RAY MINE TAILINGS STORAGE FACILITY
EIS FIGURES 1-30

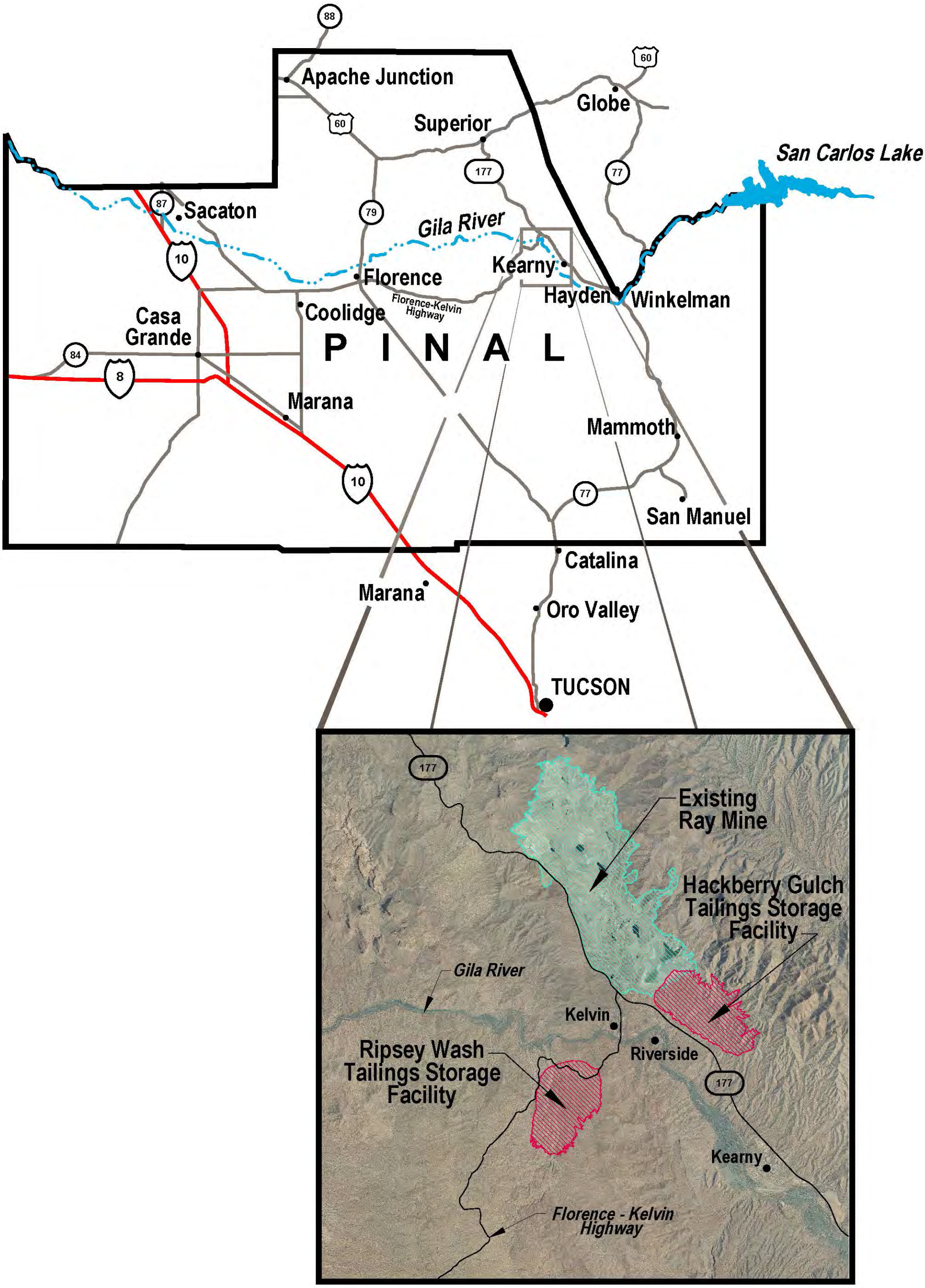


Figure 1
General Location Map

PROPOSED FACILITIES

(Ripsey Wash TSF Alternative)

1. Tailings Delivery, Fresh Water and Return Water Pipelines
2. Pumping Booster Station and Electric Switchgear
3. Tailings Drain-Down Pond
4. Gila River Bridge for Pipelines
5. East Reclaim (Seepage) Pond
6. East Seepage Trench
7. East Tailings Embankment
8. East Diversion Channel, Access Service Road and Electrical Distribution Line
9. Ripsey Wash Tailings Storage Facility
10. Up-Gradient Ripsey Wash Detention Dam
11. Pump Station for Diversion Water
12. West Detention Pond
13. West Stormwater Pipeline
14. Stormwater Discharge Structure - Zelleweger Wash
15. Main Ripsey Wash Tailings Embankment
16. Ripsey Wash Seepage Trench
17. Ripsey Wash Reclaim (Seepage) Pond
18. Relocated Florence-Kelvin Highway
19. Relocated San Carlos Irrigation Project 69kv Electric Transmission Line
20. Office, Day Shop and Water Tank
21. Construction Parking

N

0 300 600

SCALE IN FEET

R.13 E. R.14 E. T.3S. T.4S.

EXISTING RAY CONCENTRATOR

EXISTING PROCESS WATER TANKS

EXISTING WATER TANK 34

EXISTING RAY MINE

ELDER GULCH TAILINGS STORAGE FACILITY

EXISTING TAILINGS THICKENER

EXISTING PUMP STATION

EXISTING COPPER BASIN RAILROAD

EXISTING SAN CARLOS IRRIGATION PROJECT 69kV ELECTRIC LINE

EXISTING AZ TRAIL

AZ TRAIL REALIGNMENT

PROPOSED RIPSEY WASH TAILINGS STORAGE FACILITY

FLORENCE-KELVIN HIGHWAY TO BE PAVED FROM SOUTH SIDE OF NEW GILA RIVER BRIDGE TO WEST EDGE OF PROPOSED STATE LAND ACQUISITION AREA BOUNDARY (PER GILA COUNTY SPECIFICATIONS)

JACOBS POINT

Kelvin

Riverside

State Route 177

Florence - Kelvin Highway

Mineral Creek

Belgravia Gulch

Hackberry Gulch

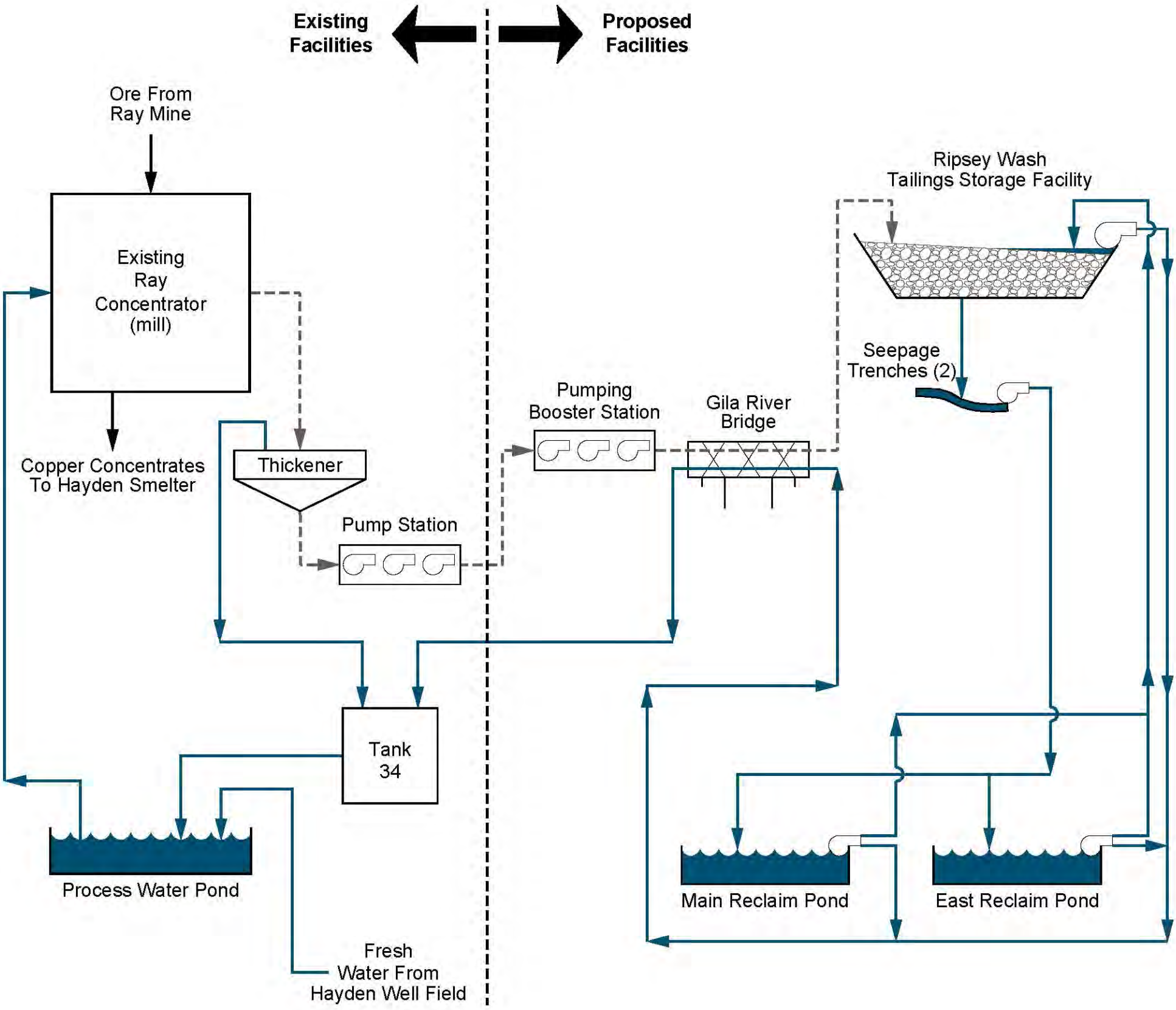
Gila River

Zelleweger Wash

Ripsey Wash

36 31 1 6

Figure 2
Site Plan Layout - Ripsey Wash TSF



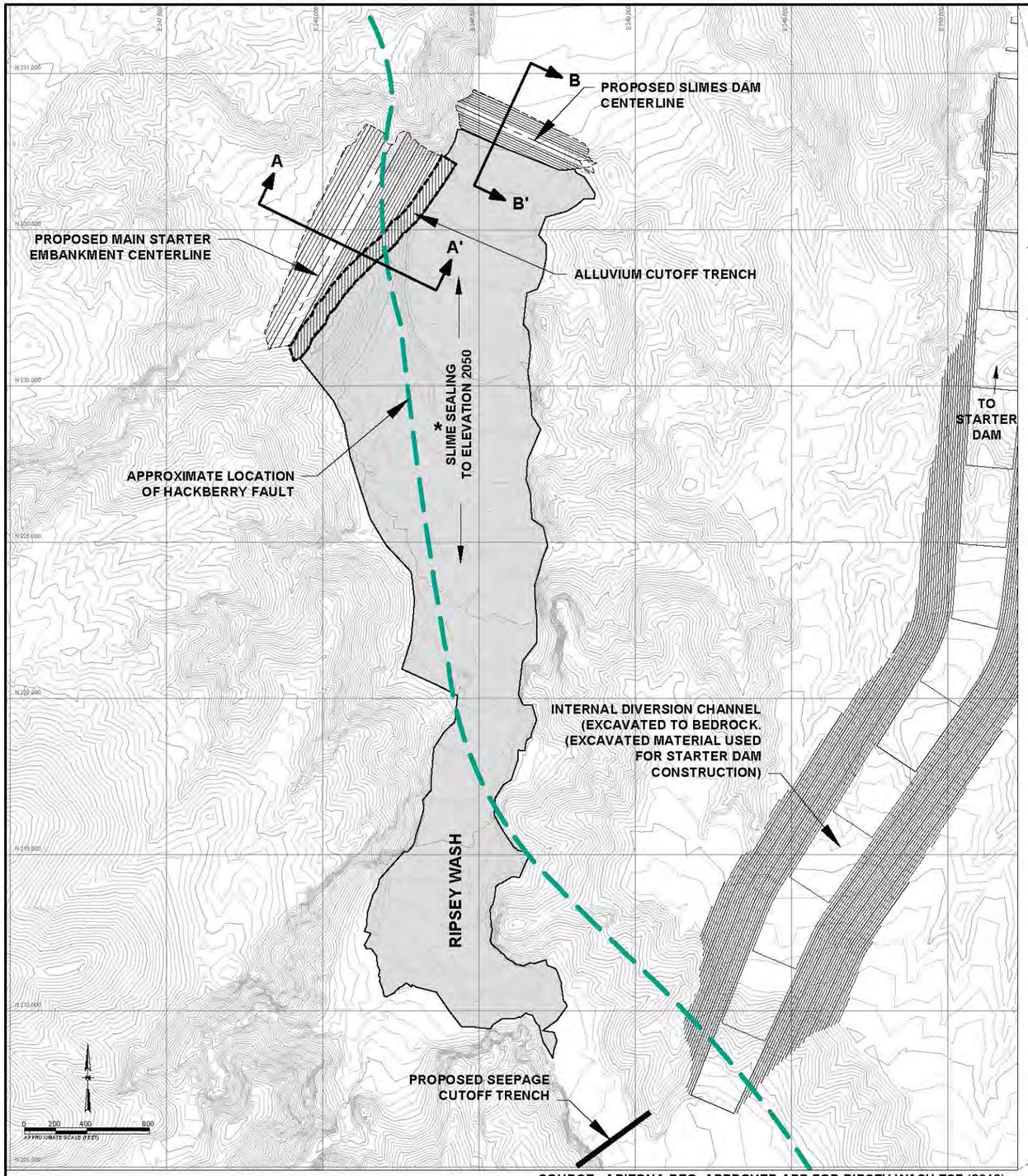
LEGEND

- - - - - - Tailings Delivery Pipelines

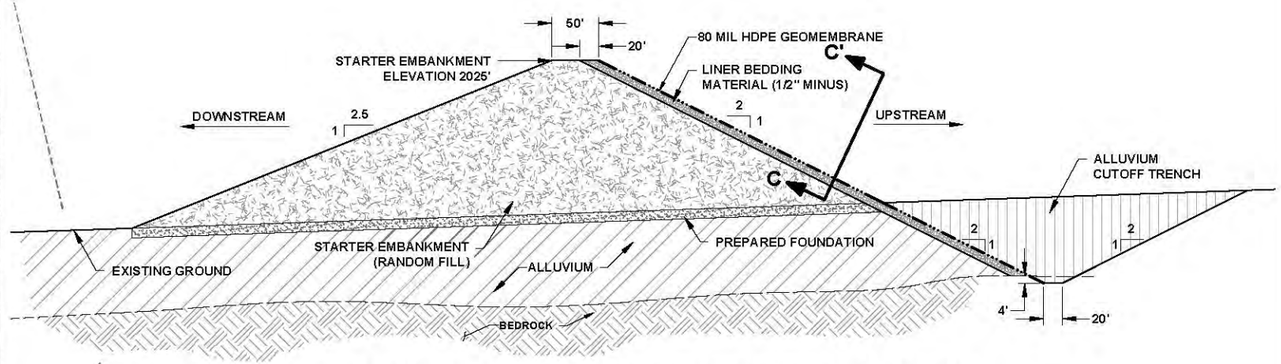
——— Return Water Pipelines

Note: See Figure 2, Site Plan Layout - Ripsey Wash TSF.

Figure 3
Process Flow Sheet - Ripsey Wash TSF

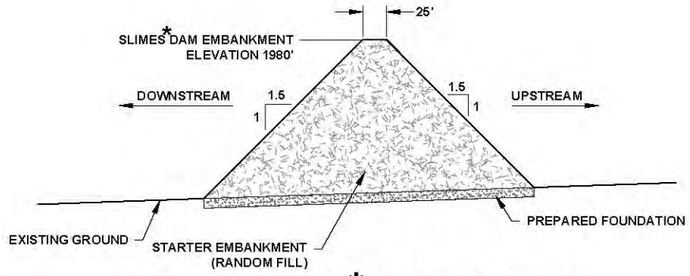


SOURCE: ARIZONA DEQ, APPROVED APP FOR RIPSEY WASH TSF (2016).



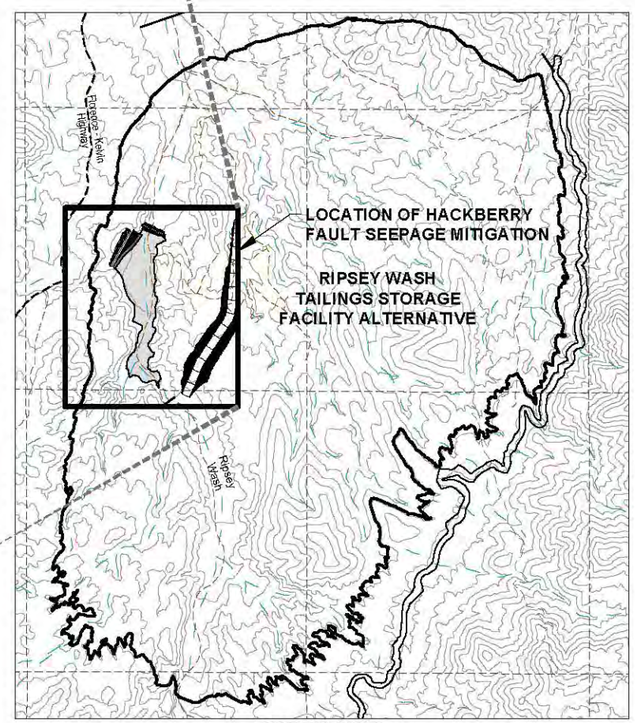
A-A' - TYPICAL MAIN STARTER EMBANKMENT CROSS SECTION

(NOT TO SCALE)

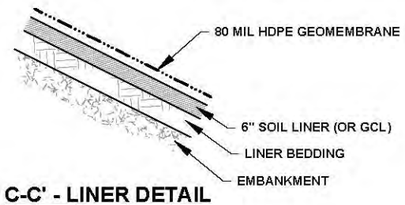


B-B' - TYPICAL SLIMES* DAM CROSS SECTION

(NOT TO SCALE)



INDEX MAP



C-C' - LINER DETAIL

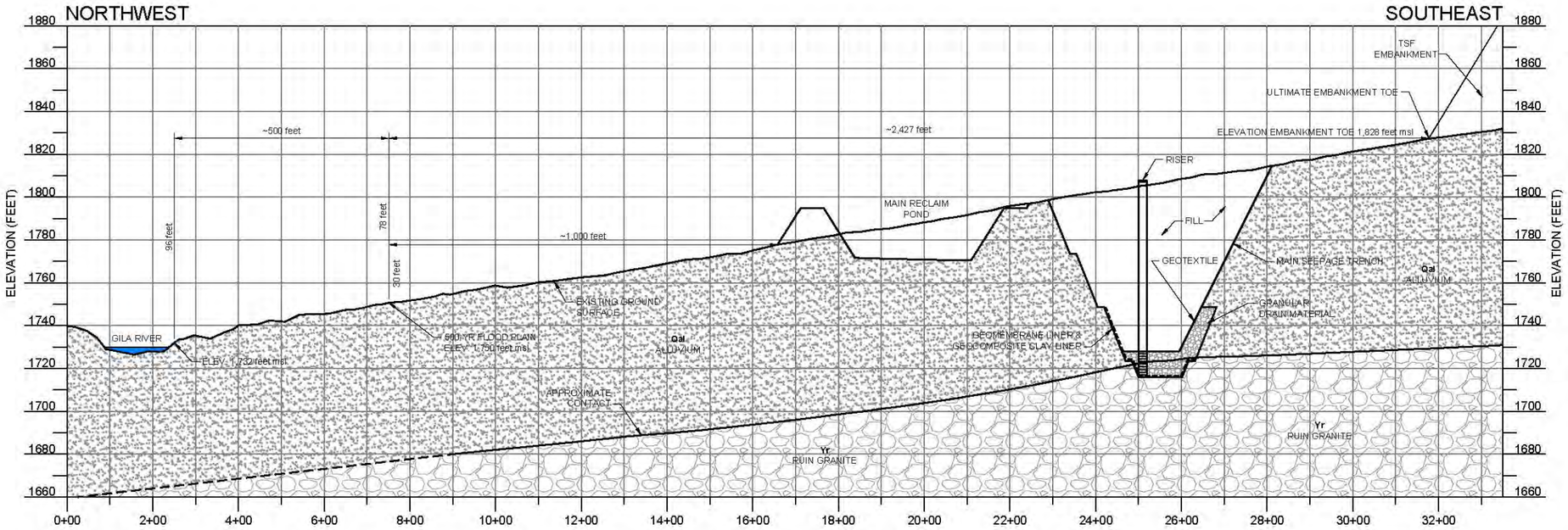
(NOT TO SCALE)

LEGEND:

- 3750 — EXISTING GROUND SURFACE CONTOUR ELEVATION (FEET)
- 100 — PROPOSED STARTER EMBANKMENT GROUND SURFACE CONTOUR ELEVATION (FEET)
- EMBANKMENT CENTERLINE

* NOTE: SLIMES ARE THE VERY FINE PARTICLE SIZING OF TAILINGS. THEY ARE SLOW TO SETTLE OUT BUT FORM A LOW PERMEABILITY BARRIER SIMILAR TO CLAY LINER.

Figure 4
Hackberry Fault Seepage Mitigation - Ripsey Wash TSF



MAIN RECLAIM POND AND SEEPAGE TRENCH SECTION

0 60 120

VERTICAL SCALE (FEET)

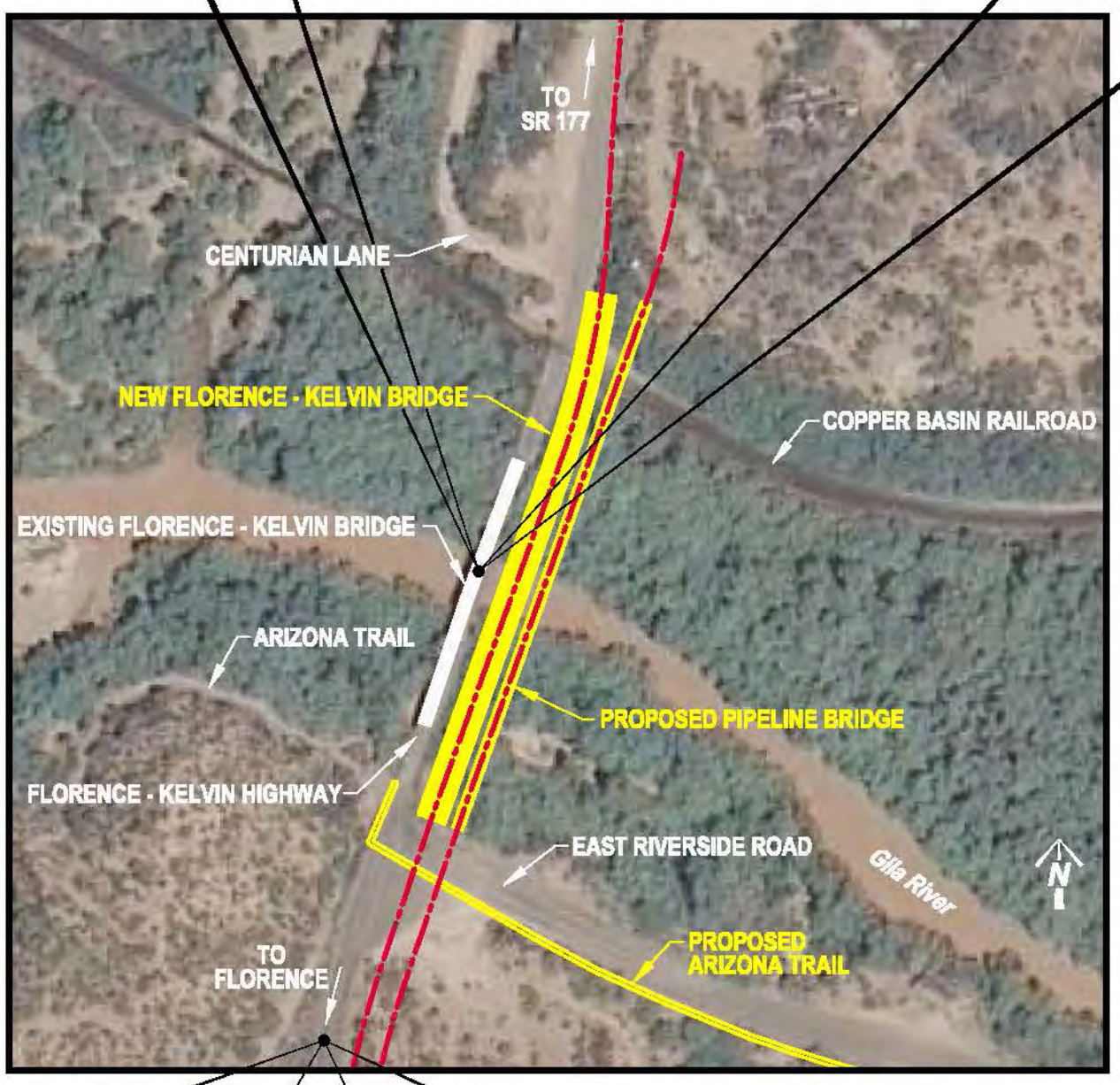
0 300 600

HORIZONAL SCALE (FEET)

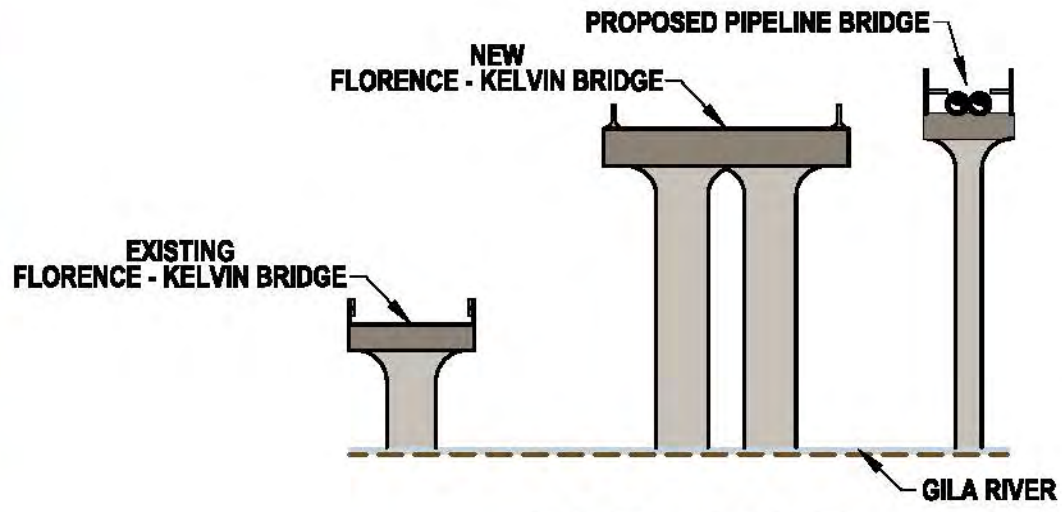
SOURCE: AMEC (2016)
(Approved APP 2016)

