PUBLIC NOTICE

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

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APPLICATION FOR PERMIT
Heacock Channel Improvement Project

Public Notice/Application No.: SPL-2013-00848-JEM
Project: Heacock Channel Improvement Project
Comment Period: February 24, 2015 through March 24, 2015
Project Manager: James Mace; 951-276-6624 x263; James.E.Mace@usace.army.mil

Applicant
Grace Williams
March Joint Powers Authority
23555 Meyer Drive
Riverside, California 92518

Contact
David Moskovitz
Glenn Lukos Associates, Inc.
29 Orchard
Lake Forest, California 92630-8300

Location

The proposed project is located west of Heacock Street between Cactus Avenue and the Heacock Street Bridge at Lateral A, within the city of Moreno Valley, CA (at: 33.8956, -117.2438; see Exhibits 1 and 2).

Activity

The three-stage project proposes the permanent discharge of fill material into 2.70 acres of waters of the United States, of which 0.57 acre are wetland waters, for the concrete lining of approximately 10,764 linear feet of Heacock Channel, adjacent to March Air Reserve Base (MARB) and portions of a retired sanitary landfill, in the City of Moreno Valley, Riverside County, California. For more information see page 3 of this notice.

Interested parties are hereby notified that an application has been received for a Department of the Army permit for the activity described herein and shown on the attached drawing(s). We invite you to review today's public notice and provide views on the proposed work. By providing substantive, site-specific comments to the Corps Regulatory Division, you provide information that support the Corps' decision-making process. All comments received during the comment period become part of the record and will be considered in the decision. This permit will be issued, issued with special conditions, or denied under Section 404 of the Clean Water Act. Comments should be mailed to:

DEPARTMENT OF THE ARMY
Los Angeles District, U.S. Army Corps of Engineers
Attn: James Mace
1451 Research Park Drive, Suite 100
Riverside, California 92507-2154

Alternatively, comments can be sent electronically to: James.E.Mace@usace.army.mil

The mission of the U.S. Army Corps of Engineers Regulatory Program is to protect the Nation's aquatic resources, while allowing reasonable development through fair, flexible and balanced permit decisions. The Corps evaluates permit applications for essentially all construction activities that occur in the Nation's waters, including wetlands. The Regulatory Program in the Los Angeles District is executed to protect aquatic resources by developing and implementing short- and long-term initiatives to improve regulatory products, processes, program transparency, and customer feedback considering current staffing levels and historical funding trends.

Corps permits are necessary for any work, including construction and dredging, in the Nation's navigable water and their tributary waters. The Corps balances the reasonably foreseeable benefits and detriments of proposed projects, and makes permit decisions that recognize the essential values of the Nation's aquatic ecosystems to the general public, as well as the property rights of private citizens who want to use their land. The Corps strives to make its permit decisions in a timely manner that minimizes impacts to the regulated public.

During the permit process, the Corps considers the views of other Federal, state and local agencies, interest groups, and the general public. The results of this careful public interest review are fair and equitable decisions that allow reasonable use of private property, infrastructure development, and growth of the economy, while offsetting the authorized impacts to the waters of the United States. The permit review process serves to first avoid and then minimize adverse effects of projects on aquatic resources to the maximum practicable extent. Any remaining unavoidable adverse impacts to the aquatic environment are offset by compensatory mitigation requirements, which may include restoration, enhancement, establishment, and/or preservation of aquatic ecosystem system functions and services.

Evaluation Factors

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof. Factors that will be considered include conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people. In addition, if the proposal would discharge dredged or fill material, the evaluation of the activity will include application of the EPA Guidelines (40 CFR Part 230) as required by Section 404 (b)(1) of the Clean Water Act.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Preliminary Review of Selected Factors

EIS Determination- A preliminary determination has been made that an environmental impact statement is not required for the proposed work.

Water Quality- The applicant is required to obtain water quality certification, under Section 401 of the Clean Water Act, from the California Regional Water Quality Control Board. Section 401 requires that any applicant for an individual Section 404 permit provide proof of water quality certification to the Corps of Engineers prior to permit issuance.

Coastal Zone Management- This project is located outside the coastal zone and preliminary review indicates that it would not affect coastal zone resources. After a review of the comments received on this public notice and in consultation with the California Coastal Commission, the Corps will make a final determination of whether this project affects coastal zone resources after review of the comments received on this Public Notice.

Essential Fish Habitat- No Essential Fish Habitat (EFH), as defined by the Magnuson-Stevens Fishery Conservation and Management Act, occurs within the project area and no EFH is affected by the proposed project.

Cultural Resources- Cogstone Resource Management, Inc. (Cogstone) conducted cultural resource studies for the project site. A search for archaeological and historical records was conducted at the Eastern Information Center (EIC) at the University of California at Riverside in October, 2013. The record search covered a one mile-radius around the project area. The records search indicated that 17 cultural resources investigations were previously completed, five of which included a portion of the Area of Potential Effects (APE). There are no known historic properties/historical resources within the APE.

