policies of the Level 1 - 3 SAA templates of the WSAA Process would also serve to ensure no net loss. These specific mitigation policies are equivalent to those of the proposed SAMP RGP and LOP above.

The proposed SAMP/WSAA Process Strategic Mitigation Plan is watershed-focused, designed to ensure no net loss of aquatic resource acreage and functions in the Watershed. The focus is on avoiding and minimizing impacts to high quality aquatic resources and restoration of lower quality habitats to improve functional integrity overall in the Watershed (ultimately a net increase in high quality aquatic resources).

In addition to the mitigation policies discussed above, key aspects of the proposed SAMP Permitting Program/WSAA Process and SAMP Strategic Mitigation Plan and associated Mitigation Coordination Program that provide for future no net loss of wetlands are:

- Low acreage impact thresholds for LOP eligibility of projects in aquatic resource integrity areas;
- Identification of future restoration opportunities of areas within and outside of the aquatic resource integrity areas;
- The designation of future mitigation, restoration, and enhancement sites as aquatic resource integrity areas after project completion; and
- Long-term management program to ensure success of restoration/enhancement sites.

In summary, the proposed SAMP Permitting Program/WSAA Process and mitigation programs are consistent with the Federal Wetland EO of no net loss of wetlands, as well as the State's goals of (a) no overall net loss, and (b) long-term net gain in the quantity, quality, and permanence of wetlands acreage and values. The SAMP/WSAA Process allows for watershed-based planning and tracking of mitigation sites, increased mitigation performance standards as compared to regulations and policies of the past decade, and an ability to determine mitigation requirements on a functional basis (according to integrity, not just acreage). If the mitigation is not acceptable, then the process will default to a SIP process, thus allowing for agency coordination and a public comment period.

The Participating Applicants' projects, listed in Section 2.1.2.2 were evaluated through the SAMP/WSAA Process stakeholder coordination process resulting in avoidance and minimization of wetlands and other aquatic resources. Due to the mitigation policy elements listed above, the general conditions of the WSAA Process, RGP and LOP, and provisions of the SAMP/WSAA Process Strategic Mitigation Plan and Mitigation Coordination Program, future activities will be consistent with EO 11990. Thus, the proposed SAMP/WSAA Process is consistent with EO 11990.

8.6 INVASIVE SPECIES EXECUTIVE ORDER

EO 13112 (Invasive Species) requires federal agencies to "...use relevant programs and authorities to...detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; monitor invasive species populations accurately and reliably; provide for the restoration of native species and habitat conditions in ecosystems that have been invaded..."

The proposed general conditions of the LOP, RGP and Level 1 - 3 SAA templates and SAA Templates Master Conditions List of the WSAA Process include provisions for the management of invasive plant species. Invasive plants are the major concern within the Watershed, and past planning efforts such as the NCCP have included elements addressing invasive plant issues. The proposed SAMP/WSAA Process includes an emphasis on invasive plant management.

The following RGP and LOP condition of the proposed SAMP/WSAA Process applies to project sites:

• <u>Exotic Species Management</u>. All giant reed (*Arundo donax*), salt cedar (*Tamarix* spp.), and castor bean (*Ricinus communis*) must be removed from the project site and ensure that the site remains free from these non-native species for a period of five years from completion of the project.

Within the SAA Templates Master Conditions List, Condition No. 42, Exotic Vegetation Eradication Control, contains numerous requirements regarding removal of non-native vegetation at project sites and restoration/enhancement sites, and includes provisions for protection of wildlife and native habitat.

The proposed Mitigation Coordination Program element of the SAMP/WSAA Process contains a series of Management Measures recommended to help in the conservation of aquatic resource integrity areas and to help ensure the long-term success of compensatory mitigation sites (see Section 2.1.3.2- long-term conservation of aquatic resource integrity). One such measure involves Invasive, Exotic Species Control as follows:

- <u>Management Aspect</u>: A list of target species of invasive, exotic vegetation is provided (Table 5-1 of Corps SAMP document). Only herbicides and associated surfactants approved by EPA for use in wetlands and with no/low toxicity to aquatic organisms may be used in aquatic resources.
- <u>At Compensatory Mitigation Sites:</u> including preserved areas within the aquatic resource integrity areas, the planting, introduction or deliberate dispersal of invasive, exotic plant or animal species is prohibited.
- <u>Within Aquatic Resource Integrity Areas</u>: To avoid redundancy and improve program efficiency, any new efforts for the control of invasive, exotic vegetation, cowbird trapping, bullfrog and African clawed frog control measures within the aquatic resource integrity areas should be coordinated and to the extent practicable with other land owners/managers with ongoing control programs within the Watershed, in both riparian and terrestrial habitats.

Due to the mitigation policy elements listed above, the general conditions of the Level 1 - 3 SAA templates of the WSAA Process, RGP and LOP, and provisions of the SAMP/WSAA Process Strategic Mitigation Plan and Mitigation Coordination Program, future activities will be consistent with EO 13112. Thus, the proposed SAMP/WSAA Process is consistent with EO 13112.

8.7 EFFECTS OF SAMP COORDINATED PERMITTING PROCEDURES ON FUTURE APPLICANTS

This section summarizes the effects on the regulated community from the changes to the Corps proposed regulatory program with establishment of the SAMP, as compared with the existing Corps permitting processes. The existing permitting system utilizes NWPs for permanent impacts (generally ≤ 0.5 acre of permanent impacts to waters of the U.S.) and SIPs for projects with greater permanent impacts to waters of the U.S., regardless of the project location. The proposed changes to the SAMP permitting process consist of the revocation of specific NWPs followed by establishment of an RGP for maintenance activities, establishment of LOP procedures for all other activities, and may include long-term individual

permit(s) for the Participating Applicants with additional project- or activity-specific environmental review to cover projects or types of activities reviewed and redesigned as part of the SAMP formulation process.

Implementation of the SAMP permitting processes is dependent on the location of the proposed regulated activity within the Watershed. Projects affecting aquatic resources outside identified aquatic resource integrity areas are able to benefit from the shortened processing times of the SAMP permitting procedures using the RGP for projects with temporary impacts to waters of the U.S. (most maintenance activities) and LOPs for projects with permanent impacts to waters of the U.S. Projects affecting aquatic resources within aquatic areas integrity areas may be eligible for LOP procedures for projects with either temporary impacts or small permanent impacts (≤ 0.1 acre of impact). Otherwise, regulated activities conducted within aquatic resource integrity areas would require individual permits for all impacts ineligible for an LOP.

The concept that aquatic areas of different condition warrant different considerations in the Section 404 permitting program is suggested in the Section 404(b)(1) Guidelines, the substantive regulations that govern the Section 404 permitting program. The Section 404(b)(1) Guidelines state, "Although all requirements in [the Guidelines] must be met, the compliance evaluation procedures will vary to reflect the seriousness of the potential for adverse impacts on the aquatic ecosystems posed by specific dredged or fill material discharge activities" (40 CFR 230.10 introduction). The Section 404(b)(1) Guidelines further emphasize that the evaluation of proposed activities "must recognize the different levels of effort that should be associated with varying degrees of impact and require or prepare commensurate documentation" and that "the level of documentation should reflect the significance and complexity of the discharge activity" (40 CFR 230.6(b)).

A determinant of whether an activity will have a high level of impact is in part based on its location in the Watershed. Projects that propose to impact waters of the U.S. within aquatic resource integrity areas would impact higher quality aquatic resources and warrant the appropriate level of permitting review commensurate with the level of impacts. Projects that propose to impact waters of the U.S. in areas eligible for abbreviated permitting outside aquatic resource integrity areas would impact lower quality aquatic resources and warrant the appropriate level of permitting review commensurate with the level of impacts. The analysis in this section differentiates between permitting processes for regulated activities affecting jurisdictional areas within aquatic resource integrity areas and those outside aquatic resource integrity areas.

8.7.1 Revocation of Selected Nationwide General Permits

An important step in implementing the SAMP permitting processes is the revocation of specific NWPs, including NWP 14, NWP 39, NWP 40, and others. Many NWPs have a threshold of 0.5 acre of permanent impacts. Under the current permitting framework, projects impacting greater than 0.5 acre of waters of the U.S. must undergo processing as an SIP. Projects impacting 0.5 acre or less of waters of the U.S. would undergo processing as a NWP. This threshold is applied regardless of the type of aquatic resource involved.

In consideration of the SAMP Analytical Framework, the Corps concludes the current NWP framework provides an inappropriate level of protection for the Watershed. In some areas where the riparian condition is poor, the thresholds required by the NWP program result in delays and uncertainty for projects proposing impacts to greater than 0.5 acre of these lower quality aquatic resources. These types of aquatic resources have a low level of hydrologic, water quality, and habitat integrity with little strategic value in the landscape context. The procedures (i.e., a public notice and environmental assessment, required under the SIP program) tend to elicit little input from the public and other resource agencies, or provide minimal additional insight on the aquatic resource condition beyond what was obtained by the formal assessment methods used for the SAMPs⁶. In light of the degraded condition of the aquatic resources outside aquatic resource integrity areas, the Corps believes NWP thresholds are unnecessarily restrictive in these areas.

In other areas where riparian ecosystems have been identified as strategic for the overall condition of the Watershed (i.e. within aquatic resource integrity areas), the Corps believes the NWP procedures provide an insufficient amount of review for those projects proposing to impact these higher quality aquatic resources. Within the aquatic resource integrity areas, these aquatic resources possess a moderate to high level of hydrologic, water quality, and habitat integrity with important strategic value in a landscape context with respect to endangered aquatic species habitat and riparian movement corridors. The NWP thresholds do not provide the public the appropriate amount of permit review in light of the condition of the aquatic resources in question. The Corps contends that additional public input and review is needed to ensure these higher quality resources receive the appropriate amount of review and regulatory attention.

Consideration was given to retaining the NWPs for use within the lower quality aquatic resource areas. These considerations were made after receiving input from specific individuals and organizations from the regulated community in working sessions through the course of SAMP development. Whereas there was an understanding of the need for additional permit review for projects affecting higher value aquatic resources, some comments questioned the need to revoke selected NWPs in the lower value aquatic areas. In particular, the primary concern was for additional time delays in using an LOP system instead of a nationwide general permit system. After considering these issues and modifying specific program elements to address the expressed concerns, the Corps has determined that for several reasons retaining the NWPs is unnecessary, given the establishment of the LOP procedures and an RGP.

First, the use of the SAMP permitting procedures alone would be simpler than establishing an alternate permitting process AND retaining the existing NWP framework within the Watershed. With multiple thresholds and activity specific conditions for multiple NWPs, the existing NWP framework combined with the SAMP permitting processes results in a complex system that may be difficult for the regulated

⁶ A review of the Corps permit database was performed to identify those projects permitted to impact lower quality aquatic resources within Orange County. The focus of the review was on channelization projects converting undersized riprap-lined channels to larger riprap-lined channels or concrete-lined channels. The riprap-lined channels were considered lower ecological quality. The review indicated that there were 7 permits issued for such projects. Six of the seven permits during the public notice phase elicited 0 to 3 comments from individuals or organizations outside of the federal and state agencies. One elicited 12 comments from individuals or organizations outside of the federal and state agencies. Most of the comments were focused on insuring the construction did not infringe on people's property with some concerns over the loss of wildlife habitat within the channels. A few comments expressed concern over people using the larger channels to trespass onto people's property. In general, the comments did not express appreciable opposition to these projects, and comments were addressed by requiring the work to stay within public right-of-way and through compensation of impacts to any low quality habitat.

public and future regulators to understand and implement. The proposed revocation of selected NWPs and the establishment of the RGP and the LOP procedures would simplify the process. The alternate permitting process would be similar to the Department's Section 1600 *et seq.* streambed alteration agreements, which do not have multiple thresholds for multiple activity types. Future permit applicants with projects affecting lower quality aquatic resources have to consider only three options for activities that would not be covered by the retained NWPs: an RGP for maintenance actions, and LOP procedures and SIPs for all other actions.

Second, the alternate permitting procedures would allow for processing of permits on similar timelines as the existing NWP framework. Table 2-2 (in Section 2.1.2.3) shows that for actions eligible for permitting by the revoked NWPs, there would be no time delays due to the timeframes established for the proposed RGP or the proposed LOP procedures. For the proposed LOP procedures, actions would be completed within 45 days. This is possible due to the advanced analysis undertaken in terms of baseline aquatic resource characterization in support of any potential decision-making, (i.e., the SAMP Analytical Framework) and the required pre-application consultation. If there had not been any detailed upfront analysis performed in the context of the SAMP, the relatively quick review times would not have been possible. For the maintenance activities eligible under the proposed RGP, the actual processing time is substantially faster than the NWP, resulting in authorizations within 15 days. When combined with a pre-approved Section 401 certification, the time savings for the RGPs would be substantially greater overall for these types of activities compared to the current NWP framework.

Third, the increased pre-application coordination required of the LOPs would not require an excessive amount of coordination between the regulated community and the Corps, as compared with the existing NWP framework. Most routine maintenance activities eligible under the proposed RGP would not require pre-application consultation. For other activities eligible for LOP procedures, the pre-application coordination would be required of only those projects that permanently impact greater than 0.1 acre of waters of the U.S. or temporarily impact greater than 0.25 acre of native riparian vegetation. Also, given the amount of coordination most applicants in southern California already undertake with other state and federal resource agencies, additional coordination with the Corps in the context of the LOP procedures would not result in additional delays. In fact, the upfront coordination would be expected to avert potentially disruptive and time consuming conflicts.

Fourth, the use of the alternate permitting program provides the appropriate amount of review that ensures projects have the supporting environmental analysis to make informed decisions, as compared with the existing NWP framework. By providing a more comprehensive review, as required by the LOP procedures, the Corps improves its decision-making process and increases the defensibility of its permit decisions. Although rendering well-reasoned environmental decisions may be perceived as burdensome to applicants, increased defensibility helps applicants, especially in a regulatory climate that results in the cessation of projects with faulty environmental analysis. For the alternate permitting procedures, the additional environmental analysis has been performed up-front to ensure that projects are reviewed in consideration of the broader landscape and watershed contexts.

Overall, use of the alternate permitting procedures includes program-level safeguards to ensure that the same advantages provided by the NWPs are not lost. The alternate permitting program allows for a

simpler process akin to the Department's Section 1600 *et seq.* streambed alteration agreement, a process that does not rely on the multitude of NWPs for different categories of activities. Combined with program-level considerations with respect to timing and coordination, and in the context of California's regulatory climate, the alternate permitting procedures would not adversely affect the regulated community. With the adoption of LOP procedures and an RGP, there is no need for most NWPs in the Watershed.

8.7.2 Permitting Outcomes Before and After the SAMP

To provide some sense of the effects of the SAMP permitting procedures on the regulated public, the outcome of permit actions from the last seven years were re-examined in light of the alternate permitting processes. This analysis involved final NWP and SIP actions initiated in the last seven years (September 2000 to 2007) within the two Orange County SAMP Watersheds for both the San Juan Creek/San Mateo Creek Watershed and the San Diego Creek Watershed. These actions were re-evaluated using the 0.5-acre thresholds of the 2002 NWP⁶, where permanent impacts greater than 0.5 acre would involve processing as SIPs and impacts at the threshold or less would involve processing as NWPs. Any instances of pre-application coordination were noted. These actions were also re-evaluated using the SAMP alternate permitting procedures in terms of which permitting process would be undertaken after factoring in its location with respect to the areas ineligible for abbreviated permitting and the size of the permanent impact.

The two permitting scenarios differ greatly. Using the 2002 NWP thresholds, the 103 actions in the review timeframe were processed as 18 SIPs and 85 NWPs, involving 17 pre-application meetings. In contrast, under the SAMP permitting procedures, these actions would have been processed as 6 SIPs, 8 NWPs, 12 RGPs, and 77 LOPs, involving 40 pre-application meetings. The alternate system would have resulted in a marked decrease in the number of SIPs processed in the Watershed areas. The retained NWPs would have been issued for boat docks, single-family homes, and geotechnical surveys (i.e., actions with minor impacts to the aquatic environment and quickly processed). For 12 projects, the RGP for maintenance would have been used, resulting in a quick review and authorization of these activities. The main difference would have been the issuance of 77 LOPs under the alternate permitting system. Of these, 15 LOPs would have been issued in place of a SIP, resulting in times savings for those applicants, and 62 LOPs would have been issued in place of a NWP. Of the 62 LOPs, there would have been 25 preapplication meetings required because the permanent impacts would have been greater than 0.1 acre of waters of the U.S., with the remainder of the LOP applicants applying directly to the Corps. As stated above, the use of LOPs instead of NWPs would not adversely affect applicants, because of built-in timelines that would allow the LOPs to be processed in the same timeframes as the NWPs. Although the LOPs involve greater review, much of the analysis has been performed up-front in the course of developing the SAMP, allowing for decreased project review times.

8.7.3 Effects of Implementing the RGP

In California, actions involving maintenance of structures, requires authorizations from Corps, the Department, and the RWQCB. Even though some maintenance activities do not require pre-construction

⁶ The majority of the analysis was performed prior to the authorization of the 2007 NWPs on March 12, 2007 (72 FR 11092), as corrected on May 8, 2007 (72 FR 26082) and then updated subsequent to their re-authorization.

notification to the Corps, all actions are required to have approvals from the Department (Section 1600 *et seq.* streambed alteration agreement) and the RWQCB (Section 401 certifications). Nevertheless, many applicants also request from the Corps verification that an activity would be covered by a NWP when such notification is unnecessary.

For the Watershed, there will be expected time savings due to the maintenance RGP for Section 404 actions. The Corps will apply for a Section 401 certification for the RGP, obviating the need for obtaining a Section 401 certification for individual maintenance actions. Thus, in terms of the Section 404 action and the associated Section 401 certification, applicants will only have to contact the Corps for individual actions. As a result, the RGP would allow for more predictability by the regulated community and less consternation over the perceived difficulties of obtaining permits from two different agencies. The mandated 15-day time frame ensures that the regulated public agencies can undergo their maintenance activities for roads, flood control channels, weir structures, pipelines, bank protection structures, and other projects with less regulatory hindrances.

8.7.4 Effects of Implementing the LOP Procedures

The effects of implementing the LOP procedures depend on the location of the proposed project within the Watershed. The effects will depend on whether those projects are located within or outside aquatic resource integrity areas. Areas in aquatic resource integrity areas are generally ineligible for abbreviated permitting because they tend to have higher quality aquatic resources. Thus, the Corps will restrict the use of LOPs for authorizing impacts to waters of the U.S. within aquatic resource integrity areas by requiring SIPs for permanent impacts greater than 0.1 acres of waters of the U.S. Areas outside SAMP aquatic resource integrity areas are generally eligible for abbreviated permitting because they tend to have lower quality aquatic resources. Thus, the Corps will not have any thresholds governing the use of LOPs outside aquatic resource integrity areas, except in instances involving substantial modifications to compensatory mitigation sites or capital improvements of major stream courses, where a SIP review process would be required.

Within aquatic resource integrity areas, there will be a threshold of 0.1 acres. Impacts greater than 0.1 acre of waters of the U.S. may be authorized with a SIP, and impacts at or less than 0.1 acre of waters of the U.S. may be authorized with a LOP. These higher value aquatic resources require the appropriate amount of review to minimize impacts to the maximum extent practicable. Consequently, within the aquatic resource integrity areas most actions will undergo review through the SIP process, whereby opportunities will be given to other resource agencies and to the public to review and comment on the proposed action. In addition, a full environmental assessment will allow for the appropriate level of review within the decision-making process. Although actions having impacts at or less than 0.1 acre of waters of the U.S. will be processed as LOPs rather than SIPs, review of these actions by other agencies through the inter-agency notification process will help minimize adverse impacts that may result. Requiring SIPs for impacts greater than 0.1 acre of waters of the U.S. has precedence within the Los Angeles District for the upper Santa Margarita River Watershed in Riverside County due to the concern about cumulative impacts to waters of the U.S.

Overall, with the SAMP permitting procedures there will be additional restrictions on permit applicants with projects affecting jurisdictional waters in aquatic resource integrity areas. Actions that could have been processed within 45 days as a NWP would now be processed within 120 days as a SIP. Although

processing times will be extended, the Corps believes the need to protect higher value aquatic resources is important in the context of implementing regulations supportive of the goal of the Clean Water Act, which is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The requirement of processing most actions through SIPs will ensure that all impacts to waters of the U.S. are unavoidable.

Outside of aquatic resource integrity areas, the LOP procedures will be without a threshold for use. Most regulated activities not involving maintenance would be processed as LOPs instead of NWPs or SIPs. Only those actions that propose to line major streams with concrete or those actions that propose to impact compensatory mitigation sites would require SIPs. As a result, permit review for SIPs would be rare outside aquatic resource integrity areas. Due to the lower quality of these aquatic resources, the additional review afforded by the SIP process would not result in any appreciable benefit to the Watershed's aquatic environment. Under the current permitting process, public notices disseminated for these types of proposed projects tend to elicit no appreciable opposition from other regulatory agencies or the public. Nevertheless, the review of all non-maintenance actions through LOPs would involve interagency coordination, ensuring an opportunity for other regulatory agencies to provide review and comments.

Overall, there would be a net benefit to permit applicants outside of aquatic resource integrity areas where a majority of actions would be eligible for abbreviated permitting. For projects that propose impacts to greater than 0.5 acre of waters of the U.S., the LOP process would allow for quicker resolution of permit actions, resulting in a permit within 45 days rather than 120 days within the current SIP process. Comments concerning the effect of the proposed action on aquatic resources will still be provided by the resource agencies, but no public notice or full environmental assessment would be included. Savings in applicant time and resources would result. For projects that propose impacts at or less than 0.5 acre of waters of the U.S., the LOP process would not result in adverse consequences as discussed above in the discussion on revoking the NWPs. There will not be time delays due to the LOP processing times. The requirements for pre-application coordination will not adversely affect applicants since many applicants already undertake coordination with the other California resource agencies as part of their normal regulatory permit application process.

8.7.5 Effects of Department's WSAA Process as Part of the SAMP's Coordinated Permitting Processes

This section summarizes the effects of the Department's WSAA Process on the regulated community, as compared with the existing Section 1600 *et seq.* procedures. With the implementation of a watershed-specific WSAA Process, the Department would leverage the SAMP Analytical Framework for its streambed alteration program. The Department would expand upon its relatively new WSAA Process program by creating a watershed-specific WSAA Process for the Watershed; in particular, the Department is proposing three template agreements: Level 1, 2, and 3. The Level 1 template SAAs apply to proposed activities that would alter aquatic resources outside aquatic resource integrity areas that are not mainstem streams. The Level 2 template SAAs apply to activities that would alter mainstem stream reaches outside aquatic resource integrity areas. The Level 3 template SAAs cover certain types of activities within aquatic resource integrity areas.

The Department will retain the authority to require individual (i.e., non-template) SAAs for those activities and projects inconsistent with the SAMP Analytical Framework. For example, a project that would propose to alter a streambed within the aquatic resource integrity area, adversely affecting the aquatic resources or the state-listed threatened or endangered species or species of concern would be inconsistent with the SAMP Analytical Framework and therefore, and ineligible for the WSAA Process. However, such instances where the WSAA Process would be unavailable are expected to be infrequent. Otherwise, the WSAA Process will apply to all activities and projects within the Watershed.

Applicants will benefit from the WSAA Process as compared with the standard individual SAA process. The WSAA Process offers greater certainty to the applicant who will know upfront and be able to plan for the conditions that will likely apply to their project or activity. Although no formal changes to agreement processing times are proposed, given the advanced planning afforded by the SAMP, along with the coordinated permitting with the Corps and procedures for interagency coordination, the applicant can expect expedited processing under the WSAA Process for SAMP-compliant activities and projects.

8.7.6 Effects of Implementing the SAMP Mitigation Framework

Mitigation includes avoidance and minimization of impacts as well as compensation for unavoidable impacts, and is within the regulatory purviews of both the Corps and the Department. Both agencies have agreed to a set of mitigation policies and to implement the SAMP Strategic Mitigation Plan. Although the mitigation framework is informed primarily by the Section 404(b)(1) Guidelines and agencies "Los Angeles District's Final Mitigation Guidelines and Monitoring Requirements", it incorporates the implementation practices of both agencies.

Implementation of the SAMP mitigation framework would result in the standardization of the following two policies that hitherto have been implemented on a case-by-case basis by one or both agencies: 1) long-term management; and 2) standard mitigation ratios based on ecological integrity scores. Long-term management has long been recognized as a need to maintain the ecological integrity of both aquatic and terrestrial conservation areas. In accordance with CESA requirements, the Department requires the permittees to provide for long-term management of a mitigation site along with an endowment or other financial assurances to do so. The Corps has previously addressed the need for preserving the conservation values of mitigation sites by requiring conservation easements that specify a permittee provide basic long-term maintenance such as trash and exotics removal from mitigation site. However, with regards to financial assurances, the Corps has usually only required financial assurances for the installation and maintenance and monitoring until a compensatory mitigation site meets its performance criteria (typically five years).

Mitigation ratios indicate the acreage of mitigation required to offset impact acreage. More often than not, mitigation ratios reflect the difficulty of habitat replacement and/or function of an impacted site even without explicit functional assessment data. Furthermore, the Department and the Corps often coordinate mitigation requirements on a case-by-case basis. The Department policy is more specific with regards to mitigation ratio requirements by habitat type. In an effort to streamline the permitting process, the Corps has agreed to adopt the ratios typically required by the Department. Additionally, with the development of a mitigation formula, the Corps has factored functional integrity of the impact area and mitigation area with acreage to ensure no net loss of aquatic resource function and acreage in the Watershed.

Mitigation requirements under the agencies' existing permitting procedures are often unpredictable for the applicants. Further, the agencies' policies pertaining to mitigation, especially those of the Corps, have come under increasing scrutiny for inability to assure the success of compensatory mitigation sites and for whether or not the Corps is achieving its own no net loss policy. The Corps and the Department believe the implementation of the SAMP mitigation framework will increase regulatory predictability and consistency across permittees and across agencies, while advancing the agencies' capacity for assuring successful mitigation and for achieving their no net loss policies.

8.7.7 Summary

Overall, the benefit of the alternate permitting system depends on the location of the proposed project within the Watershed. Excessive delays will be minimized for permit applications proposing to impact lower quality aquatic resources. Increased review of permit and consequent duration it takes to receive permits will increase for permit applications proposing to impact higher quality aquatic resources. The SAMP permitting process results in a common-sense approach allowed by the Section 404(b)(1) Guidelines, which emphasizes providing the appropriate amount of documentation commensurate with the level of impact to the aquatic environment.

The SAMP mitigation framework is consistent with the Corps and the Department's existing policies and guidance on mitigation. Moreover, the framework increases the agencies ability to provide predictability to the regulated community and increased assurance that mitigation will offset functional losses of aquatic resources with permitted impacts.

9.0 CONSISTENCY WITH FEDERAL AND STATE LAWS AND REGULATIONS

9.1 FEDERAL LAWS

9.1.1 Endangered Species Act

The FESA of 1973 (16 USC 1531 *et seq.*) is administered by the USFWS, and by the NMFS in areas where marine habitats exist. Section 7 of the FESA requires federal agencies to use their authorities to conserve threatened and endangered species. It also directs federal agencies to consult with USFWS (or NMFS) if any action they authorize, fund, or carry out "may affect" in either a beneficial or adverse manner, any species that is listed or proposed for listing, or any designated or proposed critical habitat. For example, if the issuance of a CWA Section 404 permit by the Corps for a private development project may affect any listed species, the Corps must consult with USFWS on the effects of the issuance of that permit. Species that are candidates for listing by the USFWS may also be addressed during federal interagency coordination. Section 7 also provides a mechanism for 'incidental take,' for actions that may affect a listed species, but which do not jeopardize its continued existence or destroy or adversely modify critical habitat.

Section 9 of the FESA prohibits 'take' (i.e., harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capture, or collecting, or the attempt to engage in any such conduct) of threatened and endangered species. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Under Section 10 of the FESA, non-federal entities can apply for a permit exempting them from the "take" prohibition for scientific purposes to aid the species recovery, or for "incidental take," when the project or activity does not involve a federal action and the take is incidental to, and not the purpose of, an otherwise lawful activity.