Figure 5
Ripsey Wash TSF -
Main Reclaim Pond and Seepage Trench

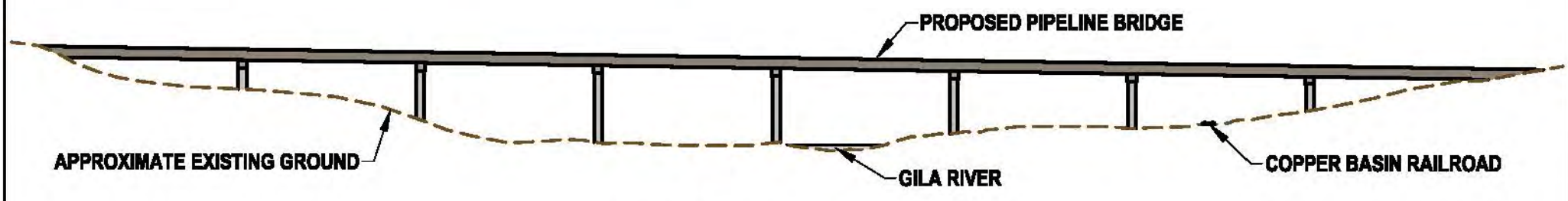






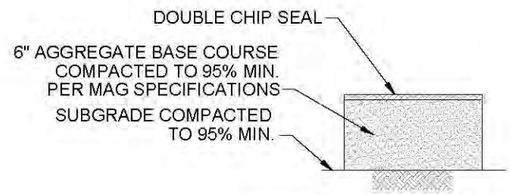


TYPICAL BRIDGE SECTION

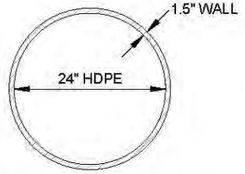


TYPICAL PIPELINE BRIDGE SECTION

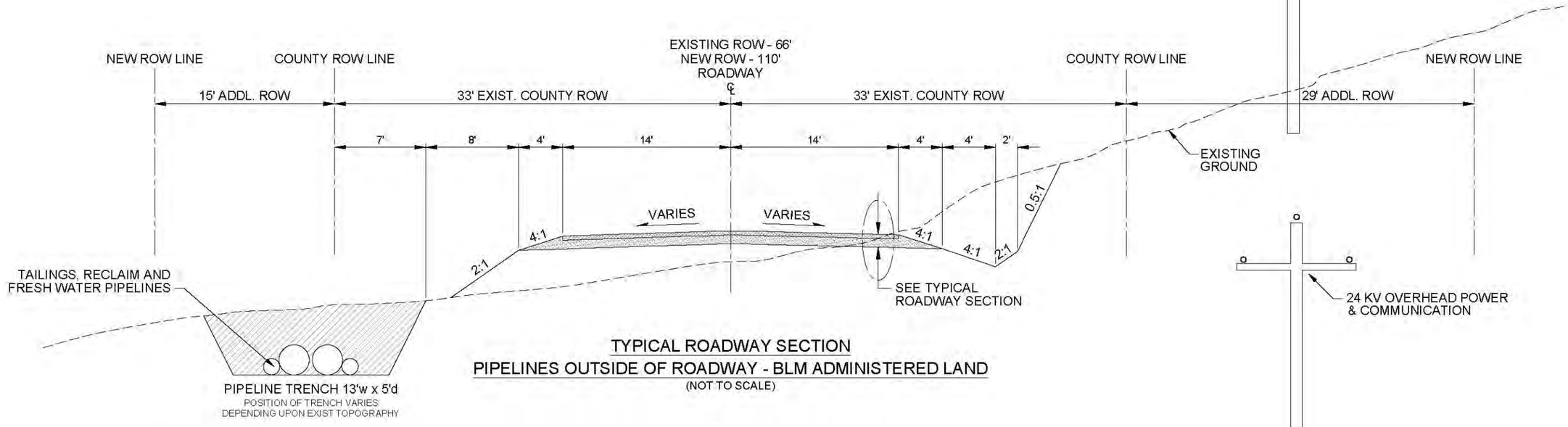
Figure 6
Gila River Tailings & Water
Pipeline Bridge - Ripsey Wash TSF



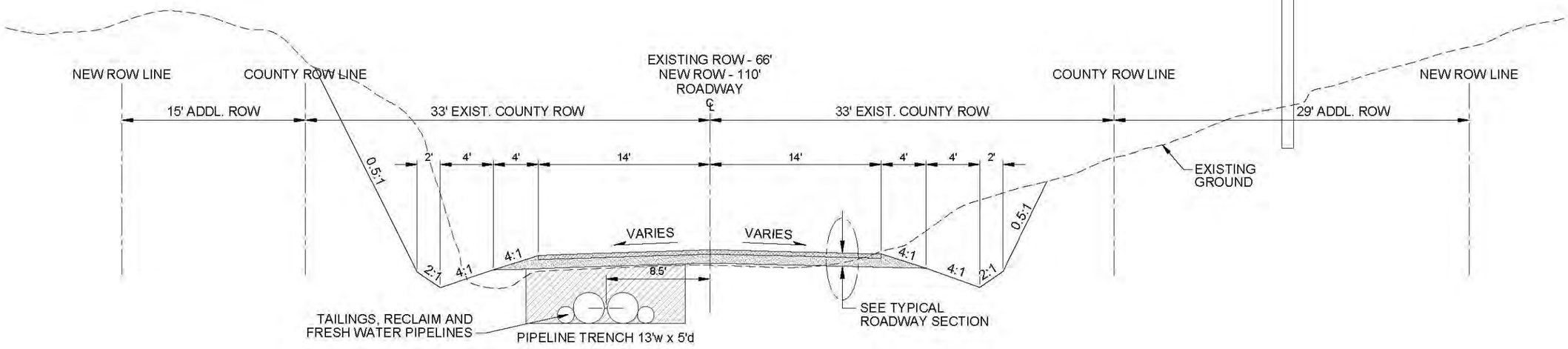
TYPICAL ROADWAY SECTION
N.T.S.



TYPICAL PIPELINE
N.T.S.

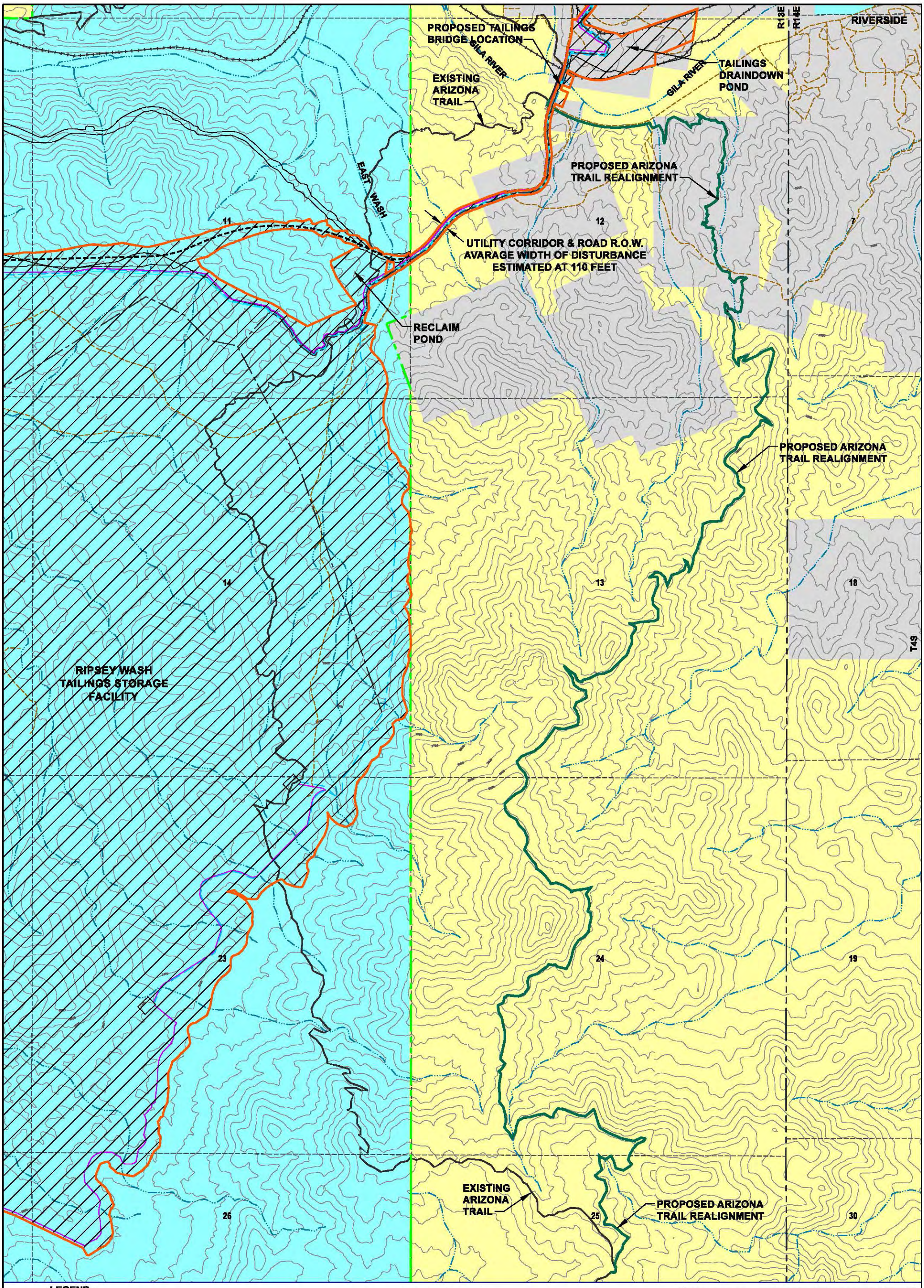


TYPICAL ROADWAY SECTION
PIPELINES OUTSIDE OF ROADWAY - BLM ADMINISTERED LAND
(NOT TO SCALE)



TYPICAL ROADWAY SECTION
PIPELINES INSIDE OF ROADWAY - BLM ADMINISTERED LAND
(NOT TO SCALE)

Figure 7
Typical Utility Corridor & Roadway Sections - Ripsey Wash TSF



LEGEND:

- EXISTING GROUND SURFACE CONTOUR ELEVATION (FEET) (3760)
- EXISTING DRAINAGES
- EXISTING RAILROAD
- EXISTING ROAD
- EXISTING TRAIL/UNIMPROVED ROAD
- PROPOSED ARIZONA TRAIL REALIGNMENT SURFACE DISTURBANCE
- PROPOSED SURFACE DISTURBANCE
- PROPOSED TAILINGS DELIVERY PIPELINE
- PROPOSED RECLAIM PIPELINE
- PROPOSED ELECTRICAL LINE

DISTURBED AREA
RIPSEY WASH TSF LAND OWNERSHIP

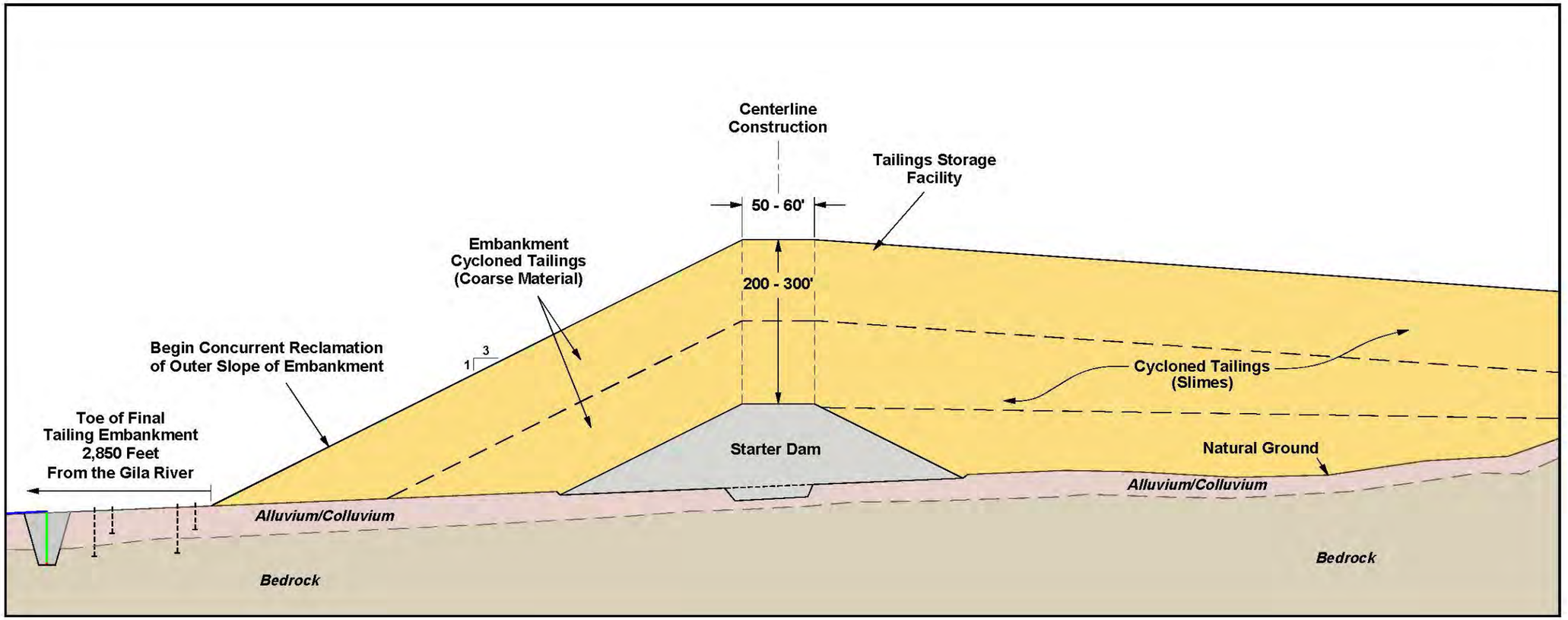
- Lands Administered by Bureau of Land Management
- Private Land
- State Trust Land

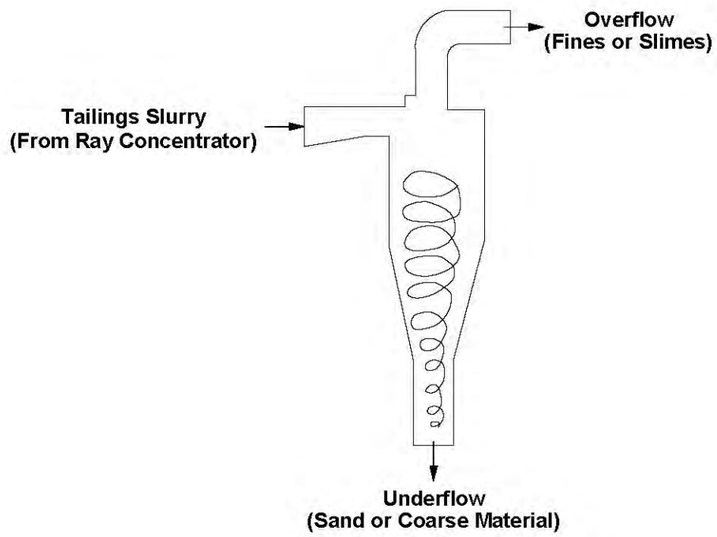
N

0 60 120 240
APPROXIMATE SCALE (FEET)

Disturbance of BLM Administered Land	
Arizona Trail Right-of-Way	3 Acres
Pipeline Corridor Right-of-Way	6 Acres

Figure 8
BLM Administered Lands - Pipelines and Arizona Trail





Cyclone Schematic

Figure 9
Centerline Tailings Embankment Construction

A

Preparation of Next Lift







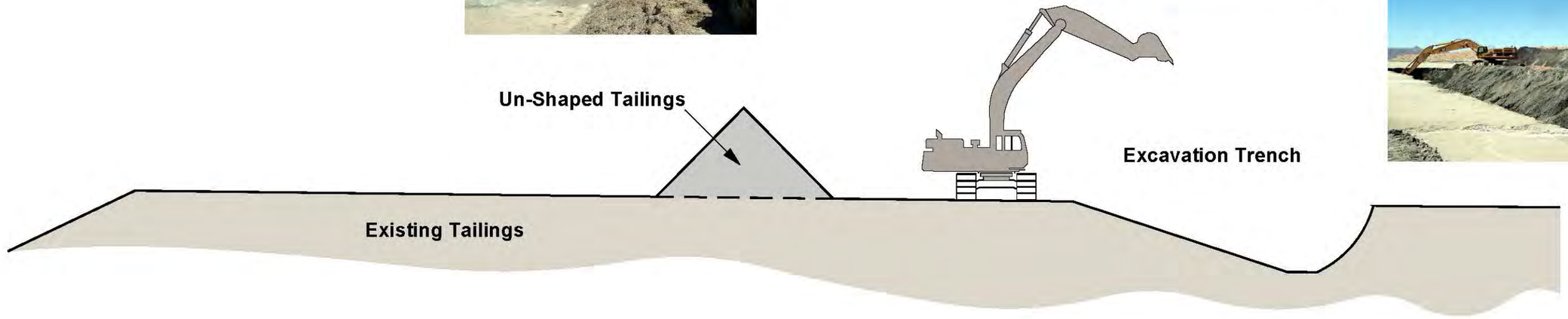


Figure 10
Upstream Tailings Embankment Construction
(sheet 1 of 4)

B

Embankment Grading to 2H : 1V Slope







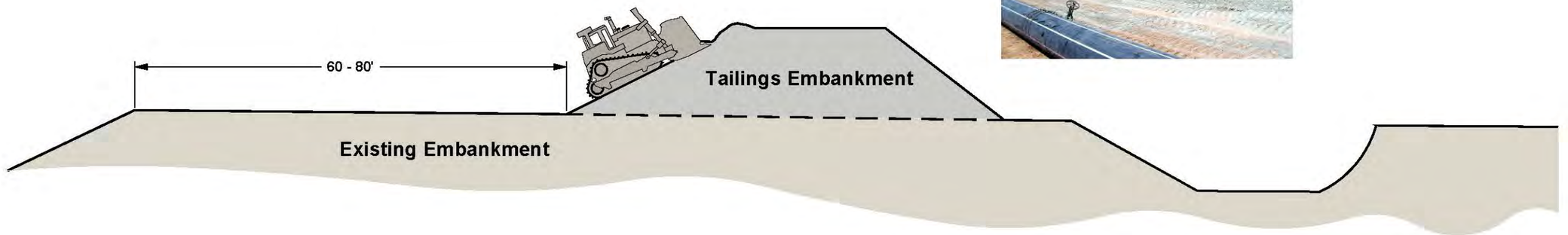


Figure 10
Upstream Tailings Embankment Construction
(sheet 2 of 4)

C

Placing of Main Pipeline & Distribution Pipes







Tailings Piping Preparation

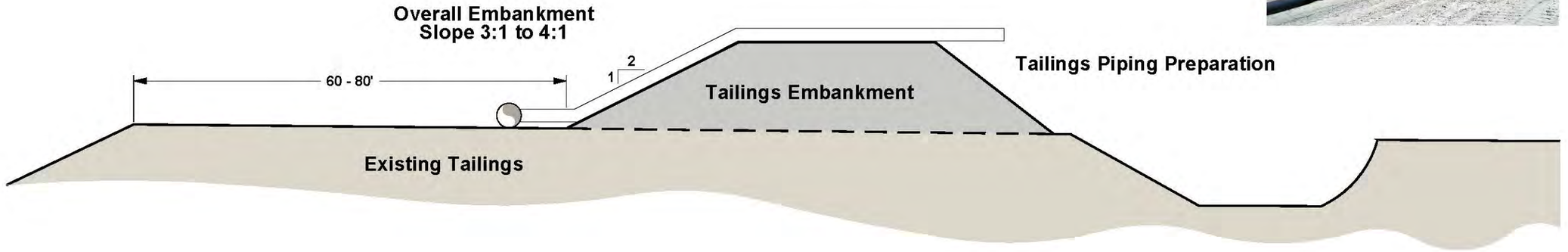


Figure 10
Upstream Tailings Embankment Construction
(sheet 3 of 4)

D

Delivering Tailings





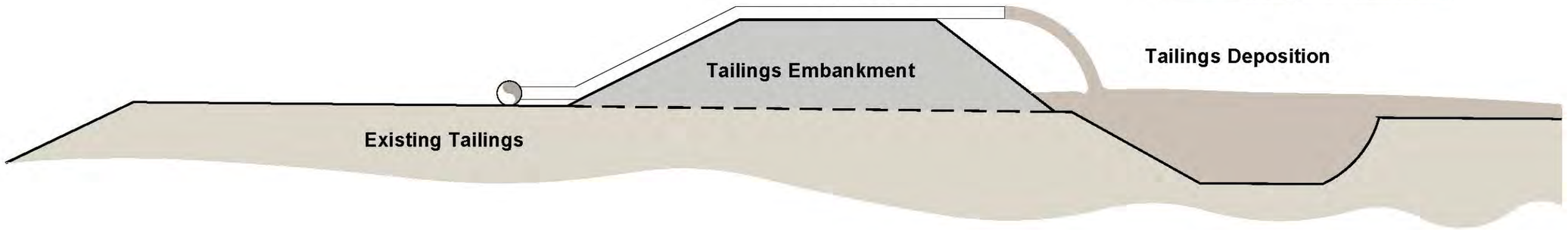


Figure 10
Upstream Tailings Embankment Construction
(sheet 4 of 4)



Tailings Spigots



Decant Pond and Pump

Note:

These photos taken at existing Elder Gulch TSF. These operational features would be the same for proposed Ripsey Wash and Hackberry Gulch TSF alternatives.

Figure 11
Tailings Facility Operation

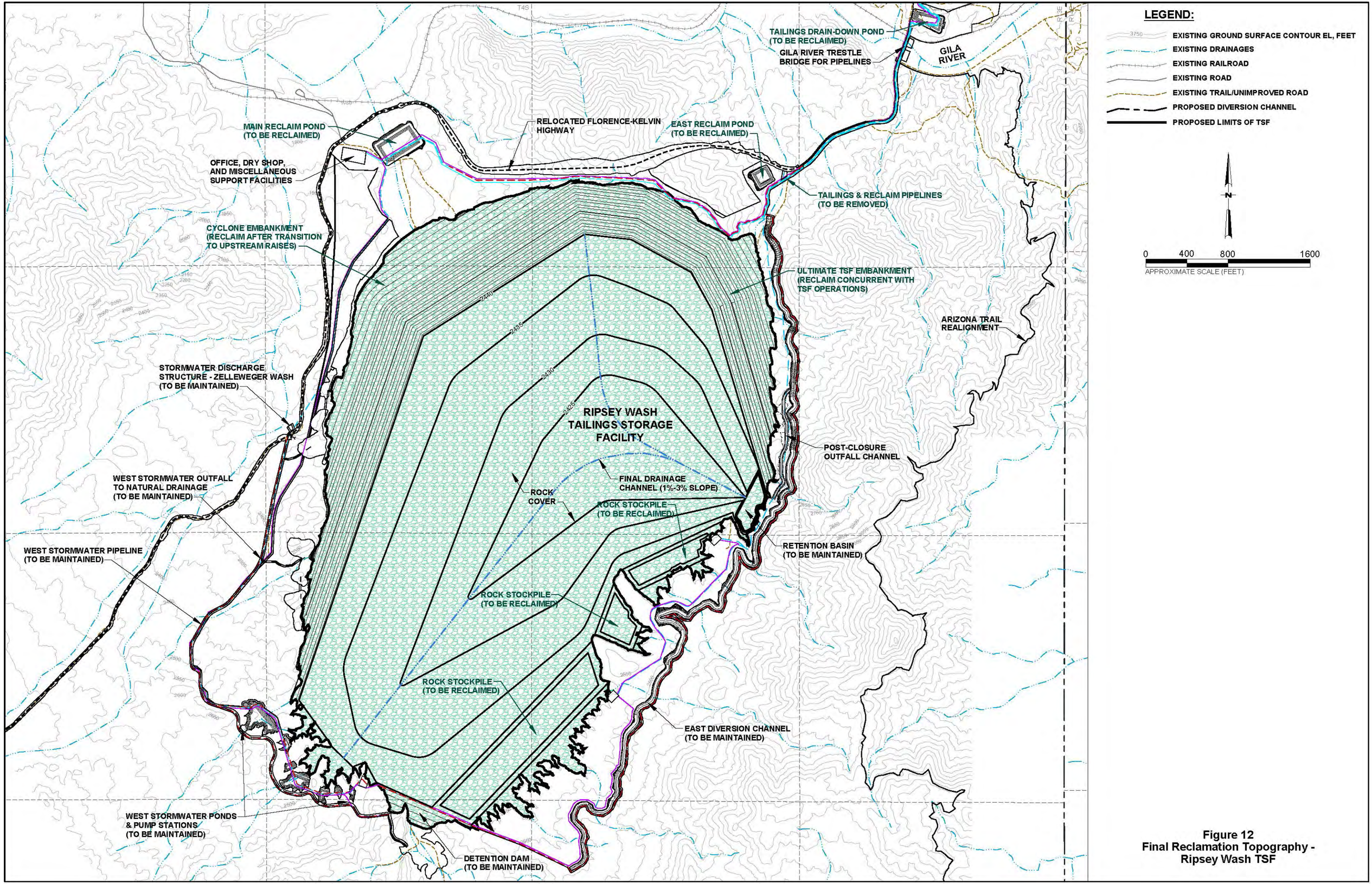
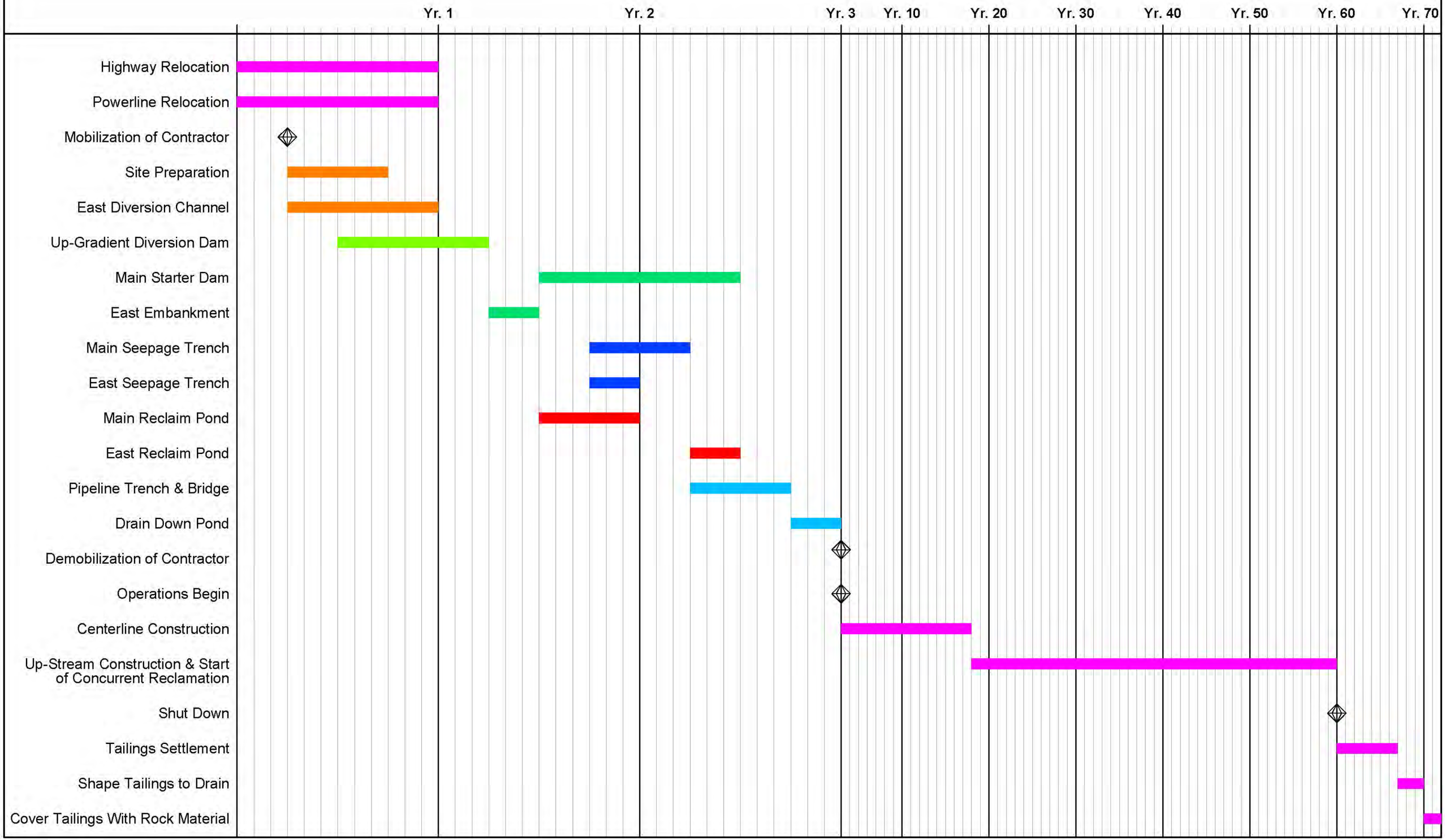


Figure 12
Final Reclamation Topography - Ripsey Wash TSF

Figure 13
Tenative Construction, Operation & Closure Schedule -
Ripsey Wash TSF



R.13 E.