An intensive cultural resources pedestrian survey was performed by Cogstone in November, 2013. No cultural resources were identified during the survey. There are no historic properties/historical resources within the project area. Extensive prior development has occurred in the vicinity without revealing buried resources. Based on this, no adverse effects/impacts are anticipated.

The Corps will determine whether the proposed activity would have any effect on historic properties listed on, or determined eligible for listing in the National Register. The Corps may initiate consultation with the State Historic Preservation Officer (SHPO) to determine the adequacy of the inventory and the Corps' evaluation of any cultural resources that may be located within the project's Area of Potential Effect. If the Corps determines there may be an effect within our scope, the Corps may also consult with the appropriate Native American Tribes regarding the proposed impacts of the project. Mitigation measures may also be incorporated as part of project implementation to reduce potential impacts to cultural resources, if deemed appropriate.

Endangered Species- The project site is located within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) and will be evaluated under MSHCP criteria. Preliminary review indicates the project site has the potential to support the federally endangered Stephens' kangaroo rat (*Dipodomys stephensi*). Potential effects to federally threatened or endangered species will be evaluated through consultation under Section 7 of the Endangered Species Act prior to a permit decision.

Public Hearing- Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearing shall state with particularity the reasons for holding a public hearing.

Proposed Activity for Which a Permit is Required

Basic Project Purpose- The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed project, and is used by the Corps to determine whether the applicant's project is water dependent (i.e., requires access or proximity to or siting within a special aquatic site to fulfill its basic purpose). Establishment of the basic project purpose is necessary only when the proposed activity would discharge dredged or fill material into a special aquatic site (e.g., wetlands, pool and riffle complex, mudflats, coral reefs). The basic project purpose for the proposed project is two part: 1) flood control and 2) the prevention of surface water contamination. Preliminary review indicates the project is water dependent.

Overall Project Purpose- The overall project purpose serves as the basis for the Corps' 404(b)(1) alternatives analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the applicant's goals for the project, and which allows a reasonable range of alternatives to be analyzed. The overall project purpose for the proposed project is to provide 100-year flood protection to residential, commercial, federal, public and privately owned properties within the vicinity of the project site, while minimizing the risk of surface water contamination via adjacent remediation sites (retired Landfill No. 6 and the OU-1 Groundwater Plume; both “Superfund” sites being remediated under the Comprehensive Environmental Response, Compensation, and Liability Act).

Additional Project Information

Baseline information- Glen Lukos Associates (GLA) conducted a jurisdictional delineation of the project site in 2013. The project site contains approximately 2.70 acres of waters of the U.S., of which 0.57 acre consists of wetland waters, representing a total of 10,764 linear feet of streambed. Nearly all areas of jurisdiction are associated with Heacock Channel, with a small portion associated with the Cactus Avenue Channel, which connects to Heacock Channel from the west. The boundaries of waters of the U.S. are depicted on the enclosed map (see Exhibit 3).

Heacock Channel is a linear, incised channel that runs the length of the project site, parallel to and west of Heacock Street. The feature originates offsite to the north where the channel is concrete-lined and collects nuisance flows from adjacent, existing urban development. Heacock Channel also receives flows from the Cactus Avenue Channel at the northern end. Heacock Channel flows southward through the project site, from Cactus Avenue to a point approximately 500 feet north of Revere Place, for a total length of approximately 10,764 linear feet. The ordinary high water mark (OHWM) within Heacock Channel ranges from approximately 10 feet to 30 feet wide, with physical flow indicators consisting of bent vegetation and the destruction of terrestrial vegetation, the presence of litter and debris, sediment deposits, a change in soil characteristics, and defined channels with shelving.

Approximately 2.12 acres of non-wetland waters of the U.S. are associated with the project site. Vegetation in non-wetland areas is dominated by upland species such as red brome (*Bromus madritensis* ssp. *rubens*, NI), common fiddleneck (*Amsinckia intermedia*, UPL), red-stemmed filaree (*Erodium cicutarium*, UPL), ripgut brome (*Bromus diandrus*, UPL), tocalote (*Centaurea melitensis*, UPL), rattlesnake weed (*Daucus pusillus*, UPL), prickly lettuce (*Lactuca serriola,* FAC), wild radish

(*Raphanus sativus*, UPL), black mustard (*Brassica nigra*, UPL), lamb's quarters (*Chenopodium album*, UPL), Russian thistle (*Salsola tragus*, UPL), castor bean (*Ricinus communis*, UPL), and horehound (*Marrubium vulgare*, UPL).

Approximately 0.57 acre of wetland waters of the U.S. are associated with the project site. Vegetation in wetland areas is comprised of various dominant riparian species including black willow (*Salix gooddingii*, OBL), red willow (*Salix laevigata*, OBL), arroyo willow (*Salix lasiolepsis*, FACW), sandbar willow (*Salix exigua*, FACW), mule fat (*Baccharis salicifolia*, FACW), blue elderberry (*Sambucus nigra caerulea*, FAC), and tamarisk (*Tamarix sp.*, FAC). Dominant species of the understory include facultative and obligate wetland species such as hoary nettle (*Urtica dioica holosericea*, FAC), white water cress (*Nasturtium officinale*, OBL), southern cattail (*Typha domingensis*, OBL), and western sunflower (*Helianthus annuus*, FAC).