Several federally listed species including (and not limited to) the coastal California gnatcatcher (*Polioptila californica californica*) and the least Bell's vireo (*Vireo bellii pusillus*) are known to occur within the Watershed. Additionally, previously designated critical habitat within the Watershed for the coastal California gnatcatcher informed the SAMP formulation process. Those designated critical habitat areas were included within aquatic resource integrity areas, making most projects impacting aquatic resources within designated critical habitat ineligible for abbreviated permitting. The Department and USFWS developed the NCCP/HCP that provides coverage under Section 10 of the ESA, as well as CESA, to those signatory to the NCCP/HCP or their constituents for certain activities that may affect the covered species.

The Corps has informally consulted with the USFWS throughout the SAMP formulation process to ensure any impacts to federally listed species, or their critical habitat, are not adverse. The Corps has determined that some future activities that would be authorized by the RGP and the LOP procedures may affect federally listed endangered species known to utilize habitat in the Watershed. At this time, the Corps has sufficient information to initiate Section 7 consultation for the establishment of the RGP. Therefore, the Corps will initiate formal consultation on the RGP in a forthcoming letter, pursuant to Section 7 of the ESA. The Corps completed an informal Section 7 consultation with the USFWS for the

RGP. The recommended conservation measures were incorporated into the conditions of the RGP to ensure the activities authorized by the RGP will not adversely affect federally listed species. Since the Corps expects to issue subsequent Federal permits under the new SAMP LOP procedures for future activities that may affect federally listed species, the Corps will, on a project-specific basis initiate consultation with USFWS as appropriate. <u>However, the Corps incorporated the same recommended conservation measures for the RGP into the condition for the LOP procedures.</u> With respect to obligations under the ESA, mitigation and minimization in the LOP procedures and RGP are considered reasonable and prudent measures for all non-jeopardy Section 7 consultations. Nevertheless, for decisions on specific projects authorized under the LOP procedures that may affect federally listed species, the Corps may undergo separate Section 7 consultations with the USFWS. Similarly, future projects would also be subject to the Department's requirements for CESA. The proposed SAMP/WSAA Process <u>permitting process</u> includes the following RGP and LOP general condition for use in the Watershed:

> (a) No activity is authorized which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the ESA or which will destroy or adversely modify the critical habitat of such species. Non-federal permittee shall not begin work on the activity until notified by the Corps that the requirements of the ESA have been satisfied and that the activity is authorized. (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. (c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat. and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until section 7 consultation has been completed. (d) As a result of formal or informal consultation with the USFWS or NMFS, the district engineer may add speciesspecific regional endangered species conditions to the RGP notices to proceed. (e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of

separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. USFWS and NMFS or their World Wide Web pages at <u>http://www.USFWS.gov/carlsbad</u> <u>http://www.fws.gov/carlsbad/</u> and <u>http://www.noaa.gov/fisheries.html</u> respectively.

Activities authorized under the RGP and LOP procedures shall comply with the following applicable conservation measures resulting from the Corps informal Section 7 consultation to ensure the activity will not adversely affect federally listed species:

- (1) <u>Removal of gnatcatcher habitat within non-Reserve areas of the Orange</u> <u>County Central/ Coastal NCCP/HCP will follow the Construction and</u> <u>Minimization Measures for the NCCP/HCP;</u>
- (2) <u>Removal of suitable habitat for the gnatcatcher and construction work within</u> 300 feet of suitable habitat for the gnatcatcher will occur outside the gnatcatcher breeding season between February 15 and August 15. If work is necessary within 300 feet of suitable gnatcatcher habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting gnatcatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable gnatcatcher habitat or within 300 feet of a nesting gnatcatcher;
- (3) <u>Removal of suitable habitat for the least Bell's vireo (LBV) and construction</u> work within 300 feet of suitable habitat for the LBV will occur outside the LBV breeding season between March 15 and September 15. If work is necessary within 300 feet of suitable LBV habitat during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting LBVs are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable LBV habitat or within 300 feet of a nesting LBV;
- (4) <u>Removal of suitable habitat for the southwestern willow flycatcher</u> (flycatcher) and construction work within 300 feet of suitable habitat for the flycatcher will occur outside the flycatcher breeding season between May 15 and July 31. If work is necessary within 300 feet of suitable flycatcher habitat
during the breeding season, a qualified biologist will perform protocol surveys in the area to determine whether any nesting flycatchers are present. If nests are absent, work will continue. If a nest is present, the permittee shall notify the Corps, the Department, and the Service of the location of the nest, a 300-foot buffer around the nest will be clearly demarcated, and the area avoided until the nest is abandoned. A biological monitor with authority to stop construction will be present onsite during breeding-season construction to ensure the limits of construction do not encroach into suitable flycatcher habitat or within 300 feet of a nesting flycatcher; and

(5) If vernal pools are observed within a proposed project site under the RGP, vernal pool/fairy shrimp protocol surveys will be performed and the permittee shall notify the Corps, the Department, and the Service of the results prior to initiating any ground disturbance.

Consistency Determination: The SAMP/WSAA Process contain provisions for the protection and continued sustainability of listed species, and no Corps authorization can be obtained without compliance with the permit condition as shown above. Some fish species and other marine animals are also covered under the FESA, but are regulated by NMFS (part of NOAA) rather than the USFWS. No issues relating to threatened and endangered fish or other marine species are present within the Watershed, nor are any indirect effects expected to occur to these resources, as described in Section 4.3. The SAMP/WSAA Process is considered to be consistent with the ESA.

9.1.2 Section 401 of the Clean Water Act

For any project seeking authorization from the Corps under the SAMP permitting framework (e.g., LOP, RGP, retained NWPs, or SIP) that will impact jurisdictional waters, the applicant must obtain a water quality certification from the Regional Water Quality Control Board (RWQCB) or State Water Resources Control Board (SWRCB). Although the RWQCB has participated as a coordinating agency throughout the SAMP development process, it is not the Corps' intention that the SAMP would fully address the numerous issues under the State Porter-Cologne Act or other sections of the Clean Water Act. Therefore, Waste Discharge Requirements (WDRs) and 401 certifications are not included directly as part of the SAMP regulatory framework, except insofar as the Corps will request a 401 certification for the RGP from the RWQCB and/or the SWRCB. With 401 certification of the RGP, regulated maintenance activities under the RGP would not need to seek an individual 401 certification, but would still be subject to the 401 notification requirements.

According to 33 CFR 330.4-320.3, Section 401 of the Clean Water Act (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification from the State in which the discharge originates or would originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the affected waters at the point where the discharge originates or would originate, that the discharge will comply with the applicable effluent limitations and water quality standards. A certification obtained for the construction of any facility must also pertain to the subsequent operation of the facility. 401 water quality certification pursuant to section 401 of the CWA, or waiver thereof, is

required prior to the Corps Section 404 authorization of a project. The issuance of such certifications will be subject to the RWQCB's or SWRCB's relevant processing times and procedures. Any conditions of a section 401 certification will become conditions of a Corps Section 404 permit. Unless a pre-certification has been obtained (e.g., as with some NWPs or RGPs), a Corps Section 404 permit will not be issued until the applicant provides the Corps with the following information: a Section 401 water quality certification, a waiver thereof, or evidence that 60 days have passed since a complete application was submitted to the RWQCB for certification. In the case of the Corps' LOP procedures, if a Section 401 certification complies with the conditions of an LOP, the Corps will issue a provisional LOP. To finalize a Corps provisional LOP, the applicant would contact the Corps when the project receives a Section 401 certification or waiver (or when 60 days have passed since complete application was submitted). [Note: The RWQCB reserves the right to regulate discharges under Porter-Cologne in lieu of or in addition to CWA Section 401 certifications.]

Consistency Determination: Proposed projects seeking authorization under the RGP or LOP must demonstrate compliance with Section 401. Also, as required by the Section 404(b)(1) Guidelines, the SAMP/WSAA Process contains provisions to ensure that future activities authorized through the SAMP/WSAA Process will not violate any state water quality standards).

9.1.3 Impaired Waters and Total Maximum Daily Loads (TMDLs)

The TMDL program is required under CWA Section 303(d). CWA Section 303(d) requries states to identify impaired water bodies (i.e. the "303(d) list") and develop TMDLs for them. A TMDL is a quantitative assessment of water quality impairments, contributing sources of pollutants, and pollutant load reductions or control actions needed to restore and protect bodies of water. The TMDL requirement does not replace existing water pollution control programs. It provides a framework for evaluating pollution control efforts and for coordination between federal, state, and local efforts to meet water quality standards.

Consistency Determination: The SAMP/WSAA Process is consistent with Section 303(d) because individual activities authorized pursuant to the SAMP/WSAA Process will be required to comply with the TMDL requirements.

9.1.4 Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act regulates activities in navigable waters of the U.S. The term "navigable waters of the U.S." as defined in 33 CFR 329.4 includes those areas subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the water body, and is not extinguished by later actions or events which impede or destroy navigable capacity including filled, drained, diked, or developed lands that at one time were navigable.

Consistency Determination: Generally, the SAMP/WSAA Process would not apply to activities affecting navigable waters subject to tidal influence since the SAMP/WSAA Process applies to the upper Watershed areas and not Newport Bay directly. However, the lower portion of San Diego Creek within the Watershed is tidally influenced and therefore, future project(s) requiring permits within the tidally-influenced portion of San Diego Creek must demonstrate consistency with the SAMP/WSAA Process and Section 10 of the Rivers and Harbors Act.

9.1.5 Clean Air Act

Pursuant to Section 176(c) of the Clean Air Act, the Corps shall not authorize projects or activities that fail to conform to the State Implementation Plan (see Section 3.5.2 for regulatory background). Conformity means that activities shall not cause or contribute to any new violation of air quality standards for the Basin, increase the frequency or severity of any existing violation of standards, or delay timely attainment of any standard or interim emission reductions.

The formulation of the SAMP/WSAA Process and the development and implementation of an Analytical Framework, a Strategic Mitigation Plan, and Mitigation Coordination Program are all planning efforts that provide technical assistance to the Corps, other federal, state, and local agencies, the public, and the regulated community in the administration of the Section 404 permitting program within the Watershed. These planning and advisory aspects of the federal action do not cause emissions of criteria pollutants or their precursors, and as such are exempt from the general conformity requirements by 40 CFR Part 93.153.

The issuance of a new RGP for maintenance activities is a federal action that would grant permits for projects than are routine, recurring maintenance dredging and debris removal and disposal projects that would result in temporary, short-term, minimal impacts to aquatic resources. The Corps has made a preliminary determination that these types of activities would result in only de minimus increases in direct mobile source and stationary source emissions of criteria pollutants or their precursors in a non-attainment area, and would be exempted from the general conformity requirements by 40 CFR Part 93.153.

The adoption of procedures for the issuance of LOPs for eligible activities is a federal action that would grant permits for projects that range from recurring maintenance activities to construction-related activities. Both broad categorizations of activities could result in temporary, minimal, or permanent, minor impacts to aquatic resources within the Watershed. Further, the Corps has made a preliminary determination that many of these types of maintenance and construction activities would result in only *de minimus* increases in direct mobile source and stationary source emissions of criteria pollutants or their precursors in a non-attainment area, and would be exempted from the general conformity requirements by 40 CFR Part 93.153.

Additionally, it is acknowledged that certain proposed projects that may otherwise be eligible for authorization under the proposed LOP could have direct mobile source emissions and/or stationary source (e.g., fugitive dust) emissions in exceedence of *de minimus* levels, or could have activities resulting in indirect mobile source or stationary source emissions within the continuing authority of the Corps. However, it is expected that many, if not all of the projects with long-term impacts from indirect mobile source or post-construction stationary source emissions would be included in the baseline inventory for the applicable State Implementation Plan. Nevertheless, to assure compliance with Section 176(c)

(General Conformity Rule review) of the Clean Air Act, the Corps has proposed the following permit condition as part of the proposed LOP procedures:

No activity is authorized that causes or contributes to any new violation of National Ambient Air Quality Standards, increases the frequency or severity of any existing violation of such standards, or delays timely attainment of any such standard or interim emission reductions, as described in the applicable California State Implementation Plan for the South Coast Air Basin. As part of the Corps LOP application package, the applicant must submit an air quality emission and impact analysis for the proposed activity if the project would result in long-term or permanent stationary (point or area) source or indirect mobile source emissions, or if the proposed activity would result in area source and direct mobile source emissions that exceed the annual de minimus emissions thresholds for any criteria air pollutant or its precursors.

Consistency Determination: The Corps has made the preliminary conclusion that the regulated activities proposed for authorization under the SAMP permitting program (RGP and LOP procedures) have been included as part of the baseline inventory for the applicable State Implementation Plan, or will not exceed federal *de minimus* levels of area source or direct mobile source emissions of any criteria pollutant or its precursors. Subsequent stationary source or indirect source emissions related to the federal action are generally not within the Corps continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this proposed action, and the direct impacts to air quality from the implementation of the SAMP are expected to be less than significant. Further, the Corps anticipates that future individual LOP and RGP actions are not likely to require further analysis under Section 176, but has included a LOP condition , specified above, applicable to some projects (e.g. those that could result in long-term emissions or that could exceed *de minimus* levels) to ensure conformity with Section 176. Thus, the proposed SAMP/WSAA Process is determined to be consistent with the Clean Air Act.

9.1.6 National Historic Preservation Act (NHPA)

The NHPA, Title 16, USC, Section 470, establishes a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States. The NHPA created the Advisory Council on Historic Preservation (ACHP), an independent federal agency, to advise the President and Congress on matters involving historic preservation. The ACHP is authorized to review and comment on all actions licensed by the federal government that will have an effect on properties listed in the National Register of Historic Places (NRHP), or eligible for such listing. Specifically, §106 of the Act (16 USC 470(f)) requires that a federal agency involved in a proposed project or activity be responsible for initiating and completing the review process. The agency must confer with the State Historic Preservation Office (SHPO) (an official appointed in each state or territory to administer the National Historic Program) and according to the NHPA process.

The NRHP is an inventory of the United States' historic resources and is maintained by the National Park Service. The inventory includes buildings, structures, objects, sites, districts, and archeological resources. The listed properties are not necessarily significant nationally; rather most are significant primarily at the state or local level. As mentioned above, §106 also encompasses significant properties which have not yet been listed or formally determined to be eligible for listing. The proposed RGP and LOP contain the following general condition:

No activity that may affect historic properties listed or eligible for listing, in the NRHP is authorized, until the Corps has complied with the NHPA. If the proposed activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the NHRP, and shall not begin the activity until notified by the Corps that the requirements of the NHPA have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the SHPO and the NRHP.

Consistency Determination: If cultural resources are discovered on a particular project site requiring Corps authorization and are located within the Corps area of potential effect (APE), the Corps, in coordination with the SHPO, will evaluate the cultural resource for eligibility for listing in the NRHP pursuant to the NHPA. Thus, the SAMP/WSAA Process is consistent with the NHPA because any cultural resources discovered on a project site seeking Corps authorization will be appropriately protected as required by the NHPA, per the RGP and LOP condition specified above.

9.1.7 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 was enacted by Congress to encourage states to preserve, protect, develop, and, where possible, to restore or enhance valuable natural coastal resources such as wetlands, flood plains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats. Administration of the CZMA was delegated to the National Oceanic and Atmospheric Administration (NOAA). A state with an approved coastal protection program can be delegated the authority to implement the provisions of the CZMA. The Office of Ocean and Coastal Resource Management (OCRM) administers the individual state programs. The California Coastal Commission (CCC) was established in 1972 as the primary lead agency responsible for implementing California's federally-approved coastal management program and Coastal Zone Management Plan. California's coastal management program is carried out through a partnership between state and local governments. The CCC certifies Local Coastal Programs and approves coastal development permits, energy projects, and federal projects consistent with these policies (See also discussion in Section 9.2.2).

Amendments to the CZMA in 1990 entitled Coastal Zone Act Reauthorization Amendments (CZARA) required coastal states to enhance cooperation between land and water use management agencies, identify management measures to prevent and control polluted runoff, and ensure that enforceable mechanisms were in place where voluntary efforts were determined to be insufficient to restore and protect State waters. In response to the new provisions of the CZARA, the CCC entered into a partnership with the SWRCB to implement a statewide plan that would address both the CZARA and CWA requirements regarding coastal waters. The SWRCB has subsequently updated their nonpoint source control plan to include the provisions of the CZARA. EPA and NOAA approved the revised California Nonpoint Source Pollution Control Program (NPS Program) in 2000. The NPS Program identifies activities to be completed by SWRCB in implementing CZARA requirements in the regional Basin Plans and storm water permit programs. To date many of the RWQCB Basin Plans and municipal separate storm sewer system (MS4) NPDES permits have been revised to include CZARA requirements. Additional information regarding the State NPS Program can be viewed at <u>www.swrcb.ca.gov/nps/</u>.

Coastal Zone Management Act (CZMA) consistency determination must be obtained from the CCC for any project impacts to jurisdictional waters located within the Coastal Zone that require authorization from the Corps under the SAMP permitting framework (e.g., LOP, RGP, or SIP). The Corps may request a federal consistency concurrence from the CCC for the Corps' maintenance RGP. An LOP for an individual project affecting the coastal zone will not be issued until CZMA consistency concurrence, or a waiver thereof, is obtained by the applicant. If no consistency determination has been made within 45 days after submittal of a complete application and complies with the conditions of an LOP, the Corps will issue a provisional LOP.

Consistency Determination: Certain restoration opportunities identified in the restoration plan (Smith and Klimas 2004) and included in the SAMP Strategic Mitigation Plan are located within the coastal zone. These include portions of San Joaquin Marsh and Bonita Creek; however, no specified projects are proposed at this time. Most projects seeking authorization under the SAMP/WSAA Process will be located outside the coastal zone and are not likely to affect aquatic resources in the coastal zone. For restoration projects and other regulated activities seeking authorization under the SAMP/WSAA Process

that may affect aquatic resources in the coastal zone, project-specific coastal development permits from the CCC would be required, and concurrence on federal consistency with the CZMA will be sought.

9.1.8 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265 as amended (Magnuson-Stevens Act), provides for the conservation and management of fishery resources within the U.S. Exclusive Economic Zone (EEZ). It was adopted to extend control of U.S. waters to 200 nautical miles in the ocean; to phase out foreign fishing activities within this zone; to prevent overfishing, especially by foreign fleets; to allow overfished stocks to recover; and to conserve and manage fishery resources.

Congress passed the original Magnuson-Stevens Act in 1976. It has since been amended several times. Among other things, the Act explains the role of regional fishery management councils and describes their functions and operating procedures. The Act includes national standards for management and outlines the contents of fishery management plans. In addition, it gives the Secretary of Commerce power to review, approve, and implement fishery management plans and other recommendations developed by the councils. NMFS (under the Department of Commerce) is charged with stewardship of the nation's living marine resources. With input from the regional councils and stakeholder groups, NMFS provides guidance for applying the National Standards of the Act (Pacific Fishery Management Council, 2004).

The Magnuson Act and was re-authorized by the 104th Congress as the "Magnuson-Stevens Act" on 11 October 1996 to become Public Law 104-297. At present, the Magnuson Act states in its "National Standards" that conservation and management measures shall:

- Prevent overfishing while achieving optimum yield;
- Not discriminate between residents of different states; any allocation of privileges must be fair and equitable;
- Where practicable, promote efficiency, except that no such measure shall have economic allocation as its sole purpose;
- Take into account and allow for variations among and contingencies in fisheries, fishery resources, and catches;
- Minimize costs and avoid duplications, where practicable;
- To the extent practicable, an individual stock shall be managed as a unit throughout its range; interrelated stocks shall be managed as a unit or in close coordination;
- Take into account the importance of fishery resources to fishing communities, consistent with conservation requirements, including prevention of overfishing and rebuilding of overfished stocks;
- Minimize bycatch or mortality from bycatch; and
- Promote safety of human life at sea.

For proposed activities in tidally-influenced waters, including special aquatic sites (e.g., wetlands, vegetated shallows such as eelgrass beds), the Corps is required to consult with the NMFS for potential impacts to Essential Fish Habitat (EFH). Within the San Diego Creek Watershed, EFH consultation may occur for proposed projects within the tidally influenced portions of lower San Diego Creek. A programmatic consultation process is already in place between the Corps and NMFS, as is an eelgrass mitigation policy. Potential impacts will be evaluated to determine if any adverse impact would occur, if the project is in compliance with the programmatic consultation agreement, and if the project would require a consultation.

Consistency Determination: This Draft Program EIS/EIR and related public notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Act, and the Corps has requested concurrence that the SAMP/WSAA Process would not adversely affect EFH. Due to the inland location of most of the SAMP/WSAA Process regulated activities as well as the limited extent of the predicted project activity impacts on EFH resources within Upper Newport Bay, it is initially determined that implementation of the proposed SAMP/WSAA Process would not have an adverse impact on EFH or federally managed fisheries in California waters.

9.2 STATE LAWS

9.2.1 California Water Code

Waters of the State. The California Water Code is the principal State law regulating water quality in California. Waters of the State includes "any surface water or groundwater, including saline waters, within the boundaries of the state" [(Section 13050(e)]. This includes tributaries to waters listed above, isolated waters (e.g. vernal pools, groundwater-supplied wetlands), and vegetated swales with no apparent OHWM. All of these water bodies contain/convey flows during and after precipitation events.

California Water Code contains provisions regulating water and its use. This portion of the California Water Code, Division 7 (Porter-Cologne Act), establishes a program to protect water quality and beneficial uses of the State water resources which includes groundwater and surface water. The SWRCB and the RWQCBs are the principal state agencies responsible for control of water quality. They establish WDRs, water quality control planning and monitoring, enforcement of discharge permits, and groundwater and surface water quality objectives.

The RWQCBs are responsible for the administration of Section 401 of the CWA. Depending on the permitting requirements of the Corps, a water quality certification issued by the RWQCBs may be necessary. If the Corps deems a particular aquatic resource to be "isolated" (and thus not regulated by the Corps Regulatory Program after 2001), the RWQCBs would regulate the isolated resource through the State Porter-Cologne Act. A WDR may be issued for any activities affecting the isolated resource. For example, many vernal pools are "isolated," and thus would be regulated through Porter-Cologne rather than the CWA.

Consistency Determination: Section 9.1.2 of this Program EIS/EIR discusses the consistency of the SAMP/WSAA Process with CWA Section 401. The Corps cannot issue a permit if a proposed project is expected to violate any State water quality standards or state anti-degradation policy. Consistency with the California Water Code is required in order to proceed under the SAMP/WSAA Process. Thus, the SAMP/WSAA Process is consistent with the California Water Code.

9.2.2 The California Coastal Act

The California Coastal Act of 1976 requires any applicant proposing to undertake development in the Coastal Zone to obtain a coastal development permit. The Coastal Zone extends inland anywhere from approximately 500 yards in developed urban areas to five miles in undeveloped areas. If projects are proposed in or adjacent to existing or historic coastal wetland areas, they will require a coastal development permit issued by the CCC.

Consistency Determination: For those projects in or affecting the coastal zone, the federal CZMA (see Section 9.1.7) requires the applicant to obtain concurrence from the CCC that the project is consistent with the State's Coastal Zone Management Plan prior to issuing the Corps authorization for the project. Although the majority of the Watershed is outside the coastal zone, certain areas around the San Joaquin Marsh (i.e., lower San Diego Creek) are within the coastal zone. Future projects proposed within the coastal zone may require a coastal development permit and will be reviewed for CZMA consistency. See also discussion under CZMA.

9.2.3 The California Endangered Species Act

CESA establishes a state policy to conserve, protect, restore, and enhance endangered and threatened and their habitats and, consistent with that policy, to acquire habitat for such species. CESA also prohibits the taking, importing, exporting, and selling of endangered, threatened, and candidate species (listed species) unless authorized by the Department. The Department may authorize take of a listed species though the issuance of an 'incidental take permit' if: 1) the take is incidental to an otherwise lawful activity; 2) the impacts of the authorized take are minimized and fully mitigated; 3) the permit is consistent with specified CESA regulations, where applicable; and 4) the permittee has adequate funding to implement the minimization, mitigation, and avoidance measures included in the permit. "Take" is defined in FGC Section 86 as: "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

Consistency Determination: Given the aquatic resource impact restrictions and general conditions in the RGP, LOP and WSAA Process, as well as the requirements of the NCCP and FESA, future projects authorized through the SAMP/WSAA Process will be consistent with the CESA.

URS

10.0 CONSISTENCY WITH REGIONAL AND LOCAL PLANS

NEPA requires that the federal lead agency identify possible conflicts between the proposed action and the objectives of state and local land use plans and policies. In addition, potential inconsistencies with local plans should be described, along with actions that the federal agency would take to avoid this inconsistency. Under the provisions of CEQA Guidelines Section 15125(b), an EIR must discuss any inconsistencies between the proposed project and applicable general plans and regional plans.

The SAMP/WSAA Process is a Watershed (landscape-level) approach to preserving and managing sensitive aquatic resources while allowing economic uses to be permitted within the Watershed consistent with the requirements of federal law (CWA Section 404) and state code (FGC Section 1600 *et seq.*). State and federal waters, including wetlands, have been identified in the Watershed, and to the extent feasible, have been avoided. Unavoidable impacts to aquatic resources will be minimized and fully mitigated according to the SAMP Permitting Program/WSAA Process and mitigation framework.

In this section, the SAMP/WSAA Process is evaluated for consistency with the Orange County Central and Coastal Natural Community Conservation Plan (NCCP), the Corps Watershed Management Plan (Corps 2001a,b), SCAG Growth Vision Report (2004), Orange County Transportation Authority Master Plan of Arterial Highways (2005); County of Orange General Plan (2005), and City of Irvine General Plan (1999, 2005, 2006). This section also discusses SAMP/WSAA Process consistency with other municipal general plans of the Watershed.

10.1 NATURAL COMMUNITY CONSERVATION PLAN (NCCP) / HABITAT CONSERVATION PLAN (HCP)

10.1.1 Background

The County's Natural Community Conservation Plan (NCCP) / Habitat Conservation Plan (HCP) is a program designed to provide long-term regional protection of the natural vegetation and wildlife diversity of the region while allowing compatible land use and appropriate development to occur. In April 1996, the Orange County Board of Supervisors adopted the Central-coastal Subregion NCCP/HCP program. The Reserve System identified within the NCCP/HCP preserves approximately 18,500 acres of open space designed to function as a multiple-habitat system. The Reserve System restricts the kinds of permitted uses to protect long-term habitat values. Residential, commercial, and industrial uses are prohibited, as are new active recreational uses outside already-disturbed areas. However, the NCCP/HCP does allow for non-habitat uses that would need to be sited in the Reserve System, such as infrastructure facilities including roads, flood control, sanitary landfills, utilities, and water storage. New recreational facilities would be allowed in locations compatible with habitat protection based on the understanding that recreational use is subordinate to habitat protection within the Reserve. The primary goal of the NCCP/HCP is to protect and manage habitat supporting a broad range of plant and animal populations that are found within the Central and Coastal Subregion. To accomplish this goal, the NCCP/HCP creates a subregional habitat Reserve System and implements a coordinated program to manage biological resources within the habitat preserve. Creating a defined Reserve System provides certainty to the public and affected landowners with respect to the location of future development and open space within the subregion.

10.1.2 Relation to the proposed SAMP/WSAA Process

As described in Section 3.2.2, the NCCP/HCP provides for the regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development growth. This approach provides an alternative to "single species" conservation through the formulation of regional, natural community-based, and habitat protection programs. The NCCP/HCP was developed to provide adequate mitigation for impacts to the California gnatcatcher and other Identified Species' habitat. The Department and USFWS developed the NCCP/HCP that provides coverage under Section 10 of FESA and CESA to those who are signatory to the NCCP/HCP. The NCCP Central and Coastal sub-region extends within the Watershed. As under the existing Corps/Department permitting, qualifying applicants within the Watershed seeking coverage under the SAMP/WSAA Process can continue to utilize the NCCP/HCP process for authorizing the take of a listed species, including the federally listed coastal California gnatcatcher. The SAMP's long-term conservation elements include a suite of policies and measures for aquatic resource management. Among these are an adaptive management framework and the requirement/recommendation for buffers. These measures also serve to coordinate the SAMP/WSAA Process with the existing NCCP reserve system. The two plans, one focused on upland species (NCCP) and one focused on riparian resources (SAMP/WSAA Process), are complementary approaches to protecting and enhancing habitats used by listed species.