R.14 E.

T.3 S.

T.4 S.

EXISTING RAY CONCENTRATOR

EXISTING PROCESS WATER TANKS

EXISTING WATER TANK 34

EXISTING RAY MINE

EXISTING TAILINGS THICKENER

EXISTING PUMP STATION

EXISTING COPPER BASIN RAILROAD

EXISTING SAN CARLOS IRRIGATION PROJECT 69kV ELECTRIC LINE

HACKBERRY GULCH TAILINGS STORAGE FACILITY ALTERNATIVE

Kelvin

Riverside

Mineral Creek

Belgravia Wash

Hackberry Gulch

Mane Springs Canyon

Gila River

State Route 177

36

31

1

6

9

PROPOSED FACILITIES

(Hackberry Gulch TSF Alternative)

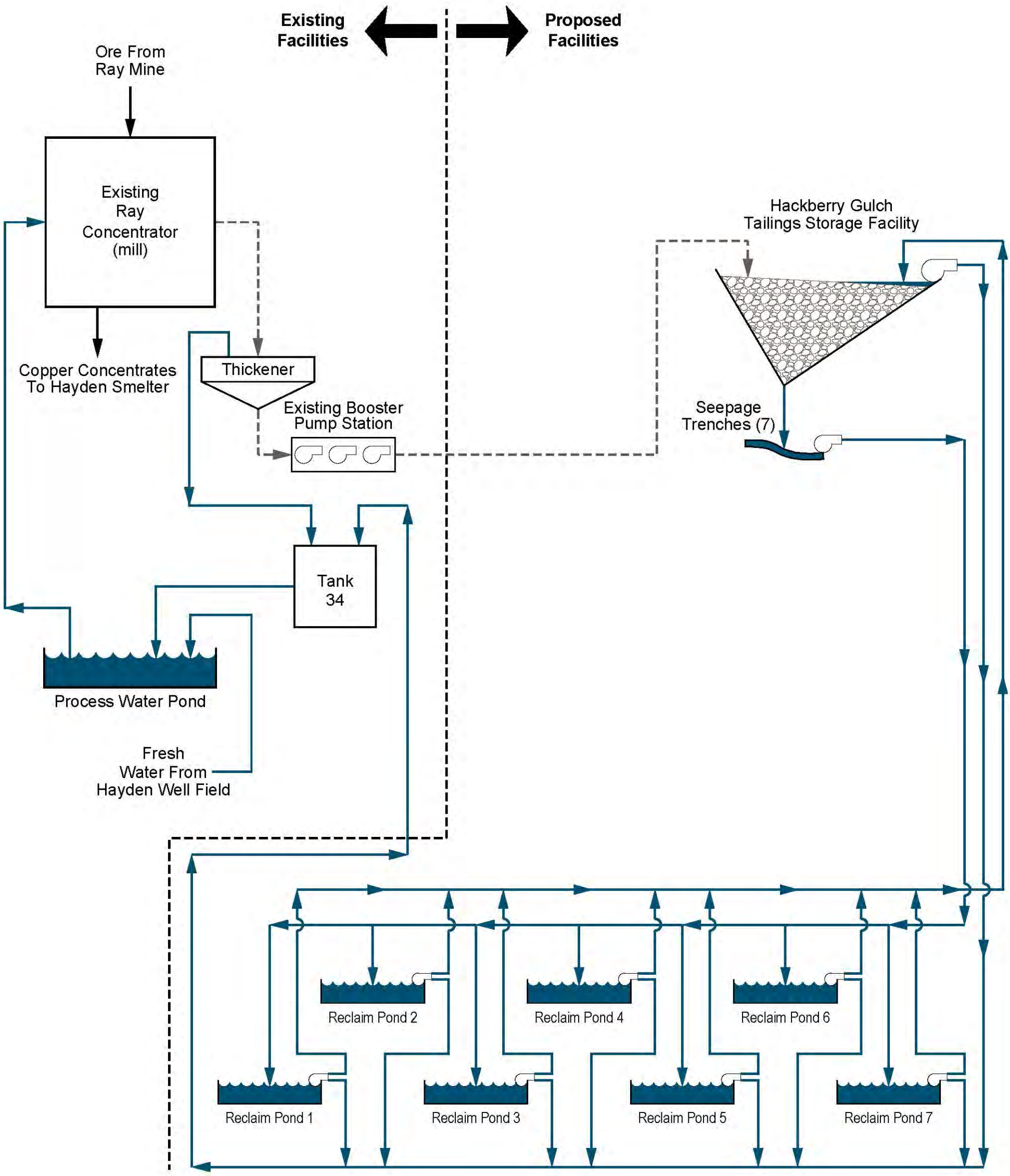
1. Tailings Delivery and Return Water Pipelines
2. Pumping Booster Station and Existing Electric Switchgear and Laydown Area
3. Tailings Drain Down Pond
4. New Bridge/Culvert Systen for Belgravia Wash - State Route 177
5. Seepage Trenches
6. Reclaim (Seepage) Ponds
7. Perimeter Service/Access Road and Electrical Distribution Line/Return Water Pipeline
8. Hackberry Gulch Tailings Embankment
9. Hackberry Gulch Tailings Storage Facility
10. Energy Dissipator/Destilling Pond
11. Piping for Diverted Water Captured in Stormwater Ponds
12. Upgradient Detention Dams
13. Main Upper Diversion Channels
14. Potential Borrow Areas

N

0 300 600

SCALE IN FEET

Figure 14
Site Plan Layout -
Hackberry Gulch TSF



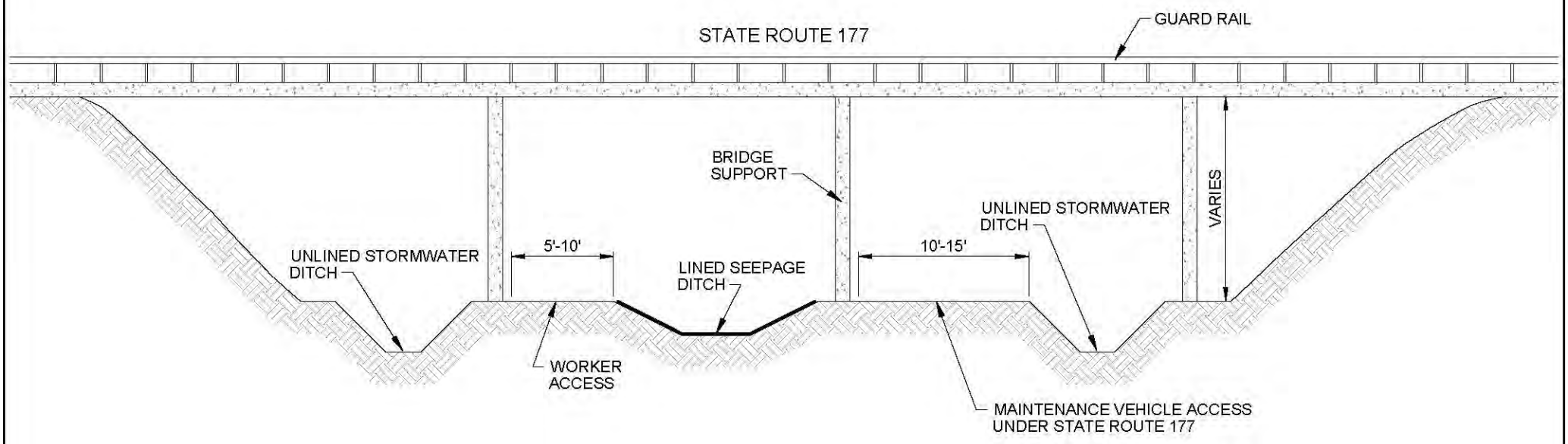
LEGEND

- - - - - - Tailings Delivery Pipelines

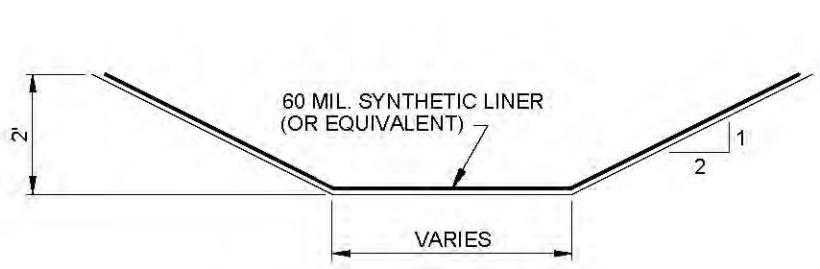
——— Return Water Pipelines

Note: See Figure 14, Site Plan Layout Hackberry Gulch TSF.

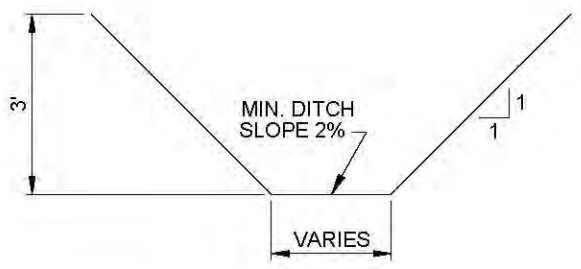
Figure 15
Process Flow Sheet - Hackberry Gulch TSF



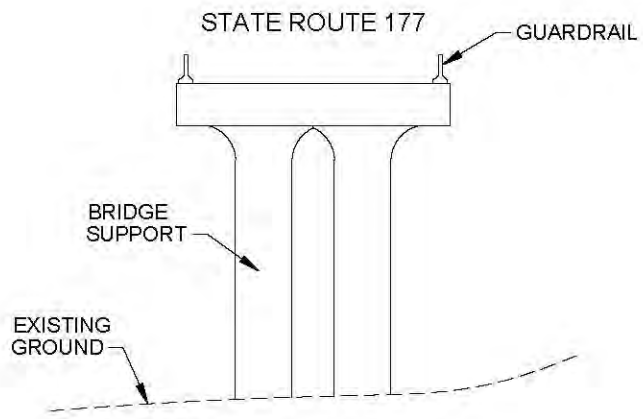
OVERPASS BRIDGE SECTION
(NOT TO SCALE)



LINED SEEPAGE DITCH DETAIL - TYPICAL
(NOT TO SCALE)



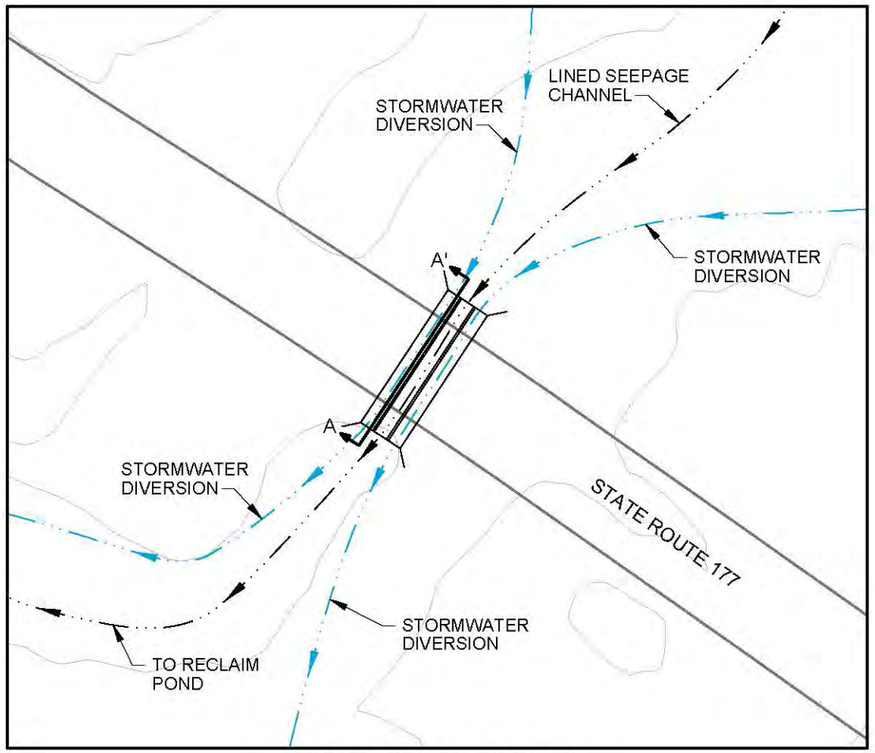
STORMWATER DITCH DETAIL - TYPICAL
(NOT TO SCALE)



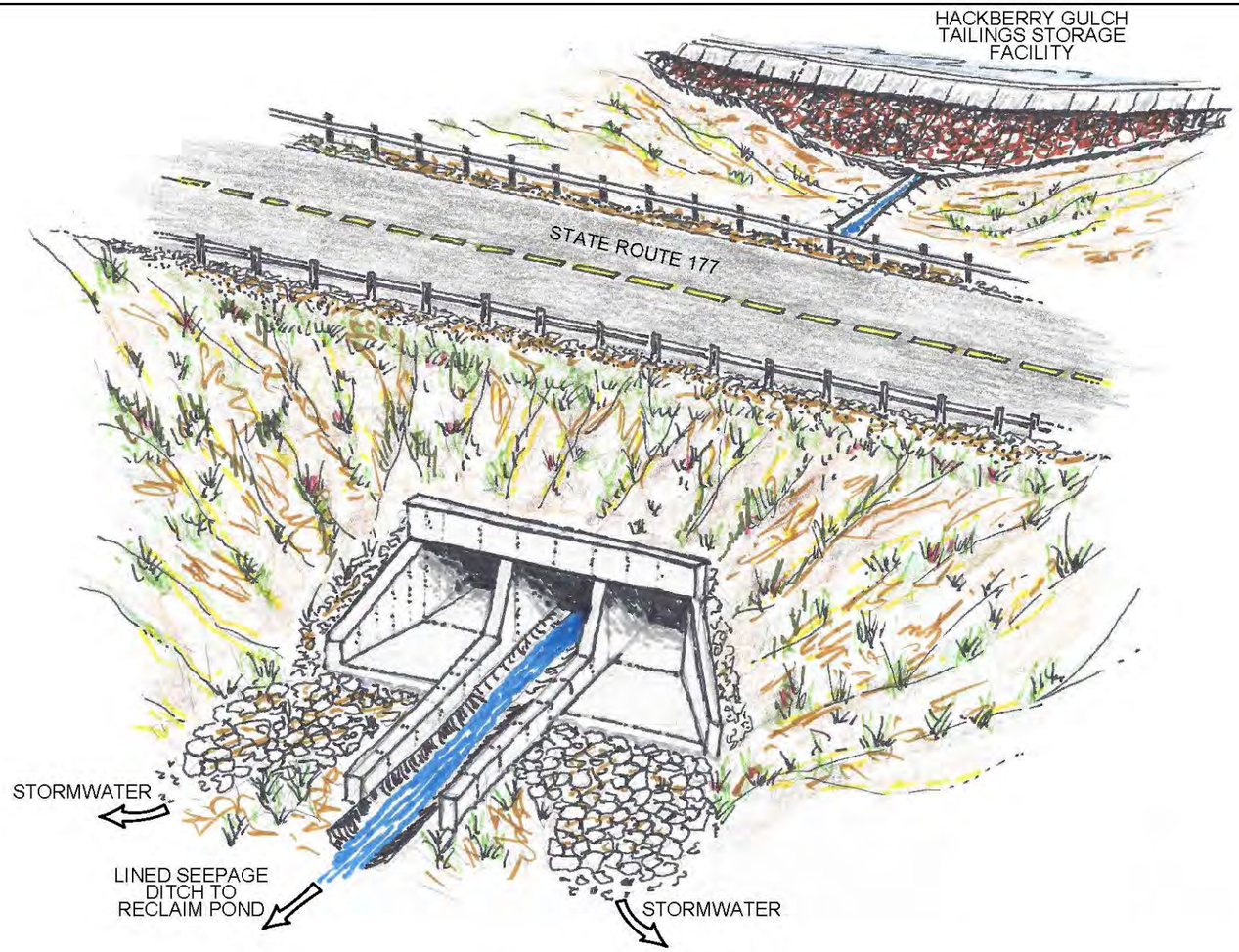
BRIDGE SUPPORT DETAIL
(NOT TO SCALE)

NOTE:
CONSTRUCTION DESIGN WILL CONFORM TO ADOT SPECIFICATIONS.

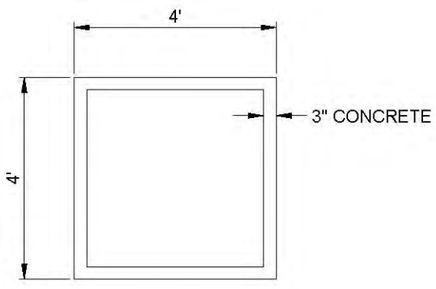
Figure 16
Typical State Route 177 Overpass Bridge - Hackberry Gulch TSF



BOX CULVERT PLAN VIEW
(Not To Scale)

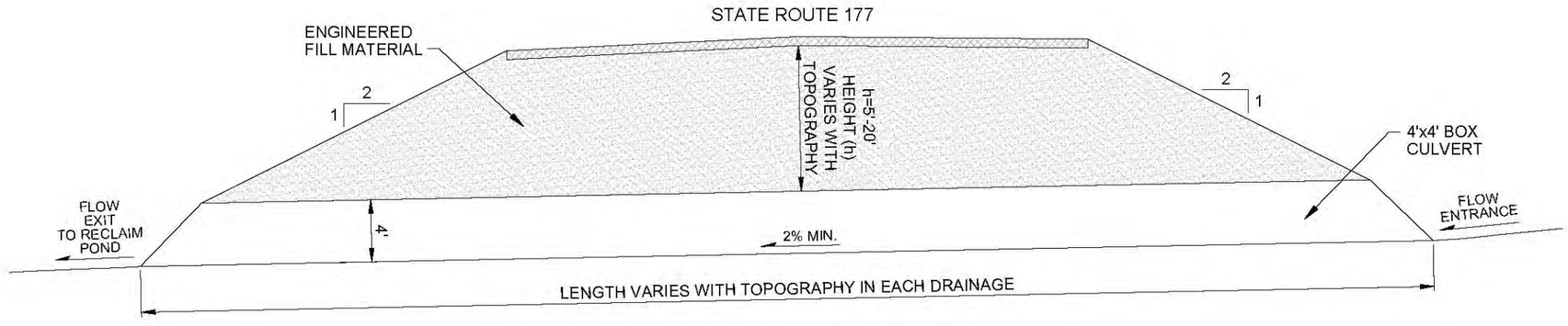


BOX CULVERT SKETCH
(Not To Scale)



BOX CULVERT SECTION
(Not To Scale)

NOTE:
BOX CULVERT DESIGN WILL CONFORM TO ADOT SPECIFICATIONS.



BOX CULVERT SECTION A-A' - TYPICAL
(Not To Scale)

Figure 17
Conceptual State Route 177 Box Culverts - Hackberry Gulch TSF

LEGEND:

- EXISTING GROUND SURFACE CONTOUR EL, FEET
- EXISTING DRAINAGES
- EXISTING RAILROAD
- EXISTING ROAD
- EXISTING TRAIL/UNIMPROVED ROAD
- PROPOSED DIVERSION CHANNEL
- PROPOSED LIMITS OF TSF

N

0 400 800 1600

APPROXIMATE SCALE (FEET)

DRAIN DOWN POND

EXISTING RAY MINE

DETENTION BASIN (TO BE MAINTAINED)

NORTH DIVERSION (TO BE MAINTAINED)

STORMWATER POND #1 (TO BE RECLAIMED)

NORTHWEST DIVERSION CHANNEL (TO BE MAINTAINED)

STORMWATER POND #2 (TO BE RECLAIMED)

BORROW AREA #1 (TO BE RECLAIMED)

STORMWATER POND #3 (TO BE RECLAIMED)

BORROW AREA #2 (TO BE RECLAIMED)

FINAL DRAINAGE CHANNEL (1%-3% SLOPE)

ROCK COVER

HACKBERRY GULCH TAILINGS STORAGE FACILITY

STAGING AREA

DETENTION POND AND ENERGY DISSIPATOR (TO BE MAINTAINED)

STORMWATER POND #4 (TO BE MAINTAINED)

PUMP STATION

STORMWATER POND #5 (TO BE MAINTAINED)

PUMP STATION

STORMWATER POND #6 (TO BE MAINTAINED)

PUMP STATION

PUMP STATION

STORMWATER POND #7 (TO BE MAINTAINED)

BORROW AREA #3 (TO BE RECLAIMED)

PUMP STATION

STORMWATER POND #8 (TO BE MAINTAINED)

STORMWATER POND #9 (TO BE MAINTAINED)

PUMP STATION

STORMWATER PIPELINE (TO BE MAINTAINED)

RECLAIM (SEEPAGE) POND #1 (TO BE RECLAIMED)

STILLING BASIN (TO BE MAINTAINED)

ACCESS BRIDGE

RECLAIM (SEEPAGE) POND #2 (TO BE RECLAIMED)

RIVERSIDE

RECLAIM (SEEPAGE) POND #3 (TO BE RECLAIMED)

RECLAIM (SEEPAGE) POND #4 (TO BE RECLAIMED)

RECLAIM (SEEPAGE) POND #5 (TO BE RECLAIMED)

RECLAIM (SEEPAGE) POND #6 (TO BE RECLAIMED)

ULTIMATE TSF EMBANKMENT (RECLAIM CONCURRENT WITH TSF OPERATIONS)

RECLAIM (SEEPAGE) POND #7 (TO BE RECLAIMED)

STORMWATER DISCHARGE APRON (TO BE MAINTAINED)

State Route 177

GILA RIVER

GILA RIVER

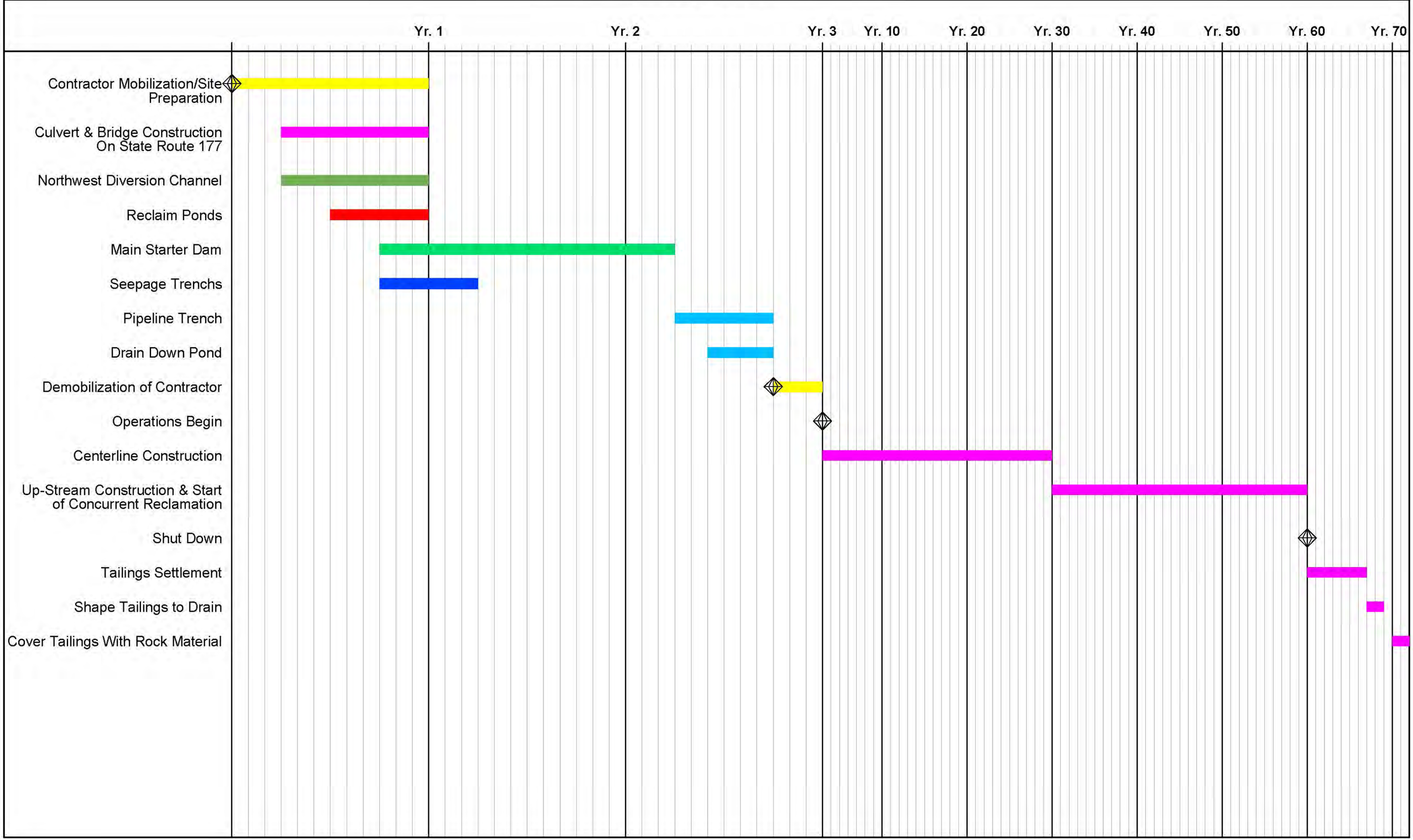
3H:1V

3H:1V

3H:1V

Figure 18
Final Reclamation Topography - Hackberry Gulch TSF

Figure 19
Tenative Construction, Operation & Closure Schedule -
Hackberry Gulch TSF