Project description- The proposed project would widen and impermeably line the existing Heacock Channel for the purpose of providing 100-year flood protection to nearby properties while minimizing the risk of surface water contamination to Heacock Channel itself (and thence downstream waters) from adjacent Superfund remediation sites. The project would permanently discharge fill material into 2.70 acres of Corps waters of the United States, including 2.12 acres of non-wetland waters and 0.57 acre of wetland waters. A total of 10,754 linear feet of streambed would be permanently disturbed. Proposed impacts consist of the placement of concrete for the channel bottom and sides for the majority of the channel, with a portion of the channel being covered (reinforced concrete box). Once completed, existing hydrology would not be disrupted (other than reduced percolation) and flows would continue to pass through the channel.

The proposed project is anticipated to be constructed in three phases with each segment identified as a Stage. Fencing and maintenance access roads would be provided along the length of each reach according to Riverside County Flood Control and Water Conservation District standards. The three distinct stages are described as follows:

- **Stage 1** begins at the intersection of Cactus Avenue and Heacock Street, paralleling Heacock Street approximately 3,590 linear feet south to the existing sanitary landfill (Site 4 - Landfill No. 6) located southerly of John F. Kennedy/Meyer Drive. Stage 1 will consist of constructing a reinforced concrete trapezoidal open channel with a 25-foot base width and depth of 15-feet. Construction of Stage 1 is scheduled to begin in November 2015 and be completed in November 2016.

- **Stage 2** continues from the existing sanitary landfill located south of John F. Kennedy/Meyer Drive along Heacock Street (downstream of Stage 1) and proceeds south approximately 2,625 linear feet adjacent to and easterly of the existing landfill located on City of Moreno Valley Parks Department property. Stage 2 proposes to construct a reinforced concrete rectangular open channel with a 35-foot base width and depth of 15-feet. Construction of Stage 2 is scheduled to begin in March 2017 and be completed in May 2018.

- **Stage 3** continues from the southerly limit of the landfill (downstream of Stage 2) and proceeds south approximately 3,600 linear feet along MARB, terminating at the Heacock Street Bridge at Lateral A (approximately 2,065 feet south of Iris Avenue). Stage 3 will be designed as an approximately 1,700 linear foot reinforced concrete box (underground facility) continued from Stage 2 with the remaining approximately 1,900 linear feet designed as reinforced concrete rectangular open channel with a 35-foot base width and depth of 15-feet.

Construction of Stage 3 is scheduled to begin in September 2018 and be completed in March 2020.

The following table provides a breakdown of Corps jurisdictional impacts by Project Stage.

Proposed Impacts to Corps Jurisdiction by Project Stage

Stage	Wetlands (Acres)	Non-Wetland Waters (Acres)	Total Corps Jurisdiction (Acres)	Linear Feet
1	0.51	0.32	0.83	3,747
2	0	0.62	0.62	2,978
3	0.06	1.19	1.25	4,029
Total	0.57	2.13	2.70	10,754

Construction of the proposed project would necessitate the relocation of several utilities crossing and/or paralleling the project footprint. All construction staging is anticipated to occur on or around the project site in disturbed/developed areas. Proposed construction would commence in late 2015. Each stage of the channel is considered a construction phase. Interim improvements would be constructed as part of each Stage (or construction phase) until the project was completed. These interim improvements would include installation of riprap or other material energy dissipators to slow flood velocity to pre-project levels. While timing and construction of each phase would be dependent upon availability of funding, each phase would likely take approximately 8 to 12 months to complete.

Preliminary Alternatives Analysis

The applicant will be submitting a draft alternatives analysis to the Corps; however, for consideration as part of the permit application a preliminary alternatives analysis is summarized below. This is provided for the purpose of soliciting comments and does not represent the Corps' final determination of its adequacy.

Four preliminary on-site alternatives are presented in this notice. Offsite alternatives are not presented in this notice because preliminary analysis suggests no practicable offsite alternatives would satisfy the project purpose (flood risk management of Heacock Channel and prevention of surface water contamination). In addition to the No Federal Action Alternative (Alternative 1), three additional on-site alternatives (Alternatives 2 through 4) evaluate varying levels of impacts to Heacock Channel.