The NCCP established a habitat reserve system for native habitat. The focus of the NCCP is to protect target sensitive species, such as the coastal California gnatcatcher. Of the 17,125 17,137 acres identified as aquatic resource integrity areas, including aquatic resources and their contributing upland areas of influence, 12,408 acres or 72% fall within the boundaries of the NCCP Reserve system. With regard to the Watershed's aquatic resources omitted from coverage under the NCCP, some already lie within the NCCP Reserve (and other open space areas and have been afforded some level of site protection independent of the SAMP/WSAA Process). For instance, 521 acres or 67% of the high and medium integrity riparian habitat (also identified as an aquatic resource integrity area) are located within the NCCP Reserve system. However, the SAMP/WSAA Process would conserve an additional 248 259 acres of high and medium integrity riparian habitat. Other riparian habitat is located in non-NCCP designated open space areas, including the City of Irvine's Open Space Preserve, and UCI's San Joaquin Freshwater Marsh Preserve.

Consistency Determination: The NCCP and SAMP/WSAA Process have many similar goals and objectives. The SAMP/WSAA Process is expected to strengthen the NCCP by including conditions regarding riparian-oriented species, such as the least Bell's vireo, and providing a process for the conservation, restoration, and rehabilitation of aquatic resource integrity areas located within and adjacent to the NCCP areas. Much of the aquatic resource integrity areas of the Watershed are located within the NCCP area; thus, the two planning processes cover similar areas, but focus on different aspects of the environment (riparian versus upland). The SAMP/WSAA Process also includes prioritization for connecting currently isolated NCCP areas (e.g., linking the northern and southern portions of the Watershed).

There are several federally listed species including (but not limited to) the coastal California gnatcatcher and the least Bell's vireo, and two previously designated critical habitats within the Watershed, including those for the coastal California gnatcatcher and the Riverside fairy shrimp. The Corps has informally consulted with the USFWS to ensure any future impacts to federally listed species, or their critical habitat, are not adverse. With this Draft EIS/EIR, the Corps has initiated formal consultation for the SAMP/WSAA Process in a letter pursuant to Section 7 of the ESA. Therefore, due to the proposed RGP, LOP, and WSAA Process conditions relating to projects within aquatic resource integrity areas, mitigation sites and those affecting listed species, the SAMP/WSAA Process is consistent with the NCCP.

10.2 NEWPORT BAY / WATERSHED MANAGEMENT PLAN

10.2.1 Background

The Committee on Public Works, House of Representatives, adopted a resolution in May 8, 1964, authorizing federal monies for the study of the Santa Ana River Basin and Orange County Streams, California. In addition, specific directive language was provided by Congress within the Conference Report on H.R. 2203, Energy and Water Development Appropriations Act, 1998, (House of Representatives - September 26, 1997), under General Investigations. The conference agreement stated: "...for the Corps of Engineers to undertake a reconnaissance study for management of the Newport Bay/Watershed in the interest of environmental preservation and restoration, water quality and sediment control, and the avoidance or minimization of undesirable impacts resulting from urbanization and other present and future Watershed activities".

The Baseline Conditions Report (F-3 Milestone; Corps 2001a,b) was the first report in a series of deliverables for the Watershed that led to a Feasibility Study, Final Feasibility Report and a Watershed Management Plan. The Baseline Conditions Report summarizes the findings, results, and data collected for the baseline (existing) conditions pertaining to hydrology, hydraulics, sedimentation, groundwater, geology, soils, economics, and the environmental setting of the Watershed. Some of the data presented in this report have been used in the preparation of the baseline sections of this Draft EIS/EIR.

The Corps, in conjunction with the County of Orange, and other stakeholders, conducted the Feasibility Study for the Watershed (F-4 Milestone) that is being used to prepare the comprehensive Watershed Management Plan (hereafter, Plan). The goal of the Feasibility Study was to maintain and/or improve the health of the Watershed. The Feasibility Study addressed restoration opportunities, and identified measures that would strike a balance between the need for economic development and the need to preserve valuable Watershed (and Newport Bay) resources.

The Corps prepared a draft Plan (F-4 Milestone; Corps 2004, Public Draft; Corps 2005b,c). The final plan will be completed and submitted with the Draft Feasibility Report (F-5 Milestone). The Watershed Management Plan is intended to provide a decision-making framework within which specific structural projects, non-structural projects, and local activities will be identified, and BMPs and other relevant information will be included. The Plan will be the overall blueprint for Watershed improvement activities. Measures that are part of the Plan, but fall outside of the Corps mission, can be implemented by other interested local, state, and federal agencies.

10.2.2 Relation to the proposed SAMP/WSAA Process

The Plan will cover topics outside the scope of the proposed permitting and mitigation programs of the SAMP/WSAA Process. The Plan considers (a) the social, economic, and environmental aspects of the Watershed, and (b) the mechanisms required to "incentivize and enable" desired actions. The Plan includes topics such as data management, design of natural and built environments, policy, finance, and communication (Corp, 2004). The proposed SAMP/WSAA Process, developed by the Regulatory Division of the Corps, focuses on a new permitting process and mitigation program for projects requiring Corps authorization for proposed activities in the Watershed. Many local-level concerns related to water resources and current water quality problems, may not be directly addressed by the SAMP/WSAA Process, and thus may be addressed through the parallel process involving the Corps Planning Division and County of Orange.

Both the Plan and the SAMP/WSAA Process have been developed by the Corps of Engineers Los Angeles District and have been designed to complement each other. Most significantly, both documents have been created with the other in mind. Given that the Corps has limits to the level of Watershed management it can require through the regulatory process, both documents provide an outline for how the regulatory process can support a comprehensive resource management process, and how communities and agencies can successfully implement and benefit from broad-based Watershed management efforts.

Additionally, it is anticipated that a Mitigation Coordination Program administrator (proposed as one concept for future management in the Watershed) could compete for and obtain non-regulatory related monies to acquire conservation lands, conduct public education and outreach activities, and/or conduct specific non-mitigation, restoration activities within the aquatic resource integrity areas. Funding sources may include, but are not limited to existing and future grant programs, federal, state, and local watershed restoration funding, bond monies, or conservation fees collected by local land use authorities. Additionally, ecosystem restoration projects determined by the Corps to have federal interest may be eligible for receiving federal monies administered by the Corps. The Corps Newport Bay Watershed Management Plan (2005c) identifies a number of revenue-generation strategies that could be adopted by a Mitigation Coordination Program administrator.

Consistency Determination: Coordination of Participating Applicants at the SAMP/WSAA Process stakeholder meetings, Newport Bay Watershed Management Committee meetings, and internal meetings between staff of the Corps planning and regulatory branches, have ensured compatibility between the two plans. The proposed SAMP/WSAA Process overlaps with the Plan by providing delineation and functional assessment data, restoration planning and site prioritization, and mitigation policies. Many projects identified in the Corps Restoration Plan (Smith and Klimas, 2004) may eventually be implemented through the finance and communication aspects of the Plan. It is expected that implementation of the SAMP/WSAA Process will not constrain or eliminate activities encouraged by the Plan such as future restoration, water quality, or other related projects (Corps, 2005 b,c).

10.3 COUNTY OF ORANGE GENERAL PLAN

Unincorporated Orange County comprises a substantial portion of the Watershed. The Orange County General Plan Land Use Element (LU-3-1) states, "The final portions of the available land within the

County will achieve first generation build-out sometime after the year 2020, varying somewhat by geographic area." It should be noted that Orange County considers build-out in conceptual terms only, as redevelopment and intensification will continue after all developable land has been used (Corps, 2001).

The Santiago Hills overlook the Watershed from the north and provide the largest remaining block of open space in the Watershed. These hills are largely protected from future development under the NCCP/HCP agreement. The Frank R. Bowerman Landfill is located north of SR-241 in the Bee Canyon area, surrounded by NCCP reserve areas. The estimated closure date of the landfill is 2053. Upon closure, it is anticipated that the landfill site would be converted to a recreational facility. Much of the remaining land to the east and west of the landfill will be incorporated into the Limestone-Whiting Ranch Wilderness Park in the future (Corps, 2001). Thus, few County areas in the Watershed remain available for future development.

10.3.1 Land Use Element

The Land Use Element of the General Plan contains 13 policies, applicable to all geographic areas of unincorporated Orange County were adopted to guide short- and long-term planning and development. Of the thirteen policies, only two are applicable to the environmental topic areas of the SAMP/WSAA Process. These include Policy 8 – Enhancement of the Environment, and Policy 13 – Urban Storm Water Runoff Regulations. Two additional county programs are applicable to the SAMP/WSAA Process and include the Environmental Review Process and the NCCP (see Section 11.1, above). The consistency of the proposed SAMP/WSAA Process with these applicable policies and programs in the County's General Plan is addressed below.

- Land Use Element, Policy 8: Enhancement of the Environment. To guide development so that the quality of the physical environment is enhanced.
- Land Use Element, Policy 13: Urban and Storm Water Runoff Regulations. Established for the reduction of water pollution. Updated objectives that respond to water pollution regulations in the Santa Ana RWQCB include:
 - Limit disturbances to natural water bodies and drainage systems; conserve natural areas; protect slopes and channels; and minimize impacts from storm water and urban runoff on the biological integrity of natural drainage systems and water bodies.
 - Look for opportunities that minimize changes in hydrology and pollutant loading; mitigate projected increases in pollutant loads and flows by incorporating structural and non-structural BMPs; ensure that post-development runoff rates and velocities from a site have no significant adverse impact on downstream erosion and stream habitat; seek to minimize the quantity of storm water directed to impermeable surfaces and the MS4s; and maximize the percentage of permeable surfaces to allow more percolation of storm water into the ground.
 - Look for opportunities to preserve wetlands, riparian corridors, and buffer zones and establish
 reasonable limits on the clearing of vegetation from the project sites.
 - Encourage the use of water quality wetlands, biofiltration swales, watershed-scale retrofits when such measures would be effective and are technically and economically feasible.
 - As appropriate, provide for permanent measures to reduce storm water pollutant loads in storm water conveyed from development sites.

- Establish guidelines for areas particularly susceptible to erosion and sediment loss.
- Establish a Condition of Approval such that permanent water quality treatment BMPs are adequately constructed, operated, and maintained throughout the life of a project.

Consistency Determination: Policy 8 ensures that all land use activities enhance the physical environment while recognizing the need for economic development. This policy also establishes the preservation of those environmental resources that have been identified as high value resources. The SAMP/WSAA Process is consistent with Policy 8 of the Orange County General Plan because the purpose of the SAMP/WSAA Process is to provide for reasonable economic development with the protection and long-term management of sensitive aquatic resources. To the extent feasible, federal waters of the U.S., including wetlands, are avoided and unavoidable impacts to aquatic resources are minimized and fully mitigated under the SAMP/WSAA Process. The SAMP/WSAA Process is consistent with Policy 13 because the SAMP/WSAA Process is a management plan designed to protect aquatic resources and includes LOP and RGP general conditions to minimize impacts to water quality. Authorizations under the SAMP will require certification under CWA Section 401 to ensure water quality standards are maintained. Furthermore, the objectives listed above are consistent with the eight SAMP Tenets, which are guiding principles that achieve the goal of protecting the biological, chemical, and physical integrity of the waters of the U.S. and avoiding impacts to fish and wildlife.

Resource Element

The Resource Element of the County of Orange General Plan (Chapter VI) includes six components with policies that pertain to the management and conservation of resources. Of the six components that make up this Element, three components: Natural Resources, Water Resources, and Open Space are applicable to the SAMP/WSAA Process. The consistency of the proposed SAMP/WSAA Process with the Resource Element's policies in the County's General Plan is addressed below.

- Resources Element, Goals, Objectives and Policies: Natural Resources Component, Goal 3, Policy 5: Landforms. To protect the unique variety of significant landforms in Orange County through environmental review procedures and community and corridor planning activities.
- Resources Element, Goals, Objectives and Policies: Water Resources Component, Goal 1, Policy 5: Water Quality. To protect water quality through management and enforcement efforts.
- Resources Element, Goals, Objectives and Policies: Water Resources Component, Goal 1, Policy 6: Intergovernmental Coordination. To encourage and support a cooperative effort among all agencies towards the resolution of problems and the utilization of opportunities in the planning and management of water resources.

• Resources Element, Goals, Objectives and Policies: Open Space, Goal 3, Policies. To encourage the conservation of open space lands, which prevent erosion, siltation, flood, and drought, and to discourage the early conversion of open space to some other land use. To ensure the wise use of County resources by identifying, planning, or assisting in the planning for and assuming management responsibility when appropriate for open space areas used for the managed production of resources including, but not limited to, forest lands, rangeland, agricultural lands, and areas of economic importance for the production of food or fiber; areas required for recharge of groundwater basins; tidelands, beaches, bays, estuaries, marshes, rivers, and streams, which are important for the management of commercial fisheries and for beach sand replenishment; and areas containing mineral deposits.

Consistency Determination: The goals and policies of the Resource Element are directed at ensuring that as urbanization increases an adequate supply of all necessary resources will be available to meet the County's growing needs. Overall, the SAMP/WSAA Process is consistent with the policies indicated in the Resource Element because the policies guide and direct local government decision-making in resource-related matters and also facilitate coordination with regional, state, and federal policies and programs. The Resource Element recognizes the need for economic development, but also establishes guidelines that promote development while providing protection and long-term management of the County's resources. The SAMP/WSAA Process provides similar guidance for future management and protection of aquatic resources in the Watershed.

Specifically, elements of the proposed action that parallel those of the Resource Element include the maintenance and restoration of: diverse and contiguous riparian corridors; hydrologic, water quality, and habitat integrity of riparian habitat; floodplain connection and sediment regimes; and headwater areas. In addition, the SAMP/WSAA Process involves an assessment of the functions and values of aquatic resources in the entire Watershed, and the establishment of a watershed-specific permitting system for issuance of 404 permits and streambed alteration agreements, as well as the identification of aquatic resource integrity areas.

The Safety Element

The Safety Element in the County of Orange General Plan presents policies related to potential and identified hazards and their associated safety considerations along with mitigation and the implications for development. The Natural Hazards component discusses flood and seismic/geologic hazards and is applicable to the SAMP/WSAA Process. The consistency of the proposed SAMP/WSAA Process with the Safety Element policies in the County's General Plan is addressed below.

Chapter IX: Safety Element, Goals, Objectives and Policies: Flood Hazards. The goals and objectives of this section provide a strategy for addressing and mitigating potential flood hazards.

- **Policy 6:** To limit erosion and sediment transport from development areas to bays and harbors.
- **Policy 7:** To permit reasonable movement of sediment to the open ocean for beach sand replenishment through remedial measures.
- **Policy 10:** To monitor and evaluate studies of the uses of non-structural alternatives, including more compatible land use planning adjacent to watercourses for flood control purposes.

• **Policy 12:** To create design criteria, which minimizes or mitigates impacts associated with crossing floodplains by development.

Consistency Determination: The goals and policies of the Safety Element provide a strategy for addressing and mitigating potential flood hazards while allowing development within the unincorporated areas of the County. The proposed project is consistent with these goals and policies because the purpose of the SAMP/WSAA Process is to provide for reasonable economic development and the protection and long term management of sensitive aquatic resources. To the extent feasible, federal waters of the U.S., including wetlands, are avoided and unavoidable impacts are minimized and fully mitigated. For areas outside of aquatic resource integrity areas, the applicable Mitigation Policies and General Conditions, along with applicable BMPs would limit adjacent and downstream impacts. Thus, the SAMP/WSAA Process is consistent with the Safety Element's goals and policies associated with minimizing erosion and sedimentation impacts in proposed development areas in the County of Orange. The SAMP Tenets (Section 2.1.1.3) which guided the Corps and Department in SAMP/WSAA Process development and help meet the objectives of the CWA and FGC include measures such as: 1) maintain and/or restore sediment sources and transport equilibrium; and 2) maintain and/or restore floodplain connection. These processes are important for the long-term sustainability of riparian habitat in the Watershed.

10.4 ORANGE COUNTY TRANSPORTATION AUTHORITY MASTER PLAN OF ARTERIAL HIGHWAYS

The Orange County Master Plan of Arterial Highways (MPAH) (2005) establishes an Orange Countywide roadway network intended to ensure coordinated transportation system development among local jurisdictions in Orange County. The primary purpose of the MPAH is to describe an arterial highway system that effectively serves existing and adopted future land uses in both incorporated and unincorporated areas of Orange County. As the administrator of the MPAH map, OCTA is responsible for maintaining the integrity of the MPAH map through coordination with cities and the County. Consistency with the MPAH is essential to the integrity of a functional, regional highway network. It ensures that each city and the County implement the same base transportation network using similar standards and assumptions. Consistency with the MPAH is also required for local agencies to be eligible for the Orange County Combined Transportation Funding Programs.

To aid in establishing consistency among plans, all jurisdictions are encouraged to use common land use assumptions and travel demand projections. OCTA facilitates the use of these common assumptions through administration of the Orange County Transportation Analysis Model (OCTAM), which was previously maintained by the County of Orange. OCTA established goals and policies to serve as countywide guidelines and provide direction to local agencies for implementing the MPAH. The goals and policies are based on the regional policies found in the County of Orange General Plan Transportation Element. A goal is a general expression of County-wide values and is abstract in nature. A policy is a specific statement that guides decision-making. The following goal and policies from the MPAH are relevant to water and aquatic resources being regulated by the SAMP/WSAA Process or environmental policies in general.

Goal: Provide an Arterial Highway System that Supports Land Use Policies of the County and Cities. **Policies:** The MPAH will establish a coordinated arterial highway system that is in balance with the General Plan Land Use Elements of the County and cities. OCTA will monitor local agencies to ensure that the arterial highway system is implemented in a manner that supports the implementation of adopted overall land use policies and that is consistent with financing capabilities. OCTA will provide guidance for the development of subarea traffic models used by local jurisdictions to determine the quantitative impacts of land use decisions on the circulation system, so as to be consistent with OCTAM.

Consistency Determination: The SAMP/WSAA Process proposes an alternative permitting and mitigation program for the Watershed; as such, it does not preclude any road construction and maintenance activities (see Section 4.6.11). Any proposed roadway project requiring a Corps permit would need to meet the terms and conditions of the SAMP/WSAA Process; any project not meeting the criteria would proceed through the SIP process. Also, the proposed SAMP/WSAA Process's goal of allowing reasonable economic development (which includes roads) while protecting sensitive resources is consistent with the MPAH. The OCTA proposes to allow development of arterial highways that are in balance with the General Plan Land Use Elements of the jurisdictions within the Watershed. Because the SAMP/WSAA Process is consistent with these general plan elements (as described in Section 11.3), the proposed SAMP/WSAA Process would also be considered consistent with the MPAH.

10.5 Southern California Association of Governments

The SCAG region covers more than 38,000 square miles that include the counties of Orange, Los Angeles, Ventura, Riverside, San Bernardino and Imperial. SCAG's Growth Vision Report (June, 2004) presents the comprehensive Growth Vision for the SCAG region and provides an analysis of the Growth Vision scenario. It also discusses the modeled impacts and effects the Growth Vision scenario is likely to have on Southern California.

The SCAG report indicates that although multi-family housing construction has increased in Orange County during the last few years, it still has not kept up with population growth. The increase in construction of townhomes also suggests that there are housing types that are becoming more in demand. While townhomes account for only 18 percent of the region's multi-family units, they accounted for more than 40 percent of the growth in multi-family housing built from 1990 and 2000. The SCAG report found that the gap in unmet demand for greater housing diversity will continue to grow without a regional long-term planning effort. In particular, the housing need for new employees entering the work force and senior housing must be addressed if the region is going to sustain economically viable and healthy communities.

Regarding land supply, the SCAG report states that the region does face a severe limit on the amount of undeveloped land suitable for development. The Coastal Basin of Los Angeles and Orange Counties, along with San Fernando Valley, is home to 77 percent of the region's jobs and 71 percent of its population. Under current general plans, capacity on vacant land accommodates only 238,000 households. This relates to only 29 percent of the SCAG 2030 growth projection for this area could be accommodated through new development on vacant land.

With limited undeveloped land, SCAG found that developed land will become increasingly important in accommodating growth. On a regional basis, infill, or new development in already developed areas, will be the method used to construct nearly half of the new housing. With the Growth Vision alternative, the Riverside and San Bernardino High Desert modeling zones absorb the most greenfield development – new development on vacant land. Ventura and Orange Counties have the least development on vacant land. Furthermore, with the Growth Vision alternative, Orange County absorbs almost half (46 percent) of

its households through infill. High percentages of infill development indicate that a larger proportion of growth is occurring where development has already occurred before, through recycling of older buildings.

In their Growth Vision report, SCAG recognized that open space is integral to the health of communities. In an effort to address this issue, SCAG developed a principle to promote sustainability for future generations. The guidelines associated with the sustainability principle and that are relevant to water and aquatic resources being regulated by the SAMP/WSAA Process or environmental policies in general are presented below:

- Preserve rural, agricultural, recreational, and environmentally sensitive areas;
- Focus development in urban centers and existing cities;
- Develop strategies to accommodate growth that use resources efficiently, eliminate pollution, and significantly reduce waste; and
- Utilize "green" development techniques.

Consistency Determination: As stated throughout this document, the SAMP/WSAA Process is a Watershed (landscape-level) approach to preserving and managing sensitive aquatic resources while allowing economic uses to be permitted within the Watershed consistent with the requirements of federal law (CWA Section 404) and state code (FGC Section 1600 *et seq.*). Economic uses include land development for residential, commercial, industrial, and institutional development necessary to accommodate planned population and economic growth for the region. As the SAMP/WSAA Process is a watershed-specific permitting program to replace existing case-by-case permitting in the Watershed, it does not present a conflict with SCAG's vision for growth and sustainability principles in the Growth Vision Report. The SAMP/WSAA Process accommodates planned growth while managing and enhancing high integrity aquatic resources and promoting the long-term ecosystem function of the Watershed.

10.6 CITY OF IRVINE GENERAL PLAN

The City of Irvine encompasses 45 square miles and is the largest jurisdiction that lies completely within the Watershed. Approximately 29,156 acres, or 38 percent of the Watershed, is within the City of Irvine. Approximately 60 percent of the City is currently developed.¹ The City of Irvine estimates full build-out by 2040. The northern edge of the City boundary, towards the Santiago Hills, is unincorporated County land and within the City's Sphere of Influence.

The City of Irvine's General Plan represents the long-range vision of the City. It is a comprehensive statement of Irvine's development and preservation policies for all geographic areas of the City and its sphere of influence, and the relationships between social, financial, environmental, and physical characteristics.

The following objectives from the City of Irvine General Plan are relevant to water and aquatic resources being regulated by the SAMP/WSAA Process or environmental policies in general.

¹ It is noted that a large area within the central portion of Irvine is proposed for the Orange County Great Park. The SAMP/WSAA Process is consistent with the Great Park concept because of inter-agency coordination, the planned restoration of riparian corridors through the site (CBA 2003, 2004), and the possible use as a mitigation bank.

- Objective L-2: Biotic Resources, Policy (b), Resource Areas 6 and 13: Development as shown on the Land Use Element diagram will be allowed in Marsh Area 6 and Habitat Area 13 in recognition of the dedication of similar resources in the Preservation Areas. Development areas located within Areas 6 and 13 shall not be subject to any preservation, protection, requirements, measures, or mitigations set forth in the Master Environmental Assessment (MEA) for these areas except that riparian/wetland habitat adversely impacted by such development will be mitigated in accordance with procedures established in an open space management and conservation plan.
- Objective L-2: Biotic Resources, Policy (b), Resource Area 28: Development as shown on the Land Use Element diagram will be allowed in Buffer Area 28 provided that any significant adverse development impacts on habitat in Riparian/Wetland Area 9 will be mitigated. The final mitigation measures shall be established in an open space management and conservation plan. Such mitigation measures shall be developed with consideration for the type and resilience of the habitat, the specific type and design of development, and the effect of natural and man-made barriers in the area.
- Objective L-2: Biotic Resources, Policy (d): Mitigation banks in the San Joaquin Marsh may be created for selected development in the City and its sphere of influence. That portion of the preservation area in San Joaquin Marsh subject to the Habitat Enhancement and Wetlands Program (approximately 85 acres) will be dedicated to the University of California Natural Reserve System in accordance with the program. Portions of the preservation area in San Joaquin Marsh not subject to the above program may be used as a mitigation bank for development impacts in development areas adjacent to the marsh and in other locations throughout the City. Riparian habitat within development areas may be modified subject to applicable state and federal regulatory requirements of the United States Fish and Wildlife Service, Army Corps of Engineers and the California Department of Fish and Game and mitigation for such modification may be accomplished off site within the San Joaquin Marsh.
- Objective L-2: Biotic Resources, Policy (e): Maintain significant riparian areas in preservation areas as natural corridors and sources of shelter, water, and food for wildlife, except where required for infrastructure.
- **Objective L-2: Biotic Resources, Policy (g):** Allow the enhancement of habitat areas, particularly riparian habitat, in all preservation areas as mitigation for any development impacts in other areas. Promote agreements between the California Department of Fish and Game and the landowner to accomplish the creation of new habitat in preservation areas consistent with applicable standards and procedures.

Consistency Determination: The SAMP/WSAA Process is consistent with these policies because it proposes no net loss of acreage and functions of waters of the U.S. With implementation of the SAMP/WSAA Process, the goal of the no net loss can be accomplished through avoidance, minimization of impacts, and compensatory mitigation, as proposed in the SAMP mitigation framework and required by the Section 404(b)(1) Guidelines. The SAMP/WSAA Process is consistent with this policy because it proposes to maintain/protect/restore diverse and contiguous riparian corridors and allow for the continued functioning of downstream riparian ecosystems.

• **Objective L-5:** Geophysical Resources, Policy (a): Promote the development of a flood control channel to handle projected flood waters of the San Diego and Peters Canyon Washes. Where practicable, require that the channel be a natural swale channel with grass or other natural

planting as an integral part of its design as opposed to a concrete design. Ensure environmental impact reports for future development to consider impacts to waterways. Pursue waterway preservation policies while considering drainage, water conservation, storage, and flood control purposes. Promote the development of all lakes and reservoirs for the public use and do not allow residential development at their edge. Study, where possible and practicable, the appearance and ecology of certain existing natural drainage channels to determine which channels or portions of the channels, conservation measures shall be applied to. Channels or portions of channels determined to be suitable for preservation purposes may be modified to enhance their ecology, long term viability and maintenance. Those channels or portions of channels shall be integrated into the design of the surrounding development. Minimize alterations of major creek courses and bottoms. Allow no net loss quantity or quality of surface and subsurface water flow into the San Joaquin Marsh.

• **Objective L-5:** Geophysical Resources, Policy (b): Develop grading standards which reflect sensitivity to land form, habitat, Watershed protection, and appropriate land use intensities.

Consistency Determination: The SAMP/WSAA Process is consistent with these policies because it proposes the following: No net loss of acreage and functions of waters of the U.S.; maintain/protect/restore hydrologic, water quality, and habitat integrity of riparian ecosystems; the protection of headwater areas. The Tenets relating to sediment regime and floodplain connection also address the physical aspects of watershed integrity.

- **Objective L-8:** Preservation Areas, Policy (d): Permit land form, vegetation, and drainage modifications pursuant to all allowable uses except in riparian vegetation areas.
- **Objective L-8:** Preservation Areas, Policy (e): Ensure that riparian vegetation is not significantly modified, except as necessary to provide fire protection, access roads, and flood control, drainage, water, sewer, and utility facilities, and except where habitat is to be enhanced as part of a mitigation program approved by the California Department of Fish and Game.
- **Objective L-8:** Preservation Areas, Policy (g): Participate in cooperative efforts with federal, state, and county agencies and land owners in planning and preserving regionally significant conservation and open space areas within the City and its sphere of influence (Lomas Ridge, Bommer and Shady Canyons, and San Joaquin Marsh).
- **Objective L-8:** Preservation Areas, Policy (I): Maintain significant riparian areas within preservation areas as natural corridors, sources of shelter, and water for wildlife.
- **Objective L-8:** Preservation Areas, Policy (k): Preserve and enhance the San Joaquin Marsh as a habitat resource and mitigation bank through implementation of the "San Joaquin Marsh Habitat Enhancement and Wetlands Creation Program" (See Biotic Resources Program Objective L-2, policy (d).

Consistency Determination: The SAMP/WSAA Process is consistent with these policies because it proposes to maintain/protect/restore: diverse and contiguous riparian corridors; hydrologic, water quality, and habitat integrity of waters of theU.S and state jurisdictional waters; and protect riparian areas and associated habitats supporting state and federally listed species. Many areas within the Watershed with high and medium integrity ratings were defined as "aquatic resource integrity areas." Although not a direct conservation mechanism, resources with this designation are subject to greater regulatory oversight, protective conditions and mitigation. The SAMP/WSAA Process provides a framework for pre-

application coordination between agency staff, land owners, and project proponents who seek authorization from the Corps and Department.