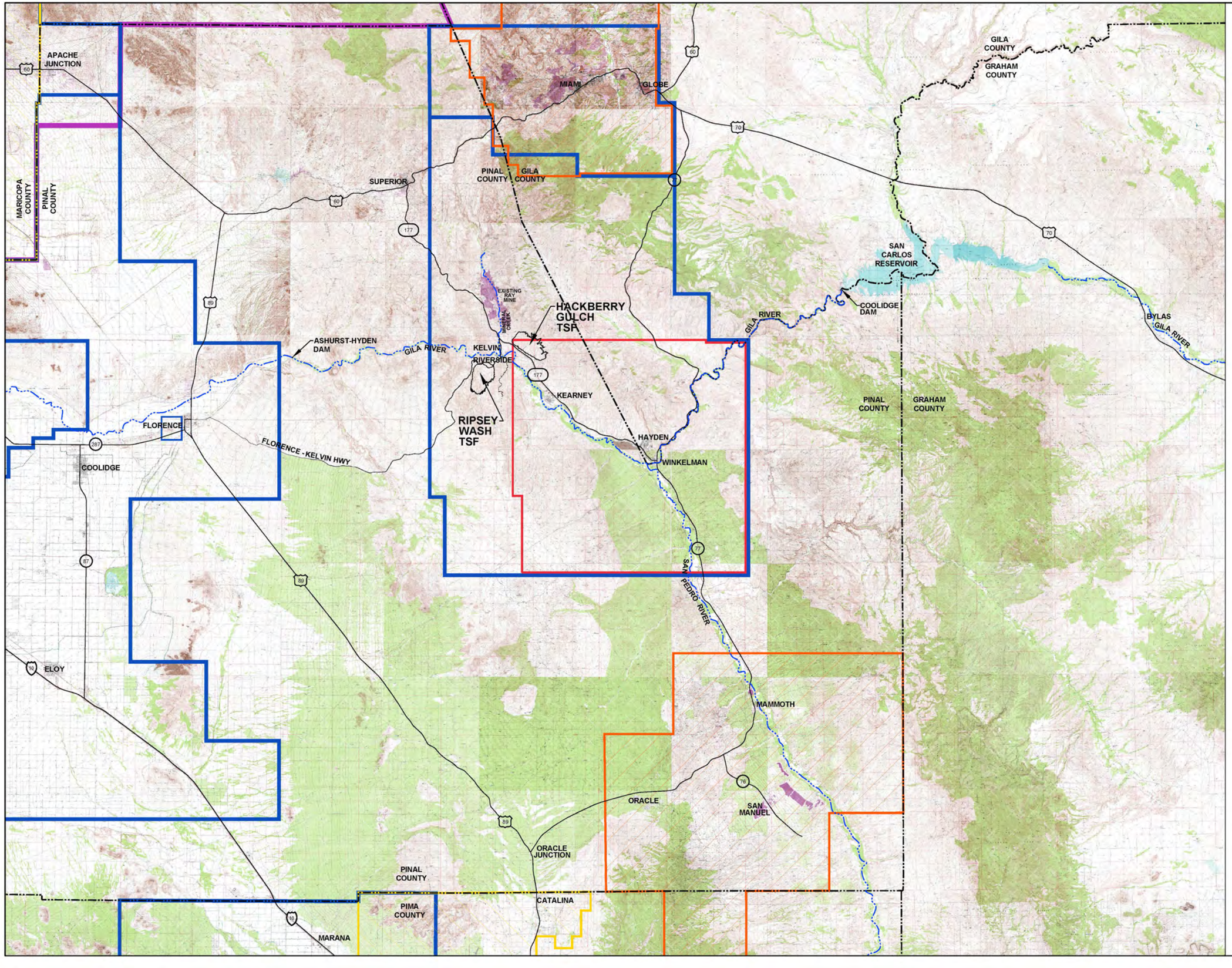
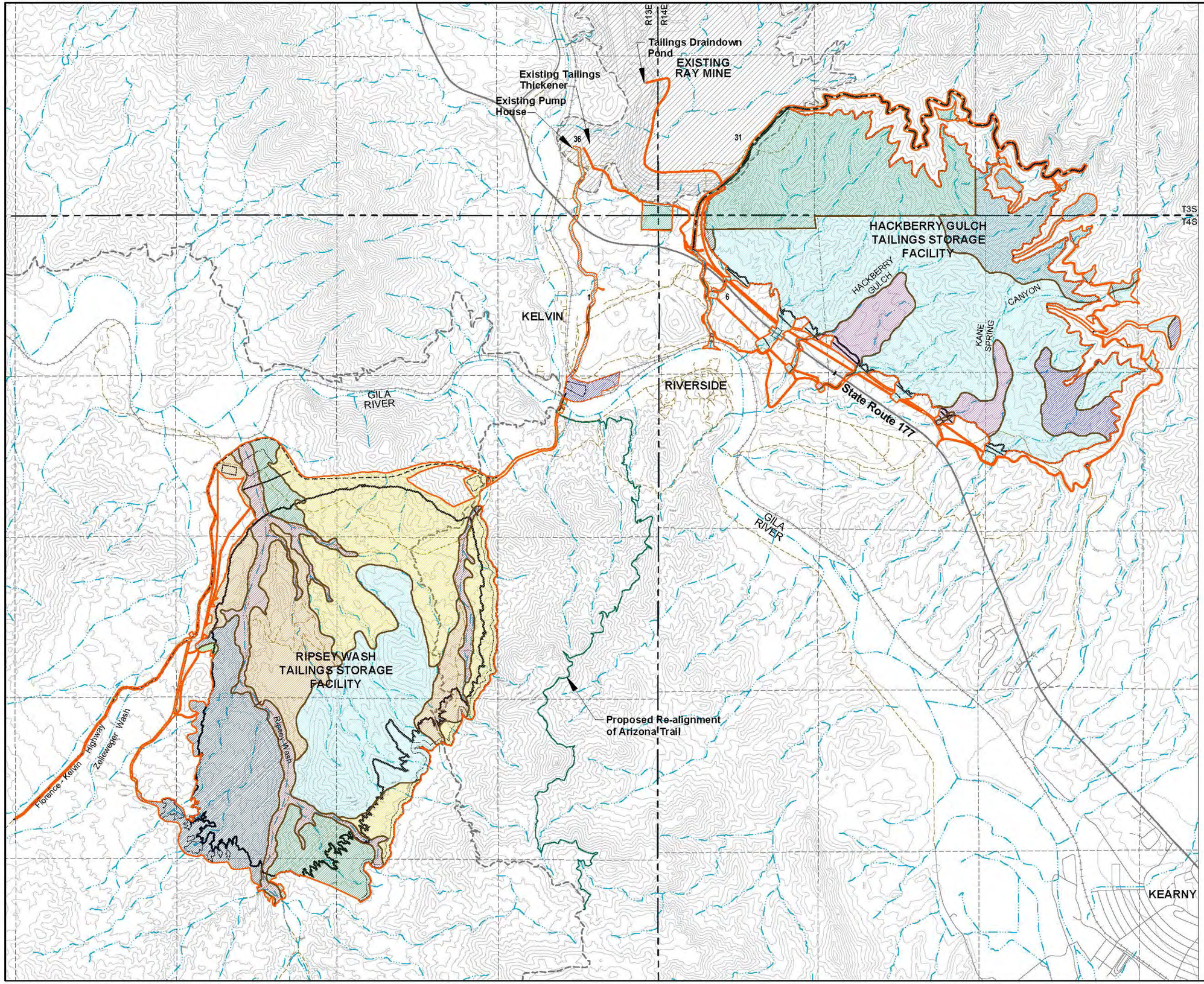


Figure 20
Air Quality Zones Map



LEGEND:

- EXISTING GROUND SURFACE CONTOUR EL, FEET (3750)
- EXISTING DRAINAGES
- EXISTING RAILROAD
- EXISTING ROAD
- EXISTING TRAIL/UNIMPROVED ROAD
- PROPOSED DIVERSION CHANNEL
- SOILS DISTURBED BY PROJECT
- ARIZONA TRAIL REALIGNMENT SURFACE DISTURBANCE

DISTURBED AREA RIPSEY WASH TSF SOILS

MAP UNIT	AREA
9	205 Acres
15	409 Acres
16	2 Acres
17	22 Acres
28	7 Acres
40	751 Acres
48	536 Acres
52	3 Acres
78	247 Acres
79	1 Acres
92	24 Acres
96	428 Acres
101	1 Acres

DISTURBED AREA HACKBERRY GULCH TSF SOILS

MAP UNIT	AREA
15	28 Acres
27	253 Acres
28	779 Acres
48	772 Acres
55	319 Acres
78	3 Acres
92	132 Acres
101	4 Acres

N

0 750 1500 3000

APPROXIMATE SCALE (FEET)

Figure 21
Soils Map

LEGEND:

- PROPOSED RIPSEY WASH TSF FOOTPRINT
- EXISTING DRAINAGES
- EXISTING RAILROAD
- FAULT / FRACTURES
- PROPOSED DIVERSION CHANNEL
- PROPOSED RECLAIM PIPELINE
- PROPOSED ELECTRICAL LINE
- PROPOSED ACCESS ROADS
- ARIZONA TOWNSHIP AND RANGE LINES
- ARIZONA SECTION LINES
- EXPLORATION PIEZOMETER

EXPLANATION

Quaternary	Qal	ALLUVIAL DEPOSITIS IN WASHES
Quaternary	Qog	OLDER GRAVELS
Miocene	Truc	UPPER COBBLE CONGLOMERATE (UPPER MEMBER)
Miocene	Trt	MASSIVE TUFFACEOUS SANDSTONE (LOWER MEMBER)
Miocene	Ldp	DIKES OF LARAMIDE AGE; INCLUDE QUARTZ MONZONITE PROPHYRY DIKES AND SMALL MASSES; MONZONITE PORPHYRY DIKES; GRANODIORITE DIKES (63 M.Y.)
Miocene	Kt	TORTILLA QUARTS DIORITE (70.5 m.y.)
Miocene	Ydb	DIABASE SILLS AND DIKES INTRUDING Ygr
Miocene	Yrg	RUIN GRANITE; INCLUDES APLITE PORPHYRY AND APLITE DIKES INTRUDING Ygr

N

0 400 800 1600

APPROXIMATE SCALE (FEET)

References:
Geology: Provide by AMEC Foster Wheeler.

Note: Section A-A' shown on Figure 23 (Schematic Geologic Cross-Section)

R13E

T4S

KELVIN

Florence - Kelvin Highway

TAILINGS DRAIN-DOWN POND

GILA RIVER

GILA RIVER TRESTLE BRIDGE FOR PIPELINES

GILA RIVER

MAIN RECLAIM POND

SEEPAGE TRENCH

RELOCATED FLORENCE-KELVIN HIGHWAY

EAST RECLAIM POND

A

A'

P-1 P-2 P-3 P-4 P-5 P-6 P-7 P-8

PROPOSED ARIZONA TRAIL REALIGNMENT

Zelleweger Wash

Florence - Kelvin Highway

HACKBERRY FAULT

RIPSEY FAULT

RIPSEY WASH TAILINGS STORAGE FACILITY

Ripsey Wash

EXISTING ARIZONA TRAIL ALIGNMENT

EAST DIVERSION CHANNEL

Figure 22
Geology - Ripsey Wash TSF

SOUTHWEST

A

NORTHEAST

A'

P-6

P-1

P-8

P-2

P-3

P-4

P-5

P-7

EXISTING GROUND SURFACE

EXISTING RIPSEY WASH CHANNEL

FLORENCE - KELVIN HWY

RIPSEY WASH PALEOCHANNEL

Qog
OLDER GRAVEL

Qal
ALLUVIUM

Ygr
RUIN GRANITE

ELEVATION (FT)

1980
1960
1940
1920
1900
1880
1860
1840
1820
1800
1780
1760
1740
1720
1700
1680
1660

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00

DISTANCE (FT)

5X VERTICAL EXAGGERATION

Source: AMEC 2014.

Note:
1. Vertical scale is exaggerated compared to the horizontal scale.
2. Cross-Section A-A' Location shown on Figure 22, Geology - Ripsey Wash TSF

Figure 23
Schematic Geologic Cross-Section - Ripsey Wash TSF

EXISTING RAY MINE

ELDER GULCH TSF

HACKBERRY GULCH TAILINGS STORAGE FACILITY

HACKBERRY GULCH

CANYON

KANE SPRING

State Route 177

RIVERSIDE

GILA RIVER

GILA RIVER

T3S

T4S

R13E

R14E

AMEC Fault Reconnaissance Area

LEGEND:

- PROPOSED HACKBERRY GULCH TSF FOOTPRINT
- EXISTING DRAINAGES
- EXISTING RAILROAD
- INFERRED FAULT
- PROPOSED ACCESS ROADS
- ARIZONA TOWNSHIP AND RANGE LINES
- ARIZONA SECTION LINES
- AMEC FAULT RECONNAISSANCE AREA: REFER TO APPENDIX B, CORPS 404(b)(1) (APPENDIX D)

EXPLANATION

Qal	Alluvium	Tblt	Lapilli tuff
Qt	Talus	Tbs	Sandstone and conglomerate
Qtr	Travertine	Kt	Tortilla Quartz Diorite
Qp	Pediment gravels	IPn	Naco Limestone
Qog	Older gravels	Me	Escabrosa Limestone
Tbl	Limestone conglomerate	Dm	Martin Limestone
Tbc	Conglomerate		

References:
Geology: Kearny Quadrangle Map, Cornwall and Krieger, 1975, USGS.
Sonora Quadrangle Map, Cornwall et al, 1971, USGS.

N

0 400 800 1600

APPROXIMATE SCALE (FEET)

Figure 24
Geology - Hackberry Gulch TSF



LEGEND:

- RIVERS
- COUNTY LINES
- HIGHWAYS
- IMPARIED WATERS
- ▲ USGS STREAM GAGE 09474000, GILA RIVER AT KELVIN, AZ

FEMA ZONE DEFINITIONS:

ZONE A - The flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

ZONE AE - The flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

N

0 5,000 10,000 20,000

APPROXIMATE SCALE (FEET)

Figure 25
Regional Surface Water

GILA RIVER
ADWR 3
UNNAMED WASH
Kelvin Stream Gage
GILA RIVER
RIVERSIDE
ADWR 6
EASTERN WASH
STOCK 3
ADWR 5
RIPSEY WASH TAILINGS STORAGE FACILITY
ZELLEWEGER WASH
STOCK 1
TANK 2
TANK 1
TANK 3
STOCK 2
ADWR 4
ADWR 2
SPRING
RIPSEY WASH
ADWR 1
36
31
T4S
T5S
ADWR 7
ADWR 9
ADWR 8
1
6
R13E
R14E
ADWR 10

LEGEND:

- 3750 EXISTING GROUND SURFACE CONTOUR EL, FEET
- PROPOSED RIPSEY WASH TSF BOUNDARY
- EXISTING DRAINAGES
- EXISTING RAILROAD
- EXISTING ROADS
- EXISTING TRAIL/UNIMPROVED ROADS
- ARIZONA TOWNSHIP AND RANGE LINES
- ARIZONA SECTION LINES
- DRAINAGE BASIN BOUNDARIES
- SURFACE WATER FEATURE

FEMA ZONE DEFINITIONS:

ZONE A - The flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

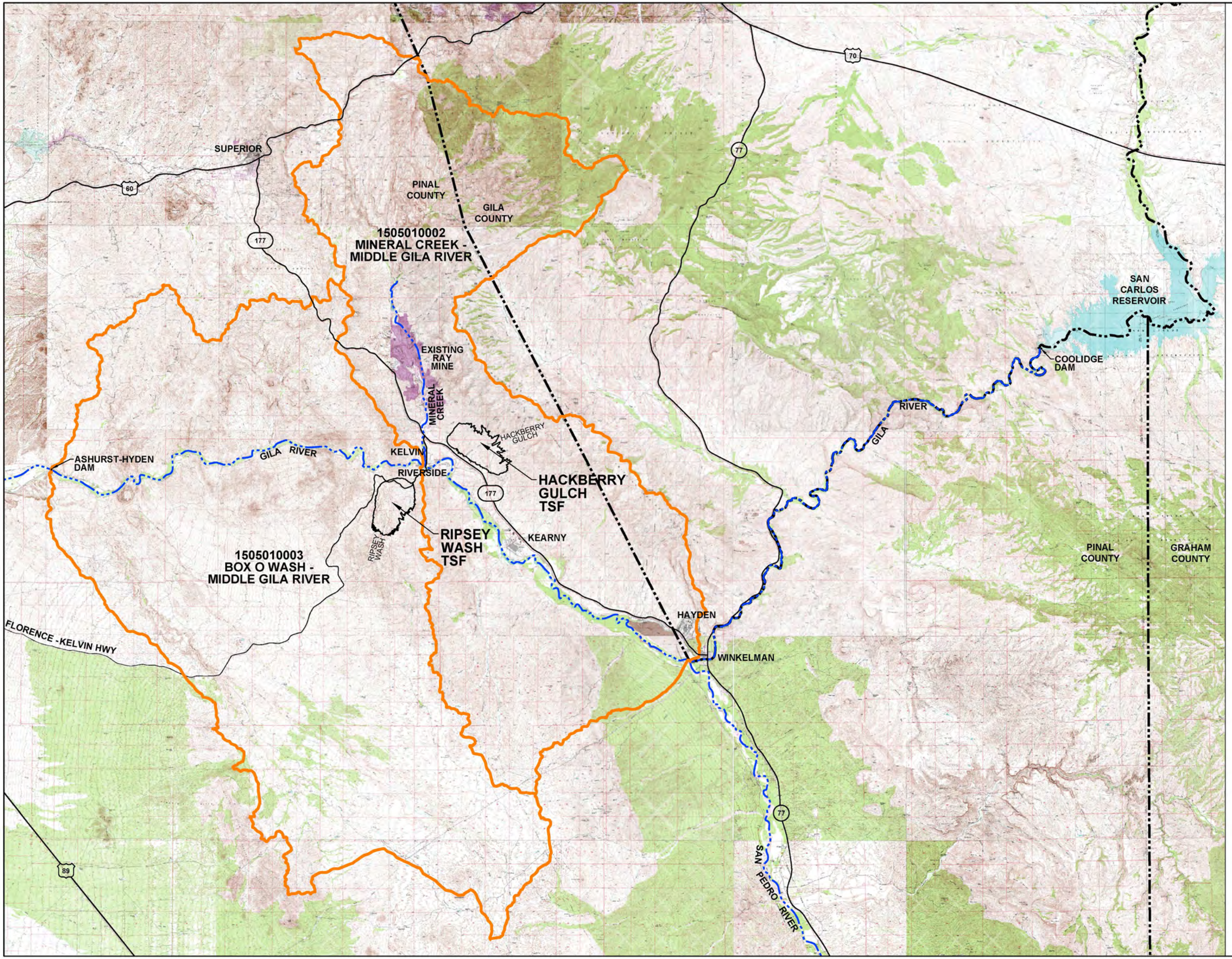
ZONE AE - The flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

N

0 600 1200 2400

APPROXIMATE SCALE (FEET)

Figure 26
Surface Water Features - Ripsey Wash TSF



LEGEND:

- RIVERS
- COUNTY LINES
- HIGHWAYS
- HYDROLOGIC UNIT BOUNDARIES

N

0 5,000 10,000 20,000

APPROXIMATE SCALE (FEET)

Figure 27
Hydrologic Unit Boundaries

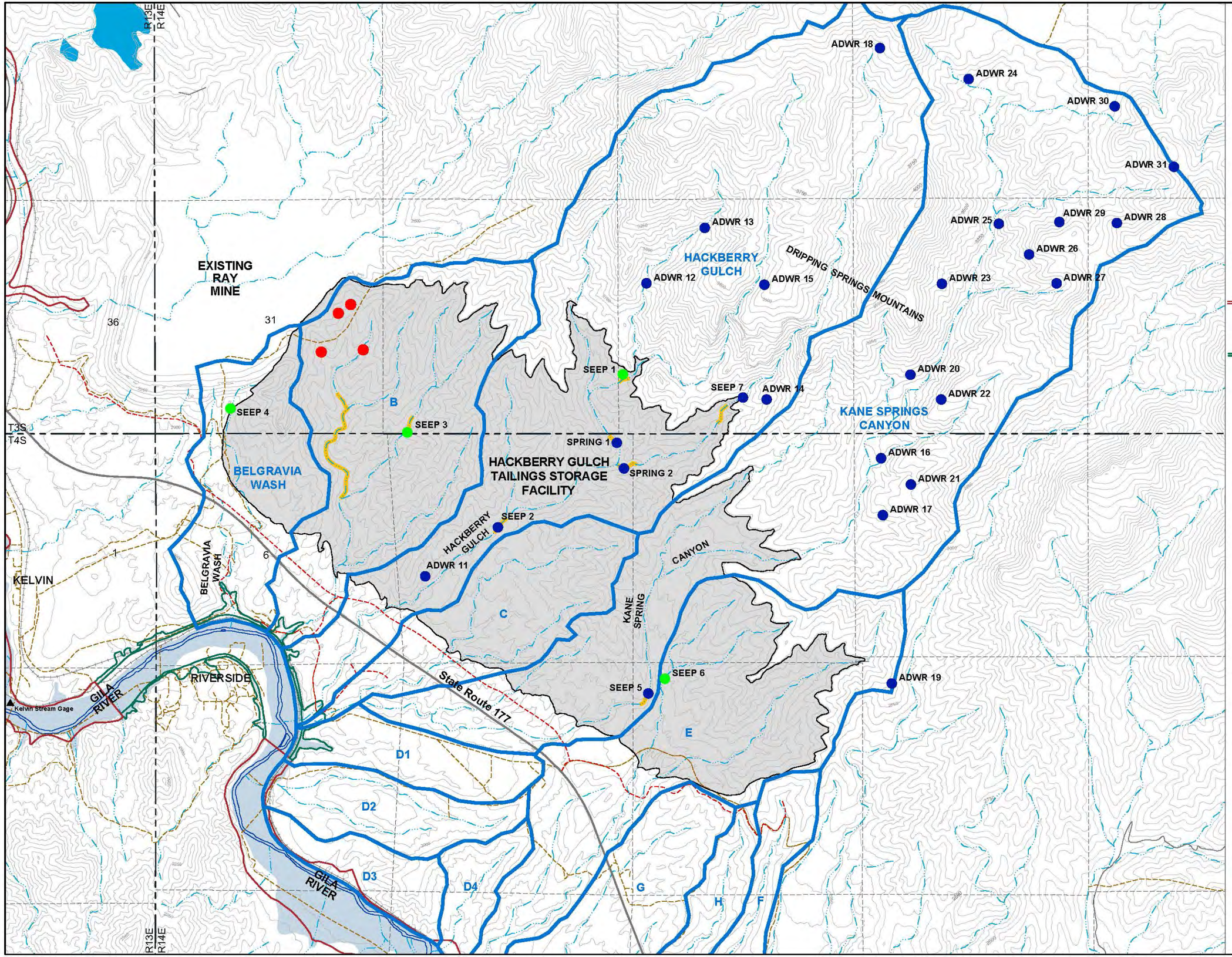
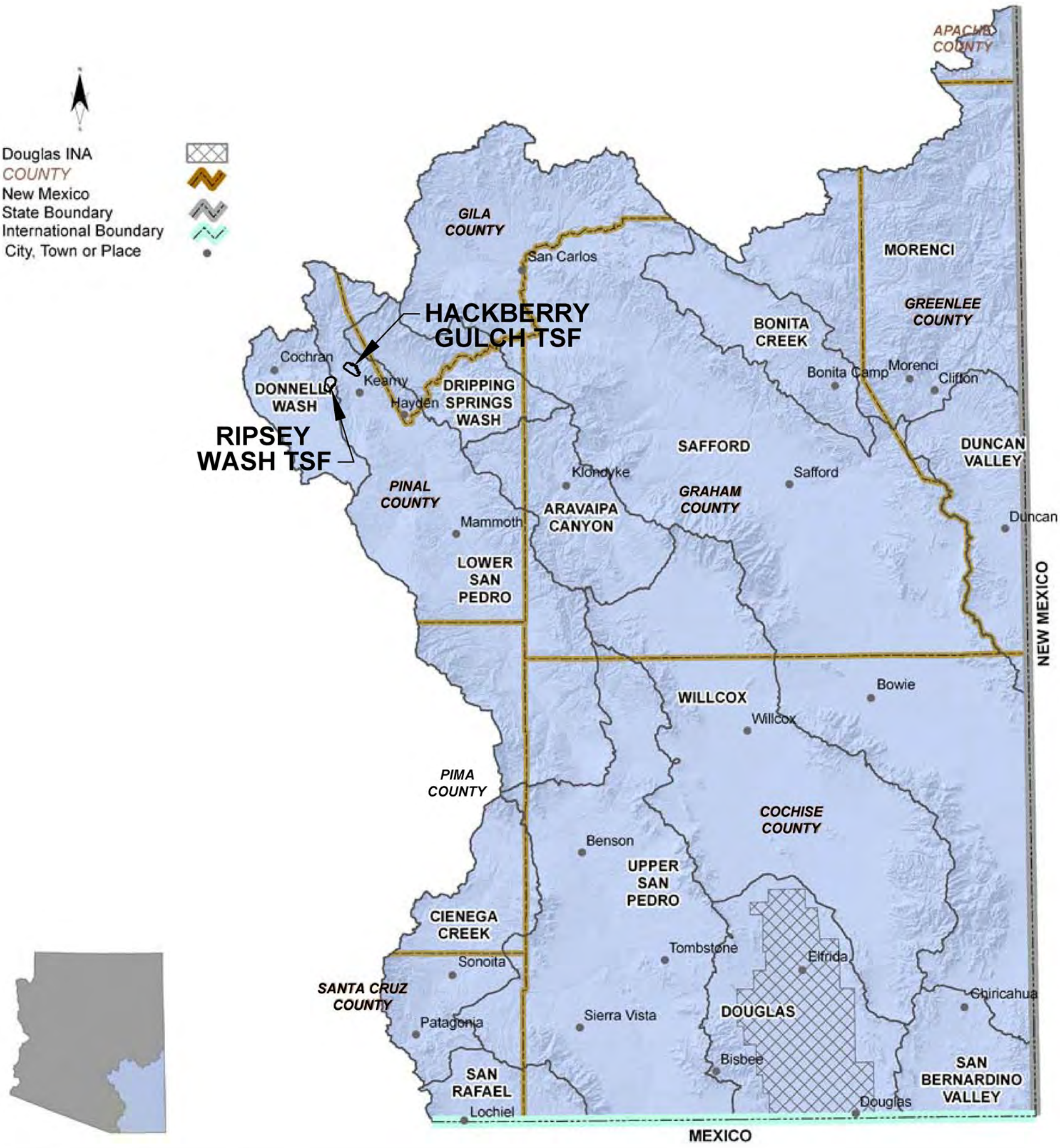


Figure 28
Site Drainages -
Hackberry Gulch TSF



Source:
Arizona Water Atlas, Volume 3, Section 3.