Alternative 1) No Federal Action Alternative

The No Federal Action Alternative (Alternative 1) would attempt to achieve the project purpose by widening the channel through excavation, without any discharge (temporary or permanent) of dredged or fill material into waters of the U.S. The existing channel bottom would be widened to approximately 70 feet on average. Access roads and side slopes would require another 35 feet and 40 feet, respectively, for a total footprint width of approximately 145 feet. The widening of the channel would require the removal and remediation of an existing retired landfill located along the western edge of the channel. The removal of the landfill would require the temporary deep excavation of the channel, followed by backfill to restore the pre-construction elevation of the channel. For these reasons, it would be not be possible for the Heacock Channel to be improved without at least a temporary discharge of fill materials into waters of the U.S. Additionally, removal and remediation of the existing

landfill would be cost-prohibitive. This alternative does not address the groundwater quality issues associated with the adjacent Superfund remediation site. As such, the No Federal Action Alternative would not be practicable to achieve the project purpose and will not be further considered.

Alternative 2) Earthen Channel Alternative (No Loss) [Exhibit 4]

Alternative 2 consists of widening/improving the existing Heacock Channel, but without a permanent impact to waters of the U.S. The entire improved channel would remain earthen under this alternative. In order to maintain an earthen channel, the existing channel bottom would be widened to approximately 70 feet on average. The access roads and side slopes would add another 35 feet and 40 feet, respectively, for a total footprint width of approximately 145 feet. The widening of the channel would require the removal and remediation of an existing landfill located along the western edge of the channel. The removal of the landfill would require the temporary deep excavation of the channel, followed by backfill to restore the pre-construction elevation of the channel. This alternative would temporarily impact all 2.70 acres of Corps jurisdiction, including 0.57 acre of wetlands. Additionally, the removal and remediation of the existing landfill would be cost-prohibitive. This alternative does not address the groundwater quality issues associated with the adjacent Superfund remediation site. As such, Alternative 2 would not be practicable to achieve the project purpose and will not be further considered.

Alternative 3) Partially-Lined Channel Alternative (Partial Loss) [Exhibit 5]

Alternative 3 consists of lining the portion of the improved channel adjacent to the existing landfill with concrete, but keeping the other portions of the channel earthen, resulting in a partial loss of waters of the U.S. The first 3,590 linear feet of the improved channel would consist of an earthen channel with an average bottom width of 70 feet, in addition to 40 feet of side slopes and 35 feet for access roads. The earthen channel would narrow to the point of the transition with the concrete-lined portion. The reinforced concrete portion would begin at the existing sanitary landfill (downstream of Stage 1) and proceed south for approximately 2,625 linear feet. The concrete channel will exhibit a 35-foot base width and depth of 15-feet. The remainder of the channel, downstream of the existing landfill, would be similar to the upstream portion, constructed as earthen with an average base width of 70 feet, with 40 feet of side slopes and 35 feet for access roads. Alternative 3 would permanently impact 0.64 acres of Corps jurisdiction (none of which support wetlands), and temporarily impact 2.05 acres of Corps jurisdiction (including 0.57 acres of wetlands). However, this alternative would encroach into the approved March LifeCare Campus, adjacent to Stage 1, and as such, is logistically infeasible. Additionally, this alternative does not address the groundwater quality issues associated with the adjacent Superfund remediation site. As such, Alternative 3 would not be practicable to achieve the project purpose and will not be further considered.

Alternative 4) Preferred Alternative [Exhibit 6]

The Preferred Alternative consists of shaping and lining the existing channel, identified in three stages. Stage 1 begins at the intersection Cactus Avenue and Heacock Street, paralleling Heacock Street approximately 3,590 linear feet south to the existing sanitary landfill (Site 4 - Landfill No. 6). Stage 1 would consist of a reinforced concrete trapezoidal open channel with a 25-foot base width and a depth of 15-feet. Stage 2 would begin at the existing sanitary landfill (downstream of Stage 1) and proceed south approximately 2,625 linear feet. Stage 2 would consist of a reinforced concrete rectangular open channel with a 35-foot base width and a depth of 15-feet. Stage 3 would continue from the southerly limit of the landfill (downstream of Stage 2) and proceed south approximately 3,600 linear feet along March Air Reserve Base, terminating at the Heacock Street Bridge at Lateral A

(approximately 2,065 feet south of Iris Avenue). Stage 3 would be designed as an approximately 1,700 linear foot reinforced concrete box (underground facility) continued from Stage 2 with the remaining approximately 1,900 linear feet, designed as reinforced concrete rectangular open channel with a 35-foot base width and a depth of 15-feet. The Preferred Alternative would permanently discharge fill material into all 2.70 acres of Corps jurisdiction, including 0.57 acre of wetland waters.

Proposed Mitigation– The proposed mitigation may change as a result of comments received in response to this public notice and/or the need for the project to comply with the 404(b)(1) Guidelines. In consideration of the above, the proposed mitigation sequence (avoidance, minimization, compensation), as applied to the proposed project is summarized below:

Avoidance: Preliminary analysis suggests the proposed project is necessarily site specific and water dependent (provide flood protection to properties along Heacock Street and prevent surface waters from receiving contamination from adjacent remediation sites). As such, preliminary analysis suggests avoidance of waters would not be practicable.