• **Objective L-12: Water, Policy (b):** Study, where possible and practicable, the appearance and ecology of certain existing natural drainage channels to determine which channels, or portions of the channels, to which conservation measures shall be applied. Channels or portions of channels determined to be suitable for preservation purposes may be modified to enhance their ecology, long term viability, and maintenance. Those channels or portions of channels shall be integrated into the design of the surrounding development.

Consistency Determination: The SAMP/WSAA Process is consistent with these policies because it proposes the following: no net loss of acreage and functions of waters of the U.S; maintain/protect/restore hydrologic, water quality, and habitat integrity of riparian ecosystems; and protection of headwater areas. The Tenets relating to sediment regime and floodplain connection also address the physical aspects of watershed integrity. The terms and conditions of the LOP, RGP, and WSAA Process address water quality concerns, and a Section 401 water quality certification is required to demonstrate compliance with state water quality standards.

10.7 UNIVERSITY OF CALIFORNIA, IRVINE LONG RANGE DEVELOPMENT PLAN (UCI LRDP)

The primary purpose of the UCI LRDP is to provide a guide for the physical development of the UCI campus. Components of the LRDP include a development plan designed to meet UCI's academic and institutional objectives as well as a land use map to guide the siting of future development. The UCI campus consists of approximately 1,470 acres and is located in the southern portion of the City of Irvine and is adjacent to the City of Newport Beach. Over 50 percent of the campus is currently developed or undergoing development. Most development has occurred in the central campus, while development of the outer campus areas is ongoing. The undeveloped areas consist of rolling topography covered with naturalized grasses, with pockets of native vegetation and wildlife habitat occurring throughout the outer campus. The LRDP is accompanied by a program EIR in conformance with CEQA. The EIR contains detailed discussion of UCI's existing environmental setting, potential environmental impacts of the LRDP, and proposed mitigation measures.

Nine land use categories are associated with the LRDP. Recreation and Open Space is one of the nine land use categories included in the LRDP. This land use category is relevant to water and aquatic resources being regulated by the SAMP/WSAA Process and is described below:

- Recreation and Open Space The recreation and open space system for the campus is comprised of several components: the UCI Open Space Reserve; a network of open space corridors; community parks; athletic/recreational facilities; and the buffer area to the San Joaquin Freshwater Marsh. Approximately 430 acres (30 percent) of the campus will be dedicated to recreation and open space, excluding open space located within residential neighborhoods and building landscaping.
- **Open Space Reserve** The Open Space Reserve is located south of the central academic core between the University Hills faculty/staff housing community and the West Campus Research Park. This area contains the majority of Coastal Sage Scrub habitat on campus and provides an

on-campus location for teaching and research related to Coastal Sage Scrub and ecological restoration within this habitat.

- **Open Space Corridors** The LRDP contains a significant network of open space corridors consisting of Aldrich Park, greenbelts, buffer zones, and habitat corridors. These linkages provide a passive open space network for the campus community, including: pedestrian and bike trails; habitat corridors consistent with campus and regional habitat planning objectives; and buffers between UCI land uses. The corridors within the outer campus in particular will provide opportunities for habitat linkages and will be developed with appropriate native plantings. Specific areas of this network are enlisted in the regional NCCP Program.
- San Joaquin Marsh The San Joaquin Freshwater Marsh is an important site for teaching, research, and public education. The Marsh is owned and operated by the UCNRS. Although not part of the UCI campus, the contiguity of the Marsh to the campus makes it a vital element in the UCI open space network. The LRDP includes a marsh open space buffer area located between proposed development on the North Campus and the Marsh Reserve, as described in a 1989 MOU between UCI and the UCNRS. This MOU addresses the buffer's width and configuration.

Consistency Determination: In their LRDP, UCI proposes remaining campus development while protecting resources such as the CSS habitat and open space corridors. Providing buffers around these areas and maintaining consistency with campus and regional habitat planning objectives guarantee preservation and protection of these resources. The San Joaquin Marsh will be protected through the MOU between UCI and the UCNRS. The Tenets, terms, and conditions associated with the SAMP/WSAA Process (as well as other provisions discussed in Section 11.6) are consistent with the UCI LRDP, and are not expected to restrict the overall approach of the LRDP.

10.8 OTHER MUNICIPAL GENERAL PLANS

The general plans of the remaining municipalities of the Watershed include city of Santa Ana (1998, 2005), city of Tustin (1993, 2005), city of Newport Beach (2006a,b), city of Orange (2004, 2005), city of Lake Forest (1994, 2004, 2006), city of Laguna Hills (1994a,b; 2005), and city of Laguna Woods (2003, 2005). SAMP/WSAA Process consistency with these plans is discussed below.

Consistency Determination: Overall, the SAMP/WSAA Process is consistent with future development presented in these local general plans because projects that could cause significant aquatic resource impacts would be required by the particular jurisdiction to modify the project to avoid the impact, or require mitigation measures to reduce the impact. Also, many of the permits that may be issued as a result of the SAMP/WSAA Process are for projects or activities previously considered in the general plans. Table 10-1 (provided at the end of this section) was prepared to help streamline and summarize the consistency analysis for each relevant policy and objective of these general plans. Specifically the relevant municipal general plan policies are compared with the SAMP Tenets. The Tenets are fully described in Section 2.1.1.3. These Tenets are as follows (with abbreviations used in table):

- No net loss of acreage and functions of waters of the U.S. and/or streambed -A/F
- Maintain/restore hydrologic, water quality, and habitat integrity of waters of the U.S. and/or streambed -INT
- Protect headwater areas -HDW

- Maintain/protect/restore diverse and contiguous riparian corridors -RP COR
- Maintain and/or restore floodplain connection -FP CON
- Maintain and/or restore sediment sources and transport equilibrium -SED
- Maintain adequate buffer for the protected riparian corridors -BFR
- Protect riparian areas and associated habitats supporting state and federally listed endangered, threatened and sensitive species, and their associated critical habitats -SPP

10.8.1 City of Santa Ana

Approximately 3,608 acres of the City of Santa Ana are within the southeastern portion of the Watershed. The City currently has an estimated build-out date of 2010; however, the portion of the City within the Watershed is essentially fully built-out. Within the Watershed area land uses include industrial, commercial, residential, and open space. The industrial designation applies to area developed with industrial and manufacturing uses and the commercial area is intended for business and professional offices; retail and service establishments; vocational, cultural, and entertainment uses; and vocational schools. Policies from the City of Santa Ana General Plan are relevant to water quality, habitat integrity, and aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1 displays consistencies between the Santa Ana General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.2 City of Tustin

The entire City, approximately 7,087 acres, is located within the Watershed. The Tustin General Plan policies emphasize balanced, compatible, and complementary development in addition to the revitalization/redevelopment of older and historic areas (City of Tustin, 2001). The City of Tustin estimates full build-out of the City by 2020. The largest remaining planned development project in the city is MCAS Tustin, which is located west of Jamboree Road and north of Barranca Parkway in the center of the Watershed. Portions of the MCAS Tustin have already been developed or are currently being redeveloped with residential, commercial, and school uses. Several policies from the City of Tustin General Plan are relevant to water quality, habitat integrity, and aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1 summarizes consistencies between the Tustin General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.3 City of Newport Beach

The City of Newport Beach forms the south/southwestern boundary of the Watershed. Existing land uses are primarily residential neighborhoods and commercial areas, as well as marine industrial uses. Since the 1,414-acre Bonita Canyon area has been annexed from Irvine and is now within the City of Newport Beach, the City now represents 2,966 acres within the Watershed. This portion of the City within the Watershed is characterized by light industrial and commercial uses in the vicinity of John Wayne Airport, and residential in the Bonita Canyon area (City of Newport Beach, 1998).

As mandated by the California Coastal Act, the City of Newport Beach is required to periodically update information on the sensitive biological resources as part of their Local Coastal Program. In 2003 the City conducted a study (Coastal Resources Management and Chambers Group, 2003) to update information on sensitive biological resources and their general plan elements. To protect those habitats and associated plants and wildlife, the City has designated the most ecologically valuable areas as Environmentally Sensitive Habitat Areas (ESHAs). Nineteen ESHAs are located in the coastal zone and are addressed in

the Biological Appendix of the Coastal Land Use Plan (Chambers Group, 2002). Nine ESHAs fall within the city limits of Newport Beach and within the City's sphere of influence and are located outside the coastal zone. If development is proposed within or adjacent to an ESHA, it must meet strict criteria: (1) that the development is resource-dependent, and (2) that any development adjacent to an ESHA must be sited to prevent significant degradation to the ESHA. The ESHAs located outside of the coastal zone include: Bonita Canyon Watershed, San Joaquin Reservoir, Arroyo Park, Coyote Canyon, MacArthur Boulevard and Bison Avenue, MacArthur Boulevard and San Miguel Avenue, MacArthur Boulevard and San Joaquin Hills Road, Spyglass Hill, and Non-Coastal Buck Gully.

In their General Plan (City of Newport Beach, 2006), the City has established a series of policies to promote the marine environment of the community, to preserve and enhance the unique natural beauty and quality of the harbor and ocean front areas, and to provide for the public use and enjoyment of the bay and ocean waters and their shorelines consistent with sound conservation principles. Table 10-1 summarizes consistencies between the Newport Beach General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.4 City of Orange

The City of Orange is currently 95 percent developed (Corps 2001). Approximately 1,041 acres of the City are located within the northeastern portion of the Watershed. Within the Watershed, the uses are residential (primarily single family units) and related greenbelts, and a small amount of commercial services.

The City of Orange General Plan contains goals, policies, and programs which are intended to guide land use and development decisions in the 21st century. Such goals include maintaining a balanced inventory of housing in Orange, promoting commercial enterprise, and preservation of open space resources. The Open Space and Conservation element of the City's General Plan is concerned with identifying the City's open space and natural resources and establishing goals and policies directed toward managing these resources for the long-term benefit of the community.

According to their General Plan (City of Orange, 2004), the residents recognize the benefits natural resources provide to the community. Clean air and water are vital to ensure the protection of public health. Plant and wildlife resources enrich the urban setting by providing changes in scenery and environment. Similarly, passive open space, such as landscaped medians or natural ridgelines, gives the community a sense of physical space. Also, the preservation of some open space areas (floodplains, steep hillsides) is necessary to protect public safety. Based on this, the City plans to carry out a number of resource conservation strategies while at the same time allowing development. The policies and goals established by the City ensure the preservation of water resources, biotic resources, and passive open space. Several goals from the Open Space and Conservation Element of the City of Orange General Plan are relevant to aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1 displays consistencies between the City of Orange General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.5 City of Lake Forest

Lake Forest (City and sphere) consists of approximately 10,775 acres. Of this, approximately 5,296 acres is located in the eastern portion of the Watershed and is largely developed. The City's total land area,

including its sphere of influence, is composed of: 37 percent residential uses, 29 percent open space, 17 percent commercial, 8 percent light industrial, 5 percent transportation facilities, and 4 percent public facilities. The City's General Plan policies emphasize establishing the City's identity, developing preincorporated Planned Communities, and phasing new development that is compatible with the community (City of Lake Forest, 1994). Industrial development continues to occur to the north and south of SR-241 in the northern portion of the city. Full build-out is anticipated to occur prior to 2020 (Corps, 2001).

Some of the proposed SAMP/WSAA Process regulated activities, such as land development, will occur within the City of Lake Forest. As such, they are subject to the General Plan policies of the City of Lake Forest. These objectives, policies and implementation measures from the Open Space and Conservation elements of the City of Lake Forest General Plan are relevant to aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1 displays the consistencies between the City of Lake Forest General Plan policies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.6 Laguna Hills

The City of Laguna Hills is almost completely built out. Approximately 758 acres of the City are located within the Watershed. Approximately 51.8 percent of the City is composed of Planned Community developments with their own specific development standards. Overall, the City is deficient in community facilities such as active parks and community centers. The General Plan addresses several land use issues, including the need to 1) unify land uses in and around the Laguna Hills Mall and Saddleback Memorial Hospital, and 2) increase the overall intensity of the nonresidential uses along the I-5 Freeway corridor. The General Plan focuses primarily on the maintenance of the City's residential neighborhoods (City of Laguna Hills 1994). Full build-out of the City is estimated to occur between 2010 and 2015 (Corps, 2001).

Some of the proposed SAMP/WSAA Process regulated activities and their associated land development projects may occur within the City of Laguna Hills. As such, they are subject to the General Plan policies of the City of Laguna Hills. These policies are relevant to aquatic resources being regulated by the SAMP/WSAA Process. Table 10-1, below displays the consistencies between the City of Laguna Hills General Plan strategies and the eight SAMP Tenets described in Section 2.1.1.3.

10.8.7 Laguna Woods

The City of Laguna Woods was incorporated in March 1999. The City's General Plan and Housing Element were adopted in October 2002, with an amendment to the General Plan approved in July 2003 (personal communication, City of Laguna Woods, 2003). Within the Watershed, the City is developed with a variety of residential and commercial uses and a golf course. Approximately 1,033.4 acres of the City is located within the Watershed. Some of the proposed SAMP/WSAA Process regulated activities, such as land development may occur within the City of Laguna Woods. As such, they are subject to the General Plan policies of the City of Laguna Woods. These objectives, policies and implementation measures from the Open Space and Conservation Elements of the City of Laguna Woods General Plan are relevant to water and aquatic resources being regulated by the SAMP/WSAA Process or environmental policies in general. Table 10-1 displays the consistencies between the City of Laguna Woods General Plan policies and the eight SAMP/ Tenets described in Section 2.1.1.3.

Municipal General Plan Policies				SAMP	Tenets			
•	1	2	3	4	5	6	7	8
	A/F	INT	HDW	RIP COR	FP CON	SED	BFR	SPP
Santa Ana								
Protect sensitive land uses		Х		Х			Х	Х
Revise zoning regulations to strengthen		37	37	37			37	37
buffers between land uses		X	Х	Х			Х	Х
Protect public health, safety and welfare								
through effective management of natural		Х	Х	Х			Х	Х
resources								
Preserve, maintain and properly use natural	x	x	x	x	x	x	x	x
and cultural resources				1		74	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Λ
Preserve and enhance the aesthetic and								
environmental quality of the community for		Х	Х	Х	Х			Х
the enjoyment of all residents								
Integrate natural and cultural resource								
protection measures into land use and		Х	Х	Х	Х	Х	Х	Х
development activities								
Minimize loss of natural aesthetic, historic,	v	v	v	v	v	v	v	v
archaeological and paleontological resources	А	А	А	А	А	А	А	Χ
Use provisions of the open space plan as								
means to achieve applicable conservation		v	v	v	v		v	v
objectives		Λ	Λ	Λ	Λ		Λ	Λ
Preserve vegetation along watercourse								
channels	Х	Х	Х	Х				Х
Implement open space provisions that								
encourage multiple use of natural resources	Х	X		Х			Х	Х
such as waterways								
Develop incentives in the zoning code to								
encourage protection and enhancement of		Х	Х	Х	Х		Х	Х
natural, cultural and historic resources								
Participate in greenbelt and channel								
improvement plans for the Santa Ana River		v	v	v	v		v	v
and Santiago Creek which aim to preserve		Λ	Λ	Λ	Λ		Λ	Λ
natural vegetation								
Tustin								
Environmental Compatibility		Х						
Flood Control Improvements					Х	Х	Х	
Peter's Canyon Wash		Х			Х	Х		
Water Quality		Х			Х	Х	Х	
Biological Resource Restoration	Х	Х		Х				Х
Natural Community Conservation Plan								Х
Protection of Biological Resources								Х
Development in environmental study areas		Х						Х
Use of buffers							X	
Wetland Protection	Х	Х						Х

Table 10-1. Consistency of SAMP Tenets with Relevant Policies ofMunicipal General Plans

Municipal General Plan Policies	SAMP Tenets							
•	1	2	3	4	5	6	7	8
	A/F	INT	HDW	RIP COR	FP CON	SED	BFR	SPP
Newport Beach								
Enhancement and protection of water quality of all natural water bodies	Х	X	Х	Х	Х	Х	Х	
Water pollution prevention	Х		Х		Х	Х	Х	
Natural water bodies	Х							
Natural wetlands	Х	Х						
Restoring natural hydrologic conditions	Х		Х		Х	Х		
Terrestrial and marine resource protection	Х	Х	Х	Х			Х	Х
Development in environmental study areas		Х	Х	Х				
Use of buffers							Х	
Wetland Protection	Х	Х		Х	Х	Х	Х	Х
Orange								
Preventing Environmental Pollution		Х	Х		Х	Х	Х	
Preservation of Significant Environmental	v	v	v	v			v	v
Resources	Λ	Λ	Λ	Λ			Λ	Λ
Preservation of Visual and Aesthetic	v		v	v			v	v
Resources	Л		Λ	Λ			Λ	Λ
Lake Forest								
Conserve and protect natural plant and animal communities		Х		Х				Х
Conserve and protect important Watershed		Х	Х	Х			Х	Х
Laguna Hills								
Protection of Significant Environmental	Х	X		Х			Х	
Establish Open Space Responsibility and								
Liability							Х	Х
Recognize Sensitive Biological Features		X					Х	Х
Wetlands Alteration	Х	X						X
Protection of Water Resources	Х	Х			X	Х		
Biological Resources		Х						Х
Stormwater Management and Flooding		Х	Х		Х	Х	Х	
Laguna Woods								
Preserve and enhance the environment		X	X	X			X	X
Protect existing riparian and wildlife habitats	Х	X	X	X	X	X	X	X
Cooperate with other cities. governmental								
units, and private organizations in protecting natural resources of area-wide or regional		X	Х	Х				Х
Reduce water pollution		v			x	x	x	
Reduce water pollution		Λ			Λ	Λ	Λ	

Table 10-1. Consistency of SAMP Tenets with Relevant Policies of Municipal General Plans (continued)

Municipal General Plan Policies	SAMP Tenets							
	1	2	3	4	5	6	7	8
	A/F	IN T	HD W	RIP COR	FP CON	SED	BFR	SPP
Cooperate with governmental agencies at the local, County, and State level in attaining established goals for surface and receiving water quality		Х	Х		Х	Х	Х	
Enforce provisions of the NPDES to reduce pollutant run-off into natural and storm drain systems		Х	Х		Х	Х	Х	
Develop and implement BMPs as specified by the City Local Implementation Plan to minimize, to the maximum extent practicable, non- stormwater runoff and pollution from entering Aliso Creek, the Laguna Lakes and other sensitive receiving water		X	Х		X	Х	X	

Table 10-1. Consistency of SAMP Tenets with Relevant Policies of Municipal General Plans (continued)

13.0 ACRONYMS AND GLOSSARY

13.1 ACRONYMS

ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Trips
AFY	Acre-feet per year
AICUZ	Air Installation Compatible Use Zone
AHC	Altered Hydraulic Conveyance
APCD	Air Pollution Control District
AQMP	Air Quality Management Plan
ARCA	Aquatic Resource Conservation Area
ARRP	Aquatic Restoration and Reserve Plan
AT&SF	Atchison Topeka & Santa Fe Bikeway
BIOL	Preservation of Biological Habitats of Special Significance
BMPs	Best Management Practices
BP	Before Present
BWRF	Black Willow Riparian Forest
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
Cal-EPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCC	Criteria Continuous Concentration
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDP	Coastal Development Permit
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations

CFS	Cubic Feet per Second
CGS	California Geologic Survey
CIP	Capital Improvement Project
CLORAVF	Canyon Live Oak Ravine Forest
CLOW	Coast Live Oak Woodland
CMS	Cubic Meters per Second
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
COMM	Commercial and Sport Fishing
Corps	U.S. Army Corps of Engineers
CRA	Colorado River Aqueduct
CRHR	California Register of Historic Places
CRREL	Cold Regions Research and Engineering Laboratory (of the <u>U.S. Army</u> Corps of Engineers)
CSS	Coastal Sage Scrub
CTR	California Toxics Rule
CWA	Clean Water Act
CWRF	Cottonwood-Willow Riparian Forest
CZARA	Coastal Zone Act Reauthorization Amendments
CZMA	Coastal Zone Management Act
DAMP	Drainage Area Management Plan
DBH	Diameter at Breast Height
DDT	Dichlorodiphenyltrichloroethane
Department	California Department of Fish and Game
DoA <u>DA</u>	Department of Army
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMC	Event Mean Concentration
EMP	Emergency Management Plan
EO	Executive Order
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERDC	Engineering Research and Development Center (of the <u>U.S. Army</u> Corps of Engineers)

ESA	Endangered Species Act
ESHA	Environmentally Sensitive Habitat Areas
EST	Estuarine Habitat
ET	Evapotranspiration
ETC	Eastern Transportation Corridor
FAA	Federal Aviation Administration
FGC	California Fish and Game Code
FESA	Federal Endangered Species Act
FI	Floodplain Interaction
FSS	Floodplain Sage Scrub
FWS	Coastal Freshwater Marsh
GDP	General Development Plan
GIS	Geographic Information System
GLA	Glen Lukos Associates
GPA	General Plan Amendment
GPP	Great Park Project
GWR	Groundwater Recharge
Hab	Habitat Integrity
HBP	Harbors, Beaches and Parks, now known as Orange County Resource Management
HCD	State Department of Housing and community Development
НСР	Habitat Conservation Plan
HOV	High Occupancy Vehicle
Hyd	Hydrologic integrity
Ι	Interstate
IA	Implementation Agreement
IED	Import, Export, or Diversion of Surface Water
ILF	In-lieu Fee
IP	Individual Permit
IRWD	Irvine Ranch Water District
IVM	Integrated Vector Management
IWMD	Integrated Water Waste Management Department, now known as Orange County Waste and Recycling
LAD	Los Angeles District (Corps of Engineers)
LAWD	Los Alisos Water District
LCWP	Laguna Coast Wilderness Park

LDB	Local Drainage Basins
LEDPA	Least Environmentally Damaging Practicable Alternative
LIPs	Local Implementation Plans
LLFA	Landscape Level Functional Assessment
LMP	Land Management Program
LOP	Letter of Permission
LRDP	Long Range Development Plan
MAF	Million Acre-Feet per Year
MAR	Marine Habitat
MCAS	Marine Corps Air Station
MEA	Master Environmental Assessment
MFI	Median Family Income
MFS	Mule Fat Scrub
mg/L	milligrams per liter
MLD	Most Likely Descendant
MLWA	Military Land Withdrawal Act
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPAH	Master Plan of Arterials and Highways
MPO	Metropolitan Planning Organization
MSAA	Master Streambed Alteration Agreement
msl	mean sea level
MWD	Metropolitan Water District of Southern California
MWDOC	Municipal Water District of Orange County
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO _x	Nitrogen Oxide
NO ₂	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOC	Notice of Completion
NOI	Notice of Intent

NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NPS	National Park Service
NPS Program	Nonpoint Source Pollution Program
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council
NRHP	National Register of Historic Places
NROC	Nature Reserve of Orange County
NTS	Natural Treatment System
NWP	Nationwide Permit
O_3	Ozone
OCFA	Orange County Fire Authority
OCFCD	Orange County Flood Control District
OCHCA	Orange County Health Care Agency
OCRM	Office of Ocean and Coastal Resource Management
OCTA	Orange County Transportation Authority
OCTAM	Orange County Transportation Analysis Model
OCVCD	Orange County Vector Control District
OCWD	Orange County Water District
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
PA	Planning Area
PAR	Property Analysis Record
Pb	Lead
PCBs	Polychlorinated Biphenyls
PFRD	Public Facilities and Resources Department
PLD	Planning Level Delineation
PM _{2.5}	Particulate Matter equal to or less than 2.5 microns
PM_{10}	Particulate Matter equal to or less than 10 microns
PSF	Perennialized Stream Flow
RARE	Rare, Threatened, or Endangered Species
RCRA	Resource Conservation and Recovery Act
RDMD	Resources and Development Management Department
REC-1	Water Contact Recreation

REC-2	Non-Contact Water Recreation
RGL	Regulatory Guidance Letter
RGP	Regional General Permit
RH	Riparian Herb
RHNA	Regional Housing Needs Assessment
RMP	Regional Monitoring Program
RMP	Resource Management Plan
ROCs	Reactive Organic Compounds
ROD	Record of Decision
RR	Riparian Reach
RRDB	Riparian Reach/Drainage Basin
RRLD	Riparian Reach/Local Drainage
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SAMP	Special Area Management Plan
SAMS	Small Area Mitigation Site
SAWF	Southern Arroyo Willow Forest
SBWF	Southern Black Willow Forest
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Soil Conservation Service
SCSM	Southern Coastal Salt Marsh
SCLORF	Southern Coast Live Oak Riparian Forest
SCRRA	Southern California Regional Rail Authority
SEWS	Sandbar Willow Scrub
SHEL	Shellfish Harvesting
SHPO	State Historic Preservation Office
SIP	Standard Individual Permit
SJMMP	San Joaquin Marsh Mitigation Project
SO_2	Sulfur Dioxide
SOF	Statement of Findings
SLE	St. Louis encephalitis
SPWN	Spawning, Reproduction, and Development
SR	State Route

SSRW	Southern Sycamore Riparian Woodland
SWANCC	Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWR	Surface Water Retention
SWRCB	State Water Resources Control Board
SWS	Southern Willow Scrub
TCA	Transportation Corridor Agencies
TCE	Primarily Trichloroethylene
TIC	The Irvine Company
TIN	Total Inorganic Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
UCCE	University of California Cooperative Extension
UCI	University of California, Irvine
UCNRS	University of California Natural Reserve System
USACOE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
VOC	Volatile Organic Compound
WARM	Warm Freshwater Habitat
Watershed	San Diego Creek Watershed
WDR	Waste Discharge Requirement
WES	Waterways Experiment Station (of the U.S. Army Corps of Engineers)
WHR	Wildlife Habitat Relationships
WILD	Wildlife Habitat
WDRs	Waste Discharge Requirements
WoUS	Waters of the U.S.
WQ	Water Quality Integrity
WQMP	Water Quality Management Plan
WSAA	Watershed Streambed Alteration Agreement
ZC	Zone Change
13.2 GLOSSARY

(Most references within the terms below have been removed; see text in Draft EIS/EIR for references.)

Adaptive Management - "Adaptive Management" shall mean a flexible, iterative approach to long-term aquatic resources management within the aquatic resource integrity areas that is directed over time by the results of ongoing monitoring activities and other information. Aquatic resource management techniques and specific objectives are regularly evaluated in light of monitoring results and other new information. These periodic evaluations are used over time to adapt both the management objectives and techniques to achieve overall management goals. This approach involves managing aquatic resources in aquatic resource integrity areas in a manner designed to maintain or improve ecosystem functions and values over the long term. Under Adaptive Management, appropriately managed aquatic areas have a greater likelihood of maintaining functions and values than a system that is unmanaged or ineffectively managed. Measures specified in the Strategic Mitigation Plan and Mitigation Coordination Program for managing lands in the aquatic resource integrity areas are based on an adaptive management model.

Aquatic Resource Integrity Areas – The "aquatic resource integrity areas" in the San Diego Creek Watershed are comprised of aquatic resources identified for their higher values related to ecological integrity, wildlife corridor values, sensitive species habitat, and other factors, as well as the adjacent upland areas of influence that drain into the aquatic resources. The aquatic resource integrity areas are the keystone of the SAMP Analytic Framework, permitting program, Strategic Mitigation Plan, and Mitigation Coordination Program.

Alleleopathic (or allelopathic) – The quality of a plant species to inhibit growth in another species of plant through the production and release of chemicals.

Aquatic - General reference to various water-oriented habitats such as rivers, streams, creeks, ponds, lakes, etc. These resources may be perennial, intermittent, or ephemeral in nature.

Aquatic Resources – "Aquatic Resources" shall mean the areas of Corps and the Department regulatory jurisdiction in the San Diego Creek Watershed pursuant to the Clean Water Act or California Fish and Game Code. For example, aquatic resources are all waters and water habitats including lakes, ponds, streams, rivers and adjoining riparian areas that they affect, as well as marshes, vernal pools, seeps, flats, and other wetlands.