Figure 29
Groundwater Basins of the Southeastern Arizona Planning Area

LEGEND:

- EXISTING GROUND SURFACE CONTOUR ELEVATION (FEET)
- EXISTING DRAINAGES
- EXISTING RAILROAD
- EXISTING ROADS
- EXISTING TRAIL/UNIMPROVED ROADS
- ARIZONA TOWNSHIP AND RANGE LINES
- ARIZONA SECTION LINES
- GROUNDWATER CONTOUR
- FAULTS
- 0.5 MILE OFFSET BOUNDARY
- BEDROCK AQUIFER WELL
- PROPOSED COMPLIANCE MONITORING WELLS
- ALLUVIAL WELL
- EXPLORATION PIEZOMETER
- ADDITIONAL ASARCO WELLS
- WELLS NOT OWNED BY ASARCO

N

0 400 800 1600

APPROXIMATE SCALE (FEET)

R13E

36

1

T3S

T4S

State Route 177

Florence - Kelvin Highway

KELVIN

RW-17

RW-18

RW-13
RW-14
RW-15
RW-16

TAILINGS DRAIN-DOWN POND

RW-19

GILA RIVER

GILA RIVER TRESTLE BRIDGE FOR PIPELINES

RW-20
RW-21

MW-1A
Compliance Monitoring

RW-3

MW-1B
Compliance Monitoring

P-3
Investigation

P-7
Investigation

RW-12

RELOCATED FLORENCE-KELVIN HIGHWAY

P-8
Investigation

P-1
Investigation

P-5
Investigation

P-4
Investigation

RW-1

RW-6
RW-11

MW-1
Compliance Monitoring

P-2
Investigation

MW-9
Investigation

RW-5

P-6
Investigation

RW-4

P-16
Investigation

P-17
Investigation

MW-2
Compliance Monitoring

MW-2 (old)
Investigation

P-12
Investigation

P-19
Investigation

P-11
Investigation

P-18
Investigation

RW-8

RW-9

Florence - Kelvin Highway

MW-3
Compliance Monitoring

P-9
Investigation

P-10
Investigation

P-13
Investigation

P-14
Investigation

R-15
Investigation

RW-2

Average Groundwater Gradient:
0.035 ft/ft

General Direction:
350° Azimuth

MW-4
Investigation

PROPOSED ARIZONA TRAIL REALIGNMENT

RIPSEY WASH
TAILINGS STORAGE
FACILITY

Zelleweger Wash

MW-5
Investigation

Ripsey Wash

RW-10

MW-6
Investigation

Hackberry Fault

RW-7

MW-7
Investigation

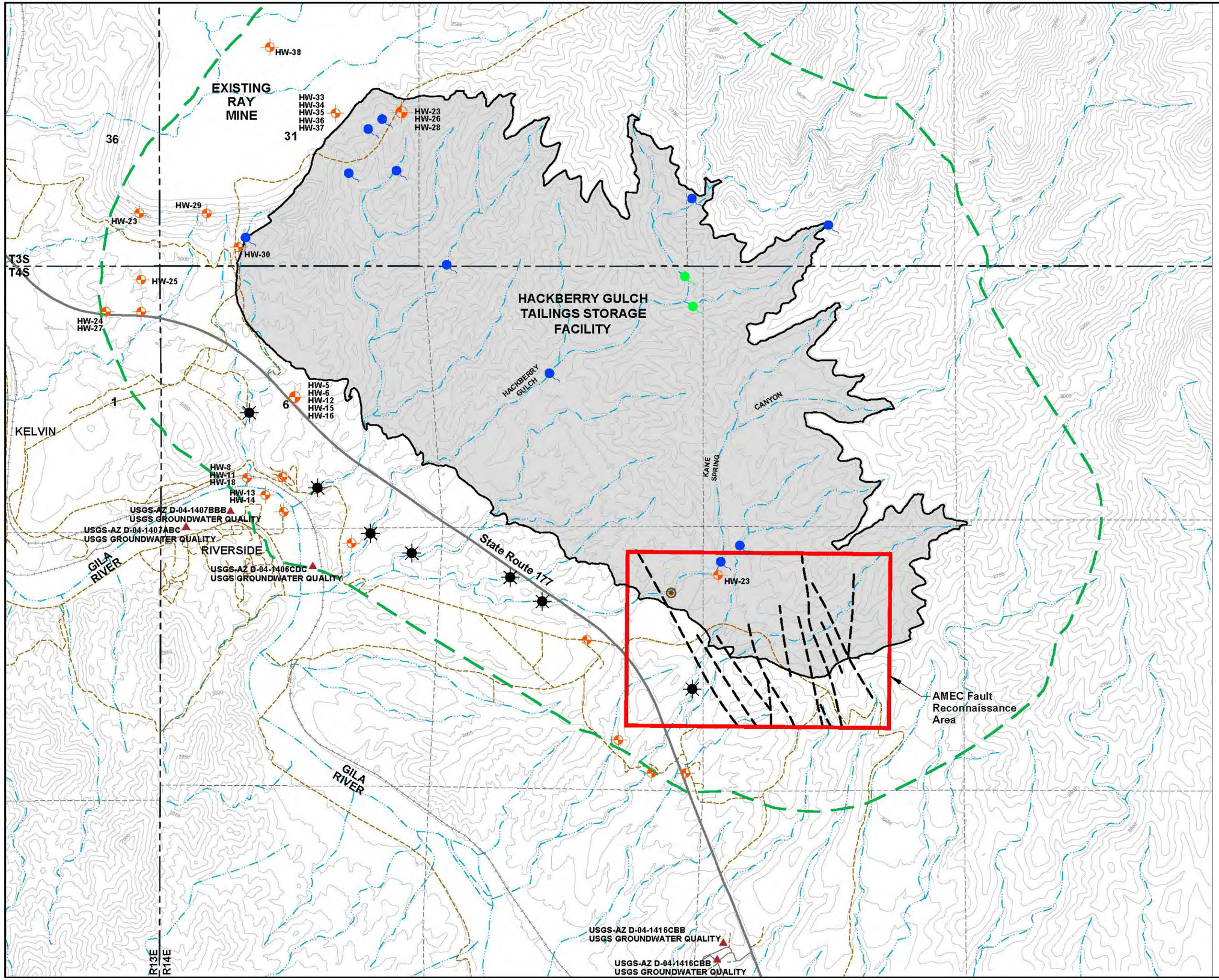
EAST DIVERSION CHANNEL

MW-8
Investigation

1750 1800 1850 1900 1950 2000 2050 2100 2150 2200 2250 2300 2350

Figure 30
Groundwater Hydrology -
Ripsey Wash TSF

RAY MINE TAILINGS STORAGE FACILITY
EIS FIGURES 31-59



LEGEND:

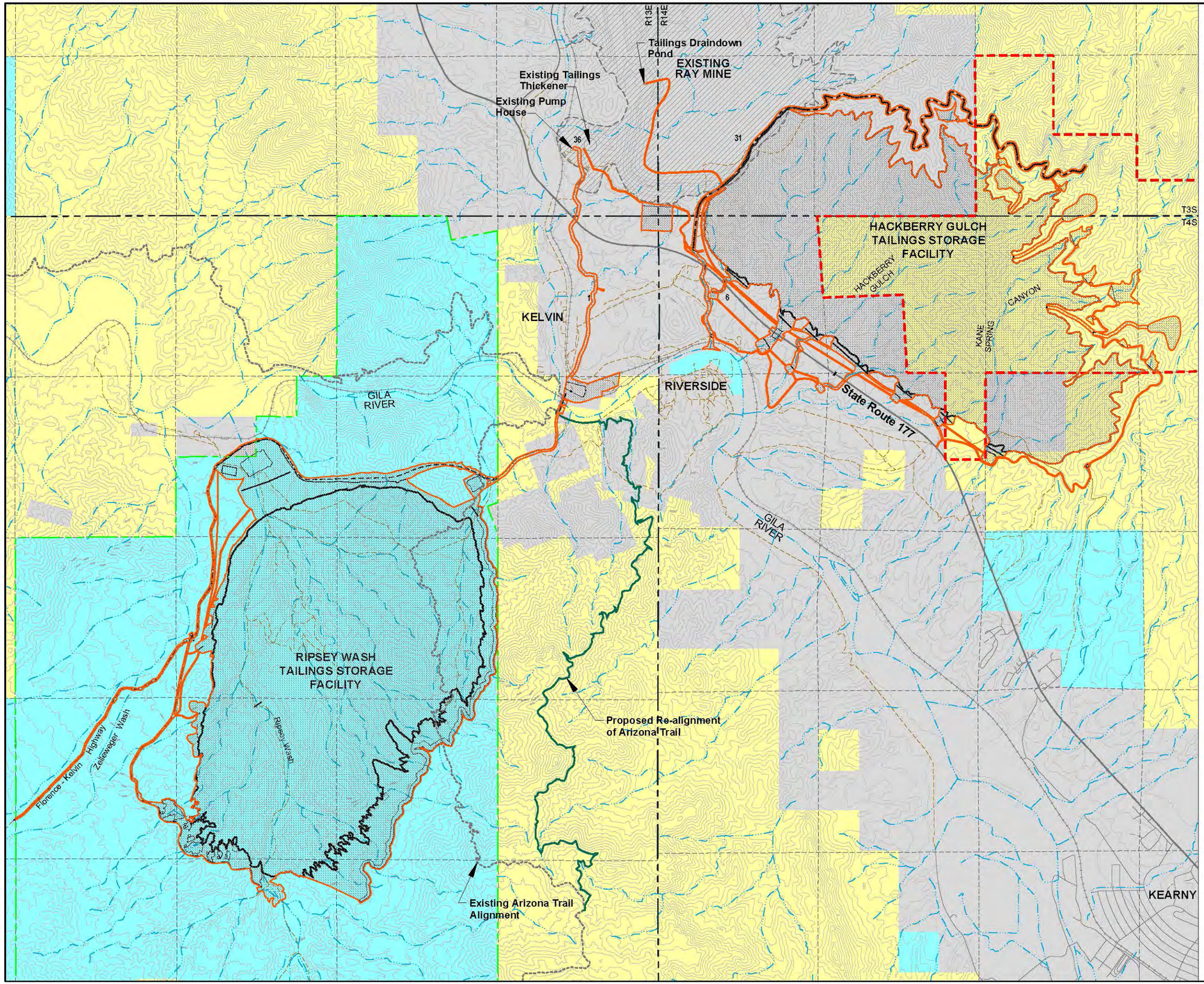
- EXISTING GROUND SURFACE CONTOUR EL, FEET
- EXISTING DRAINAGES
- EXISTING RAILROAD
- EXISTING ROADS
- EXISTING TRAIL/UNIMPROVED ROADS
- ARIZONA TOWNSHIP AND RANGE LINES
- ARIZONA SECTION LINES
- FAULTS
- 0.5 MILE OFFSET BOUNDARY
- SEEPS
- SPRINGS
- STOCK TANKS
- WELLS
- PROPOSED COMPLIANCE MONITORING WELLS
- USGS GROUNDWATER QUALITY WELLS
- AMEC FAULT RECONNAISSANCE AREA: REFER TO APPENDIX B, CORPS 404(b)(1) (APPENDIX D)

N

0 450 900 1800

APPROXIMATE SCALE (FEET)

Figure 31
Groundwater Hydrology - Hackberry Gulch TSF



LEGEND:

- EXISTING GROUND SURFACE CONTOUR EL, FEET
- EXISTING DRAINAGES
- EXISTING RAILROAD
- EXISTING ROAD
- EXISTING TRAIL/UNIMPROVED ROAD
- PROPOSED LIMITS OF SURFACE DISTURBANCE
- PROPOSED ARIZONA TRAIL REALIGNMENT DISTURBANCE
- ASARCO RAY / BLM LAND EXCHANGE PARCEL

Note: For additional information about the Asarco Ray / BLM land exchange see website www.blm.gov/az/st/en/fo/tucson_field_office.html

DISTURBED AREA RIPSEY WASH TSF LAND OWNERSHIP

- Lands Administered by Bureau of Land Management - 7 Acres
- Private Land - 55 Acres
- State Trust Land - 2,574 Acres

DISTURBED AREA HACKBERRY GULCH TSF LAND OWNERSHIP

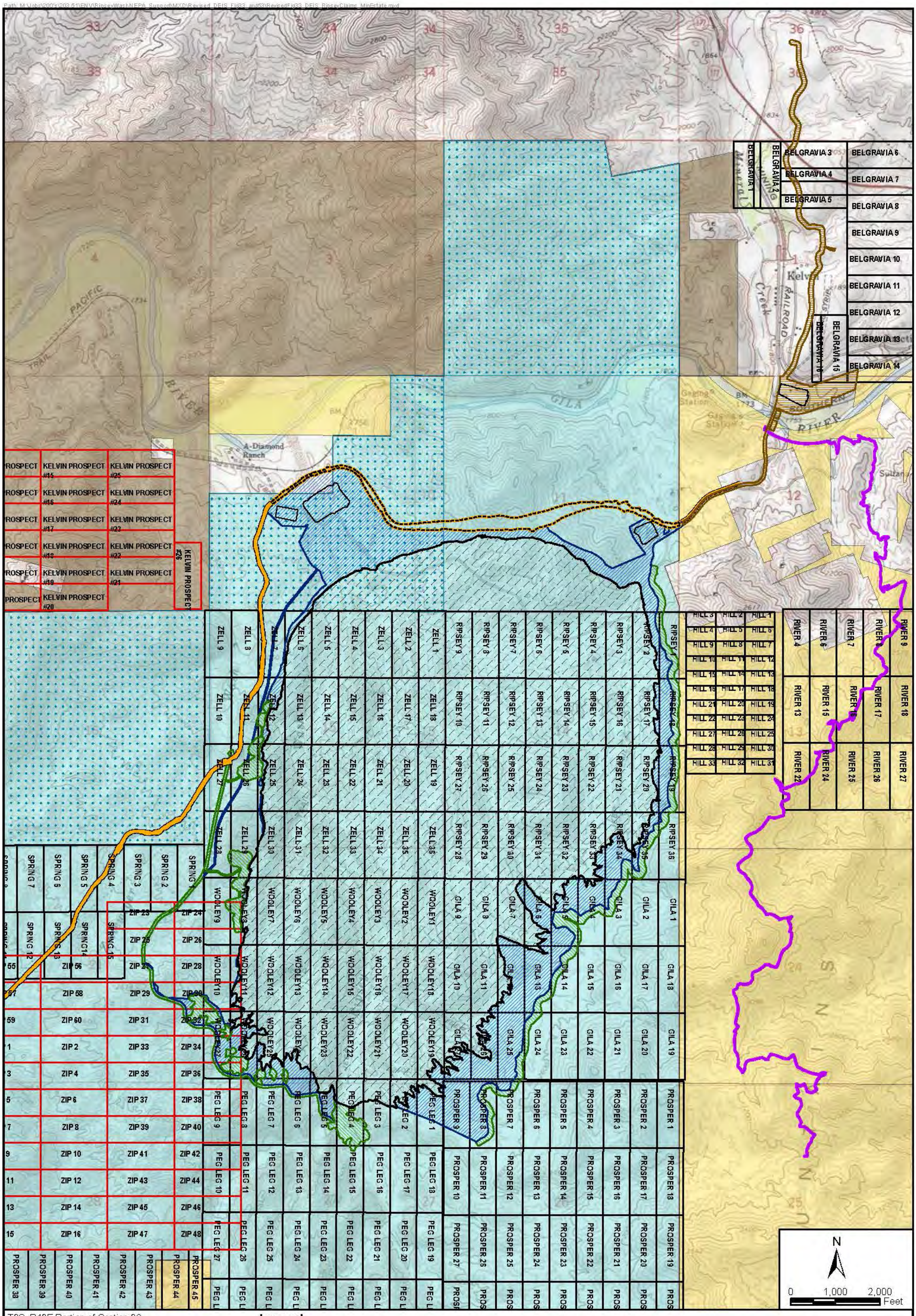
- Lands Administered by Bureau of Land Management - 1,149 Acres
- Private Land - 1,141 Acres

Note: This Ownership Map will change pending a potential sale of Arizona State Trust Lands and the BLM/Ray Land Exchange with Asarco.

0 750 1500 3000
APPROXIMATE SCALE (FEET)

Figure 32
Surface Ownership

Path: M:\Jobs\2009\209.511\ENV\RipseyWashNEPA_Support\MXD\Revised_DEIS_Fig33_and53\RevisedFig33_DEIS_RipseyClaims_MinEstate.mxd


BELGRAVIA 1
BELGRAVIA 2
BELGRAVIA 3
BELGRAVIA 4
BELGRAVIA 5
BELGRAVIA 6
BELGRAVIA 7
BELGRAVIA 8
BELGRAVIA 9
BELGRAVIA 10
BELGRAVIA 11
BELGRAVIA 12
BELGRAVIA 13
BELGRAVIA 14
BELGRAVIA 15
BELGRAVIA 16
KELVIN PROSPECT #15
KELVIN PROSPECT #25
KELVIN PROSPECT #16
KELVIN PROSPECT #24
KELVIN PROSPECT #17
KELVIN PROSPECT #23
KELVIN PROSPECT #18
KELVIN PROSPECT #22
KELVIN PROSPECT #19
KELVIN PROSPECT #21
KELVIN PROSPECT #20
KELVIN PROSPECT #26
RIVER 1
RIVER 2
RIVER 3
RIVER 4
RIVER 5
RIVER 6
RIVER 7
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PROSPER 17
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PROSPER 25
PROSPER 26
PROSPER 27
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PROSPER 38
PROSPER 39
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PROSPER 50
PROSPER 51
PROSPER 52
PROSPER 53
PROSPER 54
PROSPER 55
PROSPER 56
PROSPER 57
PROSPER

N

2,000 0 2,000 Feet

T3S, R13E Portion of Section 36,
T3S, R14E Portions of Sections 31-33,
T4S, R13E Portion of Section 1,
T4S, R14E Portions of Sections 3-10,
Pinal County, Arizona,
Hot Tamale Peak and Kearny USGS 7.5' Quadrangles

*Claim boundaries provided by ASARCO LLC
Surface Management provided by BLM

Legend

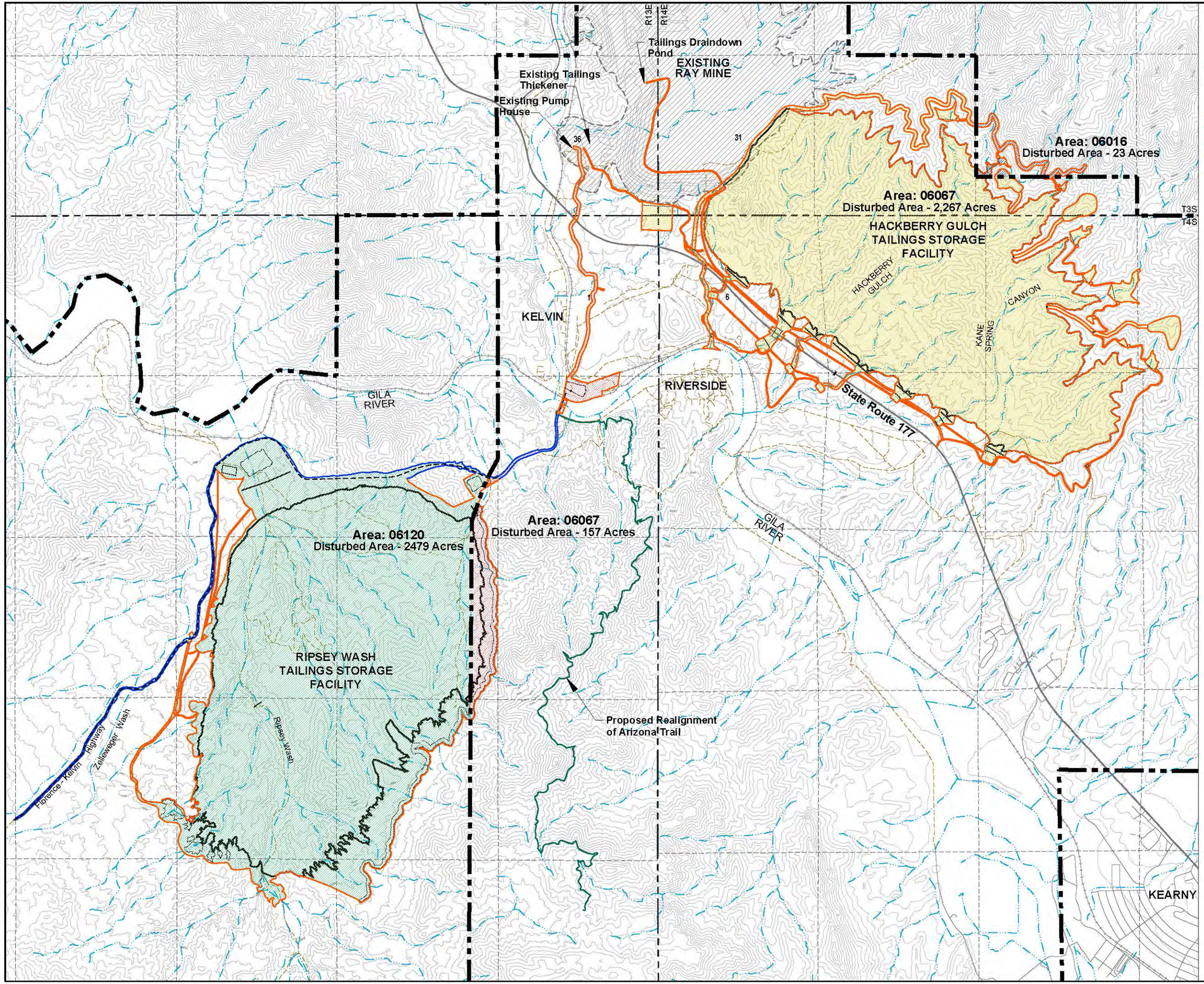
- (1) Tailings Storage Facility
- (2) Stormwater Diversion Infrastructure
- (3) Onsite TSF Infrastructure
- (4) Offsite TSF Infrastructure
- (5) Borrow Areas
- ASARCO Unpatented Claim Boundary
- Bureau of Land Management (BLM)
- Bureau of Reclamation Land
- Private Land (No Color)
- State Trust Land

NOTE: It is our understanding that BLM administers the lands identified as "Bureau of Reclamation Land" along the Gila River

Figure 34

HACKBERRY GULCH ALTERNATIVE
MINERAL ESTATE

October 30, 2015



LEGEND:

- EXISTING GROUND SURFACE CONTOUR EL, FEET
- EXISTING DRAINAGES
- EXISTING RAILROAD
- EXISTING ROAD
- EXISTING TRAIL/UNIMPROVED ROAD
- PROPOSED LIMITS OF SURFACE DISTURBANCE
- PROPOSED ARIZONA TRAIL REALIGNMENT DISTURBANCE
- PROPOSED FLORENCE - KELVIN HIGHWAY DISTURBANCE
- GRAZING ALLOTMENT BOUNDARIES

DISTURBED AREA
RIPSEY WASH TSF GRAZING ALLOTMENTS

MAP UNIT	AREA
06120	2,479 Acres
06067	157 Acres

DISTURBED AREA
HACKBERRY GULCH TSF GRAZING ALLOTMENTS

MAP UNIT	AREA
06067	2,267 Acres
06016	23 Acres

N

0 750 1500 3000

APPROXIMATE SCALE (FEET)

Figure 35
Grazing Allotments

N

0 1.5 3 Miles

Arizona Trail
Boyce Thompson Arboretum Trail
Stone Corral/ Fortuna Mountain
Top of the World
Cherry Flat
Dam Buster
Kellner Campground
Icehouse CCC Picnic Area
Devils Canyon Campground
Oak Flat
Cross Canyon Trail
Superior
Hackberry Creek
Devils Canyon Trail
Pinal County
Gila County
Sulfide Del Rey
Pinal Recreational Area
Pioneer Pass
Capitan Pass (Family Picnic)
Upper Pinal Recreation Area
77
60
Picketpost (Trailhead)
Reymert Mine
Apache Leap Trail
Near Apache Leap Trail
177
Ray Mine
Hackberry Gulch Project Area
Woodpecker Trail; Ajax Mine
Telegraph Canyon
Jack Handle
White Canyon Wilderness
Ray Mine Overlook
Cottonwood Canyon
Martinez Canyon
Artesian Well
White Canyon
Walnut Canyon
Arizona Trail
Gray Horse Mine
Box Canyon
Coke Ovens
Kearny
Mescal Mountains OHV Area
Shores Recreation Site
Gila River Loop
Kearny Golf Course
Kearny Lake
Hayden
177
77
Gila River
Winkelman
Old Ripsey Mine
Florence-Kelvin Highway
Ripsey Wash Project Area
San Pedro River
77
Willow Springs Road
Freeman Trailhead
Arizona Trail
79

LEGEND

- Campground
- Picnic
- Other Recreational Area
- Kelvin Trail Access
- Existing Trailhead Location
- Florence-Kelvin Trailhead
- Existing Known Primitive Roads Used for OHV Recreation
- Popular Hiking Trail
- Popular Offroad Trail
- Florence-Kelvin Highway
- Planned/Existing OHV County Trail
- Existing/Planned Multi-Use County Trail Corridor
- Proposed Multi-Use County Trail Corridor
- Proposed OHV County Trail Route
- Ripsey Wash Tailings Storage Facility Footprint
- Hackberry Gulch Tailings Storage Facility Footprint
- Wilderness Designation
- Existing Mining Disturbance
- City Limits
- County Line
- Florence Military Reservation (Subject to Closure)

Game Management Unit

- 24A
- 24B
- 31
- 37A
- 37B

Surface Management

- Bureau of Land Management (BLM)
- Bureau of Reclamation*
- Indian Lands
- Private Land (No Color)
- State Trust Land
- US Forest Service (USFS)

*These lands are administered and managed by the BLM.

Data Source:

-Project Design: AMEC Environment & Infrastructure Inc.
-Tonto National Forest administrative boundary, Superstition -Wilderness designation, hiking trails, campgrounds, fishing, picnic areas, springs, trailheads and other recreational sites: -Tonto National Forest
-White Canyon Wilderness, Needles Eye Wilderness and Aravaipa Canyon Wilderness designations: BLM
-Florence Military Reservation: AGFD
-DEM, Topographic Maps (ArcGIS Online): USGS
-Popular Offroad Trails: Wells & Peterson and AZLRO.org
-Popular Hiking Trails: Everytrail.com and Todshikingguide.com (hand digitized from maps provided online)
-Pinal County: Proposed and Existing County Trails
-Surface Management: BLM

Figure 36

REGIONAL RECREATION RESOURCES

Path: M:\Jobs\200's\203.51\ENV\Ripsey\WashNEPA_Support\MXD\Revised_EIS_FIG45_Visual\Fig37_DEIS_Ripsey_Project_Area.mxd Date: 8/15/2018 User: mwhite

N

0 1,750 3,500 Feet

Gila River

Ripsey Wash

Zellweger Wash

Florence-Kelvin Highway

177

Old Ripsey Mine

LEGEND

- Ripsey Wash TSF Footprint
- Proposed State Land Acquisition Area
- Proposed Florence-Kelvin Highway Relocation
- Proposed Arizona Trail Realignment
- Kelvin Trail Access (BLM)
- Florence-Kelvin Trailhead
- Dispersed Campsite (BLM)
- Primitive Road
- Railroad
- Existing Power Line
- Existing Florence-Kelvin Highway
- Existing Arizona National Scenic Trail
- Proposed Tailings Delivery and Reclaim Water Pipeline
- Proposed SCIP 69kV Powerline Relocation

EXISTING BLM RECREATIONAL OPPORTUNITY SPECTRUM DESIGNATION

- Roaded Natural
- Semi-Primitive Non-Motorized
- Roaded Modified
- Semi-Primitive Motorized (Areas Not Hatched)

LAND OWNERSHIP

- Bureau of Land Management (BLM)
- Bureau of Reclamation *
- Private Land (No Color)
- State Trust Land

*These lands are administered and managed by the BLM.

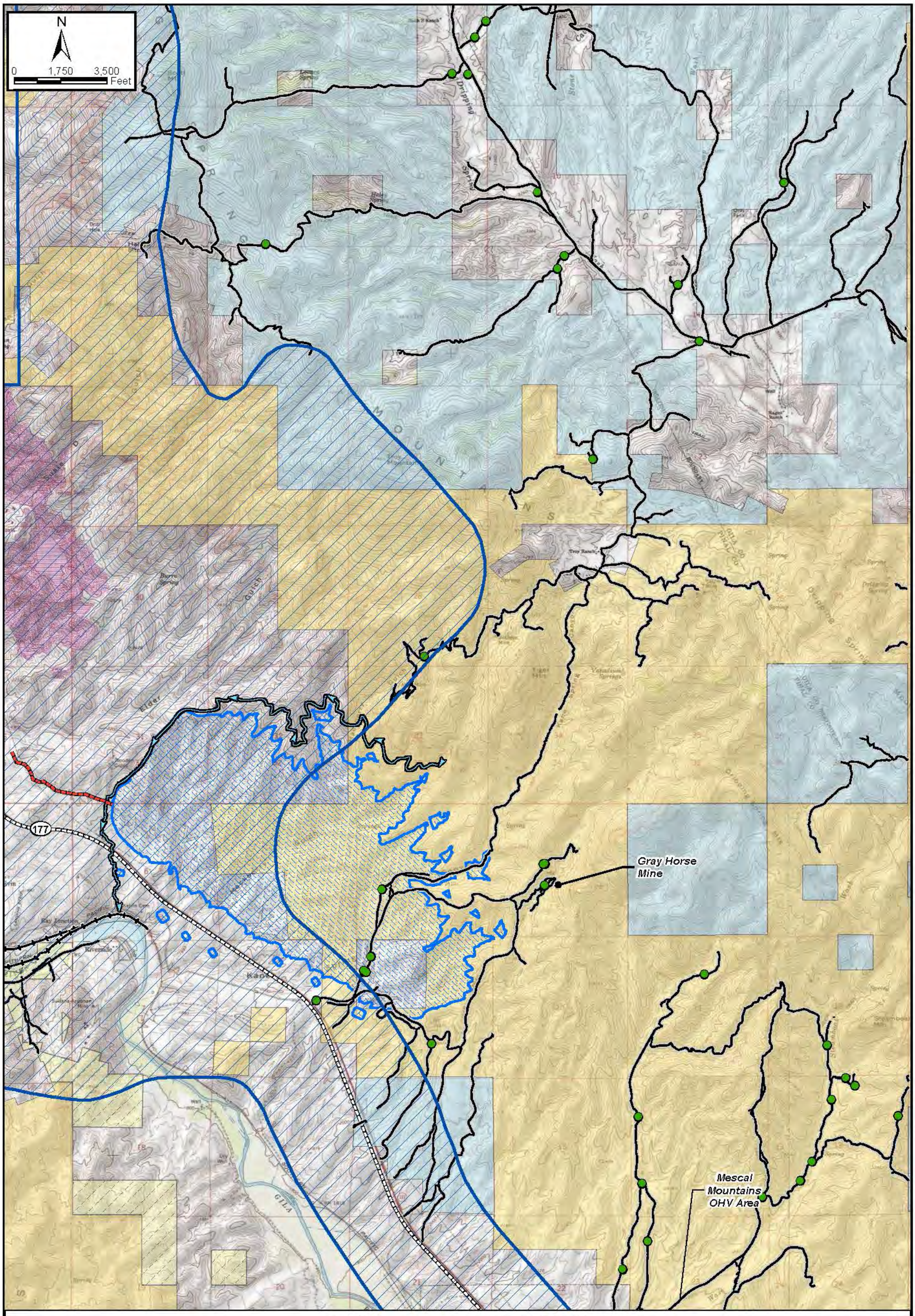
T.4S, R.13E, Portion of Sections 6-8, 12, 13, 17, 20, 21, 24, 25, 29, 32 & 33,
T.5S, R.13E, Portion of Sections 4, 5, 9 & 10
Pinal County, Arizona,
Grayback & Kearny USGS 7.5' Quadrangles

Land Ownership Provided by BLM

Primitive Road Source: Wells & Patterson, AZLRO.org, ALRIS, hand digitized from USGS 7.5' Quadrangles and ESRI Online Imagery (Microsoft, Nov-1-2010).