Minimization: In accordance with the requirements of an NPDES General Construction Permit, the project applicant will develop a Stormwater Pollution Prevention Plan (SWPPP) prior to construction. Standard Best Management Practices (BMPs) will be implemented to the maximum extent possible by incorporating water pollution control practices in the following categories: soil stabilization, sediment control, wind erosion control, tracking control, non-storm water management, and waste management and materials pollution control. Staging and storage areas for all equipment and related materials will be located outside of jurisdictional areas.

Compensation: The proposed project would result in permanent impacts to 2.70 acres of Corps jurisdictional waters, of which 0.57 acre consists of jurisdictional wetlands, and a total of 10,764 linear feet of streambed will be permanently disturbed by constructing a concrete-lined channel for the majority of the alignment, with a portion to be covered (reinforced concrete box). However, in the ultimate condition, the current hydrology will not be disrupted, blocked, or diverted and flows will continue to pass through the channel. The Applicant proposes to purchase credits through an approved mitigation bank/in-lieu fee program to replace the loss of 0.57 acre of wetlands at a 3:1 ratio, and replace the loss of 2.13 acres of non-wetlands waters at a 1:1 ratio. Since the Project will be constructed in three stages, the Applicant also proposes to phase the mitigation by purchasing mitigation credits as the construction of each Stage is initiated. The following table provides a breakdown of the phased mitigation based on impacts per Project Stage. Initial credits are intended to be purchased through the Riverside-Corona Resource Conservation District (RCRCD) in the form of willow riparian habitat.

Proposed Mitigation by Project Stage (In Acres)

Stage	Wetlands (3:1 ratio)	Non-Wetland Waters (1:1 ratio)	Total Mitigation
1	1.53	0.32	1.85
2	0	0.62	0.62
3	0.18	1.19	1.37
Total	**1.71**	**2.13**	**3.84**

Proposed Special Conditions

Special conditions providing for the avoidance, minimization and mitigation for impacts to threatened and endangered species, as well as to waters of the United States, would likely be incorporated into any Corps permit authorization, if issued. No specific conditions are proposed at this time.

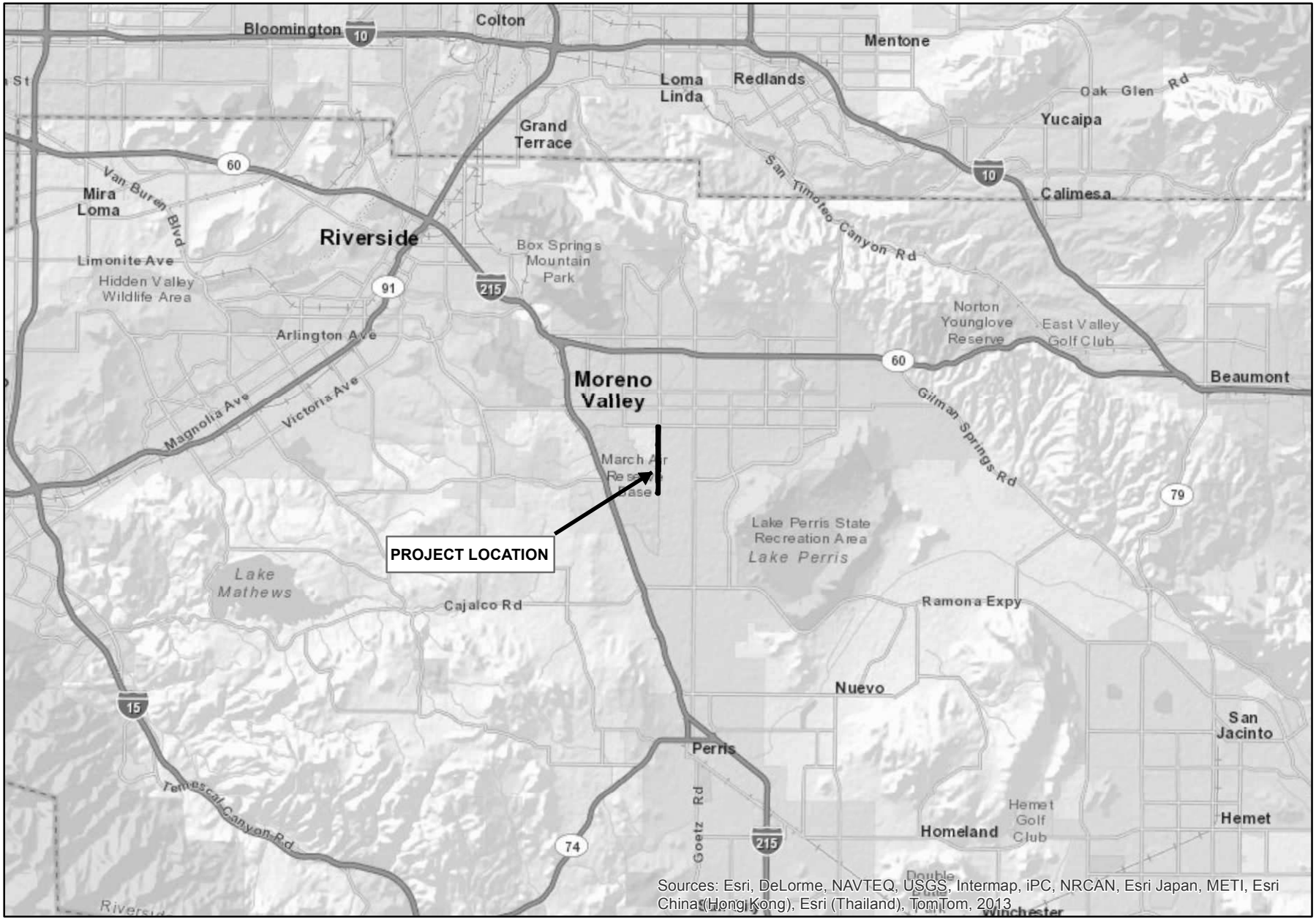
For additional information please call James Mace of my staff at 951-276-6624 x263 or via e-mail at James.E.Mace@usace.army.mil. This public notice is issued by the Chief, Regulatory Division.