Buffer (area, zone, or habitat) or Vegetated Buffer – A buffer is an intervening upland, wetland, and/or riparian area or other form of barrier that separates aquatic resources from developed or disturbed areas and protects and/or enhances aquatic resource functions associated with wetlands, rivers, streams, lakes, marine, and estuarine systems from disturbances associated with adjacent land uses. Buffers reduces the impacts on the aquatic resources that may result from human activities. The critical functions of a buffer, associated with an aquatic system, include shading, input of organic debris and coarse sediments, uptake of nutrients, stabilization of banks, interception of fine sediments, storm flow attenuation during high water events, protection from disturbance by humans and domestic animals,

maintenance of wildlife habitat, and room for variation of aquatic system boundaries over time due to hydrologic or climate effects. A vegetated buffer could be established by maintaining an existing vegetated area or planting native trees, shrubs, and herbaceous plants on land next to open waters. Mowed lawns are generally not considered vegetated buffers because they provide little or no aquatic habitat functions and values. The establishment and maintenance of vegetated buffers may be given consideration as compensatory mitigation to offset requirements after replacement has been satisfied at a ratio of 1:1 and when buffers are incorporated in conjunction with the restoration, creation establishment, enhancement, or preservation of aquatic habitats to ensure that activities authorized by the Corps and the Department's regulatory programs result in minimal adverse effects to the aquatic environment.

CEQA - "CEQA" shall mean the California Environmental Quality Act, California Public Resources Code Section 21000 *et seq*.

CESA - "CESA" shall mean the California Endangered Species Act, Fish and Game Code Section 2050 *et seq.*

Channel – A natural stream or river, or an artificial feature such as a ditch or canal that exhibits features of bed and bank, and conveys water primarily unidirectional and down gradient. The active stream channel is defined as the area inundated when the stream is at bankfull stage, which corresponds to the discharge at which most channel-forming processes occur.

Clean Water Act – The federal law that establishes standards and procedures for limiting the discharge of fill and pollutants into waters of the U.S.

Compensatory Mitigation – For purposes of Section 404 of the Clean Water Act, compensatory mitigation is the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, or in exceptional circumstances, preservation of wetlands and/or other aquatic resources to compensate for unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.

<u>Condition</u> – Condition means the relative ability of an aquatic resource to support and maintain a community of organisms having a species composition, diversity, and functional organization comparable to reference aquatic resources in the region.

Conservation Easement – Pursuant to California Civil Code Section 815-816, the term "conservation easement" means "any limitation in a deed, will, or other instrument in the form of an easement, restriction, covenant, or condition, which is or has been executed by or on behalf of the owner of the land subject to such easement and is binding upon successive owners of such land, and the purpose of which is to retain land predominantly in its natural, scenic, historical, agricultural, forested, or open-space condition" [Section 815.1]. Furthermore, only the following types of entities or organization may acquire and hold conservation easements:

(a) Tax-exempt nonprofit organization qualified under Section 501 (c)(3) of the Internal Revenue Code and qualified to do business in this state which has as its primary purpose the preservation, protection, or

enhancement of land in its natural, scenic, historical, agricultural, forested, or open-space condition or use.

(b) The state or any city, county, city and county, district, or other state or local governmental entity, if otherwise authorized to acquire and hold title to real property and if the conservation easement is voluntarily conveyed. No local governmental entity may condition the issuance of an entitlement for use on the applicant's granting of a conservation easement pursuant to this chapter [Section 815.3].

Conservation Guidelines - "Conservation Guidelines" shall mean the management practices for the aquatic resource integrity areas described in Appendix 4 that complement the Strategic Mitigation Plan and Mitigation Coordination Program.

Coordination Committee - "Coordination Committee" shall mean a committee composed of the SAMP Participating Applicants and the Corps and Department that will oversee the implementation of the Mitigation Coordination Program.

Corps Jurisdictional Activity - "Corps Jurisdictional Activity" shall mean activities resulting in a discharge of dredged or fill material into waters of the U.S. subject to regulation under section 404 of the Clean Water Act, 33 U.S.C. Section 1344.

Corps LOP - "Corps LOP" shall mean the Letter of Permission procedures for the San Diego Creek Watershed that the Corps issued in a Special Public Notice concurrent with this SAMP and any finalization of or amendments thereto, included herein in Appendix C-1.

Corps RGP - "Corps RGP" shall mean the Regional General Permit for the San Diego Creek Watershed that the Corps issued in a Special Public Notice concurrent with this SAMP and any finalization of or amendments thereto, included herein in Appendix C-2.

Creation – The conversion of a persistent non-aquatic resource (i.e., terrestrial resource) to an aquatic resource. For the purpose of this plan, creation includes the conversion of sites that currently do not meet the definition of wetlands, even though these sites were wetlands prior to being permanently drained and/or covered by fill.

Delineation – A determination of the boundaries of a wetland or other aquatic site.

Department Jurisdictional Activity - "Department Jurisdictional Activity" shall mean any activity resulting in the alteration of those areas subject to the Department jurisdiction under Division 2, Chapter 6, of the FGC.

Department WSAA Process - "Department WSAA Process" shall mean the procedures established by the Department in conjunction with the SAMP for the San Diego Creek Watershed to provide for a Watershed-based approach to issuing Department Streambed Alteration Agreements (SAAs) and includes the use of one of three Department template SAAs for the Watershed, the Master Streambed Conditions List, and a comprehensive mitigation strategy, including a Mitigation Coordination Program. The Department issues its SAAs pursuant to Division 2, Chapter 6 of the FGC. Template SAAs for the Watershed are attached hereto at Appendix D.

Discharge - The placement of dredged or fill material into waters of the U.S. that may result in impacts to the aquatic system. Examples include the redeposition of material during excavation, mechanized land clearing, and ditching.

Drainage Basin – Area contributing to mainstem inflow from upstream of a riparian reach.

Ecosystem Management – A collaborative management approach that focuses on sustaining the integrity and biodiversity of ecological components, conditions, and functions in reconciliation with the promotion of economic opportunities.

EIR - "EIR" shall mean an Environmental Impact Report prepared pursuant to CEQA for the SAMP to address the Department's WSAA Process.

EIS - "EIS" shall mean an Environmental Impact Statement prepared pursuant to NEPA for the SAMP.

EIS/EIR - "EIS/EIR" shall mean a program-level environmental document for the San Diego Creek Watershed Special Area Management Plan/Watershed Streambed Alteration Agreement Process (SAMP/WSAA Process), prepared in compliance with the requirements of CEQA and NEPA.

Eligible Activities - "Eligible Activities" shall mean those activities that are consistent with the SAMP LOP procedures, RGP, and WSAA Process. Authorizations for other types of Corps and Department Jurisdictional Activities would require evaluation under the Corps SIP and Department SAA processes.

Eligible Areas - "Eligible Areas" shall mean those areas identified in the SAMP as being eligible for the permitting process described in the Corps LOP procedures and RGP and the Department WSAA Process.

Enhancement – Improving existing functions of a low quality or degraded aquatic resource or wetland. The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to the decline in other aquatic resource function(s). Enhancement does not result in a gain of aquatic resource area.

Ephemeral Stream – An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral streambeds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

ESA - "ESA" shall mean the federal Endangered Species Act of 1973, as amended, 16 U.S.C. Section 1531 *et seq*.

Establishment – "Establishment" (creation) means the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and function.

Fill Material – "Fill material" shall means material (including but not limited to rock, sand, and earth) that has the effect of: (i) Replacing any portion of water of the United States with dry land; or (ii) Changing the bottom elevation of any portion of a Water of the United States. The term fill material does not include discharges covered by proposed or final effluent limitations guidelines and standards under Sections 301, 304 or Section 306 of the Clean Water Act (see generally, 40 CFR Part 401), or discharges covered by an NPDES permit issued under Section 402 of the Clean Water Act.

Fish and Game Code - "Fish and Game Code" shall mean the California Fish and Game Code.

Flood Channel – The term "flood channel" is used in the context of discussing the opportunities and constraints of restoring riparian areas. Hydrologists calculate the overall flood channel size, including channel, floodplain, and terraces needed to contain a major flood event. In most cases, the flood channel is likely to contain the 100-year flood, but local flood management criteria determine overall "flood channel" size. The term "floodplain" has been reserved for the area subject to inundation at the 50-year recurrence interval. However, larger magnitude floods may also inundate one or more terraces. In a developed environment, protection of life and property requires that containment of floodwaters be a part of the design criteria for stream systems. Therefore, the design templates referred to herein and in ERDC's restoration plan (Appendix B-3) generally specify the number and height of terraces appropriate to sustain a riparian community characteristic of a particular geomorphic zone, based on reference data from streams in the basin and region. However, the range of terrace widths encountered in reference systems varied widely. Although the reference data provide general target ranges, hydrologists calculating the overall flood channel size must determine actual minimum terrace widths for restored systems. See also **Channel**, **Floodplain**, **Terrace**, and **Riparian Ecosystem**.

Flood Control Facilities - "Drainage and flood control facilities" including flood control channels, outfalls, culverts, retention/detention basins and sediment basins are located within or near jurisdictional waters. As the infrastructure component of a broader "flood management" program, flood control facilities are designed and constructed in accordance with applicable hydrologic design standards to prevent loss of life and reduce property damage caused by floods. Construction of permanent flood control structures generally requires soil excavation, removal, compaction, and sometimes concrete-lining and or placement of bank stabilization measures in channels. These construction activities can result in the following types of impacts: permanent loss of aquatic habitat from removal of riparian vegetation and replacement with concrete channel; temporary and permanent loss of upland habitat from temporary placement of dredged or fill material or permanent impacts of location of flood control basins; permanent alteration to channel hydrology from channel reconfiguration, concrete lining, changes in hydraulic flow characteristics, streambed and bank stabilization; and potential temporary impacts to water quality from uncontrolled sediment during construction. Maintenance typically involves periodic dredging of accumulated sediments in channels and basins as well as periodic removal of vegetation to restore the original basin and channel design capacity and configuration. Dredged material is typically placed in upland areas and proper sedimentation controls are used. Maintenance activities may also involve

excavation of accumulated sediments in outfall and intake structures, culverts and other structural features of the conveyance system to maintain design capacity. For maintenance, impacts would generally be temporary including short-term loss of aquatic habitat and potential impacts to water quality from temporary soil disturbing activities.

Flood Management - "Flood management" refers to an integrated approach undertaken to reduce flood risks and may include floodplain management, planning and investments in flood projects, and improved management of infrastructure that balances public safety and environmental protection. Related are storm water quality and drainage management efforts. Some flood management activities are regulated by the Corps and/or the Department, while others (in non-jurisdictional areas) are not.

Floodplain – "Floodplain" shall mean the land adjacent to a stream or lake, built of alluvium and subject to repeated flooding. Technically, the floodplain is the valley floor level corresponding to the bankfull stage. However, there are various "floodplains" (e.g. 5-year, 10-year, etc.), which include surfaces inundated at flow depths or frequencies of interest in a particular situation. For the purposes of the SAMP and related studies, the floodplain corresponds to the "flood prone area.". This is the area flooded to twice the depth of the maximum channel depth at bankfull stage, which is usually assumed to correspond approximately to the 50-year floodplain. In coastal streams of southern California, the flood prone area usually includes most or all of the point bar deposits below the scarp rising to the lowest distinct terrace.

Functional Assessment - The process by which the capacity of a wetland to perform a function is measured. See also, **Functional Integrity**.

Functional Integrity – The Corps Waterways Experiment Station (WES) and the Cold Regions Research and Engineering Laboratory (CRREL), as experts in aquatic resource delineation and wetland functional assessment, developed a tool to conduct a high precision, planning level delineation (i.e., the identification of aquatic resources) and a landscape level functional assessment (i.e., the characterization of aquatic resources). These tools were used to assess aquatic resources within the San Diego Creek Watershed, Orange County, California. As part of the functional assessment, the Corps assessed the following endpoints: hydrologic integrity, water quality integrity, and habitat integrity. **Hydrologic integrity** refers to the frequency, magnitude, and location of stream water flow and the interaction of the stream with the floodplains. **Water quality integrity** refers to the processing of nutrients and sediments within streams. **Habitat integrity** refers to the quality and quantity of habitat necessary to support functioning riparian systems. (See definitions below for additional information).

Functions – Functions means the physical, chemical, and biological processes that occur in ecosystems.

Geomorphic - A term referring to the shape of the land surface.

Geomorphic Zone – Five geomorphic zones were identified for the ERDC restoration plan based on topographic maps, the maps and descriptions provided in the county soil survey, and geologic maps and reports on Orange County and the region. A geomorphic zone was assigned to each riparian reach using aerial photography, baseline assessment data, and the knowledge of each riparian reach acquired during baseline assessment field sampling. Based on the typical, "natural" condition of each of the five

geomorphic zones in terms of geomorphology, vegetation structure, and the typical current condition, the following geomorphic zones were identified: Geomorphic Zone 1 – Riparian areas in V-shaped valleys with predominantly bedrock control; Geomorphic Zone 2 Small floodplains and terrace fragments in mountain and foothill valleys, where meander belt formation is restricted by lateral impingement of alluvial fans and colluvium; Geomorphic Zone 3 – Meander belts in alluvium within broad mountain and foothill valleys, and through marine terraces; Geomorphic Zone 4: Broad alluvial fan deposits where mountain and foothill valleys open to the coastal plain, and marine terraces; and Geomorphic Zone 5: Riparian areas along larger streams of the coastal plain area.

Great Park - "Great Park" or Orange County Great Park shall mean those lands in the City of Irvine that were formerly part of the El Toro Marine Air Station and now planned for open space, restoration, or development by the City of Irvine, the Great Park Corporation and Heritage Fields, LLC.

Habitat Integrity – Riparian ecosystems with habitat integrity exhibit the quality and quantity of habitat necessary to support and maintain a balanced, integrated, adaptive biological system having the full range of characteristics, processes, and organisms at the site-specific, landscape, and watershed scales that historically characterized riparian ecosystems in the region. Several factors were considered in selecting indicators of habitat integrity, including the spatial extent and quality of riparian habitat, the "connectedness" of riparian habitats at the riparian reach and drainage basin scales, and the spatial extent and quality of upland habitat in the landscape adjacent to riparian ecosystems. Moreover, headwater streams provide unique habitats for aquatic biota. Small spring-fed headwater streams can serve as thermal refuges for fishes, serving as a refuge from freezing for stream fishes during winter and cool refuges for young fishes during summer. Therefore, the elimination of headwater streams from the landscape increases the vulnerability for extinction of aquatic invertebrate, amphibian, and fish species, including federally listed threatened or endangered species.

The following five indicators were used to calculate the Habitat Integrity Index for each riparian reach: Area of Native Riparian Vegetation (Riparian Reach (RR) Scale); Riparian Corridor Continuity (RR Scale); Riparian Corridor Continuity (Riparian Reach/Drainage Basin (RRDB) Scale); Land Use/Land Cover at Riparian Ecosystem Boundary (Riparian Reach/Local Drainage (RRLD) Scale); and Land Use/Land Cover in 100m Buffer around the Riparian Ecosystem (RRDB Scale).

Also, see Functional Integrity.

HCP - "HCP" shall mean a Habitat Conservation Plan pursuant to Section 10 of ESA.

Headwater Local Drainage Basins – "Headwater local drainage basins" are local drainages of a particular reach with tributaries consisting of first order streams discharging to second order streams. The protection of the particular tributaries flowing into a reach would allow for the maintenance and/or restoration of riparian ecosystem integrity at the reach, sub-basin, and watershed scales.

Hydrogeomorphology – "Hydrogeomorphology" refers to the interaction between the structural components and the physical, chemical, and biological processes of a stream as it flows through its watershed.

Hydrologic Integrity – Riparian ecosystems with high hydrologic integrity exhibit the range of frequency, magnitude, and temporal distribution of stream discharge, and surface and subsurface interaction between the stream channel, floodplain, and terraces, that historically characterized riparian ecosystems in the region. In the arid and semi-arid southwest, a natural riparian ecosystem exhibits seasonal intermittent, ephemeral, or low flow periods, with annual bankfull discharges superimposed on a background of episodic, and often catastrophic, larger magnitude floods that inundate historical terraces.

Additionally, headwater streams in particular provide hydrologic retention capacity, thereby mediating the flow of water throughout a watershed. Without flow retention, downstream portions of the watershed would experience increased frequency and intensity of flooding as well as lower base flows. In turn, increased frequency and intensity of flooding accelerates channel erosion downstream.

In selecting indicators to assess hydrologic integrity, two groups of characteristics and processes were considered. The first group focused on the factors that influence frequency, magnitude, and temporal distribution of *stream discharge*, and the second group focused on the factors that influenced the *hydrologic interaction* between the stream channel, floodplain, and historical terraces.

Direct measures of stream discharge are unavailable at the riparian reach scale in this Watershed. Consequently, several indicators were selected at the drainage basin scale with the assumption that an indirect estimate of deviation from reference condition can be made based on changes in specific characteristic and processes of a drainage basin such as interception, infiltration, evapotranspiration, percolation, groundwater flow, and surface water flow over land and in channels. Cultural alteration of the drainage basin alters these characteristics and processes and consequently stream discharge. While it is difficult to quantify the exact nature of the relationship between specific drainage basin characteristics, as represented by the indicators, and stream discharge, in general, as cultural alteration of a watershed increases, so does the deviation from short and long-term historical patterns of frequency, magnitude, and distribution of stream discharge. Therefore, the following four indicators of hydrologic integrity were selected to reflect the degree of cultural alteration in a drainage basin with the potential to influence stream discharge: Altered Hydraulic Conveyance (RRDB Scale); Surface Water Retention (RRDB Scale); Perennialized Stream Flow (RRDB Scale); and Import, Export, or Diversion of Surface Water (RRDB Scale).

Frequency, magnitude, and distribution of stream discharge similar to the historical range of conditions do not alone ensure the hydrologic integrity of a riparian reach. Rather, hydrologic integrity also depends on maintaining the interaction between the stream channel, floodplain, and terraces of the riparian ecosystems through overbank and subsurface flows. This interaction is critical to the maintenance of riparian plant communities, sediment storage, carbon dynamics, biogeochemical processes, and other characteristics and processes of riparian ecosystems. Therefore, the following two indicators were selected to represent the degree of interaction between the stream channel and the floodplain: Altered Hydraulic Conveyance (RR Scale) described above; and Floodplain Interaction (RR Scale). Floodplain Interaction (FI_{RR}) indicates of the degree to which the overbank hydrologic connection between the bank full channel and the active floodplain and terraces of the riparian ecosystem has been lost in a riparian reach. The lost connection could be a result of levees, channelization, or channel incision. Many of the characteristics and processes of riparian ecosystems are dependent on periodic hydrologic interaction

between the stream channel and the floodplain. When the hydrologic connection is lost, the physical and biological characteristics of the riparian ecosystem become altered. Combined, the six-abovementioned indicators of stream discharge and hydrologic interaction were used to calculate the Hydrologic Integrity Index for each riparian reach.

Also, see Functional Integrity.

Impact – "Impact" shall mean adverse effect.

In-lieu Fee Program – "In-lieu fee program" shall refer to a program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation for Corps permits or Department agreements. Similar to a mitigation bank, the in-lieu fee program sells credits to permittees whose obligation to provide compensatory mitigation is transferred to the in-lieu fee program sponsor. The rules governing the operation and use of in-lieu fee programs are somewhat different from the rules governing operation and use of mitigation banks. The operation and use of an in-lieu fee program area governed by an in-lieu fee program instrument.

In-lieu Fee Program Instrument – "In-lieu fee program instrument" means the legal document for the establishment, operation, and use of an in lieu fee program. An in-lieu fee program instrument must be approved by an interagency review team, an interagency group of federal, tribal, state, and /or local regulatory and resource agency representatives that reviews documentation for, and advises the Corps on, the management of a mitigation bank or an in-lieu fee program.

In Perpetuity – In the context of aquatic resource conservation, "in perpetuity" protection shall mean protection of conservation values for an indefinite period of time, or forever. For purposes of implementing agreements, the operational definition often is a 100-year term.

Infrastructure - "Infrastructure" shall mean all public and quasi-public service facilities and structures, including, but not limited to road crossings, landfills, flood control facilities, water transmission lines and facilities, electric utility lines and sewer facilities, and supplemental or appurtenant facilities to road crossings and flood control facilities, such as water quality features, swales, and basins.

Intermittent Stream – An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Jurisdictional Wetlands – Areas that meet the soil, vegetation, and hydrologic criteria described in the "Corps of Engineers Wetlands Delineation Manual" (Environmental Laboratory, 1987) and its interim regional supplement for the arid west region.

Land Use Laws and Ordinances – see Local Land Use.

Level of Effort – For the ERDC's restoration plan (Smith and Klimas, 2004), a scale estimating the level of effort that would be required to restore a riparian reach segment to the prescribed Restoration Template

was developed. Based on the analysis of 50 riparian reaches within the Watershed, using aerial photography, baseline assessment data, knowledge of each riparian reach acquired during baseline assessment field sampling, and field verification, a level of effort value was assigned to each riparian reach segment. Level of effort was intended to serve as tool for planners based on the assumption that limited resources or potential sites would be available for restoration, or limited potential sites available to offset certain types of impacts. The level of effort scale represents a surrogate for the resources required, as no consideration of land purchase costs or similar issues are represented in these estimates. Unforeseen circumstances could dramatically alter the estimates. The following five categories of level of effort are listed: None, Light Planting, Heavy Planting, Light Earthwork, and Heavy Earthwork (for further detailed description, please consult the ERDC restoration plan):

Local Drainage – Area contributing to tributary, groundwater, and overland flow that directly enters the riparian reach.

Local Land Use – Local land use decisions are the responsibility of local government, which may control land use through Planning Laws, Financial/Property Ordinances, Subdivision Ordinances, Zoning Ordinances, and Building Ordinances. These legal mechanisms of land use allow for the prioritization and implementation of conservation objectives. Although through various programs, including the SAMP, state and federal agencies may provide technical and policy information to inform the local land use decisionmaking, control over local land use remains outside the authority of state and federal governments.

Mitigation – "Mitigation" shall mean all measures to avoid, minimize, reduce, or offset impacts of any activities resulting in impacts to Corps or the Department jurisdiction, including but not limited to: avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impact by limiting the timing, degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; compensating for impacts as provided for in the Corps LOP and RGP and the Department WSAA Process.

Mitigation Bank or Banking – Use of a single site, suitable for wetlands enhancement, restoration, and/or creation, for the mitigation of impacts on wetlands that result from more than one project at other sites.

Mitigation Framework – A component of the SAMP regulatory program modifications for the Watershed includes an approach to mitigation that is informed by the SAMP Analytical Framework. Mitigation, including avoidance and minimization of impacts as well as compensation is addressed under the SAMP mitigation framework. Both the Corps and the Department have agreed to a set of mitigation policies and to implement the SAMP Strategic Mitigation Plan as well as to promote a Mitigation Coordination Program to improve the effectiveness and efficiency of mitigation occurring within the Watershed.

Mitigation Sequencing – Provisions in the EPA Section 404(b)(1) Guidelines (40 CFR 230.10) and the 1990 Corps/EPA MOA requiring avoidance and minimization of adverse impacts on the aquatic environment before compensatory mitigation may be considered.

Natural Community Conservation Plan (NCCP) – "NCCP" shall mean the Natural Community Conservation Planning program, specifically the Orange County Central-Coastal NCCP Subregional Plan, developed pursuant to the NCCP Act, FGC Section 2800 *et seq*. NCCP is a program of the Department that takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity. The NCCP process identifies and provides for the regional or area-wide protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. The primary objective of the NCCP program is the conservation of natural communities at the ecosystem scale while accommodating compatible land uses.

NCCP/HCP - "NCCP/HCP" shall mean the plan for conservation in the Central/Coastal Subregion approved by the County, Department, and USFWS to meet the requirements of Section 7 and Section 10(a) under ESA, Sections 2081 and 2084 under CESA and Sections 2810, 2825(c), 2830 and 2835 under the NCCP Act.

NEPA - "NEPA" shall mean the National Environmental Policy Act, 42 U.S.C. Section 4321 *et seq.* and the Corps implementing regulations at 33 CFR Part 325, Appendix B.

NROC - "NROC" shall mean the Nature Reserve of Orange County, the non-profit corporation established for the management of the Orange County Central-Coastal NCCP Reserve System.

Open Water – An area that, during a year with normal patterns of precipitation, has standing or flowing water for sufficient duration to establish an ordinary high water mark. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered open waters. The term "open water" includes rivers, streams, lakes, and ponds.

Ordinary High Water Mark – The Corps jurisdictional limits of streams are defined by using the "ordinary high water mark" (OHWM). The OHWM is defined at 33 CFR 328.3(e) as "... that line on the shore established by fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area". Additionally, seasonal wetlands, as described in the Corps of Engineers Wetland Delineation Manual, are where "...water in a depression (is) ... sufficiently persistent to exhibit an ordinary high water mark or the presence of wetland characteristics." The regulated waters delineated in the PLD are intermittent streams, riverine, isolated wetland depressions, and coastal salt marshes. The isolated depressions, coastal marshes, and parts of the riverine system were determined to be wetlands because they met the three-parameter criteria. The intermittent stream and some portions of the perennial streams were treated as waters of the U.S.

Perennial Stream – A perennial stream has flowing water year-round during a typical year. The water table is located above the streambed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Planned Activities - "Planned Activities" shall mean development on land or interests in land owned or controlled by one or more of the SAMP Participating Applicants in the Eligible Areas, including development of communities and infrastructure, and anticipated activities allowed within the SAMP Eligible Areas as described in the Corps SAMP document.

Potential Applicant - "Potential Applicants" shall mean landowners, applicants, and local governments who have not actively participated in the formulation of SAMP.

Preservation – "Preservation" is the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area.

Reference aquatic resources – A set of aquatic resources that represent the full range of variability exhibited by a regional class of aquatic resources as a result of natural processes and anthropogenic disturbances.

Rehabilitation – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. To track net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Restoration Templates – As presented in ERDC's Restoration Plan (Smith and Klimas, 2004), restoration templates were assigned based on the potential to establish natural plant communities with composition, structure, and overall diversity characteristic of the geomorphic zone. Analyses of habitat requirements for animal species of concern in the region indicate that complex and diverse riparian plant communities are among the key determinants of habitat quality. In order to re-establish such natural conditions, it is assumed that floodplains, terraces, and adjacent uplands must be available for restoration and surfaces must be restored to appropriate height relative to bankfull stage to establish self-sustaining plant communities. The restoration plan estimated the ranges of appropriate values for the widths and heights of these surfaces based on reference data from the most intact reaches within southern California watersheds including the San Diego Creek Watershed, as well as the criteria for channel geometry from other studies. All templates include a zone of native upland vegetation as part of the overall riparian corridor, in addition to the riparian vegetation associated with the channel and terrace systems. The five

restoration templates are listed as follows: Natural Channel Template, Incised Channel Template, Constrained Channel Template, Engineered Channel Template, and Restoration Impractical. (for detailed information, please consult ERDC's restoration plan)

Restrictive Covenant – The purpose of a restrictive covenant is to ensure the restricted property (i.e. conservation or mitigation site(s)) would be retained in perpetuity in a natural condition and to prevent any use of the restricted property that would impair or interfere with the conservation values of the restricted property. Typically, the declarant (landowner/signatory) intends to confine the use of the restricted property to such activities, including without limitation, those involving the preservation and enhancement of native species and their habitat in a manner consistent with the habitat conservation purposes of the restrictive covenant.

Riparian Ecosystem (also Riparian, Riparian Areas, Riparian Zone, Riparian Vegetation) -Riparian areas typically border rivers and streams such that the riparian zone usually is defined as the area that lies along a stream channel. "Riparian areas" are lands adjacent to streams, rivers, lakes, and estuarine-marine shorelines; they provide a variety of ecological functions and services and help improve or maintain local water quality. The term "riparian zone" implies some interaction with the channel (e.g., inputs of organic material), but the definition used for this and related studies, is based primarily on proximity and may include upland vegetation growing on a high terrace or overhanging a channel from the top of a cut bank as well as species that occur only in association with watercourses. In the technical reports prepared in support of the SAMP (Smith, 2000; Lichvar et al., 2000), the term "riparian vegetation" is reserved for the latter group of plants, such as sycamores, willows, and mulefat. Riparian areas are particularly important because they link and integrate across landscapes by serving as corridors through which water, materials, and organisms move. In arid regions, riparian areas are critical to maintaining regional biodiversity because they provide habitat for a disproportionately large number of species in spite of their limited areal extent. Riparian areas typically include a zone of frequent flooding (bankfull), that is regulated under existing federal and state law, as well as a less frequently flooded transition zone between these areas regulated under state law and adjacent uplands (active floodplain to floodplain terrace). These transition zones vary in regulated statute from jurisdictional waters (including wetlands) to uplands even though they contribute greatly to the habitat, hydrologic, and biogeochemical functions performed by riparian areas. For the purposes of the SAMP, including the WSAA Process, and in the related studies, the Corps and the Department identified and assessed, and proposed management that should focus on the bankfull channel and transition zone, together as a "functional" riparian ecosystem. However, regulatory processes will remain applicable to jurisdictional jurisdictional areas.