Figure 37

EXISTING RECREATION RESOURCES, RIPSEY WASH PROJECT AREA



T.3S, R.14E, Portion of Sections 31-33, T.4S, R.14E, 3-9,
Pinal County, Arizona,
Hot Tamale Peak & Kearny USGS 7.5' Quadrangles

Land Ownership Provided by BLM

Primitive Road Source: Wells & Patterson,
AZLRO.org, ALRIS, hand digitized from USGS 7.5'
Quadrangles and ESRI Online Imagery (Microsoft, Nov-1-2010).

LEGEND

- Dispersed Campsite (BLM)
- Railroad
- Proposed Tailings Delivery and Reclaim Water Pipelines
- Primitive Roads
- Proposed Surface Water Diversion Channel
- Hackberry Gulch Tailings Storage Facility Footprint

EXISTING BLM RECREATIONAL OPPORTUNITY SPECTRUM DESIGNATION

- Roaded Modified
- Semi-Primitive Motorized (Areas Not Hatched)

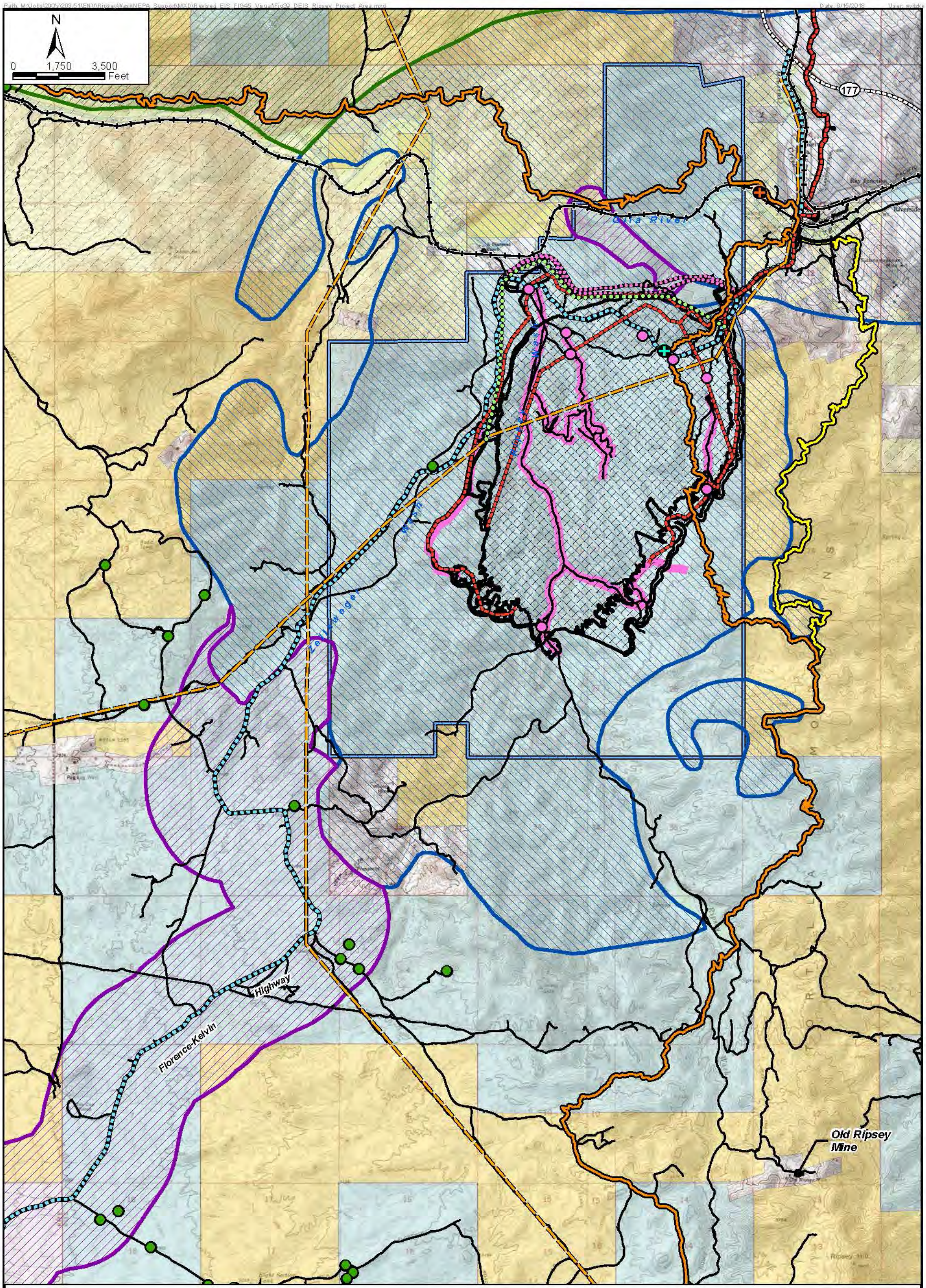
LAND OWNERSHIP

- Bureau of Land Management (BLM)
- Bureau of Reclamation*
- Private Land (No Color)
- State Trust Land

*These lands are administered and managed by the BLM.

Figure 38

EXISTING RECREATION RESOURCES,
HACKBERRY GULCH PROJECT AREA



LEGEND

- Ripsey Wash TSF Footprint
- Proposed State Land Acquisition Area
- Proposed Florence-Kelvin Highway Relocation
- Proposed Arizona Trail Realignment
- Kelvin Trail Access (BLM)
- Florence-Kelvin Trailhead
- Dispersed Campsite (BLM) Remaining Open to Public
- Dispersed Campsite Closed to Public Under Ripsey Wash Alternative
- Primitive Road Remaining Open to Public
- Railroad
- Existing Power Line
- Existing Florence-Kelvin Highway
- Existing Arizona National Scenic Trail
- Primitive Roads Closed to Public Under Ripsey Wash Alternative
- Proposed Tailings Delivery and Reclaim Water Pipeline
- Proposed SCIP 69kV Powerline Relocation

BLM RECREATIONAL OPPORTUNITY SPECTRUM DESIGNATION

- Semi-Primitive Non-Motorized
- Roaded Natural
- Roaded Modified
- Semi-Primitive Motorized (Areas Not Hatched)

LAND OWNERSHIP

- Bureau of Land Management (BLM)
- Bureau of Reclamation*
- Private Land (No Color)
- State Trust Land

*These lands are administered and managed by the BLM.

T.4S, R.13E, Portion of Sections 6-8, 12, 13, 17, 20, 21, 24, 25, 29, 32 & 33,
T.5S, R.13E, Portion of Sections 4, 5, 9 & 10
Pinal County, Arizona,
Grayback & Kearny USGS 7.5' Quadrangles

Land Ownership Provided by BLM

Primitive Road Source: Wells & Patterson, AZLRO.org, ALRIS, hand digitized from USGS 7.5' Quadrangles and ESRI Online Imagery (Microsoft, Nov-1-2010).

Figure 39

RECREATION RESOURCES, RIPSEY WASH ALTERNATIVE

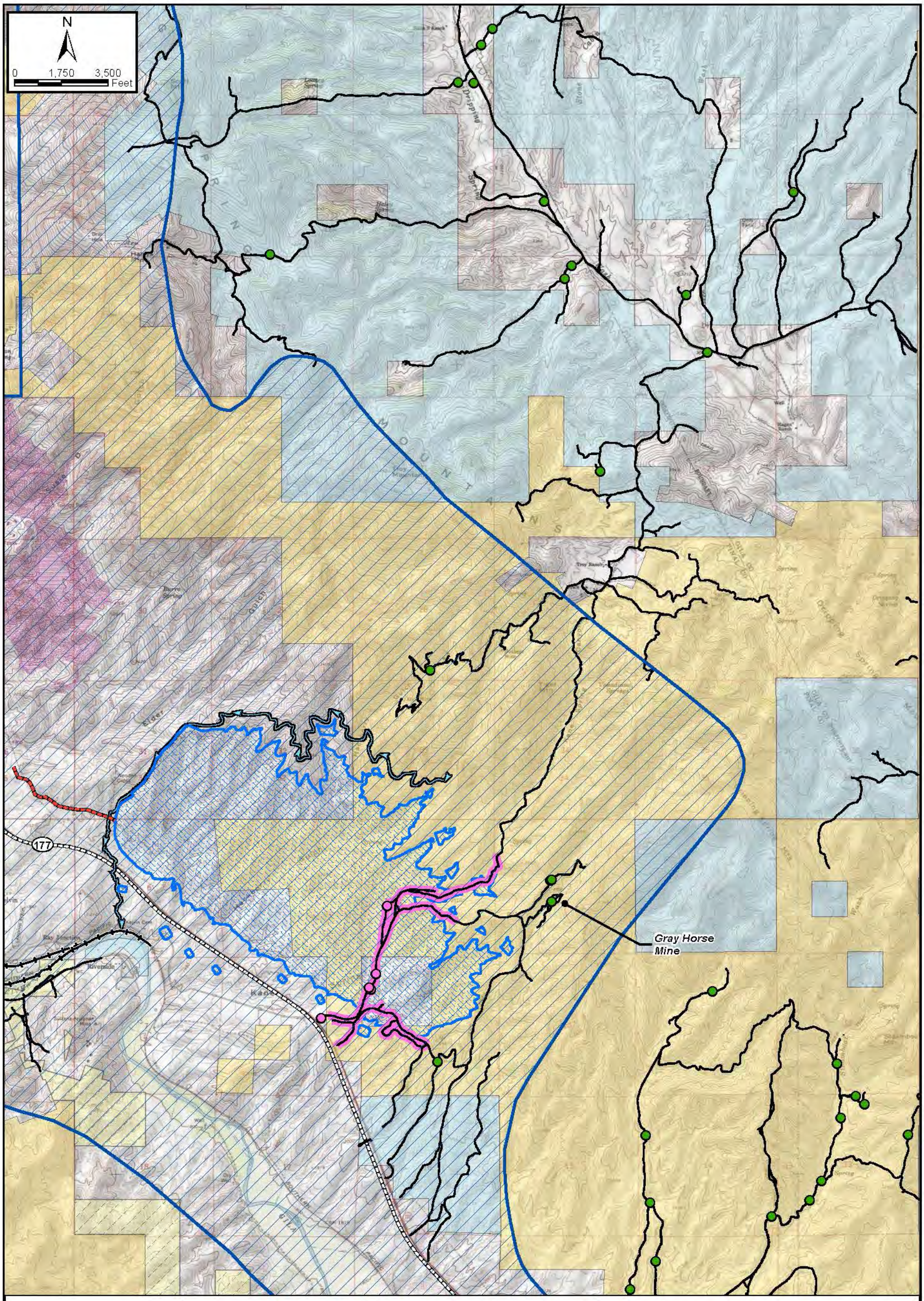


Figure 40

RECREATION RESOURCES,
HACKBERRY GULCH ALTERNATIVE



Note:
Asarco is coordinating with the Arizona Trail Association (ATA) to replace the existing trailhead that is located within the planned footprint of the proposed Ripsey Wash TSF. Asarco is committed to relocate and fund the construction of the trailhead replacement (see Appendix I, Applicant Project Mitigation). Currently, two trailhead locations are being considered: one north of the Gila River and the one west of the Florence-Kelvin highway at an existing Pinal County maintenance yard. Both these locations are on privately-owned lands. The ATA is planning to provide Asarco with draft trailhead design parameters, and Asarco plans to continue coordination with the ATA regarding the final location and design details for the trailhead relocation.

0 50 100 200
APPROXIMATE SCALE (FEET)

Figure 41
Proposed Trail Head & Parking

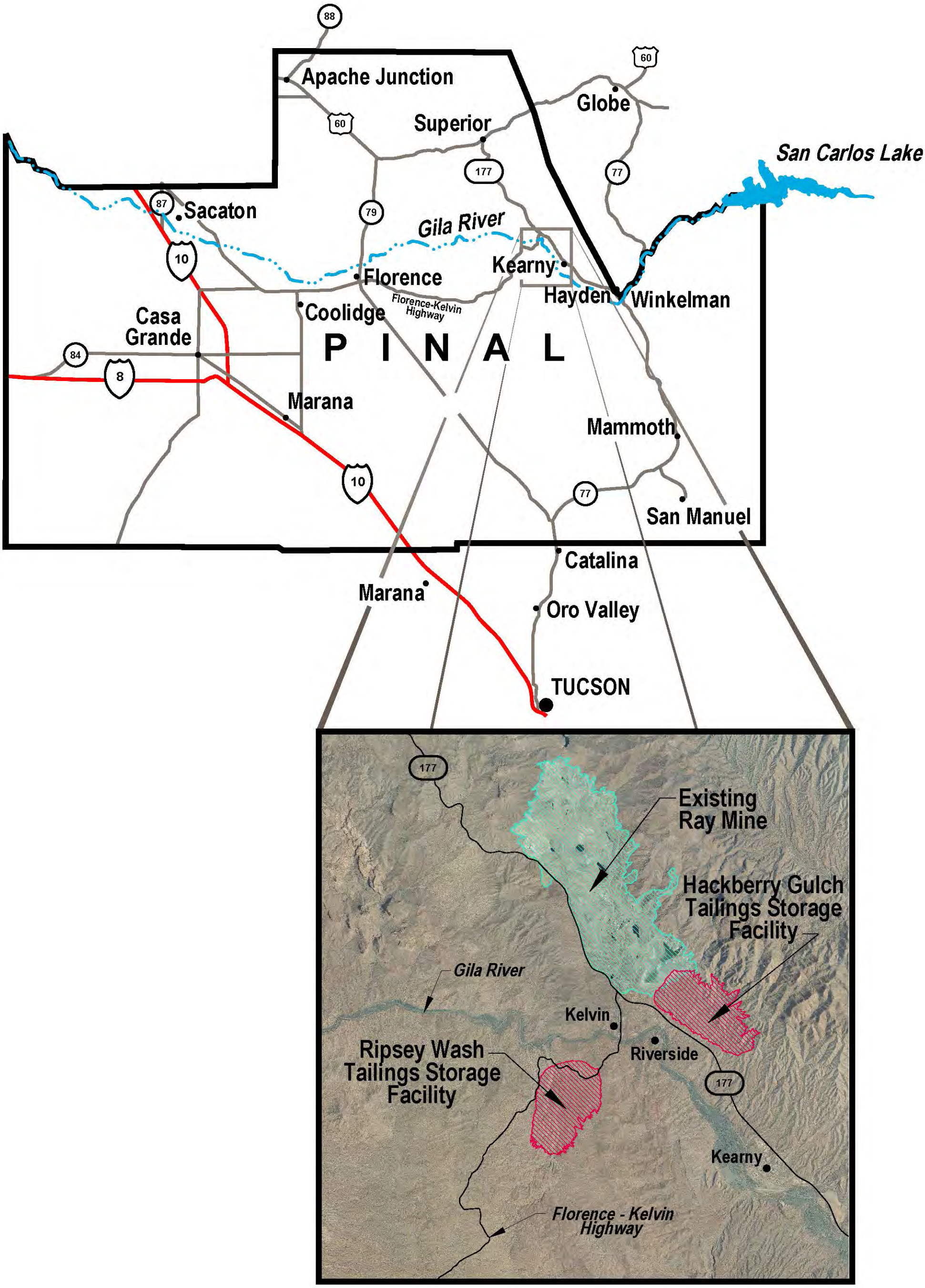


Figure 42
Highways & Roads

R13E
R14E
Tailings Draindown Pond
EXISTING RAY MINE
Existing Tailings Thickener
Existing Pump House
36
31
HACKBERRY GULCH TAILINGS STORAGE FACILITY
HACKBERRY GULCH
CANYON
KANE SPRING
6
KELVIN
RIVERSIDE
GILA RIVER
State Route 177
RIPSEY WASH TAILINGS STORAGE FACILITY
Florence - Kelvin Highway
Zellweger Wash
Ripsey Wash
Proposed Re-alignment of Arizona Trail
KEARNY

LEGEND:

- EXISTING GROUND SURFACE CONTOUR EL, FEET
- EXISTING DRAINAGES
- EXISTING RAILROAD
- EXISTING ROAD
- EXISTING TRAIL/UNIMPROVED ROAD
- PROPOSED DIVERSION CHANNEL
- PROPOSED DISTURBANCE BOUNDARY
- PROPOSED ARIZONA TRAIL REALIGNMENT DISTURBANCE BOUNDARY

DISTURBED AREA RIPSEY WASH TSF VEGETATION

- Saguaro/Paloverde-Jojoba/Mixed Cacti Shrubland - 2,048 Acres
- Paloverde/Catclaw-Burrowbush-Desert Broom Xeroriparian Washes - 402 Acres
- Saguaro/Ocotillo/Jojoba/Triangleleaf Bursage Shrubland - 134 Acres
- Riparian Vegetation - 6 Acres
- Saguaro Density - 15 Acres
- Tuffaceous Sandstone Outcrop - 9 Acres
- Disturbed - 19 Acres
- Mine Disturbance - 3 Acres

DISTURBED AREA HACKBERRY GULCH TSF VEGETATION

- Saguaro/Paloverde-Jojoba/Mixed Cacti Shrubland - 1,675 Acres
- Paloverde/Catclaw-Burrobush-Desert Broom Xeroriparian Washes - 157 Acres
- Saguaro/Paloverde-Jojoba/Triangleleaf Bursage Shrubland - 63 Acres
- Saguaro Density - 6 Acres
- Ocotillo/Paloverde–Mixed Shrubland - 47 Acres
- Saguaro/Ocotillo/Paloverde-Jojoba Shrubland - 240 Acres
- Sonoran Riparian Deciduous Woodlands - 23 Acres
- Saguaro/Paloverde/Teddybear Cholla Shrubland - 44 Acres
- Conglomerate Outcrop - 8 Acres
- Mine Disturbance - 27 Acres

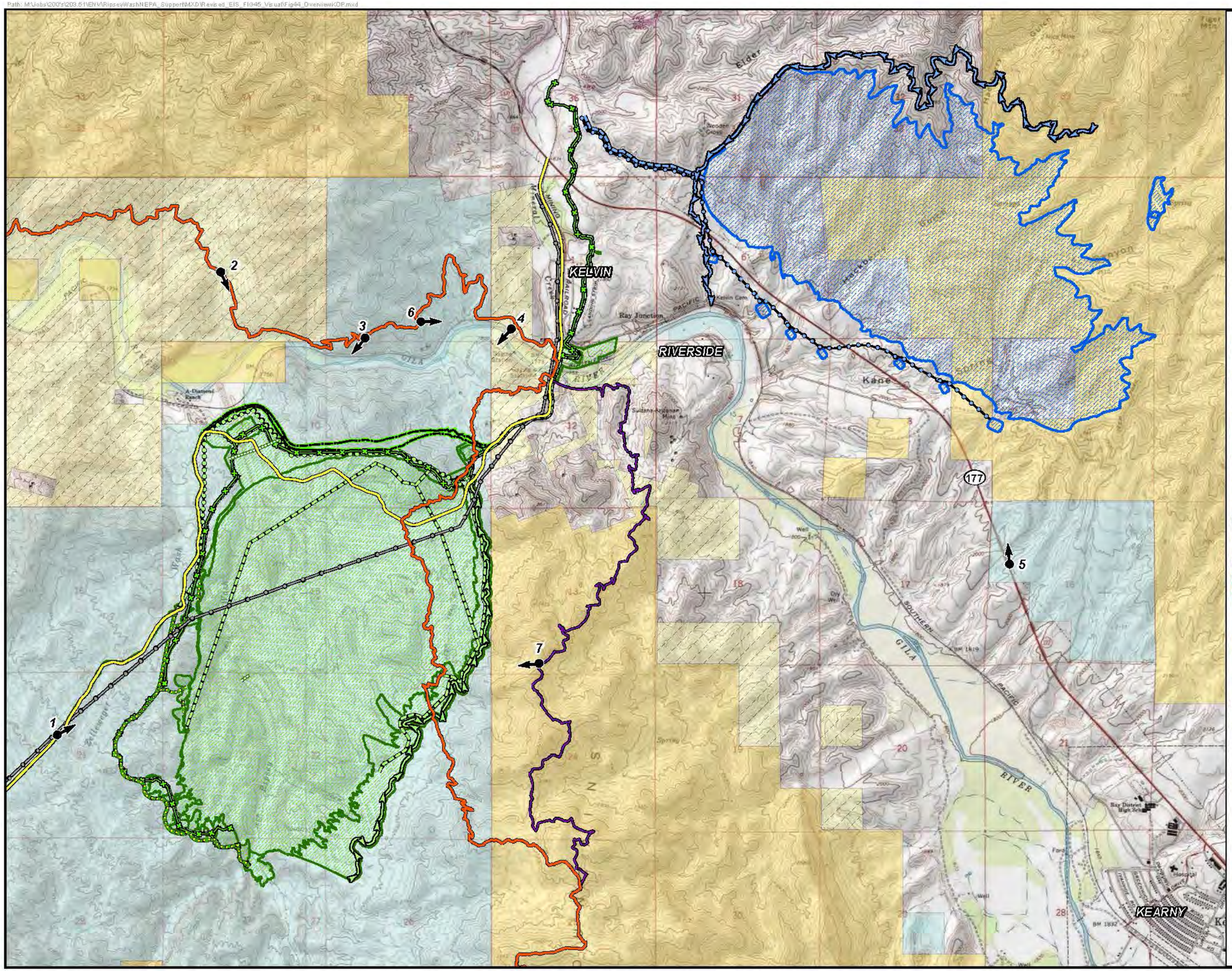
N

0 750 1500 3000

APPROXIMATE SCALE (FEET)

Figure 43
Vegetation Map

Path: M:\Jobs\200's\203.51\ENV\RipseyWashNEPA_Support\MXD\Revised_EIS_FI945_Visual\Fig44_OverviewKOP.mxd



N

3,000 0 3,000 Feet

T4S, R13E, Portions of Sections 1-3, 12 & 21
T4S, R14E, Portions of Sections 16 & 27,
Pinal County, Arizona,
Grayback & Kearny USGS 7.5' Quadrangles

Land Ownership Provided by BLM

Project Line Work Provided by AMEC Environment & Infrastructure

LEGEND

- Key Observation Point and Direction

EXISTING FEATURES

- Florence-Kelvin Highway
- Overhead Electric
- Existing Arizona National Scenic Trail
- Proposed Arizona Trail Realignment

RIPSEY WASH ALTERNATIVE 3

- Ripsey Wash TSF Footprint
- Ripsey Wash Tailings Delivery and Reclaim Water Pipelines
- Stormwater Diversion Pipeline
- Cutoff Wall
- Surface Water Diversion Channel
- Ripsey Wash Project Powerline
- Proposed SCIP 69kV Powerline Relocation
- Proposed Florence-Kelvin Highway Relocation

HACKBERRY GULCH ALTERNATIVE 2

- Hackberry Gulch Alternative 2 Tailings Storage Facility Footprint
- Hackberry Gulch Tailings Delivery and Reclaim Water Pipelines
- Surface Water Diversion Channel
- Hackberry Gulch Route for Overhead Electric

LAND OWNERSHIP

- Bureau of Land Management (BLM)
- Bureau of Reclamation*
- Private Land (No Color)
- State Trust Land

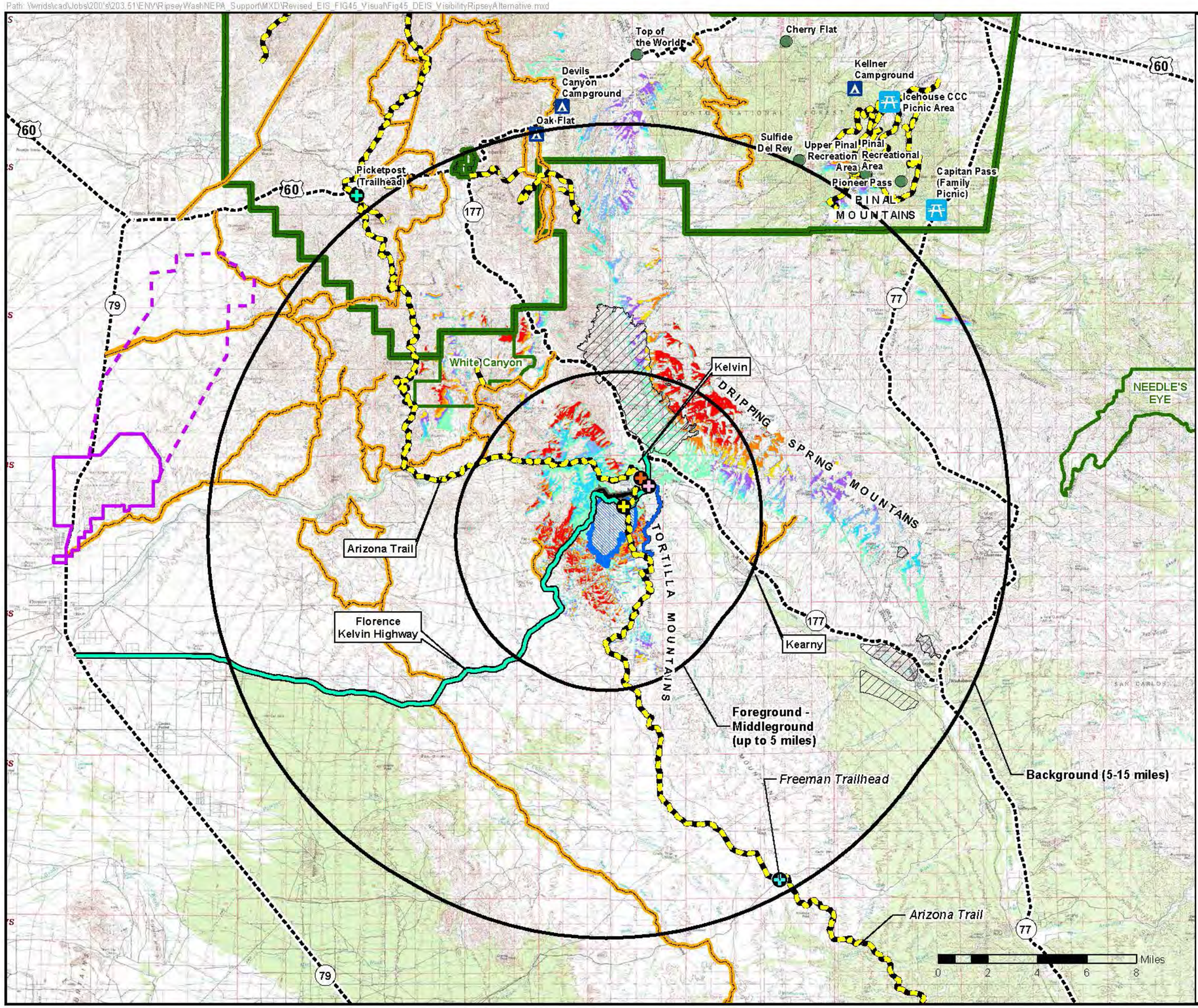
*These lands are administered and managed by the BLM.