Regulatory Program Goals:

- To provide strong protection of the nation's aquatic environment, including wetlands.
- To ensure the Corps provides the regulated public with fair and reasonable decisions.
- To enhance the efficiency of the Corps' administration of its regulatory program.

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1451 RESEARCH PARK DRIVE, SUITE 100
RIVERSIDE, CALIFORNIA 92507-2154
WWW.SPL.USACE.ARMY.MIL/MISSIONS/REGULATORY

Source: ESRI World Street Map



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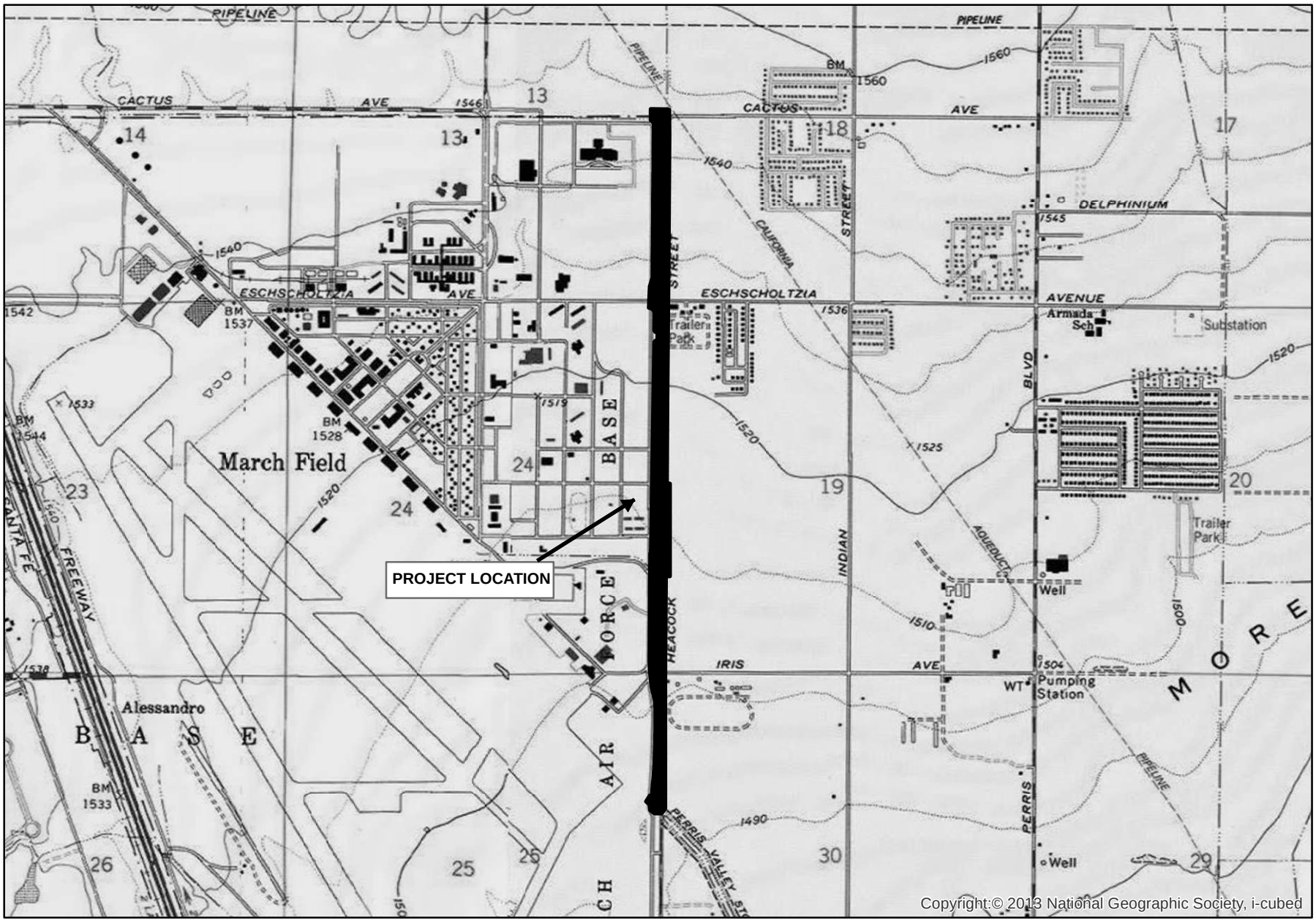
HEACOCK CHANNEL IMPROVEMENT PROJECT