Riparian Reach – A unit of assessment used for the LLFA of riparian ecosystems conducted by the Corps that represents the segment of the main stem, bankfull stream channel and adjacent riparian ecosystem considered relatively homogenous with respect to geology, geomorphology, channel morphology, substrate type, vegetation communities, and cultural alteration.

Ruderal – Ruderal plant communities occur in areas of disturbances such as along roads, trails, parking lots, and other areas subjected to ongoing or past disturbances (e.g., vehicle activities, mountain bikes, mowing, etc.). Ruderal communities of native and exotic weedy species become established after a disturbance has taken place. Although ruderal communities may be successional in nature and give way

to the native communities when the stressor is removed, some introduced weedy species become established and the site may never return to its original state without intervening restoration activities.

SAMP - "SAMP" or "Special Area Management Plan" shall mean the plan and associated regulatory and mitigation program established by the Corps pursuant to section 404 of the Clean Water Act, 33 U.S.C. section 1344, for the San Diego Creek Watershed to provide for a watershed-based approach to issuing Corps permits, the Department's template SAAs for the Watershed, and a coordinated, comprehensive mitigation strategy, including the Strategic Mitigation Plan, and Mitigation Coordination Program.

Section 404 Permit – The permit issued by the Corps under Section 404 of the Clean Water Act for authorizing the discharge of dredged or fill material into waters of the U.S., including wetlands; also known as Corps permit, fill permit, Department of the Army permit, DA permit, individual permit, 404 permit.

Section 404(b)(1) Guidelines – Substantive regulations in 40 CFR Part 230.40, promulgated in accordance with Section 404(b)(1) of the Clean Water Act, that provide the standards for unacceptable adverse impacts on waters of the U.S., including wetlands, used to determine whether a Section 404 permit should be issued. Generally, discharges of fill are allowed under the Guidelines only if no other environmentally less damaging practicable alternative is available, no significant degradation of the waters, no jeopardy to threatened and endangered species, and if appropriate and practicable steps have been taken in sequence to avoid, minimize, and compensate adverse impacts on the aquatic ecosystem.

Stream Order – Strahler stream order refers to a stream numbering method in which the smallest, terminal stream segments receive a designation of first order or "1". A stream segment downstream from the confluence of two first order stream segments receives a designation of second order or "2". A stream segment downstream from the confluence of two second order stream segments receives a designation of third order or "3", and so on. In all cases, stream order increases only when two stream segments of equal order join.

Streambed or **stream bed** – For the SAMP, the term streambed refers to riverine aquatic resources located within the bed, bank, and channel geomorphic features. A streambed may include all or a portion of the riparian zone. Streambeds are a sub-set of aquatic resources, and may overlap with Corps jurisdiction located within the OHWM. Streambed resources include perennial, intermittent, and ephemeral drainages that display a bed, bank, and channel. The Corps defines "stream bed" in terms of its jurisdiction: the substrate of the stream channel between the ordinary high water marks, where the substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the OHWM, are not considered part of the stream bed. The Department defines "streambed" as the land beneath a stream and its outermost banks, whereby the streambed includes that portion of a stream channel directly beneath its waters and extends laterally beneath the banks where subsurface hydrologic connectivity exists between the stream and the surrounding land.

Subbasin – see Local Drainage and Drainage Basin.

Temporal Loss – "Temporal loss" is the time lag between the loss of aquatic resources functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site. Higher compensation ratios may be required to compensate for temporal loss. When the compensatory mitigation project is initiated prior to, or concurrent with, the permitted impacts, the district engineer may determine that compensation for temporal loss is not necessary, unless the resource has a long development time.

Terraces – Terraces are usually defined as former floodplains, although they also include flat surfaces carved by flowing waters, or the wave-cut surfaces of the marine terraces. For the purposes of the SAMP technical studies, terraces (excluding marine deposits) are alluvial features originally deposited as floodplains, but which under baseline conditions are situated outside the 50-year flood zone (i.e., the flood prone area). There may be multiple terraces associated with some stream reaches, usually identifiable as distinct steps along the channel, but sometimes the lowest terrace is contiguous with the floodplain, and is identifiable only with measurements based on the bankfull stage.

Third-Party Mitigation Program - "Third-Party" mitigation occurs in circumstances where a permittee provides acreage equivalent funds to an approved third party instead of either completing project-specific mitigation or purchasing credits from a mitigation bank approved under the Banking Guidance, which was jointly prepared by the Department of the Army (Corps), the Department of the Interior (USFWS), the EPA, and the National Oceanic and Atmospheric Administration (National Marine Fisheries Service) (2000). Third-party mitigation must be approved in advance by the Corps and the Department.

Upland Area of Influence - An upland area of influence is represented as a drainage basin or local drainage area (i.e., the subwatershed unit of land that drains to a particular stream reach through surface flows); it includes any vegetated buffer to the stream. Both the local drainage area and drainage basin of a riparian reach extend beyond the boundaries of the Corps and the Department's jurisdictions. However, the local drainage and drainage basins constitute the upland areas of influence of aquatic resources by directly contributing flows over the uplands into the riparian reach, and thereby affecting the hydrologic, water quality, and habitat integrity of the receiving aquatic resources.

Vegetated Buffer – see Buffer

Water Quality Integrity – Water quality integrity was defined as exhibiting a range of pollutant loading, including nutrients, pesticides, hydrocarbons, and sediments that are similar to those that historically characterized riparian ecosystems in the region. Assessing changes in the range of loading in each pollutant category can be determined directly by comparing data for current loading with data describing historical loading, when such data are available. While there are historical and recent monitoring data available for a limited number of stations in the Watershed, little or no loading data are available at the riparian reach scale. Consequently, the assessment of water quality integrity was based on indicators of drainage basin and riparian reach characteristics that have been shown to influence water quality integrity. Three groups of factors were considered in selecting indicators for the water quality integrity endpoint. The focus of the first group of factors was on whether or not the changes in *land use* in the drainage basin had the potential to increase sources of pollution compared to the reference condition. The second group focused on whether or not the stream channel *pollutant transport system* had changed in relation to

reference condition in terms of frequency, magnitude, and temporal distribution of stream flow. The third group focused on whether or not changes in land use in the areas adjacent to the stream, or the loss of a hydrologic connection between the stream channel and the floodplain had decreased the likelihood of *pollutant elimination*, i.e., being physically captured or biogeochemically processed, as compared to reference condition.

To reflect the condition of *land use* in the drainage basin, one composite indicator of water quality, Land Use/Land Cover in Drainage Basin (LULC_{RRDB}), was selected. Land use / land cover (LULC) indicates the way in which a tract of land is utilized, has been developed, or the class of vegetation.

Four sub-indicators were used to measure the LULC indicator. Each of the sub-indices were measured as the percent of the drainage basin of a riparian reach with LULC types with the potential to increase the nutrient, pesticide, hydrocarbon, or sediment loading in downstream surface waters. Using the ArcView GIS themes of riparian reach and LULC themes, the area of a drainage basin occupied by each LULC was determined for each sub-indicator. The area of LULC types with the potential to increase pollutants, hydrocarbons, nutrients, and sediment were then summed across the drainage basin and divided by the total drainage basin area to determine the sub-indicator value. The four sub-indicator values were averaged to determine the LULC indicator value.

Additionally, five indicators were selected to reflect the condition of the stream system that transports pollutants. These indicators used to assess hydrologic integrity with the exception of Floodplain Interaction and included the following indicators: Altered Hydraulic Conveyance (RRDB Scale), Altered Hydraulic Conveyance (RR Scale), Surface Water Retention (RRDB Scale), Perennialized Stream Flow (RRDB Scale), and Import, Export, or Diversion of Surface Water (RRDB Scale).

The following three indicators of water quality were selected to reflect the condition of riparian ecosystem with respect to its ability to physically capture and biogeochemically process pollutants, and thus eliminating pollutants from the system: Floodplain Interaction (RR Scale); Sediment Regime (RR Scale); and Area of Native Riparian Vegetation (RR Scale).

These nine indicators were used to calculate the Water Quality Integrity Index for each riparian reach.

Also, see Functional Integrity.

Waterbody - For purposes of the SAMP, a waterbody is a jurisdictional Water of the U.S. that, during a year with normal patterns of precipitation, has water flowing or standing above ground to the extent that an OHWM or other indicators of jurisdiction can be determined, as well as any wetland area (see 33 CFR 328.3(b)). If a jurisdictional wetland is adjacent--meaning bordering, contiguous, or neighboring--to a jurisdictional waterbody displaying an OHWM or other indicators of jurisdiction, that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

Waters of the State – Consistent with the Porter-Cologne Water Quality Control Act, "waters of the state" means any surface water or groundwater within the boundaries of the State of California, including saline waters and perennial, intermittent, and ephemeral rivers and streams. (See Water Code Section 13050(e).)

Waters of the United States – "Waters of the United States" or "waters of the U.S." are waterbodies that are regulated under Section 404 of the Clean Water Act. It is the broadest category of regulated water bodies and includes wetlands along with non-wetland habitats, such as streams, rivers, lakes, ponds, bays, and oceans.

Watershed – A hydrologically defined geographical area that drains to a major waterbody such as a river, lake, or creek, which is usually the waterbody for which the watershed is named.

Watershed Approach – EPA defines the watershed approach as a framework used to coordinate environmental management efforts of the private and public sectors to address the priority problems within a hydrologically defined geographic area that considers ground and surface water flows. As applied to the SAMP, the target is to develop regulatory tools using a watershed approach to improve the Corps <u>eand_and</u> the Department's contribution to riparian ecosystem management within the ongoing broader watershed management efforts. In the context of compensatory mitigation, an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and services caused by activities authorized by Corps permits and Department agreements. The watershed approach may involve consideration of landscape scale, historic, and potential aquatic resource conditions, past and projected aquatic resource impacts in the watershed, and terrestrial connections between aquatic resources when determining compensatory mitigation requirements for permits or agreements.

Wetland(s) – Areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

WSAA Process - "Watershed Streambed Alteration Agreement Process" or "WSAA Process" shall mean the procedures established by the Department in conjunction with the SAMP for the San Diego Creek Watershed to provide for a watershed-based approach to issuing Department Streambed Alteration Agreements per FGC Section 1600 *et seq.* and includes the use of one of three Department template SAAs for the Watershed, a SAA Templates Master Conditions List, and a mitigation framework including a Mitigation Cooridnation Program.

12.0 LIST OF CONSULTING AGENCIES AND PARTICIPANTS

CONSULTING AGENCIES

California Regional Water Quality Control Board, Santa Ana Region Mark Adelson, Sr. Environmental Scientist Adam Fisher, Environmental Scientist Wanda Smith, Sr. Environmental Scientist

U.S. Environmental Protection Agency, Region IX

Steven John, EPA Region IX, Director, Southern California Field Office

U.S. Fish and Wildlife Service

Jonathan Snyder, Fish and Wildlife Biologist

PARTICIPANTS

The Irvine Company

Dean Kirk, Sr. Director of Environmental Compliance Steve Letterly, Vice President, Environmental Planning (formerly of The Irvine Company) Heather Martin, Manager of GIS Systems Robert Uram, Attorney, Sheppard Mullin Richter & Hampton, LLP Maria Pracher, Attorney, Sheppard Mullin Richter & Hampton, LLP

City of Irvine

Glenn Worthington, Principal Planner Mike Loving, Water Quality Administrator, Public Works Department Sharon Heider, Open Space Administrator (formerly with City of Irvine)

County of Orange, Resources Development and Management Department

Chris Kubasek, Engineer (formerly Chief, Engineering and Permit Services/Regulatory Permits) Nardy Drew, Chief, Regulatory Permits Hualin Hsu-Wingard, Project Manager, Regulatory Permits Cathy Nowak, Planner III, Harbors, Beaches, and Parks Eileen Takata (formerly Watershed Coordinator, RDMD Watershed & Coastal Resources)

County of Orange, Integrated Waste Management Department

Suzanne McClanahan, Manager, Public Affairs

Jim Pfaff, Manager, Strategic Planning

Irvine Ranch Water District

Norris Brandt, Assistant General Manager, NTS Project Manager (formerly with IRWD) Dick Diamond, Water Resources Manager (formerly with IRWD)

Nature Reserve of Orange County

Lyn McAfee, Executive Director

OTHER CONSULTING LOCAL STAKEHOLDERS

University of California, Irvine Jim Lawson, Senior Planner

University of California, Agriculture & Natural Resources, South Coast Research & Extension Center

John Kabashima, Orange County Director, Cooperative Extension

Newport Bay Watershed Management Committee

13.0 ACRONYMS AND GLOSSARY

13.1 ACRONYMS

ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Trips
AFY	Acre-feet per year
AICUZ	Air Installation Compatible Use Zone
AHC	Altered Hydraulic Conveyance
APCD	Air Pollution Control District
AQMP	Air Quality Management Plan
ARCA	Aquatic Resource Conservation Area
ARRP	Aquatic Restoration and Reserve Plan
AT&SF	Atchison Topeka & Santa Fe Bikeway
BIOL	Preservation of Biological Habitats of Special Significance
BMPs	Best Management Practices
BP	Before Present
BWRF	Black Willow Riparian Forest
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
Cal-EPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCC	Criteria Continuous Concentration
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDP	Coastal Development Permit
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations

CFS	Cubic Feet per Second
CGS	California Geologic Survey
CIP	Capital Improvement Project
CLORAVF	Canyon Live Oak Ravine Forest
CLOW	Coast Live Oak Woodland
CMS	Cubic Meters per Second
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
COMM	Commercial and Sport Fishing
Corps	U.S. Army Corps of Engineers
CRA	Colorado River Aqueduct
CRHR	California Register of Historic Places
CRREL	Cold Regions Research and Engineering Laboratory (of the <u>U.S. Army</u> Corps of Engineers)
CSS	Coastal Sage Scrub
CTR	California Toxics Rule
CWA	Clean Water Act
CWRF	Cottonwood-Willow Riparian Forest
CZARA	Coastal Zone Act Reauthorization Amendments
CZMA	Coastal Zone Management Act
DAMP	Drainage Area Management Plan
DBH	Diameter at Breast Height
DDT	Dichlorodiphenyltrichloroethane
Department	California Department of Fish and Game
DoA <u>DA</u>	Department of Army
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMC	Event Mean Concentration
EMP	Emergency Management Plan
EO	Executive Order
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERDC	Engineering Research and Development Center (of the <u>U.S. Army</u> Corps of Engineers)

ESA	Endangered Species Act
ESHA	Environmentally Sensitive Habitat Areas
EST	Estuarine Habitat
ET	Evapotranspiration
ETC	Eastern Transportation Corridor
FAA	Federal Aviation Administration
FGC	California Fish and Game Code
FESA	Federal Endangered Species Act
FI	Floodplain Interaction
FSS	Floodplain Sage Scrub
FWS	Coastal Freshwater Marsh
GDP	General Development Plan
GIS	Geographic Information System
GLA	Glen Lukos Associates
GPA	General Plan Amendment
GPP	Great Park Project
GWR	Groundwater Recharge
Hab	Habitat Integrity
HBP	Harbors, Beaches and Parks, now known as Orange County Resource Management
HCD	State Department of Housing and community Development
НСР	Habitat Conservation Plan
HOV	High Occupancy Vehicle
Hyd	Hydrologic integrity
Ι	Interstate
IA	Implementation Agreement
IED	Import, Export, or Diversion of Surface Water
ILF	In-lieu Fee
IP	Individual Permit
IRWD	Irvine Ranch Water District
IVM	Integrated Vector Management
IWMD	Integrated Water Waste Management Department, now known as Orange County Waste and Recycling
LAD	Los Angeles District (Corps of Engineers)
LAWD	Los Alisos Water District
LCWP	Laguna Coast Wilderness Park

Local Drainage Basins
Least Environmentally Damaging Practicable Alternative
Local Implementation Plans
Landscape Level Functional Assessment
Land Management Program
Letter of Permission
Long Range Development Plan
Million Acre-Feet per Year
Marine Habitat
Marine Corps Air Station
Master Environmental Assessment
Median Family Income
Mule Fat Scrub
milligrams per liter
Most Likely Descendant
Military Land Withdrawal Act
Memorandum of Agreement
Memorandum of Understanding
Master Plan of Arterials and Highways
Metropolitan Planning Organization
Master Streambed Alteration Agreement
mean sea level
Metropolitan Water District of Southern California
Municipal Water District of Orange County
National Ambient Air Quality Standards
Native American Heritage Commission
Natural Community Conservation Plan
National Environmental Policy Act
National Historic Preservation Act
National Marine Fisheries Service
Nitrogen Oxide
Nitrogen Dioxide
National Oceanic and Atmospheric Administration
Notice of Completion
Notice of Intent

NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NPS	National Park Service
NPS Program	Nonpoint Source Pollution Program
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council
NRHP	National Register of Historic Places
NROC	Nature Reserve of Orange County
NTS	Natural Treatment System
NWP	Nationwide Permit
O_3	Ozone
OCFA	Orange County Fire Authority
OCFCD	Orange County Flood Control District
OCHCA	Orange County Health Care Agency
OCRM	Office of Ocean and Coastal Resource Management
OCTA	Orange County Transportation Authority
OCTAM	Orange County Transportation Analysis Model
OCVCD	Orange County Vector Control District
OCWD	Orange County Water District
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
PA	Planning Area
PAR	Property Analysis Record
Pb	Lead
PCBs	Polychlorinated Biphenyls
PFRD	Public Facilities and Resources Department
PLD	Planning Level Delineation
PM _{2.5}	Particulate Matter equal to or less than 2.5 microns
PM_{10}	Particulate Matter equal to or less than 10 microns
PSF	Perennialized Stream Flow
RARE	Rare, Threatened, or Endangered Species
RCRA	Resource Conservation and Recovery Act
RDMD	Resources and Development Management Department
REC-1	Water Contact Recreation

REC-2	Non-Contact Water Recreation
RGL	Regulatory Guidance Letter
RGP	Regional General Permit
RH	Riparian Herb
RHNA	Regional Housing Needs Assessment
RMP	Regional Monitoring Program
RMP	Resource Management Plan
ROCs	Reactive Organic Compounds
ROD	Record of Decision
RR	Riparian Reach
RRDB	Riparian Reach/Drainage Basin
RRLD	Riparian Reach/Local Drainage
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SAMP	Special Area Management Plan
SAMS	Small Area Mitigation Site
SAWF	Southern Arroyo Willow Forest
SBWF	Southern Black Willow Forest
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Soil Conservation Service
SCSM	Southern Coastal Salt Marsh
SCLORF	Southern Coast Live Oak Riparian Forest
SCRRA	Southern California Regional Rail Authority
SEWS	Sandbar Willow Scrub
SHEL	Shellfish Harvesting
SHPO	State Historic Preservation Office
SIP	Standard Individual Permit
SJMMP	San Joaquin Marsh Mitigation Project
SO_2	Sulfur Dioxide
SOF	Statement of Findings
SLE	St. Louis encephalitis
SPWN	Spawning, Reproduction, and Development
SR	State Route

SSRW	Southern Sycamore Riparian Woodland
SWANCC	Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWR	Surface Water Retention
SWRCB	State Water Resources Control Board
SWS	Southern Willow Scrub
TCA	Transportation Corridor Agencies
TCE	Primarily Trichloroethylene
TIC	The Irvine Company
TIN	Total Inorganic Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
UCCE	University of California Cooperative Extension
UCI	University of California, Irvine
UCNRS	University of California Natural Reserve System
USACOE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
VOC	Volatile Organic Compound
WARM	Warm Freshwater Habitat
Watershed	San Diego Creek Watershed
WDR	Waste Discharge Requirement
WES	Waterways Experiment Station (of the U.S. Army Corps of Engineers)
WHR	Wildlife Habitat Relationships
WILD	Wildlife Habitat
WDRs	Waste Discharge Requirements
WoUS	Waters of the U.S.
WQ	Water Quality Integrity
WQMP	Water Quality Management Plan
WSAA	Watershed Streambed Alteration Agreement
ZC	Zone Change

13.2 GLOSSARY

(Most references within the terms below have been removed; see text in Draft EIS/EIR for references.)

Adaptive Management - "Adaptive Management" shall mean a flexible, iterative approach to long-term aquatic resources management within the aquatic resource integrity areas that is directed over time by the results of ongoing monitoring activities and other information. Aquatic resource management techniques and specific objectives are regularly evaluated in light of monitoring results and other new information. These periodic evaluations are used over time to adapt both the management objectives and techniques to achieve overall management goals. This approach involves managing aquatic resources in aquatic resource integrity areas in a manner designed to maintain or improve ecosystem functions and values over the long term. Under Adaptive Management, appropriately managed aquatic areas have a greater likelihood of maintaining functions and values than a system that is unmanaged or ineffectively managed. Measures specified in the Strategic Mitigation Plan and Mitigation Coordination Program for managing lands in the aquatic resource integrity areas are based on an adaptive management model.

Aquatic Resource Integrity Areas – The "aquatic resource integrity areas" in the San Diego Creek Watershed are comprised of aquatic resources identified for their higher values related to ecological integrity, wildlife corridor values, sensitive species habitat, and other factors, as well as the adjacent upland areas of influence that drain into the aquatic resources. The aquatic resource integrity areas are the keystone of the SAMP Analytic Framework, permitting program, Strategic Mitigation Plan, and Mitigation Coordination Program.

Alleleopathic (or allelopathic) – The quality of a plant species to inhibit growth in another species of plant through the production and release of chemicals.

Aquatic - General reference to various water-oriented habitats such as rivers, streams, creeks, ponds, lakes, etc. These resources may be perennial, intermittent, or ephemeral in nature.

Aquatic Resources – "Aquatic Resources" shall mean the areas of Corps and the Department regulatory jurisdiction in the San Diego Creek Watershed pursuant to the Clean Water Act or California Fish and Game Code. For example, aquatic resources are all waters and water habitats including lakes, ponds, streams, rivers and adjoining riparian areas that they affect, as well as marshes, vernal pools, seeps, flats, and other wetlands.

Buffer (area, zone, or habitat) or Vegetated Buffer – A buffer is an intervening upland, wetland, and/or riparian area or other form of barrier that separates aquatic resources from developed or disturbed areas and protects and/or enhances aquatic resource functions associated with wetlands, rivers, streams, lakes, marine, and estuarine systems from disturbances associated with adjacent land uses. Buffers reduces the impacts on the aquatic resources that may result from human activities. The critical functions of a buffer, associated with an aquatic system, include shading, input of organic debris and coarse sediments, uptake of nutrients, stabilization of banks, interception of fine sediments, storm flow attenuation during high water events, protection from disturbance by humans and domestic animals,

maintenance of wildlife habitat, and room for variation of aquatic system boundaries over time due to hydrologic or climate effects. A vegetated buffer could be established by maintaining an existing vegetated area or planting native trees, shrubs, and herbaceous plants on land next to open waters. Mowed lawns are generally not considered vegetated buffers because they provide little or no aquatic habitat functions and values. The establishment and maintenance of vegetated buffers may be given consideration as compensatory mitigation to offset requirements after replacement has been satisfied at a ratio of 1:1 and when buffers are incorporated in conjunction with the restoration, creation establishment, enhancement, or preservation of aquatic habitats to ensure that activities authorized by the Corps and the Department's regulatory programs result in minimal adverse effects to the aquatic environment.

CEQA - "CEQA" shall mean the California Environmental Quality Act, California Public Resources Code Section 21000 *et seq*.

CESA - "CESA" shall mean the California Endangered Species Act, Fish and Game Code Section 2050 *et seq.*

Channel – A natural stream or river, or an artificial feature such as a ditch or canal that exhibits features of bed and bank, and conveys water primarily unidirectional and down gradient. The active stream channel is defined as the area inundated when the stream is at bankfull stage, which corresponds to the discharge at which most channel-forming processes occur.

Clean Water Act – The federal law that establishes standards and procedures for limiting the discharge of fill and pollutants into waters of the U.S.

Compensatory Mitigation – For purposes of Section 404 of the Clean Water Act, compensatory mitigation is the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, or in exceptional circumstances, preservation of wetlands and/or other aquatic resources to compensate for unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.

<u>Condition</u> – Condition means the relative ability of an aquatic resource to support and maintain a community of organisms having a species composition, diversity, and functional organization comparable to reference aquatic resources in the region.

Conservation Easement – Pursuant to California Civil Code Section 815-816, the term "conservation easement" means "any limitation in a deed, will, or other instrument in the form of an easement, restriction, covenant, or condition, which is or has been executed by or on behalf of the owner of the land subject to such easement and is binding upon successive owners of such land, and the purpose of which is to retain land predominantly in its natural, scenic, historical, agricultural, forested, or open-space condition" [Section 815.1]. Furthermore, only the following types of entities or organization may acquire and hold conservation easements:

(a) Tax-exempt nonprofit organization qualified under Section 501 (c)(3) of the Internal Revenue Code and qualified to do business in this state which has as its primary purpose the preservation, protection, or

enhancement of land in its natural, scenic, historical, agricultural, forested, or open-space condition or use.

(b) The state or any city, county, city and county, district, or other state or local governmental entity, if otherwise authorized to acquire and hold title to real property and if the conservation easement is voluntarily conveyed. No local governmental entity may condition the issuance of an entitlement for use on the applicant's granting of a conservation easement pursuant to this chapter [Section 815.3].

Conservation Guidelines - "Conservation Guidelines" shall mean the management practices for the aquatic resource integrity areas described in Appendix 4 that complement the Strategic Mitigation Plan and Mitigation Coordination Program.

Coordination Committee - "Coordination Committee" shall mean a committee composed of the SAMP Participating Applicants and the Corps and Department that will oversee the implementation of the Mitigation Coordination Program.

Corps Jurisdictional Activity - "Corps Jurisdictional Activity" shall mean activities resulting in a discharge of dredged or fill material into waters of the U.S. subject to regulation under section 404 of the Clean Water Act, 33 U.S.C. Section 1344.

Corps LOP - "Corps LOP" shall mean the Letter of Permission procedures for the San Diego Creek Watershed that the Corps issued in a Special Public Notice concurrent with this SAMP and any finalization of or amendments thereto, included herein in Appendix C-1.

Corps RGP - "Corps RGP" shall mean the Regional General Permit for the San Diego Creek Watershed that the Corps issued in a Special Public Notice concurrent with this SAMP and any finalization of or amendments thereto, included herein in Appendix C-2.

Creation – The conversion of a persistent non-aquatic resource (i.e., terrestrial resource) to an aquatic resource. For the purpose of this plan, creation includes the conversion of sites that currently do not meet the definition of wetlands, even though these sites were wetlands prior to being permanently drained and/or covered by fill.

Delineation – A determination of the boundaries of a wetland or other aquatic site.

Department Jurisdictional Activity - "Department Jurisdictional Activity" shall mean any activity resulting in the alteration of those areas subject to the Department jurisdiction under Division 2, Chapter 6, of the FGC.

Department WSAA Process - "Department WSAA Process" shall mean the procedures established by the Department in conjunction with the SAMP for the San Diego Creek Watershed to provide for a Watershed-based approach to issuing Department Streambed Alteration Agreements (SAAs) and includes the use of one of three Department template SAAs for the Watershed, the Master Streambed Conditions List, and a comprehensive mitigation strategy, including a Mitigation Coordination Program. The Department issues its SAAs pursuant to Division 2, Chapter 6 of the FGC. Template SAAs for the Watershed are attached hereto at Appendix D.

Discharge - The placement of dredged or fill material into waters of the U.S. that may result in impacts to the aquatic system. Examples include the redeposition of material during excavation, mechanized land clearing, and ditching.

Drainage Basin – Area contributing to mainstem inflow from upstream of a riparian reach.

Ecosystem Management – A collaborative management approach that focuses on sustaining the integrity and biodiversity of ecological components, conditions, and functions in reconciliation with the promotion of economic opportunities.

EIR - "EIR" shall mean an Environmental Impact Report prepared pursuant to CEQA for the SAMP to address the Department's WSAA Process.

EIS - "EIS" shall mean an Environmental Impact Statement prepared pursuant to NEPA for the SAMP.