Figure 44

KEY OBSERVATION POINT (KOP) LOCATIONS

Path: \\wrids\cad\Jobs\200's\203.51\ENV\RipseyWashNEPA_Support\MXD\Revised_EIS_FIG45_Visual\Fig45_DEIS_VisibilityRipseyAlternative.mxd

Date: 2/23/2018 User: rwitzke



Legend

- Ripsey Wash TSF Footprint
- Existing Mining Disturbance
- Tonto National Forest (Administrative Boundary)
- Wilderness Designation
- Florence Military Reservation (Closed to Entry)
- Florence Military Reservation (Subject to Closure)
- Proposed Florence-Kelvin Highway Relocation
- Proposed Arizona Trail Realignment
- Popular Hiking Trails
- Popular Offroad Trail
- Florence-Kelvin Highway
- Campground
- Picnic
- Other Recreational Area
- Kelvin Trail Access
- Existing Trailhead Location
- Florence-Kelvin Trailhead
- Proposed Relocated Florence-Kelvin Highway Trailhead

Percent of Tailings Storage Facility Receptors Visible

- Not Visible
- >0 ≤ 5% Visible
- >5 ≤ 10% Visible
- >10 ≤ 20% Visible
- >20 ≤ 35% Visible
- >35 ≤ 50% Visible
- >50 ≤ 70% Visible
- >70 ≤ 100% Visible

Data Source:

Amec: Tailings Facilities

Tonto National Forest: Administrative Boundary, Wilderness Designation, Hiking Trails, Campgrounds, Fishing, Picnic, springs, Trailheads and other Rec Sites

BLM: Wilderness Designation

AZGF: Florence Military Reservation

USGS: DEM, Topo Maps (ArcGIS Online)

Wells & Peterson: Popular Offroad Trails

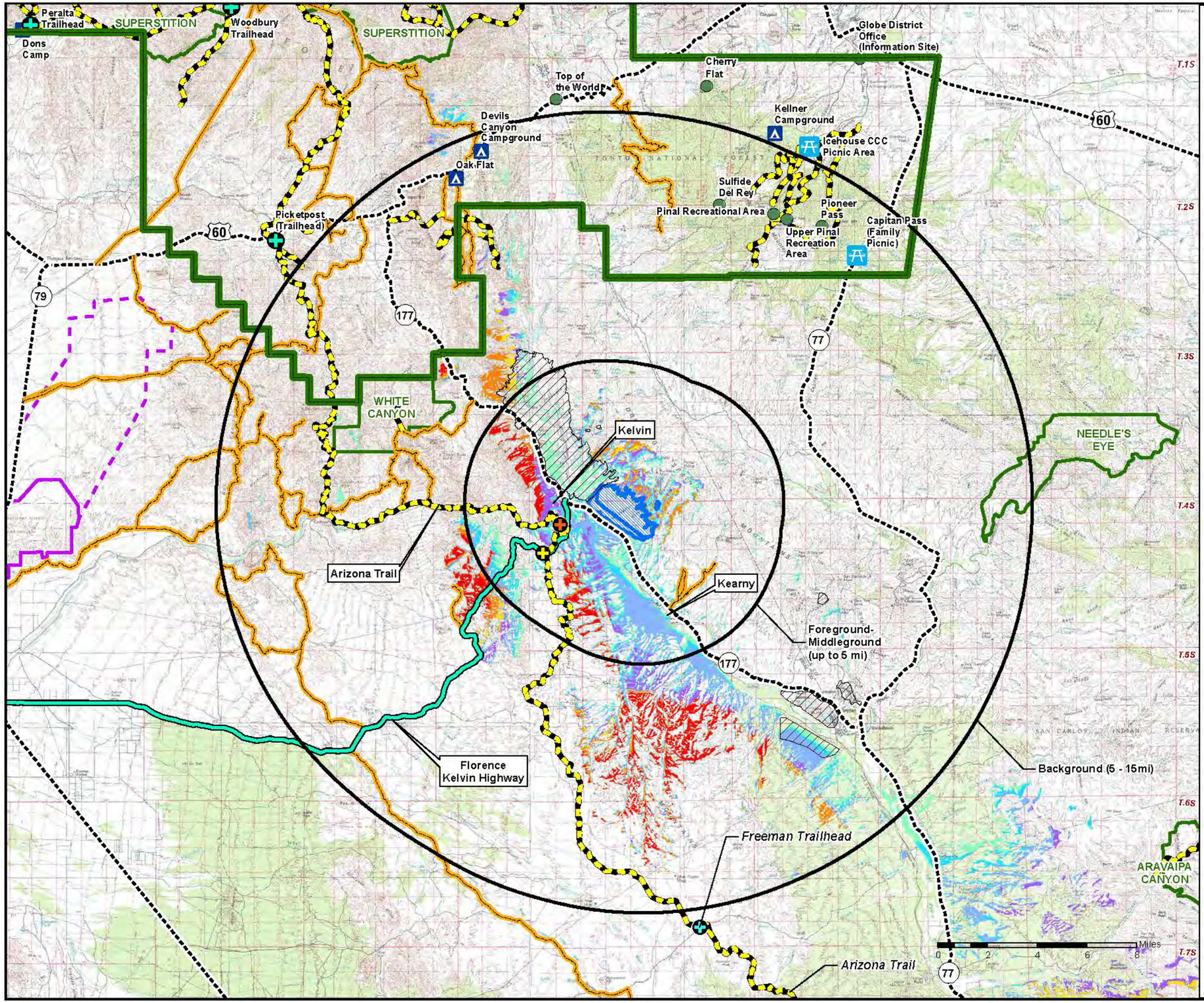
Everytrail.com: Popular Hiking Trails

Todshikingguide.com: Popular Hiking Trails

AZLRO.org: Popular Offroad Trails

Figure 45

VISIBILITY STUDY
RIPSEY WASH ALTERNATIVE



Legend

- Hackberry Gulch TSF Footprint
- Existing Mining Disturbance
- Tonto National Forest (Admin. Boundary)
- Wilderness Designation
- Florence Military Reservation (Closed to Entry)
- Florence Military Reservation (Subject to Closure)
- Popular Hiking Trails
- Popular Offroad Trail
- Florence-Kelvin Highway
- Campground
- Picnic
- Other Recreational Area
- Kelvin Trail Access
- Existing Trailhead Location
- Florence-Kelvin Trailhead

Percent of Tailings Storage Facility Receptors Visible

- Not Visible
- >0 ≤ 5% Visible
- >5 ≤ 10% Visible
- >10 ≤ 20% Visible
- >20 ≤ 35% Visible
- >35 ≤ 50% Visible
- >50 ≤ 70% Visible
- >70 ≤ 100% Visible

Data Source:

Amec: Tailings Facilities

Tonto National Forest: Admin Boundary, Wilderness Designation, Hiking Trails, Campgrounds, Fishing, Picnic, springs, Trailheads and other Rec Sites

BLM: Wilderness Designation

AZGF: Florence Military Reservation

USGS: DEM, Topo Maps (ArcGIS Online)

Wells & Peterson: Popular Offroad Trails

Everytrail.com: Popular Hiking Trails

Todshikingguide.com: Popular Hiking Trails

AZLRO.org: Popular Offroad Trails

Figure 46

VISIBILITY STUDY
HACKBERRY GULCH ALTERNATIVE

October 30, 2015

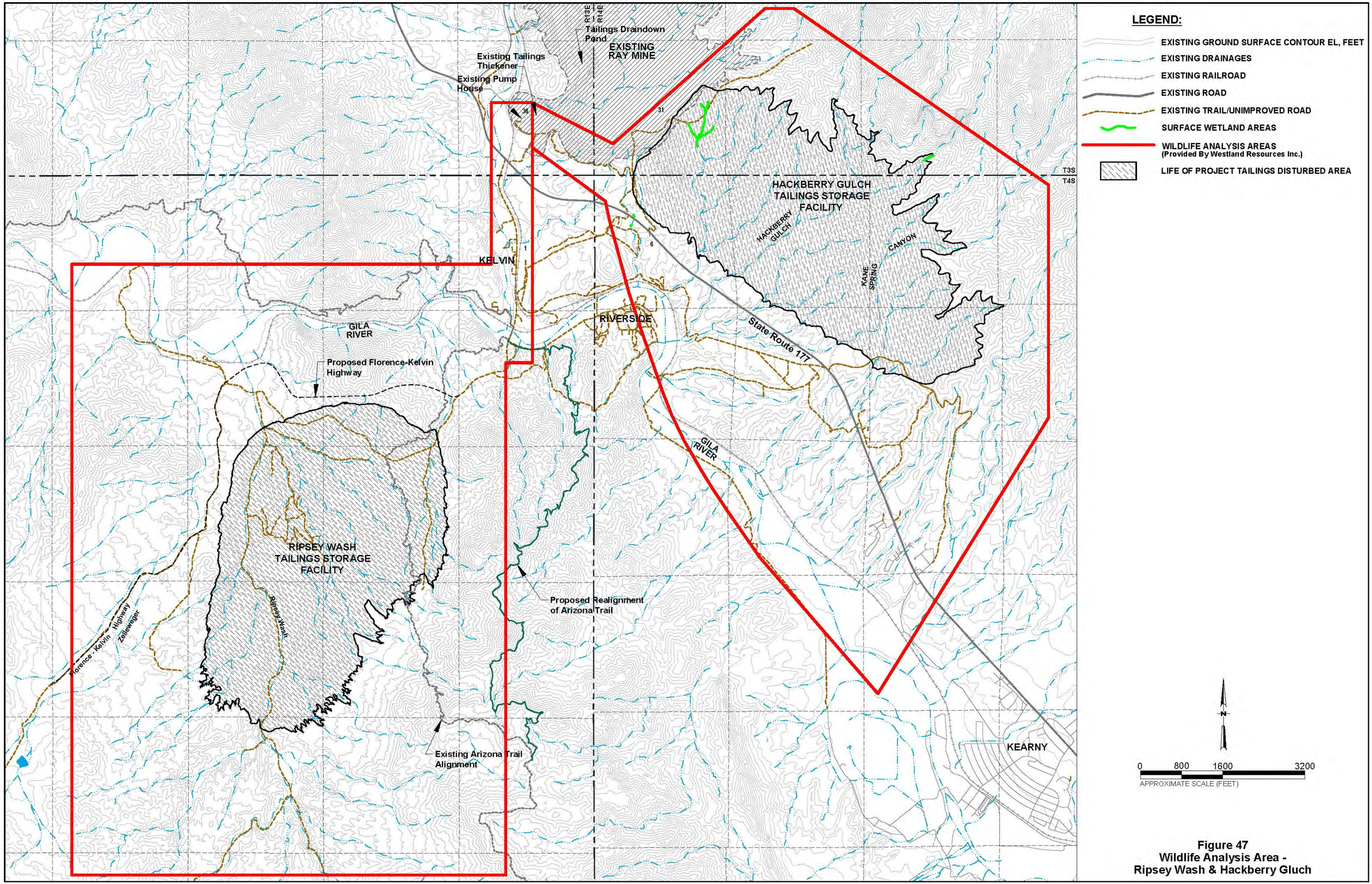
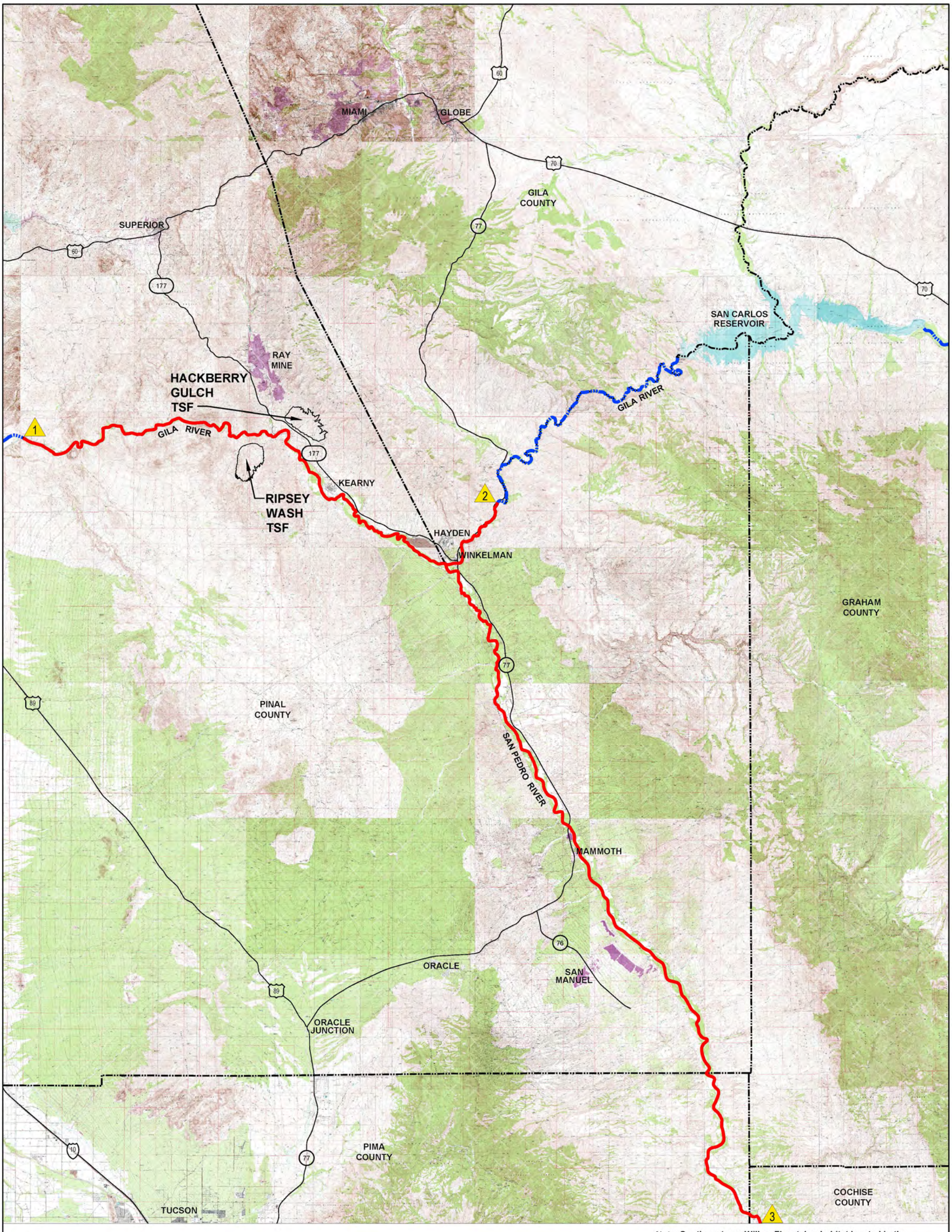


Figure 47
Wildlife Analysis Area -
Ripsey Wash & Hackberry Gluch



Note: Southwesteren Willow Flycatcher habitat located in the USFWS Middle Gila/San Pedro Management Unit.

LEGEND:

- CRITICAL HABITAT FOR SOUTHWESTERN WILLOW FLYCATCHER
- RIVERS
- COUNTY LINES
- HIGHWAYS

ENDPOINTS OF CRITICAL HABITAT FOR SOUTHWESTEREN WILLOW FLYCATCHER

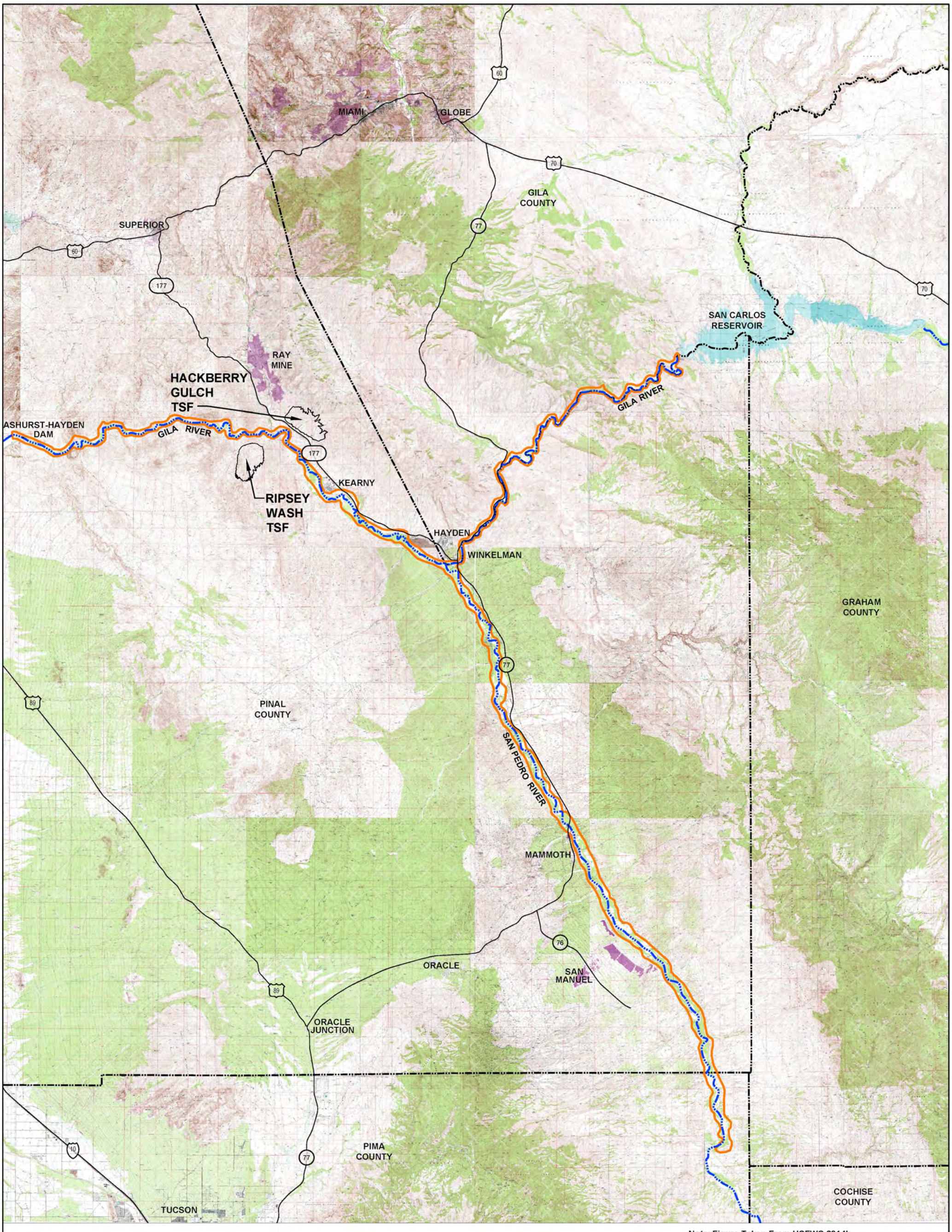
1. ASHURST-HAYDEN DAM ON GILA RIVER
2. CONFLUENCE OF DRIPPING SPRINGS WASH AND GILA RIVER
3. 3.5 MILES SOUTH OF CONFLUENCE OF HOT SPRINGS CANYON AND SAN PEDRO RIVER

N

0 7,500 15,000 30,000

APPROXIMATE SCALE (FEET)

Figure 48
Southwesteren Willow Flycatcher Designated Critical Habitat Near the TSF Sites



Note: Figure Taken From USFWS 2014b.

LEGEND:

- CRITICAL HABITAT FOR YELLOW-BILLED CUCKOO
- RIVERS
- COUNTY LINES
- HIGHWAYS

N

0 7,500 15,000 30,000

APPROXIMATE SCALE (FEET)

Figure 49
Yellow-Billed Cuckoo Proposed Critical Habitat Near the TSF Sites

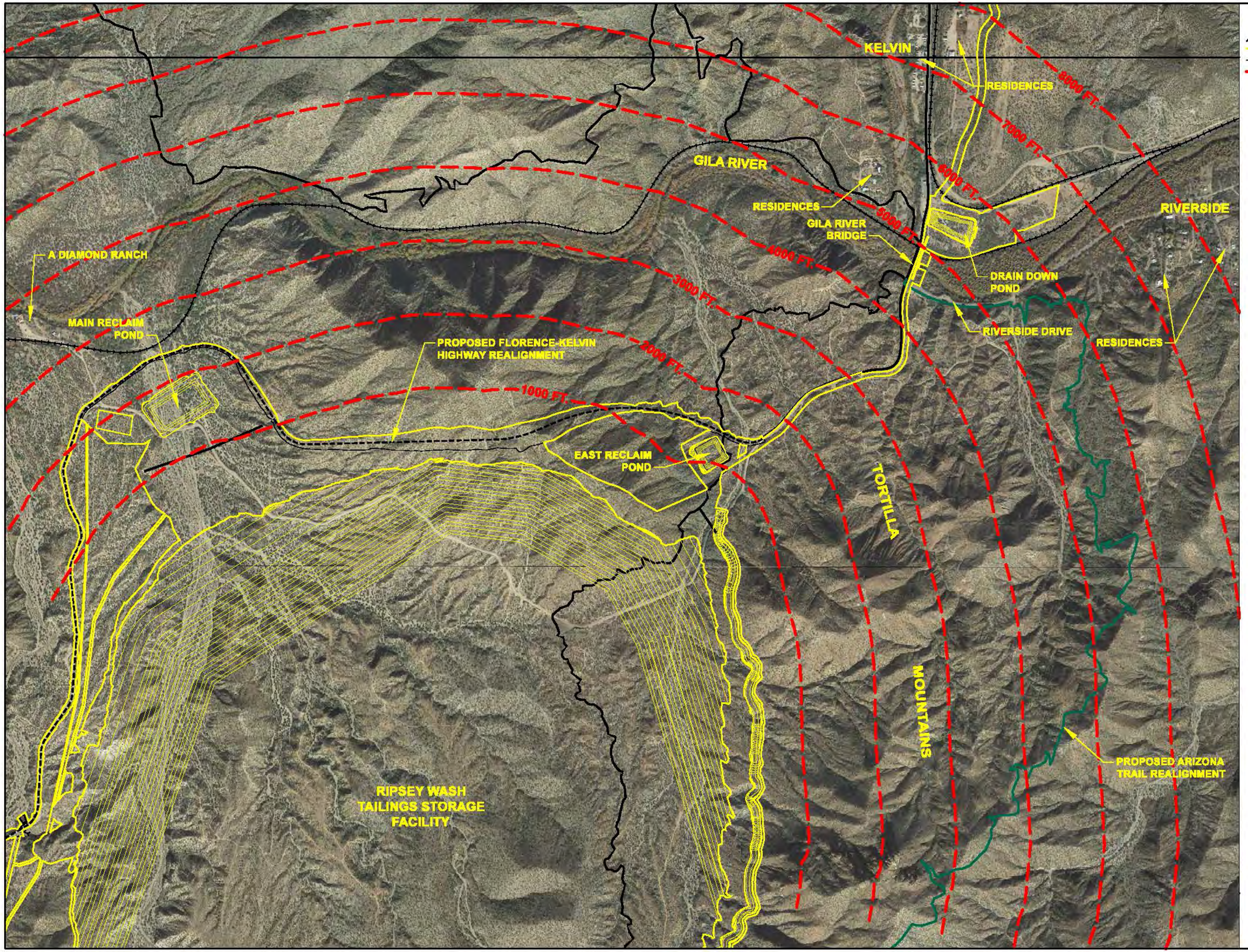
LEGEND:

- RIVERS
- COUNTY LINES
- HIGHWAYS

APACHE JUNCTION
SUPERSTITION WILDERNESS
MARICOPA COUNTY
PINAL COUNTY
GOLD CANYON
PROPOSED RESOLUTION COPPER TSF
PROPOSED RESOLUTION COPPER FACILITIES
SUPERIOR
MIAMI
GLOBE
GILA COUNTY
GRAHAM COUNTY
PINAL COUNTY
GILA COUNTY
BRYCE THOMPSON ARBORETUM
WHITE CANYON WILDERNESS
EXISTING RAY MINE
MINERAL CREEK
COPPER BASIN RAILROAD
ASHURST-HYDEN DAM
GILA RIVER
KELVIN
RIVERSIDE
RIPSEY WASH TSF
HACKBERRY GULCH TSF
KEARNY
PROPOSED ARIZONA TRAIL
EXISTING ARIZONA TRAIL
HAYDEN CONCENTRATOR
HAYDEN
HAYDEN COPPER SMELTER
WINKELMAN
SAN CARLOS RESERVOIR
COOLIDGE DAM
NEEDLES EYE WILDERNESS
GILA RIVER
BYLAS
GILA RIVER
PINAL COUNTY
GRAHAM COUNTY
FLORENCE
FLORENCE -KELVIN HWY
COOLIDGE
ARAVAIPA WILDERNESS
SAN PEDRO RIVER
ELOY
MAMMOTH
ORACLE
SAN MANUEL
ORACLE JUNCTION
PINAL COUNTY
PIMA COUNTY
CATALINA
MARANA

0 9,000 18,000 36,000
APPROXIMATE SCALE (FEET)

Figure 50
Regional Activities/Actions Locations Map



LEGEND:

- EXISTING RAILROAD
- PROPOSED LIMITS OF SURFACE DISTURBANCE
- PROPOSED TAILINGS DELIVERY PIPELINE
- APPROXIMATE DISTANCE FROM THE TOE OF PROPOSED TAILINGS EMBANKMENT

0 300 600 1200

APPROXIMATE SCALE (FEET)

Figure 51
Nearby Residents -
Ripsey Wash TSF

HACKBERRY GULCH
TAILINGS STORAGE
FACILITY

2500

2250

2000

KELVIN

RESIDENCES

RESIDENCES

1060 FT.

2000 FT.

RIVERSIDE

3000 FT.

4000 FT.

5000 FT.

6000 FT.

RESIDENCES

State Route 177

RESIDENCES

RESIDENCES

RESIDENCES

GILA RIVER

LEGEND:

- EXISTING RAILROAD
- PROPOSED LIMITS OF SURFACE DISTURBANCE
- PROPOSED TAILINGS DELIVERY PIPELINE
- APPROXIMATE DISTANCE FROM THE TOE OF PROPOSED TAILINGS EMBANKMENT
- PROPOSED RECLAIM PONDS

0 300 600 1200

APPROXIMATE SCALE (FEET)

Figure 52
Nearby Residents -
Hackberry Gulch TSF

Path: M:\Jobs\200\s203_51\ENV\AR\psey\WashNEPA_Support\MXD\Revised_DEIS_Fig39_and53\RevisedFig53_DEIS_RipseyAPE.mxd Date: 3/20/2018 User: swilcke

Mineral Creek
Ray Mine
Existing AZ National Scenic Trail
AZ National Scenic Trail Realignment
177
Ripsey Wash
Kearny
GILA COUNTY
PINAL COUNTY
77
Gila River
Hayden
Winkelman
San Pedro River
Mitigation Sites A, C and D
Mitigation Site B
Aravaipa Creek