Regional Map

GLENN LUKOS ASSOCIATES

U.S. Army Corps of Engineers
File No. SPL-2013-00848

Exhibit 1



Adapted from USGS Sunnymead, CA quadrangle

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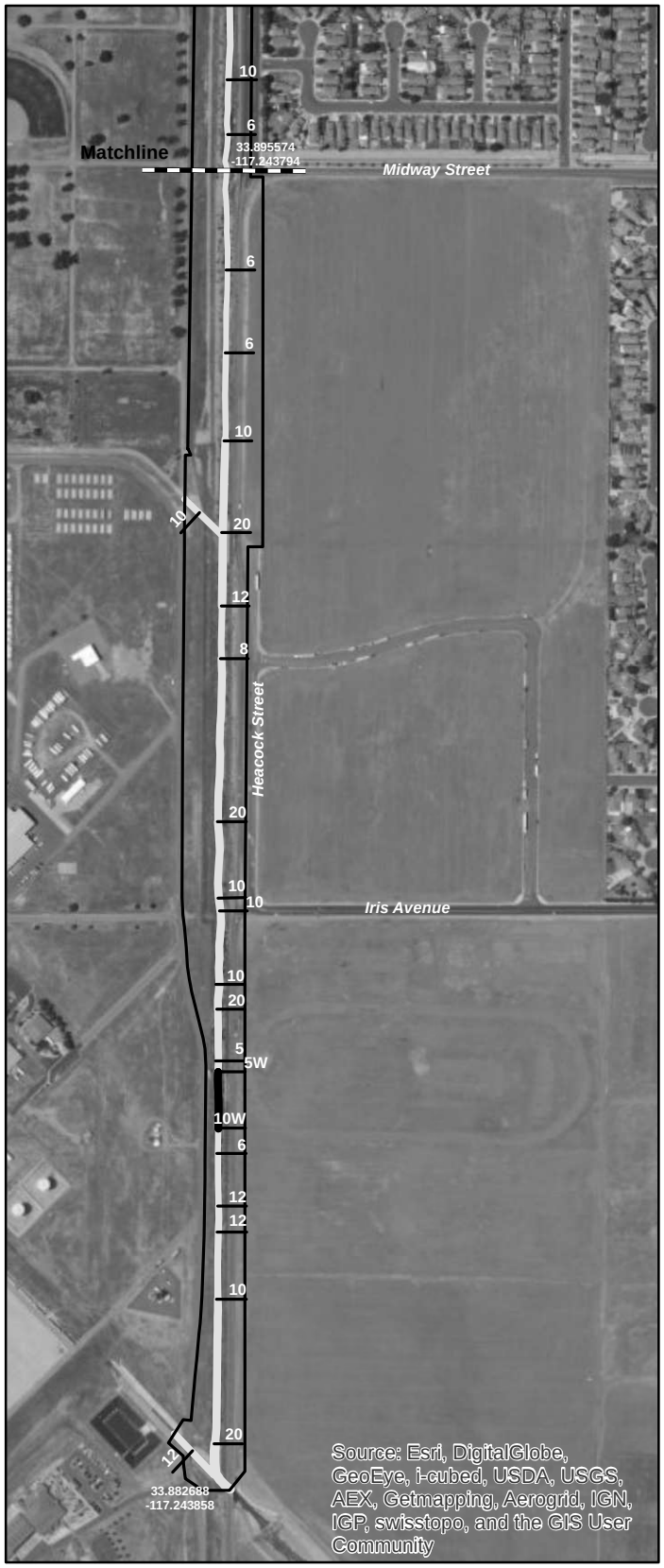
HEACOCK CHANNEL IMPROVEMENT PROJECT

Vicinity Map

GLENN LUKOS ASSOCIATES

U.S. Army Corps of Engineers
File No. SPL-2013-00848

Exhibit 2



Aerial Photo: ESRI Basemaps
Reference Elevation Datum: State Plane 6 NAD 83
Map Prepared by: K. Kartunen, GLA
Date Prepared: June 20, 2014

Legend

- Project Boundary
- Matchline
- Corps Non-Wetland Waters
- Corps Wetland
- Width in Feet (W indicates wetland width)

N

0 325 650 1,300
Feet

1 inch = 650 feet

HEACOCK CHANNEL IMPROVEMENT PROJECT

Corps Jurisdictional Delineation Map

GLENN LUKOS ASSOCIATES

U.S. Army Corps of Engineers
File No. SPL-2013-00848

Exhibit 3

G:\2013\13-0055\GIS\EarthernChannel_Alt.mxd; Map created April 22, 2014.