EIS/EIR - "EIS/EIR" shall mean a program-level environmental document for the San Diego Creek Watershed Special Area Management Plan/Watershed Streambed Alteration Agreement Process (SAMP/WSAA Process), prepared in compliance with the requirements of CEQA and NEPA.

Eligible Activities - "Eligible Activities" shall mean those activities that are consistent with the SAMP LOP procedures, RGP, and WSAA Process. Authorizations for other types of Corps and Department Jurisdictional Activities would require evaluation under the Corps SIP and Department SAA processes.

Eligible Areas - "Eligible Areas" shall mean those areas identified in the SAMP as being eligible for the permitting process described in the Corps LOP procedures and RGP and the Department WSAA Process.

Enhancement – Improving existing functions of a low quality or degraded aquatic resource or wetland. The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to the decline in other aquatic resource function(s). Enhancement does not result in a gain of aquatic resource area.

Ephemeral Stream – An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral streambeds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

ESA - "ESA" shall mean the federal Endangered Species Act of 1973, as amended, 16 U.S.C. Section 1531 *et seq*.

Establishment – "Establishment" (creation) means the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and function.

Fill Material – "Fill material" shall means material (including but not limited to rock, sand, and earth) that has the effect of: (i) Replacing any portion of water of the United States with dry land; or (ii) Changing the bottom elevation of any portion of a Water of the United States. The term fill material does not include discharges covered by proposed or final effluent limitations guidelines and standards under Sections 301, 304 or Section 306 of the Clean Water Act (see generally, 40 CFR Part 401), or discharges covered by an NPDES permit issued under Section 402 of the Clean Water Act.

Fish and Game Code - "Fish and Game Code" shall mean the California Fish and Game Code.

Flood Channel – The term "flood channel" is used in the context of discussing the opportunities and constraints of restoring riparian areas. Hydrologists calculate the overall flood channel size, including channel, floodplain, and terraces needed to contain a major flood event. In most cases, the flood channel is likely to contain the 100-year flood, but local flood management criteria determine overall "flood channel" size. The term "floodplain" has been reserved for the area subject to inundation at the 50-year recurrence interval. However, larger magnitude floods may also inundate one or more terraces. In a developed environment, protection of life and property requires that containment of floodwaters be a part of the design criteria for stream systems. Therefore, the design templates referred to herein and in ERDC's restoration plan (Appendix B-3) generally specify the number and height of terraces appropriate to sustain a riparian community characteristic of a particular geomorphic zone, based on reference data from streams in the basin and region. However, the range of terrace widths encountered in reference systems varied widely. Although the reference data provide general target ranges, hydrologists calculating the overall flood channel size must determine actual minimum terrace widths for restored systems. See also **Channel**, **Floodplain**, **Terrace**, and **Riparian Ecosystem**.

Flood Control Facilities - "Drainage and flood control facilities" including flood control channels, outfalls, culverts, retention/detention basins and sediment basins are located within or near jurisdictional waters. As the infrastructure component of a broader "flood management" program, flood control facilities are designed and constructed in accordance with applicable hydrologic design standards to prevent loss of life and reduce property damage caused by floods. Construction of permanent flood control structures generally requires soil excavation, removal, compaction, and sometimes concrete-lining and or placement of bank stabilization measures in channels. These construction activities can result in the following types of impacts: permanent loss of aquatic habitat from removal of riparian vegetation and replacement with concrete channel; temporary and permanent loss of upland habitat from temporary placement of dredged or fill material or permanent impacts of location of flood control basins; permanent alteration to channel hydrology from channel reconfiguration, concrete lining, changes in hydraulic flow characteristics, streambed and bank stabilization; and potential temporary impacts to water quality from uncontrolled sediment during construction. Maintenance typically involves periodic dredging of accumulated sediments in channels and basins as well as periodic removal of vegetation to restore the original basin and channel design capacity and configuration. Dredged material is typically placed in upland areas and proper sedimentation controls are used. Maintenance activities may also involve

excavation of accumulated sediments in outfall and intake structures, culverts and other structural features of the conveyance system to maintain design capacity. For maintenance, impacts would generally be temporary including short-term loss of aquatic habitat and potential impacts to water quality from temporary soil disturbing activities.

Flood Management - "Flood management" refers to an integrated approach undertaken to reduce flood risks and may include floodplain management, planning and investments in flood projects, and improved management of infrastructure that balances public safety and environmental protection. Related are storm water quality and drainage management efforts. Some flood management activities are regulated by the Corps and/or the Department, while others (in non-jurisdictional areas) are not.

Floodplain – "Floodplain" shall mean the land adjacent to a stream or lake, built of alluvium and subject to repeated flooding. Technically, the floodplain is the valley floor level corresponding to the bankfull stage. However, there are various "floodplains" (e.g. 5-year, 10-year, etc.), which include surfaces inundated at flow depths or frequencies of interest in a particular situation. For the purposes of the SAMP and related studies, the floodplain corresponds to the "flood prone area.". This is the area flooded to twice the depth of the maximum channel depth at bankfull stage, which is usually assumed to correspond approximately to the 50-year floodplain. In coastal streams of southern California, the flood prone area usually includes most or all of the point bar deposits below the scarp rising to the lowest distinct terrace.

Functional Assessment - The process by which the capacity of a wetland to perform a function is measured. See also, **Functional Integrity**.

Functional Integrity – The Corps Waterways Experiment Station (WES) and the Cold Regions Research and Engineering Laboratory (CRREL), as experts in aquatic resource delineation and wetland functional assessment, developed a tool to conduct a high precision, planning level delineation (i.e., the identification of aquatic resources) and a landscape level functional assessment (i.e., the characterization of aquatic resources). These tools were used to assess aquatic resources within the San Diego Creek Watershed, Orange County, California. As part of the functional assessment, the Corps assessed the following endpoints: hydrologic integrity, water quality integrity, and habitat integrity. **Hydrologic integrity** refers to the frequency, magnitude, and location of stream water flow and the interaction of the stream with the floodplains. **Water quality integrity** refers to the processing of nutrients and sediments within streams. **Habitat integrity** refers to the quality and quantity of habitat necessary to support functioning riparian systems. (See definitions below for additional information).

Functions – Functions means the physical, chemical, and biological processes that occur in ecosystems.

Geomorphic - A term referring to the shape of the land surface.

Geomorphic Zone – Five geomorphic zones were identified for the ERDC restoration plan based on topographic maps, the maps and descriptions provided in the county soil survey, and geologic maps and reports on Orange County and the region. A geomorphic zone was assigned to each riparian reach using aerial photography, baseline assessment data, and the knowledge of each riparian reach acquired during baseline assessment field sampling. Based on the typical, "natural" condition of each of the five

geomorphic zones in terms of geomorphology, vegetation structure, and the typical current condition, the following geomorphic zones were identified: Geomorphic Zone 1 – Riparian areas in V-shaped valleys with predominantly bedrock control; Geomorphic Zone 2 Small floodplains and terrace fragments in mountain and foothill valleys, where meander belt formation is restricted by lateral impingement of alluvial fans and colluvium; Geomorphic Zone 3 – Meander belts in alluvium within broad mountain and foothill valleys, and through marine terraces; Geomorphic Zone 4: Broad alluvial fan deposits where mountain and foothill valleys open to the coastal plain, and marine terraces; and Geomorphic Zone 5: Riparian areas along larger streams of the coastal plain area.

Great Park - "Great Park" or Orange County Great Park shall mean those lands in the City of Irvine that were formerly part of the El Toro Marine Air Station and now planned for open space, restoration, or development by the City of Irvine, the Great Park Corporation and Heritage Fields, LLC.

Habitat Integrity – Riparian ecosystems with habitat integrity exhibit the quality and quantity of habitat necessary to support and maintain a balanced, integrated, adaptive biological system having the full range of characteristics, processes, and organisms at the site-specific, landscape, and watershed scales that historically characterized riparian ecosystems in the region. Several factors were considered in selecting indicators of habitat integrity, including the spatial extent and quality of riparian habitat, the "connectedness" of riparian habitats at the riparian reach and drainage basin scales, and the spatial extent and quality of upland habitat in the landscape adjacent to riparian ecosystems. Moreover, headwater streams provide unique habitats for aquatic biota. Small spring-fed headwater streams can serve as thermal refuges for fishes, serving as a refuge from freezing for stream fishes during winter and cool refuges for young fishes during summer. Therefore, the elimination of headwater streams from the landscape increases the vulnerability for extinction of aquatic invertebrate, amphibian, and fish species, including federally listed threatened or endangered species.

The following five indicators were used to calculate the Habitat Integrity Index for each riparian reach: Area of Native Riparian Vegetation (Riparian Reach (RR) Scale); Riparian Corridor Continuity (RR Scale); Riparian Corridor Continuity (Riparian Reach/Drainage Basin (RRDB) Scale); Land Use/Land Cover at Riparian Ecosystem Boundary (Riparian Reach/Local Drainage (RRLD) Scale); and Land Use/Land Cover in 100m Buffer around the Riparian Ecosystem (RRDB Scale).

Also, see Functional Integrity.

HCP - "HCP" shall mean a Habitat Conservation Plan pursuant to Section 10 of ESA.

Headwater Local Drainage Basins – "Headwater local drainage basins" are local drainages of a particular reach with tributaries consisting of first order streams discharging to second order streams. The protection of the particular tributaries flowing into a reach would allow for the maintenance and/or restoration of riparian ecosystem integrity at the reach, sub-basin, and watershed scales.

Hydrogeomorphology – "Hydrogeomorphology" refers to the interaction between the structural components and the physical, chemical, and biological processes of a stream as it flows through its watershed.

Hydrologic Integrity – Riparian ecosystems with high hydrologic integrity exhibit the range of frequency, magnitude, and temporal distribution of stream discharge, and surface and subsurface interaction between the stream channel, floodplain, and terraces, that historically characterized riparian ecosystems in the region. In the arid and semi-arid southwest, a natural riparian ecosystem exhibits seasonal intermittent, ephemeral, or low flow periods, with annual bankfull discharges superimposed on a background of episodic, and often catastrophic, larger magnitude floods that inundate historical terraces.

Additionally, headwater streams in particular provide hydrologic retention capacity, thereby mediating the flow of water throughout a watershed. Without flow retention, downstream portions of the watershed would experience increased frequency and intensity of flooding as well as lower base flows. In turn, increased frequency and intensity of flooding accelerates channel erosion downstream.

In selecting indicators to assess hydrologic integrity, two groups of characteristics and processes were considered. The first group focused on the factors that influence frequency, magnitude, and temporal distribution of *stream discharge*, and the second group focused on the factors that influenced the *hydrologic interaction* between the stream channel, floodplain, and historical terraces.

Direct measures of stream discharge are unavailable at the riparian reach scale in this Watershed. Consequently, several indicators were selected at the drainage basin scale with the assumption that an indirect estimate of deviation from reference condition can be made based on changes in specific characteristic and processes of a drainage basin such as interception, infiltration, evapotranspiration, percolation, groundwater flow, and surface water flow over land and in channels. Cultural alteration of the drainage basin alters these characteristics and processes and consequently stream discharge. While it is difficult to quantify the exact nature of the relationship between specific drainage basin characteristics, as represented by the indicators, and stream discharge, in general, as cultural alteration of a watershed increases, so does the deviation from short and long-term historical patterns of frequency, magnitude, and distribution of stream discharge. Therefore, the following four indicators of hydrologic integrity were selected to reflect the degree of cultural alteration in a drainage basin with the potential to influence stream discharge: Altered Hydraulic Conveyance (RRDB Scale); Surface Water Retention (RRDB Scale); Perennialized Stream Flow (RRDB Scale); and Import, Export, or Diversion of Surface Water (RRDB Scale).

Frequency, magnitude, and distribution of stream discharge similar to the historical range of conditions do not alone ensure the hydrologic integrity of a riparian reach. Rather, hydrologic integrity also depends on maintaining the interaction between the stream channel, floodplain, and terraces of the riparian ecosystems through overbank and subsurface flows. This interaction is critical to the maintenance of riparian plant communities, sediment storage, carbon dynamics, biogeochemical processes, and other characteristics and processes of riparian ecosystems. Therefore, the following two indicators were selected to represent the degree of interaction between the stream channel and the floodplain: Altered Hydraulic Conveyance (RR Scale) described above; and Floodplain Interaction (RR Scale). Floodplain Interaction (FI_{RR}) indicates of the degree to which the overbank hydrologic connection between the bank full channel and the active floodplain and terraces of the riparian ecosystem has been lost in a riparian reach. The lost connection could be a result of levees, channelization, or channel incision. Many of the characteristics and processes of riparian ecosystems are dependent on periodic hydrologic interaction

between the stream channel and the floodplain. When the hydrologic connection is lost, the physical and biological characteristics of the riparian ecosystem become altered. Combined, the six-abovementioned indicators of stream discharge and hydrologic interaction were used to calculate the Hydrologic Integrity Index for each riparian reach.

Also, see Functional Integrity.

Impact – "Impact" shall mean adverse effect.

In-lieu Fee Program – "In-lieu fee program" shall refer to a program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation for Corps permits or Department agreements. Similar to a mitigation bank, the in-lieu fee program sells credits to permittees whose obligation to provide compensatory mitigation is transferred to the in-lieu fee program sponsor. The rules governing the operation and use of in-lieu fee programs are somewhat different from the rules governing operation and use of mitigation banks. The operation and use of an in-lieu fee program area governed by an in-lieu fee program instrument.

In-lieu Fee Program Instrument – "In-lieu fee program instrument" means the legal document for the establishment, operation, and use of an in lieu fee program. An in-lieu fee program instrument must be approved by an interagency review team, an interagency group of federal, tribal, state, and /or local regulatory and resource agency representatives that reviews documentation for, and advises the Corps on, the management of a mitigation bank or an in-lieu fee program.

In Perpetuity – In the context of aquatic resource conservation, "in perpetuity" protection shall mean protection of conservation values for an indefinite period of time, or forever. For purposes of implementing agreements, the operational definition often is a 100-year term.

Infrastructure - "Infrastructure" shall mean all public and quasi-public service facilities and structures, including, but not limited to road crossings, landfills, flood control facilities, water transmission lines and facilities, electric utility lines and sewer facilities, and supplemental or appurtenant facilities to road crossings and flood control facilities, such as water quality features, swales, and basins.

Intermittent Stream – An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Jurisdictional Wetlands – Areas that meet the soil, vegetation, and hydrologic criteria described in the "Corps of Engineers Wetlands Delineation Manual" (Environmental Laboratory, 1987) and its interim regional supplement for the arid west region.

Land Use Laws and Ordinances – see Local Land Use.

Level of Effort – For the ERDC's restoration plan (Smith and Klimas, 2004), a scale estimating the level of effort that would be required to restore a riparian reach segment to the prescribed Restoration Template

was developed. Based on the analysis of 50 riparian reaches within the Watershed, using aerial photography, baseline assessment data, knowledge of each riparian reach acquired during baseline assessment field sampling, and field verification, a level of effort value was assigned to each riparian reach segment. Level of effort was intended to serve as tool for planners based on the assumption that limited resources or potential sites would be available for restoration, or limited potential sites available to offset certain types of impacts. The level of effort scale represents a surrogate for the resources required, as no consideration of land purchase costs or similar issues are represented in these estimates. Unforeseen circumstances could dramatically alter the estimates. The following five categories of level of effort are listed: None, Light Planting, Heavy Planting, Light Earthwork, and Heavy Earthwork (for further detailed description, please consult the ERDC restoration plan):

Local Drainage – Area contributing to tributary, groundwater, and overland flow that directly enters the riparian reach.

Local Land Use – Local land use decisions are the responsibility of local government, which may control land use through Planning Laws, Financial/Property Ordinances, Subdivision Ordinances, Zoning Ordinances, and Building Ordinances. These legal mechanisms of land use allow for the prioritization and implementation of conservation objectives. Although through various programs, including the SAMP, state and federal agencies may provide technical and policy information to inform the local land use decisionmaking, control over local land use remains outside the authority of state and federal governments.

Mitigation – "Mitigation" shall mean all measures to avoid, minimize, reduce, or offset impacts of any activities resulting in impacts to Corps or the Department jurisdiction, including but not limited to: avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impact by limiting the timing, degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; compensating for impacts as provided for in the Corps LOP and RGP and the Department WSAA Process.

Mitigation Bank or Banking – Use of a single site, suitable for wetlands enhancement, restoration, and/or creation, for the mitigation of impacts on wetlands that result from more than one project at other sites.

Mitigation Framework – A component of the SAMP regulatory program modifications for the Watershed includes an approach to mitigation that is informed by the SAMP Analytical Framework. Mitigation, including avoidance and minimization of impacts as well as compensation is addressed under the SAMP mitigation framework. Both the Corps and the Department have agreed to a set of mitigation policies and to implement the SAMP Strategic Mitigation Plan as well as to promote a Mitigation Coordination Program to improve the effectiveness and efficiency of mitigation occurring within the Watershed.
Mitigation Sequencing – Provisions in the EPA Section 404(b)(1) Guidelines (40 CFR 230.10) and the 1990 Corps/EPA MOA requiring avoidance and minimization of adverse impacts on the aquatic environment before compensatory mitigation may be considered.

Natural Community Conservation Plan (NCCP) – "NCCP" shall mean the Natural Community Conservation Planning program, specifically the Orange County Central-Coastal NCCP Subregional Plan, developed pursuant to the NCCP Act, FGC Section 2800 *et seq*. NCCP is a program of the Department that takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity. The NCCP process identifies and provides for the regional or area-wide protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. The primary objective of the NCCP program is the conservation of natural communities at the ecosystem scale while accommodating compatible land uses.

NCCP/HCP - "NCCP/HCP" shall mean the plan for conservation in the Central/Coastal Subregion approved by the County, Department, and USFWS to meet the requirements of Section 7 and Section 10(a) under ESA, Sections 2081 and 2084 under CESA and Sections 2810, 2825(c), 2830 and 2835 under the NCCP Act.

NEPA - "NEPA" shall mean the National Environmental Policy Act, 42 U.S.C. Section 4321 *et seq.* and the Corps implementing regulations at 33 CFR Part 325, Appendix B.

NROC - "NROC" shall mean the Nature Reserve of Orange County, the non-profit corporation established for the management of the Orange County Central-Coastal NCCP Reserve System.

Open Water – An area that, during a year with normal patterns of precipitation, has standing or flowing water for sufficient duration to establish an ordinary high water mark. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered open waters. The term "open water" includes rivers, streams, lakes, and ponds.

Ordinary High Water Mark – The Corps jurisdictional limits of streams are defined by using the "ordinary high water mark" (OHWM). The OHWM is defined at 33 CFR 328.3(e) as "... that line on the shore established by fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area". Additionally, seasonal wetlands, as described in the Corps of Engineers Wetland Delineation Manual, are where "...water in a depression (is) ... sufficiently persistent to exhibit an ordinary high water mark or the presence of wetland characteristics." The regulated waters delineated in the PLD are intermittent streams, riverine, isolated wetland depressions, and coastal salt marshes. The isolated depressions, coastal marshes, and parts of the riverine system were determined to be wetlands because they met the three-parameter criteria. The intermittent stream and some portions of the perennial streams were treated as waters of the U.S.

Perennial Stream – A perennial stream has flowing water year-round during a typical year. The water table is located above the streambed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Planned Activities - "Planned Activities" shall mean development on land or interests in land owned or controlled by one or more of the SAMP Participating Applicants in the Eligible Areas, including development of communities and infrastructure, and anticipated activities allowed within the SAMP Eligible Areas as described in the Corps SAMP document.

Potential Applicant - "Potential Applicants" shall mean landowners, applicants, and local governments who have not actively participated in the formulation of SAMP.

Preservation – "Preservation" is the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area.

Reference aquatic resources – A set of aquatic resources that represent the full range of variability exhibited by a regional class of aquatic resources as a result of natural processes and anthropogenic disturbances.

Rehabilitation – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. To track net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Restoration Templates – As presented in ERDC's Restoration Plan (Smith and Klimas, 2004), restoration templates were assigned based on the potential to establish natural plant communities with composition, structure, and overall diversity characteristic of the geomorphic zone. Analyses of habitat requirements for animal species of concern in the region indicate that complex and diverse riparian plant communities are among the key determinants of habitat quality. In order to re-establish such natural conditions, it is assumed that floodplains, terraces, and adjacent uplands must be available for restoration and surfaces must be restored to appropriate height relative to bankfull stage to establish self-sustaining plant communities. The restoration plan estimated the ranges of appropriate values for the widths and heights of these surfaces based on reference data from the most intact reaches within southern California watersheds including the San Diego Creek Watershed, as well as the criteria for channel geometry from other studies. All templates include a zone of native upland vegetation as part of the overall riparian corridor, in addition to the riparian vegetation associated with the channel and terrace systems. The five

restoration templates are listed as follows: Natural Channel Template, Incised Channel Template, Constrained Channel Template, Engineered Channel Template, and Restoration Impractical. (for detailed information, please consult ERDC's restoration plan)

Restrictive Covenant – The purpose of a restrictive covenant is to ensure the restricted property (i.e. conservation or mitigation site(s)) would be retained in perpetuity in a natural condition and to prevent any use of the restricted property that would impair or interfere with the conservation values of the restricted property. Typically, the declarant (landowner/signatory) intends to confine the use of the restricted property to such activities, including without limitation, those involving the preservation and enhancement of native species and their habitat in a manner consistent with the habitat conservation purposes of the restrictive covenant.

Riparian Ecosystem (also Riparian, Riparian Areas, Riparian Zone, Riparian Vegetation) -Riparian areas typically border rivers and streams such that the riparian zone usually is defined as the area that lies along a stream channel. "Riparian areas" are lands adjacent to streams, rivers, lakes, and estuarine-marine shorelines; they provide a variety of ecological functions and services and help improve or maintain local water quality. The term "riparian zone" implies some interaction with the channel (e.g., inputs of organic material), but the definition used for this and related studies, is based primarily on proximity and may include upland vegetation growing on a high terrace or overhanging a channel from the top of a cut bank as well as species that occur only in association with watercourses. In the technical reports prepared in support of the SAMP (Smith, 2000; Lichvar et al., 2000), the term "riparian vegetation" is reserved for the latter group of plants, such as sycamores, willows, and mulefat. Riparian areas are particularly important because they link and integrate across landscapes by serving as corridors through which water, materials, and organisms move. In arid regions, riparian areas are critical to maintaining regional biodiversity because they provide habitat for a disproportionately large number of species in spite of their limited areal extent. Riparian areas typically include a zone of frequent flooding (bankfull), that is regulated under existing federal and state law, as well as a less frequently flooded transition zone between these areas regulated under state law and adjacent uplands (active floodplain to floodplain terrace). These transition zones vary in regulated statute from jurisdictional waters (including wetlands) to uplands even though they contribute greatly to the habitat, hydrologic, and biogeochemical functions performed by riparian areas. For the purposes of the SAMP, including the WSAA Process, and in the related studies, the Corps and the Department identified and assessed, and proposed management that should focus on the bankfull channel and transition zone, together as a "functional" riparian ecosystem. However, regulatory processes will remain applicable to jurisdictional jurisdictional areas.

Riparian Reach – A unit of assessment used for the LLFA of riparian ecosystems conducted by the Corps that represents the segment of the main stem, bankfull stream channel and adjacent riparian ecosystem considered relatively homogenous with respect to geology, geomorphology, channel morphology, substrate type, vegetation communities, and cultural alteration.

Ruderal – Ruderal plant communities occur in areas of disturbances such as along roads, trails, parking lots, and other areas subjected to ongoing or past disturbances (e.g., vehicle activities, mountain bikes, mowing, etc.). Ruderal communities of native and exotic weedy species become established after a disturbance has taken place. Although ruderal communities may be successional in nature and give way

to the native communities when the stressor is removed, some introduced weedy species become established and the site may never return to its original state without intervening restoration activities.

SAMP - "SAMP" or "Special Area Management Plan" shall mean the plan and associated regulatory and mitigation program established by the Corps pursuant to section 404 of the Clean Water Act, 33 U.S.C. section 1344, for the San Diego Creek Watershed to provide for a watershed-based approach to issuing Corps permits, the Department's template SAAs for the Watershed, and a coordinated, comprehensive mitigation strategy, including the Strategic Mitigation Plan, and Mitigation Coordination Program.

Section 404 Permit – The permit issued by the Corps under Section 404 of the Clean Water Act for authorizing the discharge of dredged or fill material into waters of the U.S., including wetlands; also known as Corps permit, fill permit, Department of the Army permit, DA permit, individual permit, 404 permit.

Section 404(b)(1) Guidelines – Substantive regulations in 40 CFR Part 230.40, promulgated in accordance with Section 404(b)(1) of the Clean Water Act, that provide the standards for unacceptable adverse impacts on waters of the U.S., including wetlands, used to determine whether a Section 404 permit should be issued. Generally, discharges of fill are allowed under the Guidelines only if no other environmentally less damaging practicable alternative is available, no significant degradation of the waters, no jeopardy to threatened and endangered species, and if appropriate and practicable steps have been taken in sequence to avoid, minimize, and compensate adverse impacts on the aquatic ecosystem.

Stream Order – Strahler stream order refers to a stream numbering method in which the smallest, terminal stream segments receive a designation of first order or "1". A stream segment downstream from the confluence of two first order stream segments receives a designation of second order or "2". A stream segment downstream from the confluence of two second order stream segments receives a designation of third order or "3", and so on. In all cases, stream order increases only when two stream segments of equal order join.

Streambed or **stream bed** – For the SAMP, the term streambed refers to riverine aquatic resources located within the bed, bank, and channel geomorphic features. A streambed may include all or a portion of the riparian zone. Streambeds are a sub-set of aquatic resources, and may overlap with Corps jurisdiction located within the OHWM. Streambed resources include perennial, intermittent, and ephemeral drainages that display a bed, bank, and channel. The Corps defines "stream bed" in terms of its jurisdiction: the substrate of the stream channel between the ordinary high water marks, where the substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the OHWM, are not considered part of the stream bed. The Department defines "streambed" as the land beneath a stream and its outermost banks, whereby the streambed includes that portion of a stream channel directly beneath its waters and extends laterally beneath the banks where subsurface hydrologic connectivity exists between the stream and the surrounding land.

Subbasin – see Local Drainage and Drainage Basin.

Temporal Loss – "Temporal loss" is the time lag between the loss of aquatic resources functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site. Higher compensation ratios may be required to compensate for temporal loss. When the compensatory mitigation project is initiated prior to, or concurrent with, the permitted impacts, the district engineer may determine that compensation for temporal loss is not necessary, unless the resource has a long development time.

Terraces – Terraces are usually defined as former floodplains, although they also include flat surfaces carved by flowing waters, or the wave-cut surfaces of the marine terraces. For the purposes of the SAMP technical studies, terraces (excluding marine deposits) are alluvial features originally deposited as floodplains, but which under baseline conditions are situated outside the 50-year flood zone (i.e., the flood prone area). There may be multiple terraces associated with some stream reaches, usually identifiable as distinct steps along the channel, but sometimes the lowest terrace is contiguous with the floodplain, and is identifiable only with measurements based on the bankfull stage.

Third-Party Mitigation Program - "Third-Party" mitigation occurs in circumstances where a permittee provides acreage equivalent funds to an approved third party instead of either completing project-specific mitigation or purchasing credits from a mitigation bank approved under the Banking Guidance, which was jointly prepared by the Department of the Army (Corps), the Department of the Interior (USFWS), the EPA, and the National Oceanic and Atmospheric Administration (National Marine Fisheries Service) (2000). Third-party mitigation must be approved in advance by the Corps and the Department.

Upland Area of Influence - An upland area of influence is represented as a drainage basin or local drainage area (i.e., the subwatershed unit of land that drains to a particular stream reach through surface flows); it includes any vegetated buffer to the stream. Both the local drainage area and drainage basin of a riparian reach extend beyond the boundaries of the Corps and the Department's jurisdictions. However, the local drainage and drainage basins constitute the upland areas of influence of aquatic resources by directly contributing flows over the uplands into the riparian reach, and thereby affecting the hydrologic, water quality, and habitat integrity of the receiving aquatic resources.