N

2.5 0 2.5 Miles

1 in = 2.5 miles

Image Source: NAIP, 2015

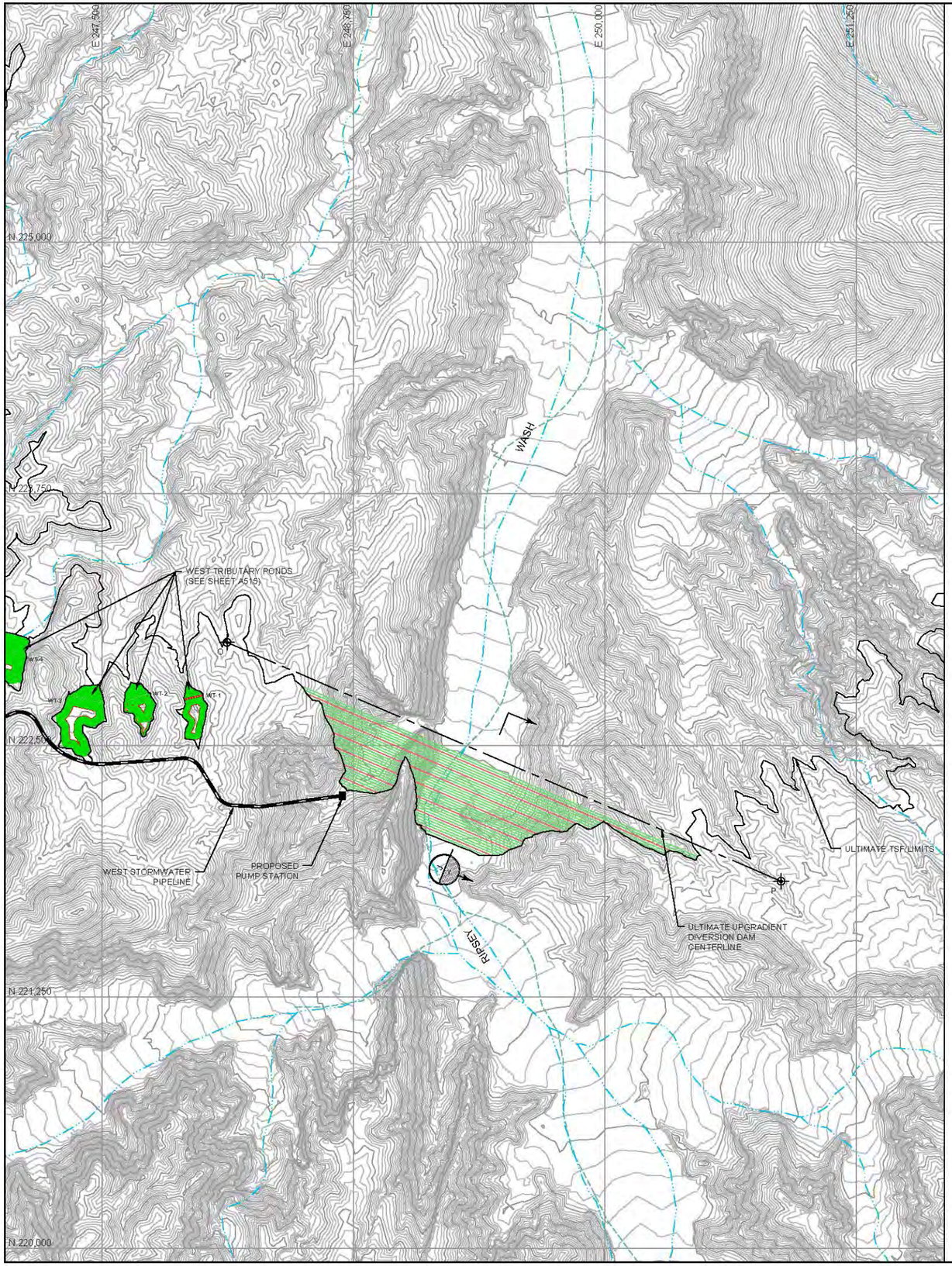
Legend

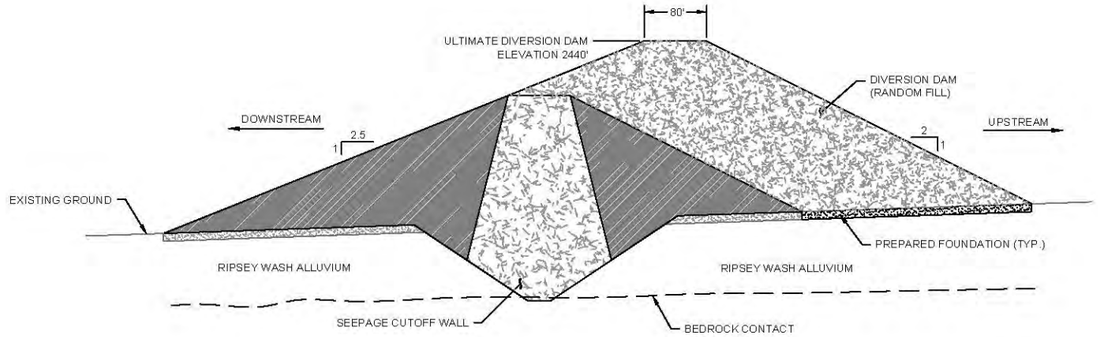
Ripsey Wash Area of Potential Effect

Figure 53

RIPSEY WASH AREA OF POTENTIAL EFFECT

March 20, 2018





J — ULTIMATE UPGRADIENT DIVERSION DAM TYPICAL CROSS SECTION

MAIN EMBANKMENT CENTERLINE ALIGNMENT				
POINT		STATION	NORTHING	EASTING
O	PI	10+00.00	223011.87	248121.19
P	PI	40+00.00	221824.39	250876.17

LEGEND:

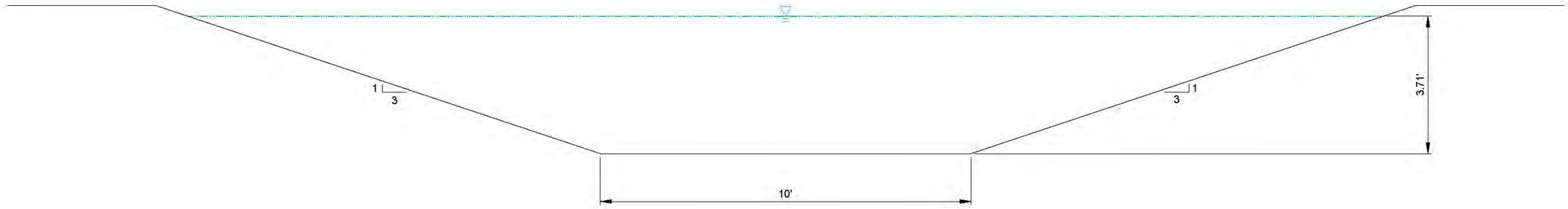
- EXISTING GROUND SURFACE CONTOUR ELEVATION (FEET)
- PROPOSED STARTER EMBANKMENT GROUND SURFACE CONTOUR ELEVATION (FEET)
- PROPOSED GROUND SURFACE CONTOUR ELEVATION (FEET)
- EXISTING DRAINAGES
- EXISTING TRAIL/UNIMPROVED ROAD
- EMBANKMENT CENTERLINE

N

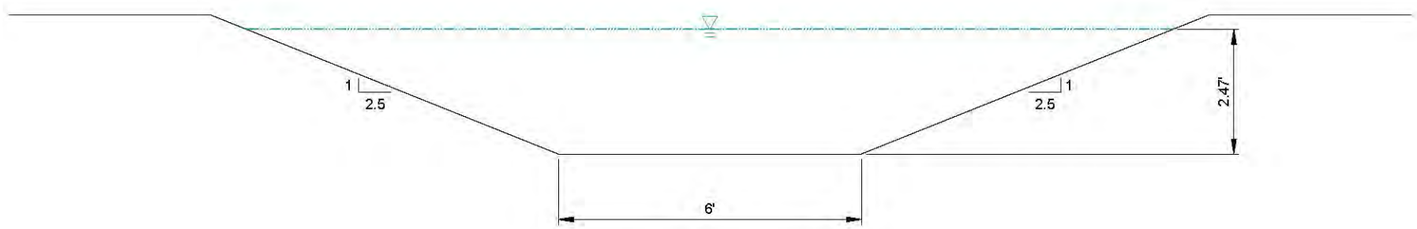
300 0 300 600 FEET

SOURCE: AMEC (2016)
(Approved APP 2016)

Figure 54
Ripsey Wash TSF Detention Dam -
Plan View & Typical Section



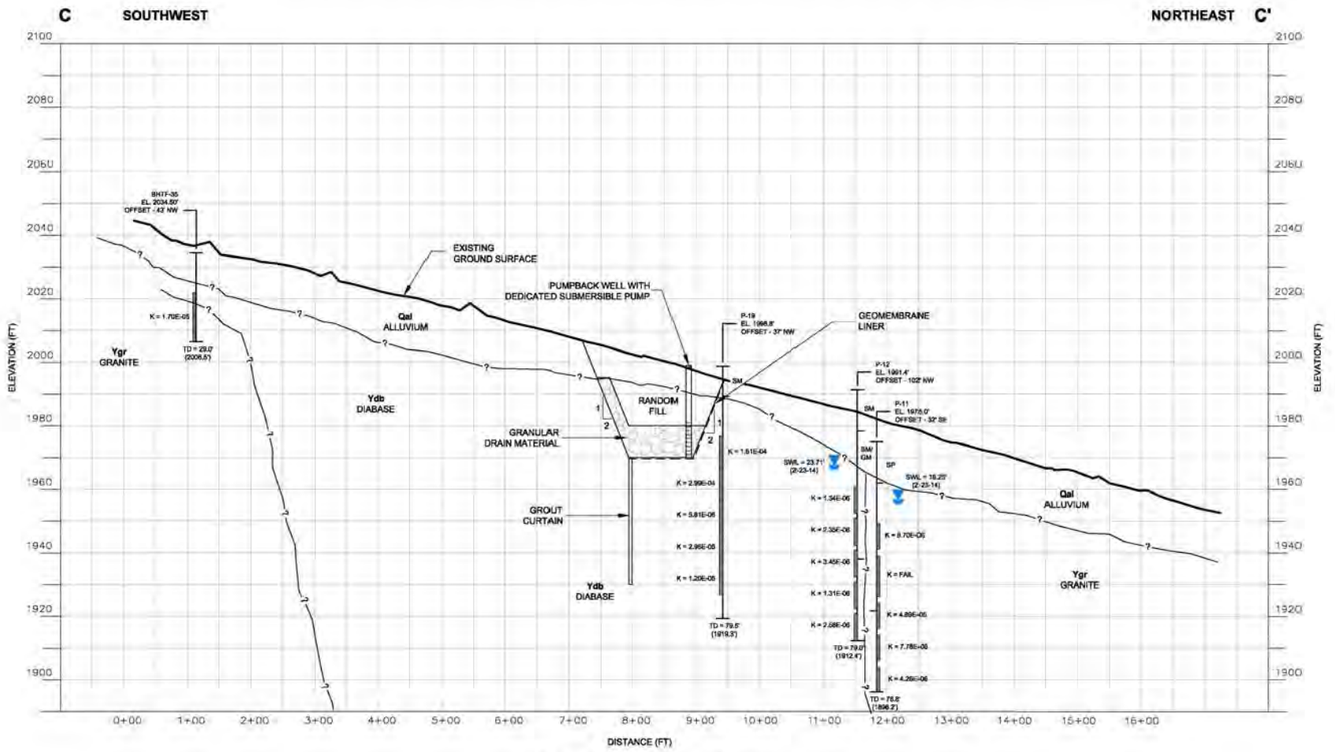
TYPICAL EAST DIVERSION CHANNEL
(NOT TO SCALE)



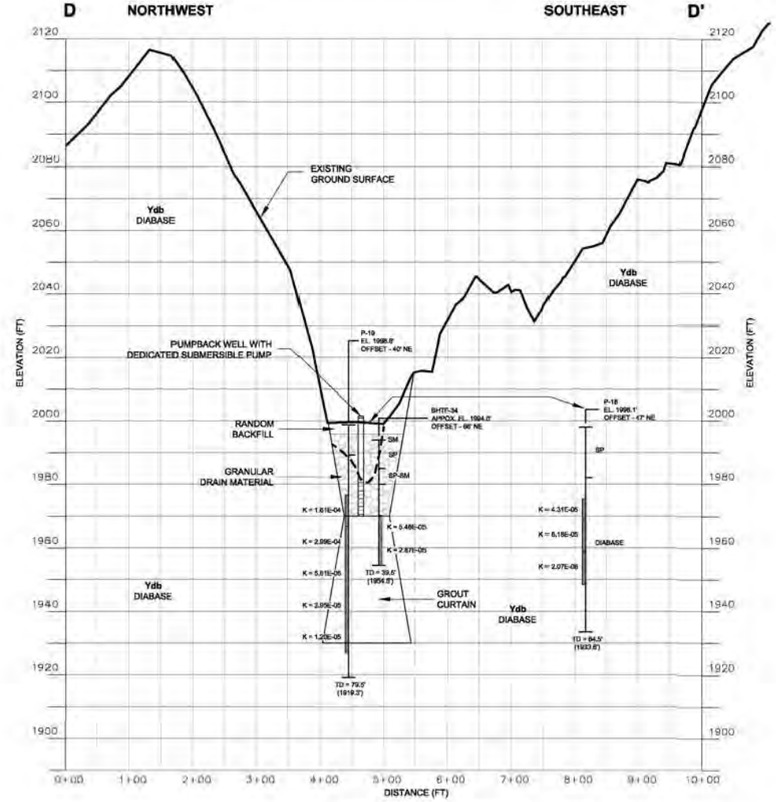
TYPICAL WEST DIVERSION CHANNEL
(NOT TO SCALE)

SOURCE: AMEC (2016)
(Approved APP 2016)

Figure 55
Ripsey Wash TSF East Diversion & Contact Stormwater Channels - Typical Channels

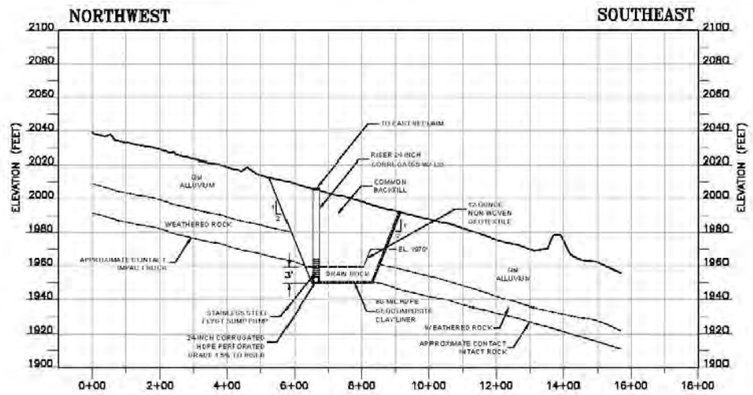


TYPICAL SECTION
(NOT TO SCALE)



TYPICAL SECTION
(NOT TO SCALE)

Note:
For more information about the location of the Cutoff Walls, Refer to Drawing No. A305 from the approved APP (2016).

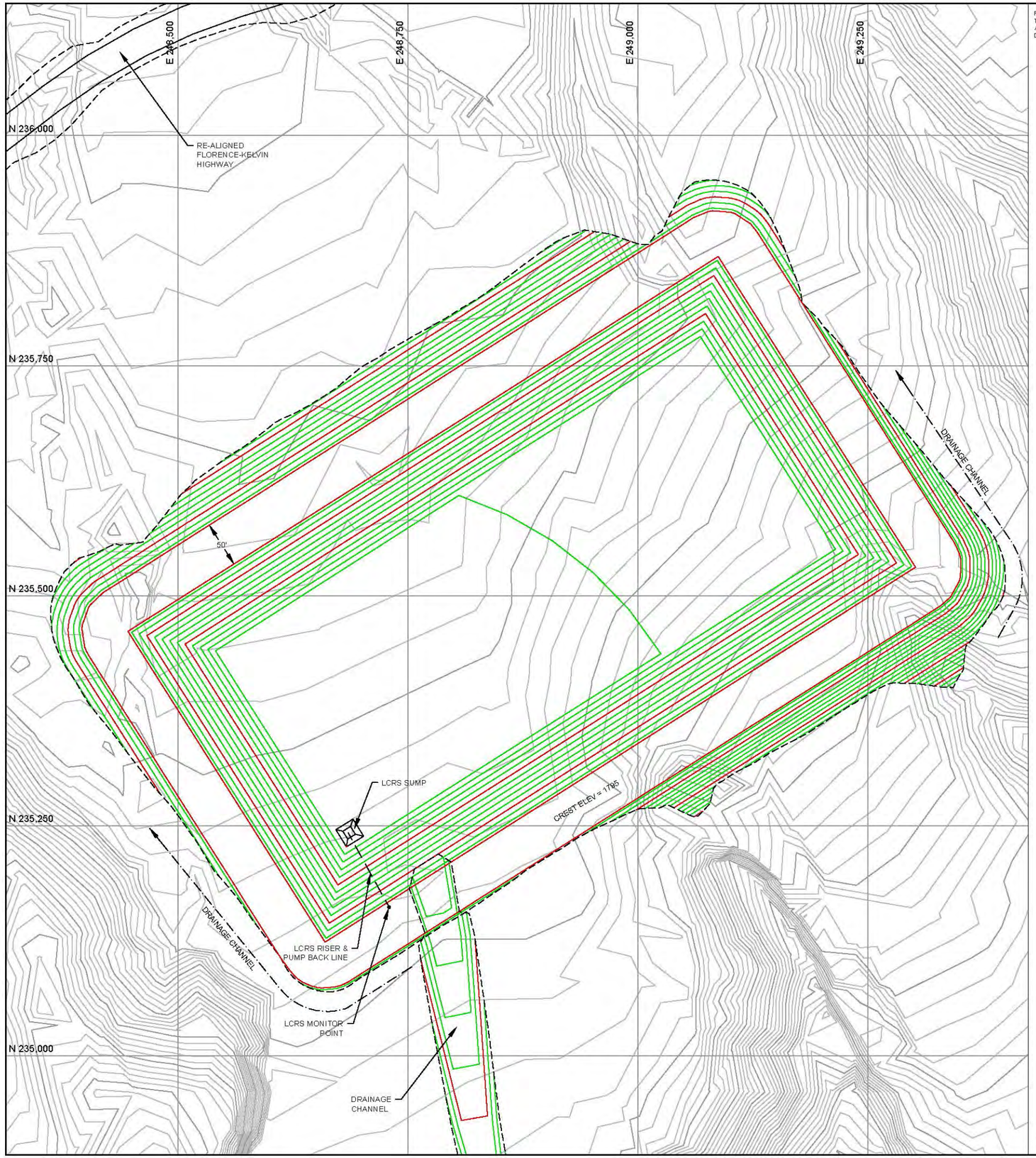


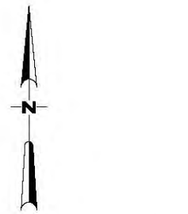
EAST SEEPAGE CUTOFF SECTION
(NOT TO SCALE)

Figure 56
East Seepage Trench - Cutoff Walls

SOURCE: AMEC (2016)
(Approved APP 2016)

REFERENCE:
TOPOGRAPHIC MAPPING AND EXISTING FEATURE DATA PROVIDED BY AIRBORNE 1, INC.; COORDINATE SYSTEM IS IN UTM ZONE 12 NAD 83 DATUM FOR HORIZONTAL AND NAVD 88 DATUM FOR VERTICAL.





LEGEND:

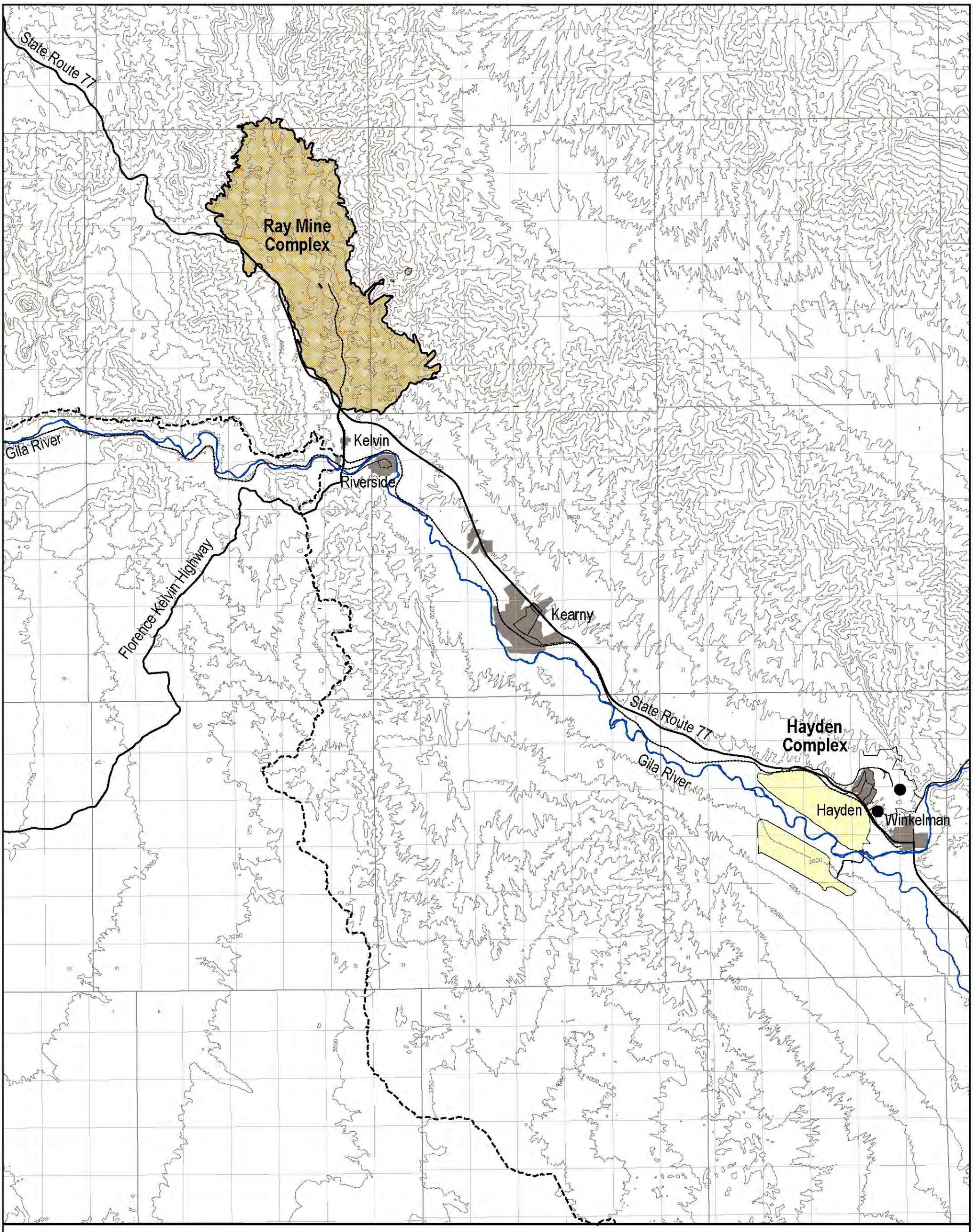
- EXISTING GROUND SURFACE CONTOUR ELEVATION (FEET)
- PROPOSED RECLAIM POND SURFACE CONTOUR ELEVATION (FEET)
- RE-ALIGNED ROAD

LEAK RECOVERY AND COLLECTION SYSTEM MONITOR POINT			
NORTHING	EASTING	LATITUDE	LONGITUDE
235161.456	248729.438	33.0965	-111.0076

NOTE: SEE FIGURE 2, SITE PLAN LAYOU - RIPSEY WASH TSF TO SHOW LOCATION.

SOURCE: AMEC (2016)
(Approved APP 2016)

Figure 57
Ripsey Wash TSF Main Reclaim Pond - Plan View



N

SCALE

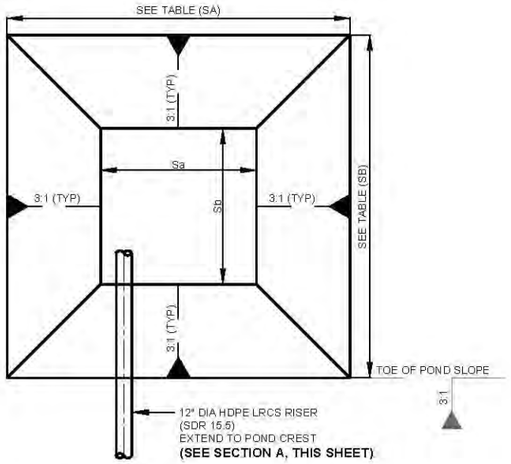
10,000' 0 10,000'

CONTOUR INTERVAL 250FT.

LEGEND:

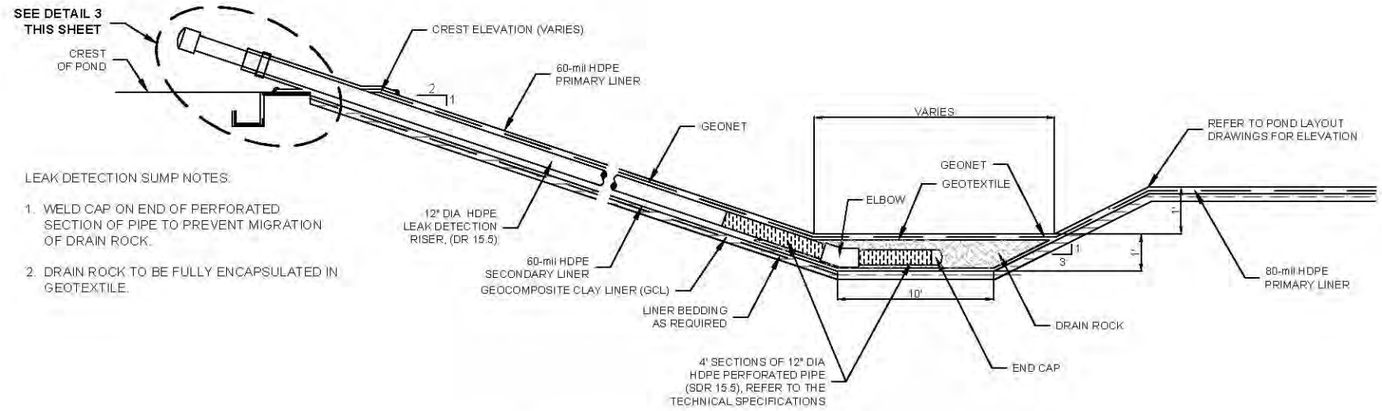
- Ray Mine Complex Disturbance
- Hayden Smelter, Concentrator & Tailings Disposal Areas
- Towns or Cities
- Existing Arizona Trail

Figure 58
Existing Current Disturbed Areas
Ray Mine Complex



DETAIL 1 LEAK RECOVERY AND COLLECTION SYSTEM (LRCS) SUMP

SCALE: 1" = 5'

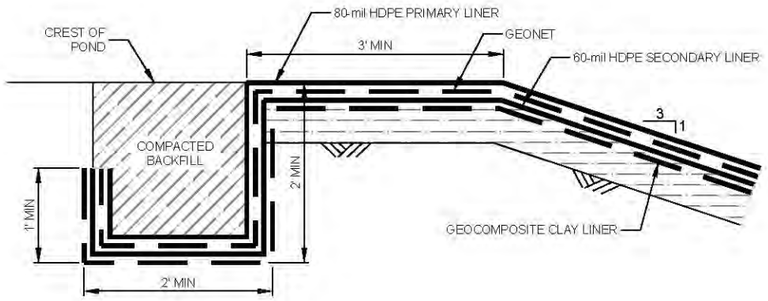


LEAK DETECTION SUMP NOTES:

1. WELD CAP ON END OF PERFORATED SECTION OF PIPE TO PREVENT MIGRATION OF DRAIN ROCK.
2. DRAIN ROCK TO BE FULLY ENCAPSULATED IN GEOTEXTILE.

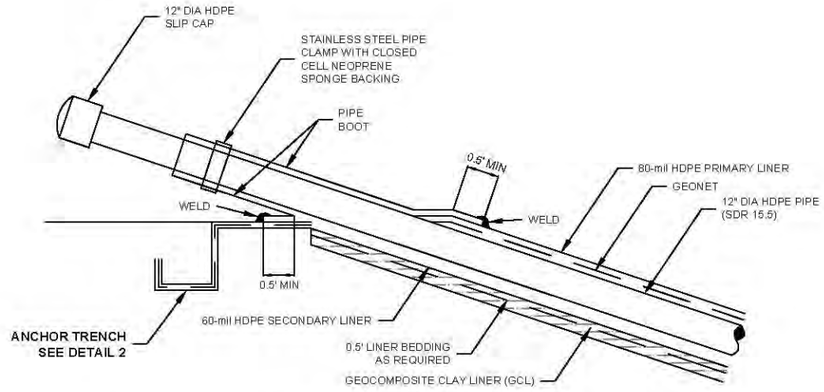
SECTION A POND LEAK DETECTION RISER

N.T.S.



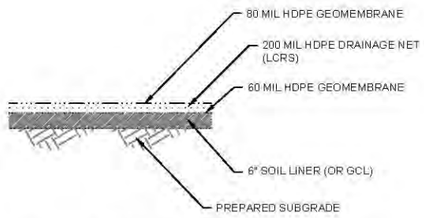
DETAIL 2 TYPICAL DOUBLE LINER ANCHOR TRENCH

N.T.S.



DETAIL 3 LEAK DETECTION RISER PIPE BOOT

N.T.S.



LINER SYSTEM

N.T.S.

LEAK DETECTION (LRCS) SUMP VOLUMES						
POND	SA (ft)	SB (ft)	Sa (ft)	Sb (ft)	VOLUME (ft^3)	DEPTH (ft)
MAIN RECLAIM	48	48	30	30	4644	3
EAST RECLAIM	30	30	12	12	1404	3
DRAIN DOWN	34	34	16	16	1956	3

SOURCE: AMEC (2016)
(Approved APP 2016)

Figure 59
Pond Lining Details