Sources: County of Riverside GIS, 2014;
Eagle Aerial, April 2012.

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Exhibit 4 - Earthen Channel Alternative (No Loss)

Heacock Channel Improvement Project

U.S. Army Corps of Engineers
File No. SPL-2013-00848

Albert A. WEBB Associates

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Sources: County of Riverside GIS, 2014; Eagle Aerial, April 2012.

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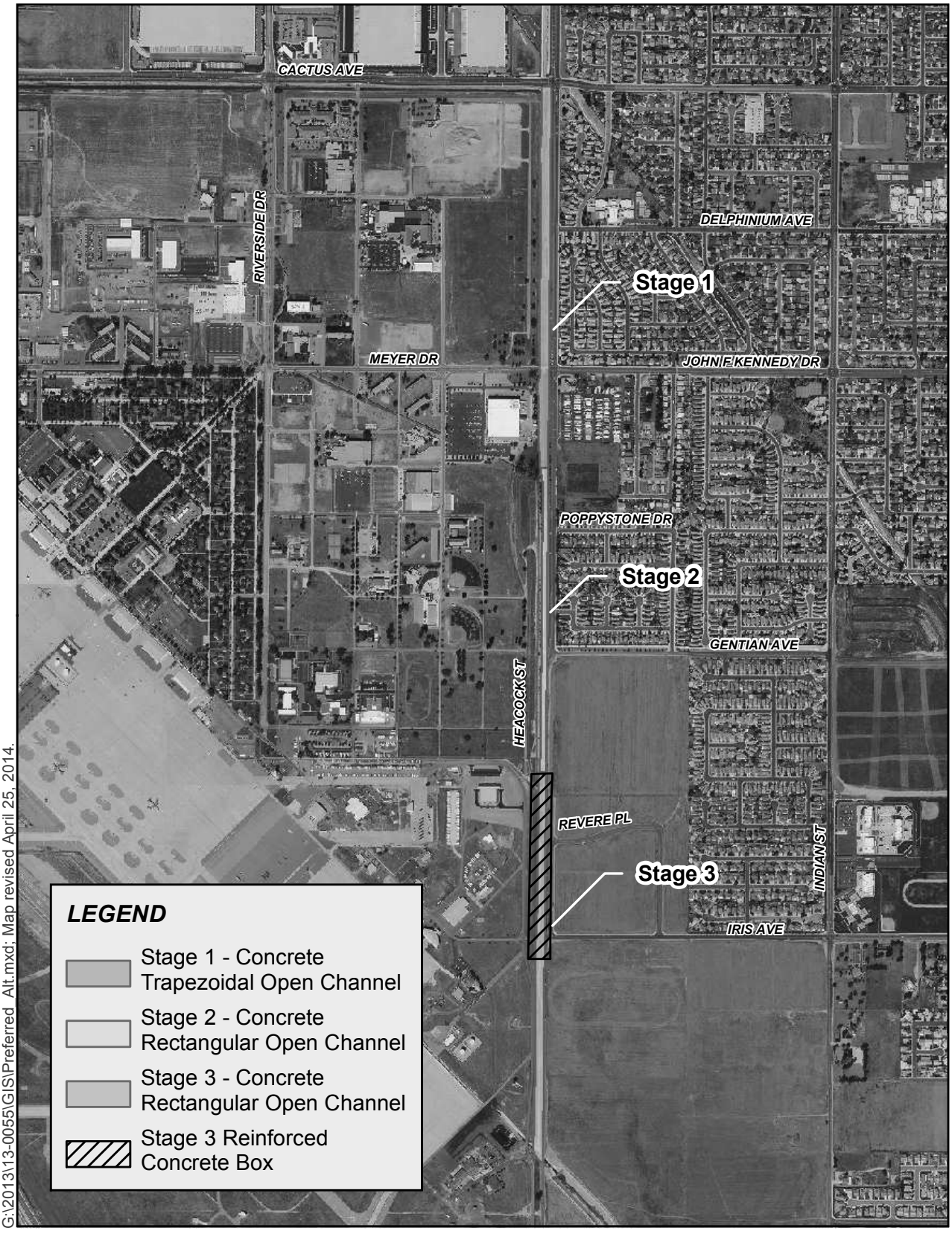
N W WEBB E S

Exhibit 5 - Partially-Lined Channel Alternative (Partial Loss)

Heacock Channel Improvement Project

U.S. Army Corps of Engineers
File No. SPL-2013-00848

Albert A. WEBB Associates



G:\2013\13-0055\GIS\Preferred_Alt.mxd; Map revised April 25, 2014.

Sources: County of Riverside GIS, 2014;
Eagle Aerial, April 2012.

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Feet

Exhibit 6 - Preferred Alternative

Heacock Channel Improvement Project

U.S. Army Corps of Engineers
File No. SPL-2013-00848

Albert A. WEBB Associates