Vegetated Buffer – see Buffer

Water Quality Integrity – Water quality integrity was defined as exhibiting a range of pollutant loading, including nutrients, pesticides, hydrocarbons, and sediments that are similar to those that historically characterized riparian ecosystems in the region. Assessing changes in the range of loading in each pollutant category can be determined directly by comparing data for current loading with data describing historical loading, when such data are available. While there are historical and recent monitoring data available for a limited number of stations in the Watershed, little or no loading data are available at the riparian reach scale. Consequently, the assessment of water quality integrity was based on indicators of drainage basin and riparian reach characteristics that have been shown to influence water quality integrity. Three groups of factors were considered in selecting indicators for the water quality integrity endpoint. The focus of the first group of factors was on whether or not the changes in *land use* in the drainage basin had the potential to increase sources of pollution compared to the reference condition. The second group focused on whether or not the stream channel *pollutant transport system* had changed in relation to

reference condition in terms of frequency, magnitude, and temporal distribution of stream flow. The third group focused on whether or not changes in land use in the areas adjacent to the stream, or the loss of a hydrologic connection between the stream channel and the floodplain had decreased the likelihood of *pollutant elimination*, i.e., being physically captured or biogeochemically processed, as compared to reference condition.

To reflect the condition of *land use* in the drainage basin, one composite indicator of water quality, Land Use/Land Cover in Drainage Basin (LULC_{RRDB}), was selected. Land use / land cover (LULC) indicates the way in which a tract of land is utilized, has been developed, or the class of vegetation.

Four sub-indicators were used to measure the LULC indicator. Each of the sub-indices were measured as the percent of the drainage basin of a riparian reach with LULC types with the potential to increase the nutrient, pesticide, hydrocarbon, or sediment loading in downstream surface waters. Using the ArcView GIS themes of riparian reach and LULC themes, the area of a drainage basin occupied by each LULC was determined for each sub-indicator. The area of LULC types with the potential to increase pollutants, hydrocarbons, nutrients, and sediment were then summed across the drainage basin and divided by the total drainage basin area to determine the sub-indicator value. The four sub-indicator values were averaged to determine the LULC indicator value.

Additionally, five indicators were selected to reflect the condition of the stream system that transports pollutants. These indicators used to assess hydrologic integrity with the exception of Floodplain Interaction and included the following indicators: Altered Hydraulic Conveyance (RRDB Scale), Altered Hydraulic Conveyance (RR Scale), Surface Water Retention (RRDB Scale), Perennialized Stream Flow (RRDB Scale), and Import, Export, or Diversion of Surface Water (RRDB Scale).

The following three indicators of water quality were selected to reflect the condition of riparian ecosystem with respect to its ability to physically capture and biogeochemically process pollutants, and thus eliminating pollutants from the system: Floodplain Interaction (RR Scale); Sediment Regime (RR Scale); and Area of Native Riparian Vegetation (RR Scale).

These nine indicators were used to calculate the Water Quality Integrity Index for each riparian reach.

Also, see Functional Integrity.

Waterbody - For purposes of the SAMP, a waterbody is a jurisdictional Water of the U.S. that, during a year with normal patterns of precipitation, has water flowing or standing above ground to the extent that an OHWM or other indicators of jurisdiction can be determined, as well as any wetland area (see 33 CFR 328.3(b)). If a jurisdictional wetland is adjacent--meaning bordering, contiguous, or neighboring--to a jurisdictional waterbody displaying an OHWM or other indicators of jurisdiction, that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

Waters of the State – Consistent with the Porter-Cologne Water Quality Control Act, "waters of the state" means any surface water or groundwater within the boundaries of the State of California, including saline waters and perennial, intermittent, and ephemeral rivers and streams. (See Water Code Section 13050(e).)

Waters of the United States – "Waters of the United States" or "waters of the U.S." are waterbodies that are regulated under Section 404 of the Clean Water Act. It is the broadest category of regulated water bodies and includes wetlands along with non-wetland habitats, such as streams, rivers, lakes, ponds, bays, and oceans.

Watershed – A hydrologically defined geographical area that drains to a major waterbody such as a river, lake, or creek, which is usually the waterbody for which the watershed is named.

Watershed Approach – EPA defines the watershed approach as a framework used to coordinate environmental management efforts of the private and public sectors to address the priority problems within a hydrologically defined geographic area that considers ground and surface water flows. As applied to the SAMP, the target is to develop regulatory tools using a watershed approach to improve the Corps <u>eand_and</u> the Department's contribution to riparian ecosystem management within the ongoing broader watershed management efforts. In the context of compensatory mitigation, an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and services caused by activities authorized by Corps permits and Department agreements. The watershed approach may involve consideration of landscape scale, historic, and potential aquatic resource conditions, past and projected aquatic resource impacts in the watershed, and terrestrial connections between aquatic resources when determining compensatory mitigation requirements for permits or agreements.

Wetland(s) – Areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

WSAA Process - "Watershed Streambed Alteration Agreement Process" or "WSAA Process" shall mean the procedures established by the Department in conjunction with the SAMP for the San Diego Creek Watershed to provide for a watershed-based approach to issuing Department Streambed Alteration Agreements per FGC Section 1600 *et seq.* and includes the use of one of three Department template SAAs for the Watershed, a SAA Templates Master Conditions List, and a mitigation framework including a Mitigation Cooridnation Program.

14.0 REFERENCES

- Alsop III, F.J. 2001. Birds of North America, Western Region. Smithsonian Handbook. DK Publishing, Inc., New York. 752 p.
- Barr, L. 2003. City of Laguna Woods. Personal Communication with L. Boquiren (URS).
- Bedford, B., and E. Preston. 1988. Developing the Scientific Basis for Assessing Cumulative Effects of Wetland Loss and Degradation on Landscape Functions: Status, Perspectives and Prospects. Environmental Management 12: 751-771.
- Behler, J.L., and F.W. King. 1998. National Audubon Society Field Guide to North American Reptiles and Amphibians. Chanticleer Press, Inc., New York. 743 pp.
- Beier, P., and R.F. Noss. "Do Wildlife Corridors Provide Connectivity?" *Conservation Biology* 12:1241-1252. 1998.
- Beier, P., and S. Loe. "A Checklist for Evaluating Impacts to Wildlife Movement Corridors." *Wildlife Society Bulletin* 20:434-440. 1992.
- BonTerra Consulting. 2004. Revised Draft Environmental Impact Report for San Diego Creek Watershed Natural Treatment System prepared for the Irvine Ranch Water District. January, 2004.
- Brinson, M.M. 1993. A Hydrogeomorphic Classification of Wetlands. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Brooks, R.P., D.H. Wardrop, and J.A. Bishop. 2004. Assessing Wetland Condition on a Watershed Basis in the Mid-Atlantic Region Using Synoptic Land-Cover Maps. Environmental Monitoring and Assessment 94: 9-22.
- Brown, P.R. 1997. A Field Guide to Snakes of California. Gulf Publishing Company, Houston, Texas. 215pp.
- Bryant, P.J. Natural History of Orange County, California. http://mamba.bio.uci.edu/~pjbryant/biodiv/.
- California Department of Conservation. 2006. Orange County 2002 2004 Land Use Conversion Table A-20, website: <u>http://www.consrv.ca.gov/DLRP/fmmp/pubs/2002_2004/conversion_tables/ora0204_web.xls</u>, accessed March 2006.
- California Department of Fish & Game, California Natural Diversity Database Rarefind 2, Sacramento, 2003.
- California Department of Fish & Game. 1990. California's Wildlife Volume II Birds. A Wildlife Habitat Relationships (WHR) System publication. Sacramento, California. November, 1990.

- California Department of Fish & Game. 1990. California's Wildlife Volume III Mammals. A Wildlife Habitat Relationships (WHR) System publication. Sacramento, California. November, 1990.
- California Department of Fish & Game. 1990. California's Wildlife Volume II Reptiles. A Wildlife Habitat Relationships (WHR) System publication. Sacramento, California. November, 1990.
- California Department of Fish & Game. 1990. California's Wildlife Volume II Insects. A Wildlife Habitat Relationships (WHR) System publication. Sacramento, California. November, 1990.
- California Department of Fish and Game. October, 2003. Habitat Conservation Planning Branch, California's Plants and Animals <u>www.dfg.ca.gov/hcpb/cgi-bin/read_all.asp?specy=fish&character=Q-S</u>.
- California Division of Mines and Geology, 2001a. "Official Map of Seismic Hazard Zones for the El Toro Quadrangle." January 17, 2001.
- California Division of Mines and Geology, 2001b. "Official Map of Seismic Hazard Zones for the Tustin Quadrangle." January 17, 2001.
- California Division of Mines and Geology. 1997. "Fault Rupture Hazard Zones in California" Special Publication 42, Revised 1997.
- California Invasive Plant Council (Cal-IPC). 2006. California Invasive Plant Inventory. Cal-IPC Publication 2006-02. Berkeley, CA. 39p. Available at: www.cal-ipc.org.
- California Regional Water Quality Control Board, Santa Ana Region. 2002. Order No., R8-2002-0010 NPDES No. CAS618030 Water Discharge Requirements for the County of Orange, Orange County Flood Control District and The Incorporated Cities of Orange County Within the Santa Ana Region Areawide Urban Storm Water Runoff Orange County. January 18, 2002.
- California Regional Water Quality Control Board, Santa Ana Region. 2002. Order No., R8-2002-0044 Waiver of Waste Discharge Requirements for Specific Types of Discharges. September 6, 2002.
- California Regional Water Quality Control Board, Santa Ana Region. 1998. Order No. 98-67, NPDES No. CAG998001 General Waste Discharge Requirements for Discharges to Surface Waters Which Pose an Insignificant (De Minimus) Threat to Water Quality. July, 1998.
- California Regional Water Quality Control Board, Santa Ana Region, Newport Bay/Watershed Nutrient TMDL, 2000.
- California Regional Water Quality Control Board, Santa Ana Region, Newport Bay/Watershed Sediment TMDL, 1998.
- California Regional Water Quality Control Board, Santa Ana Region. 1995. Water Quality Control Plan for Santa Ana River Basin (8). January, 1995.

- California Regional Water Quality Control Board, Santa Ana Region. Watershed Management Initiative, 2002.
- California State Water Resources Control Board. 1992. General Construction Activity Storm Water Permit. Adopted August 20, 1992.
- Caltrans, 1999. Office of State Landscape Architecture. California Scenic Highway Mapping System. Website: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm.
- City of Irvine. 1999. City of Irvine General Plan 2000. Adopted March, 1999.
- City of Irvine. 2005. City of Irvine Municipal Code. http://www.ci.irvine.ca.us/ (February 17, 2006).
- City of Irvine. 2006. City of Irvine, Planning Areas 18, 33 (Lot 109), 34, and 39 General Plan Amendment Zone Change, Draft Environmental Impact Report. February, 2006.
- City of Laguna Hills. 1994. Laguna Hills Final Master EIR. June 28, 1994.
- City of Laguna Hills. 1994. City of Laguna Hills General Plan.
- City of Laguna Hills. 2005. City of Laguna Hills Municipal Code. http://www.ci.laguna-hills.ca.us/ (February 17, 2006).
- City of Laguna Woods. 2002. Laguna Woods Final Environmental Impact Report. August 1, 2002.
- City of Laguna Woods. 2003. City of Laguna Woods General Plan.
- City of Laguna Woods. 2005. Code of Ordinances. City of Laguna Woods, California. (February 17, 2006).
- City of Lake Forest. 1994. City of Lake Forest General Plan.
- City of Lake Forest. 2004. Lake Forest, California Municipal Code. <u>http://www.city-lakeforest.com/ (February 17, 2006).</u>
- City of Lake Forest. 2006. Lake Forest Opportunities Study Program Draft Environmental Impact Report. January 31, 2006.
- City of Newport Beach, 2006. City of Newport Beach General Plan 2006 Update Draft Environmental Impact Report April 21, 2006.
- City of Newport Beach, 2006. General Plan Public Draft. March 27, 2006.
- City of Orange. 1989. City of Orange General Plan Final Environmental Impact Report. March, 1989.

City of Orange. 2004. City of Orange General Plan.

- City of Orange. 2005. Orange, California Municipal Code. <u>(February 17, 2006)">http://www.cityoforange.org/>(February 17, 2006).</u>
- City of Santa Ana. 1998. City of Santa Ana General Plan.
- City of Santa Ana. 2005. City of Santa Ana Municipal Code. http://www.ci.santa-ana.ca.us/ (February 17, 2006).
- City of Tustin. 1993. City of Tustin General Plan. Final Environmental Impact Report. December 1993.
- City of Tustin. 2005. City of Tustin Municipal Code. http://www.tustinca.org/ (February 17, 2006).
- Cotton Bridges Associates. 2003. Final Environmental Impact Report for the Orange County Great Park. May, 2003.
- Cotton Bridges Associates & Ecosystems Restoration Associates. 2004. Irvine Wildlife Corridor Plan. May 2004.
- Council on Environmental Quality. 1981. Forty Most Asked Questions on CEQ's National Environmental Policy Act Regulations, March 1981. <u>http://ceq.eh.doe.gov/nepa/regs/40/40p3.htm1</u>

County of Orange. 2005. Conceptual Retarding Basins Manual Foothill Basins. Version 2. June 1, 2005.

County of Orange. 2005. County of Orange General Plan. Adopted September, 2005.

- County of Orange, Environmental Management Agency. 1996. Joint EIR/EIS Regarding Take Authorization of the County of Orange Central and Coastal Subregion Natural Community Conservation Plan and Habitat Conservation Plan. May, 1996.
- County of Orange, Environmental Management Agency. 1996. National Community Conservation Plan and Habitat Conservation Plan. July, 1996.
- County of Orange, Public Facilities and Resources Department. 2000. Orange County Flood Control District Design Manual. November, 2000.
- Crooks, K.R. "Relative Sensitivities of Mammalian Carnivores to Habitat Fragmentation." Conservation Biology 16:1-15. 2002.
- Crooks, K.R., and M.E. Soule. "Mesopredator Release and Avifaunal Extinctions in a Fragmented System." Nature 400:563-566. 1999.
- Douglas Bender and Associates. 2003. Special Area Management Plan (SAMP) Conceptual Water Quality Management Plan (WQMP) for Planning Area 1 Prepared for the Irvine Community Development Department. August 8, 2003.

- Douglas Bender and Associates. 2003. Special Area Management Plan (SAMP) Conceptual Water Quality Management Plan (WQMP) for Planning Area 1. August 8, 2003.
- Dudek & Associates Inc. 2002. Biological Resources Technical Report for the Irvine Community Development Company Planning Area 1, Orange County, California. 106pp and Appendices.
- Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1988. The Birder's Handbook. A Field Guide to the Natural History of North American Birds. Simon & Schuster Inc.
- EIP. 1995. Draft Environmental Impact Report for the Long Range Development Plan Circulation and Open Space Amendment prepared for the University of California, Irvine. October, 1995.
- Environmental Laboratory. 2005. Multi-Scale Assessment of Riparian Ecosystem Integrity (MAREI). U.S. Army Engineer Research and Development Center (ERDC). .
- Environmental Law Institute. 2004. National Symposium on Compensatory Mitigation and the Watershed Approach. Conservation and Resources Center, May 19 21, 2004. Published September, 2004.
- Fahrig, L., and G. Merriam. 1985. "Habitat Patch Connectivity and Population Survival." Ecology 66:1762-1768.
- Fife, D.L. 1974. "Geology of the South Half of the El Toro Quadrangle, Orange County, California." California Division of Mines and Geology, Special Report 110.
- Garrett, K., and J. Dunn. 1981. Birds of Southern California: Status and Distribution. Los Angeles Audubon Society, Los Angeles, California. 408pp.
- Genoways, H.H., and J.H. Brown, editors. 1993. Biology of the Heteromyidae. Special Publication No.10, The American Society of Mammalogists.
- Glenn Lukos Associates. 2003a. Draft Corps and Fish and Game Permit Applications for Planning Area 18. August 18, 2003.
- Glenn Lukos Associates. 2003b. Draft Corps and Fish and Game Permit Application Package for Planning Area 39. August 18, 2003.
- Glenn Lukos Associates. 2003c. Draft Corps and Fish and Game Permit Application Package for Planning Area 6. August 18, 2003.
- Glenn Lukos Assoicates. 2003d. Draft Corps and Fish and Game Permit Application Package for Planning Area 1. August 18, 2003.
- Glenn Lukos Assoicates. 2003e. Draft Regional Water Quality Control Board, Corps, and Fish and Game Permit Application Package for Lake Forest Drive Extension. October 23, 2003.

- Grant, L.B., K.J. Mueller, E.M. Gath, H. Cheng, R.L. Edwards, R. Munro, and G.L. Kennedy. 1999. Late Quaternary Uplift and Earthquake Potential of the San Joaquin Hills, Southern Los Angeles Basin, California: Geology, v. 27, p. 1031-1034.
- Gwin, S., M. Kentula, and P. Shaffer. 1999. Evaluating the Effects of Wetland Regulation Through Hydrogeomorphic Classification and Landscape Profiles. Wetlands 19: 477-489.
- Hall, R E. 1981. The Mammals of North America. Vol 1, 2nd Edition. John Wiley & Sons, Inc. New York. 600pp. and index 90 pp.
- Hamilton, R.A. and D.R. Willick. 1996. The Birds of Orange County, California: Status and Distribution. Sea & Sage Press, Sea & Sage Audubon Society, Irvine. 150pp.
- Harmsworth Associates. 2001. Report on Least Bell and Vireo Surveys at San Diego Creek. November, 2001.
- Harmsworth Associates. 2002. Report on Arundo Donax Mapping in the Watershed. January, 2002.
- Harmsworth Associates. 2002. Report on Arundo Donax Removal Methods in the Watershed. April, 2002.
- Harmsworth Associates. 2002. Report on Potential Mitigation Sites in the Watershed. April, 2002.
- Hauer, F.R., and R.D. Smith. 1998. The hydrogeomorphic approach to functional assessment of riparian wetlands: evaluating impacts and mitigation on river floodplains in the U.S.A. Freshwater Biology 40: 517-530.
- Hickman, J.C. (editor). 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley, California. 1400 pp.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency. Department of Fish and Game, 156 pp.
- Ingles, L.G. 1965. Mammals of the Pacific States-California, Oregon, Washington. Stanford University Press. 663 pp.
- Irvine Ranch Water District 2005. 2005 Urban Water Management Plan, November, 2005.
- Jennings, M.R., and M.P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA. 255 pp.
- Johnson, J.B. 2005. Hydrogeomorphic Wetland Profiling: An Approach to Landscape and Cumulative Impacts Analysis. EPA/620/R-05/001. U.S. Environmental Protection Agency, Washington, D.C.

- Jones and Stokes. 2002. Scoping Report for SAMP/MSAA for San Diego Creek SAMP EIS/EIR. May, 2002.
- Kays, R.W., and D.E. Wilson. 2002. Mammals of North America. Princeton University Press, New Jersey. 240pp.
- Lee, L., and J. Gosselink. 1988. Cumulative Impacts on Wetlands: Linking Scientific Assessments and Regulatory Alternatives. Environmental Management 12: 591-602.
- Leibowitz, S.G., B. Abbruzzese, P.R. Adamus, L.E. Hughes, and J.T. Irish. A Synoptic Approach to Cumulative Impact Assessment: A Proposed Methodology. EPA/600/R-92/167. U.S. Environmental Protection Agency, Environmental Research Laboratory, Corvallis, OR, USA. p.127.
- Lichvar, R., G. Gustina, D. MacDonald, and M. Ericsson. 2000. Planning Level Delineation and Geospatial Characterization of San Diego Creek Watershed, Orange County, California. US Army Corps of Engineers, Engineering and Research Development Center (ERDC), Cold Regions Research and Engineering Laboratory (CRREL), Hanover, NH. September 18, 2000.
- LSA and Lobell, C. 2001. Draft Existing Setting for Watershed.
- LSA. 1988. San Diego Creek Flood Control Master Plan prepared for the County of Orange. December, 1988.
- LSA. 2003. Draft Summary of Cultural Resources Identified Within the San Diego Creek Special Area Management Plan Permit Area, Specifically Planning Areas 1, 6, 18, and 39, Irvine California. February 17, 2003.
- LSA. 2003. Final Summary of Cultural Resources Identified Within the San Diego Creek Special Area Management Plan Permit Area, Specifically Planning Areas 1, 2, 3, 5, 6, 8, and 9, Irvine California. August 17, 2003.
- LSA. 2003. Final Summary of Cultural Resources Within the Watershed. Auguts 26, 2003.
- McMinn, H. 1939. An Illustrated Manual of California Shrubs. University of California Press. Berkeley. 663 pp.

Migratory Bird Treaty Act of 1918 (16 U.S.C. 704-712; Ch. 128; July 13, 1918; 40 Stat. 755).

- Miller R.V., and S.S. Tan. 1976. "Geology and Engineering Geologic Aspects of the South Half Tustin Quadrangle, Orange County, California," California Division of Mines and Geology, Special Report 126.
- Moyle, P. B., R.M Yoshiyama, J.E. Williams, and E.D. Wikramanayake. 1995. Fish Species of Special Concern in California. Second Edition. The Resources Agency, Department of Fish and Game, Inland Fisheries Division, Rancho Cordova. 272 pp.

National Wildlife Federation. San Diego Fairy Shrimp <<u>www.nwf.org/keepthewildalive/shrimp.cfm</u>>.

NMG Geotechnical, Inc. 2002. "Supplemental Geotechnical Investigation and Review of 200-Scale Conceptual Grading Plan for Neighborhoods 1 through 4 of Planning Area 1, City of Irvine Sphere of Influence, County of Orange, California," prepared for Irvine Community Development Company. September 6, 2002.

Orange County Transportation Authority. 2005. Master Plan of Aterial Highways, December 2005.

- Orange County Water District. 2004. Groundwater Management Plan. March 2004.
- Public Facilities and Resource Department Engineering and Permit Services Division. 2003. Maintenance Manual for Orange County Flood District Facilities in the Watershed.
- RBF Consulting. 2005. Conceptual Retarding Basins Manual Foothill Basins. Santa Ana, CA: County of Orange.
- Sawyer, J.O., and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society. California Native Plant Society. Sacramento. 471 pp.
- Schoenherr, A.A. 1992. A Natural History of California. University of California Press, Berkeley. 772 pp.
- Scientific Style and Format. 1994. The CBE Manual for Authors, Editors, and publishers. Cambridge University Press. New York. 825 pp.
- Sibley, D.A, 2003. The Sibley Field Guide to Birds of Western North America. Chanticleer Press, Inc., New York. 471 pp.
- Sibley, D.A. 2000. National Audubon Society The Sibley Guide to Birds. Alfred A. Knopf, Inc., New York. 544 pp.
- Simberloff, D., and J. Cox. 1987. "Consequences and Costs of Conservation Corridors." Conservation Biology 1:63-71, 1987.
- Smith, R.D., A. Ammann, C. Bartoldus, and M.M. Brinson. 1995. An Approach for Assessing Wetland Functions Using Hydrogeomorphic Classification, Reference Wetlands, and Functional Indices. Technical Report WRP-DE-9. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.
- Smith, R.D. 2000. Assessment of Riparian Ecosystem Integrity In the San Diego Creek Watershed, Orange County, California. US Army Corps of Engineers, Engineering and Research Development Center (ERDC), Waterways Experiment Station, Vicksburg, MS.
- Smith, R.D. 2003. Alternatives Analysis For San Diego Creek Watershed, Orange County, California: Potential Impacts to Waters of the United States and Riparian Ecosystems. U.S. Army Engineer

Research and Development Center, Waterways Experiment Station, Vicksburg, MS. September, 2003.

- Smith, R.D. and C.V. Klimas. 2004. San Diego Creek Watershed Riparian Ecosystem Restoration Plan: Site Selection and General Design Criteria. U.S. Army Engineer Research and Development Center, Waterways Experiment Station, Vicksburg, MS. Draft report. August, 2004.
- Southern California Association of Governments. 2004. Growth Vision Report for Southern California. June 2004.
- Stebbins, R.C. 1985. A field guide of western reptiles and amphibians. Second edition, revised. Houghton Mifflin Company, Boston, Massachusetts. 279 pp.
- Sudol, M.F., and R.F. Ambrose. 2002. The US Clean Water Act and Habitat Replacement: Evaluation of Mitigation Sites in Orange County, California. Environmental Management 30(5): 727-734.
- Templeton Planning Group. 2001. Northern Sphere Area General Plan Amendment and Zone Change Draft Environmental Impact Report prepared for the City of Irvine. Volume I.
- The Keith Companies. 2003. Special Area Management Plan (SAMP) Conceptual Water Quality Management Plan (WQMP) for Planning Area 6 prepared for the Irvine Community Development Department. August 12, 2003.
- The Keith Companies. 2003. Special Area Management Plan (SAMP) Conceptual Water Quality Management Plan (WQMP) for Planning Areas 18 and 39 prepared for the Irvine Community Development Department. August 14, 2003.
- The Planning Center. 1996. Marine Corps Air Station (MCAS) Tustin Specific Plan/Reuse Plan prepared for the City of Tustin Local Redevelopment Authority. October 1996.
- The Planning Center. 1998. MCAS Tustin Specific Plan/Reuse Plan prepared for the City of Tustin Local Redevelopment Authority. September 1998.
- Thomas, R., and Z. Lamb. 2005. Compensatory Wetland Mitigation and the Watershed Approach: A Review of Selected Literature. Society of Wetland Scientists Bulletin, March.
- Trimble, S.W. 1997. Contribution of Stream Channel Eriosion to Sediment Yield from an Urbanizing Watershed. Science 278: 1442-1444. November 21, 1997.
- Trimble, S.W. 2003. Historical Hydrographic and Hydrologic Changes in the San Diego Creek Watershed, Newport Bay, California. Journal of Historical Geography 29(3):422-444.
- U.S. Army Corps of Engineers and California Department of Fish and Game. 1997. Environmental Impact Statement/Environmental Impact Report for the 404 Permit and 1603 Streambed Alteration Agreement for Portions of the Santa Clara River and its Tributaries Los Angeles County. December, 1997.

- U.S. Army Corps of Engineers. 1997. Upper Newport Bay Draft Baseline Conditions Report and Appendices. December, 1997.
- U.S. Army Corps of Engineers. 2001a. Newport Bay/San Diego Creek Watershed Management Study Baseline Conditions Report Technical Appendices. September, 2001.
- U.S. Army Corps of Engineers. 2001b. Newport Bay/San Diego Creek Watershed Management Study, Orange County California Baseline Conditions Report (F-3 Milestone).
- U.S. Army Corps of Engineers, Los Angeles District. 2004. San Diego Creek Watershed Management Study Feasibility Phase. First Public Draft, December 15. On file with: U.S. Army Corps of Engineers, CESPL-PD-WW, P.O. Box 532711, Los Angeles, CA 90053.
- U.S. Army Corps of Engineers. 2005a. Regulatory Guidance Letter No. 05-02. Guidance on Expiration of Geographic Jurisdictional Determinations of Waters of the United States. June 14, 2005.
- U.S. Army Corps of Engineers, Los Angeles District. 2005b. San Diego Creek Watershed Management Study Feasibility Report. Preliminary Draft. On file with: U.S. Army Corps of Engineers, CESPL-PD-WW, P.O. Box 532711, Los Angeles, CA 90053.
- U.S. Army Corps of Engineers, Los Angeles District. 2005c. San Diego Creek Watershed Management Study Feasibility Report. Watershed Management Plan. Preliminary Draft. On file with: U.S. Army Corps of Engineers, CESPL-PD-WW, P.O. Box 532711, Los Angeles, CA 90053.
- U.S. Army Corps of Engineers, Los Angeles District, Regulatory Division. 2008. A Special Area Management Plan for the San Diego Creek Watershed, Orange County, California., February 2008 (rev. December).
- U.S. Environmental Protection Agency. 2002. Total Maximum Daily Loads for Toxic Pollutants San Diego Creek and Newport Bay, California. June, 2002.
- Verne, J., and A.S. Boss. 1980. California wildlife and their habitats: western Sierra Nevada. U.S. Department of Agriculture, Forestry Service, Berkeley, CA.
- Williams, D. 1986. SOUTHERN CALIFORNIA SALT MARSH SHREW (Sorex ornatus salicornicus), www.geocities.com/Yosemite/Gorge/5604/shrewballona1986.htm, California Department of Fish and Game, Sacramento, California.
- Wilson, D.E., and F.R. Cole. 2000. Common Names of Mammals of the World. Smithsonian Institution Press, Washington, D.C., 204 pp.
- Zeiner, D.C., W. F. Laudenslayer Jr., and K.E. Mayer. 1990. California Statewide Wildlife Habitat Relations System.