

INDIVIDUAL WATER QUALITY ASSESSMENT REPORT

Site Name/Facility: Nestor Creek Channel

Master Program Map No.: Map Number 131, 132, 133, 134

Date: October 9, 2015; Revised January 11, 2017; Revised April 21, 2017; **Revised May 2, 2017**

Civil Engineer (name, company, phone number): Jayne Janda-Timba
Rick Engineering Company
5620 Friars Road
San Diego, California 92110
(619) 688-1448

Register Civil Engineer Number & Expiration Date (place stamp here): RCE # 70649
Exp. 06/2017



Instructions: This form must be completed for each facility prior to the completion of the Individual Maintenance Plan and prior to any work being conducted in the facility. Attach additional sheets if needed.

EXISTING CONDITIONS

Introduction:

The City of San Diego developed the Master Storm Water System Maintenance Program to optimize its business processes and environmental protection practices related to channel operation and maintenance activities. The Master Maintenance Program (MMP) is intended to integrate operation and maintenance planning, implementation and assessment activities with its water quality protection programs. This document provides a summary of the Individual Water Quality Assessment (IWQA) Report activities conducted within Nestor Creek Channel located west of Beyer Boulevard, north of Grove Avenue, east of Thermal Avenue and south of the Otay River crossing at Interstate 5 (I-5).

The Nestor Creek Channel area of study consists of thirteen reaches (Reach 1a, 1b, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12), as defined in the Individual Hydrologic and Hydraulic Assessment (IHHA) Report for Nestor Creek. Reach 1a is the most downstream reach in this assessment, bound from the downstream end of Reach 1b to approximately 400-feet downstream. Reach 1b is immediately upstream of Reach 1a, and bound from the downstream side of the triple 10-foot wide by 4-foot high Reinforced Concrete Box (RCB) culvert beneath Palm Avenue to approximately 600-feet downstream. Reach 2 begins at Palm Avenue and extends upstream for approximately 840 feet to Saturn Boulevard/19th street. Reach 3 begins at Saturn Boulevard and extends to Cerrissa Court. Reach 4 is the next most downstream reach, beginning at the upstream edge of Reach 3 at Cerrissa Court and extending upstream in a southerly direction to Coronado Avenue. Reach 5 begins at Coronado Avenue and extends upstream in a southeast direction to Hollister Street. Reach 6 begins at Hollister Street and ends at the downstream end of a double 10 feet wide by 5 feet high RCB culvert crossing at a Private Street in the Country Airre Subdivision. Reach 7 begins at the upstream limit of Reach 6 and extends to Tesoro Grove Way. Reach 8 begins at the upstream limit of Reach 7 and extends to Interstate 5. Reach 9 begins from Interstate 5 and extends upstream in an easterly direction to 27th Street. Reach 10 begins from the west side of 27th Street and extends to the San Diego Railroad crossing. Reach 11 begins at the railroad crossing and extends east approximately 710 feet to a gabion wall. Reach 12 is the most upstream reach, beginning at the gabion wall at the upstream end of Reach 11 and extending to 30th Street. It should be noted that only Reaches 1a, 1b, 4, 11, and 12 are intended to be maintained by the City of San Diego and is the focus of this IWQA.

Site visits were conducted on September 10, 2015 and November 16, 2016 to determine if dry weather flows exist. No dry weather flows were observed on either date.

Description of creek/channel geometry (length, width, and depth):

The Nestor Creek Channel area of study for this report varies in configuration throughout. The channel configuration ranges from a concrete rectangular open channel to an earthen trapezoidal channel. For the purposes of this assessment, this report will address the portion of Nestor Creek Channel that extends from roughly 600 feet downstream of Palm Avenue to 30th Street (approximately 11,400 feet upstream) covering MMP map numbers 131, 132, 133, and 134. Pursuant to the IHHA, it should be noted that Reach 2 of Map 134 is not proposed for maintenance.

The reaches to be maintained by the City of San Diego are indicated below. The Reaches excluded in the list below (Reaches 2, 3, 5, 6, 7, 8, and 10) are not being maintained by the City of San Diego. Reaches 5, 6, 7, 8, 10, as well as portions of Reaches 3 and 4 contain flowage easements, thus the private property owner is responsible for performing maintenance.

- Reach 1b – HEC-RAS Cross Sections 947.5947 to 1397.676
- Reach 1a - HEC-RAS Cross Sections 855.4912 to 947.5947
- Portion of Reach 4 - HEC-RAS Cross Sections 4167.329 to 5493.50
- Reach 9 - HEC-RAS Cross Sections 8250.62 to 9705.227
- Reach 11 - HEC-RAS Cross Sections 10553.02 to 11208.47
- Reach 12 - HEC-RAS Cross Sections 11208.47 to 11800.64

The limits of each Reach are identified in Figure 3 - Project Vicinity Map and Figure 4 - Hydraulic Workmap attached. Unless otherwise stated in the descriptions below, the open channel portions in all of the Reaches are under the City's responsibility to maintain.

Reach 1a: (HEC-RAS Cross Sections 855.4912 to 947.5947) MMP Map 134

Reach 1a is bound from the downstream end of Reach 1b to roughly 400 feet downstream. Reach 1a is entirely earthen and trapezoidal throughout the reach, having a varying bottom width of 1 to 15 feet and varying depth of 4 to 7 feet. For approximately 50 feet of the upstream portion of this reach, both channel side slopes are rip rap lined, with an earthen bottom. This 15 foot portion at the upstream end of Reach 1a was recently maintained in January 2016 as an emergency project by the City. The City has an easement in the channel for this approximately 50 feet portion at the upstream end of Reach 1a, the channel downstream of the City's easement is privately owned. As observed during the site visit performed on November 16, 2016, Reach 1a contains varying amounts of sediment deposition and light to dense vegetation in the channel.

Reach 1b: (HEC-RAS Cross Sections 947.5947 to 1397.676) MMP Map 134

Reach 1b is bound from the downstream side of the triple 10 feet wide by 4 feet high reinforced concrete box (RCB) culvert beneath Palm Avenue to roughly 600 feet downstream, at the end of the concrete portion of the creek. Reach 1b is entirely concrete and rectangular throughout the reach, having a bottom width of 28 feet and varying depth. The concrete side walls of the channel stay at an elevation of 13.32 feet throughout the entire reach. As observed during the site visit performed on November 16, 2016, Reach 1b contains scattered patches of sediment of approximately 6 inches high and a patch of medium density vegetation on the upstream end, at the discharge of the triple RCB culvert underneath Palm Avenue.

Reach 4: (HEC-RAS Cross Sections 3521.29 to 5493.50) MMP Map 133

The downstream limit of Reach 4 is the upstream limit of Reach 3. Reach 4 begins at Cerrissa Court and extends upstream in a southerly direction approximately 1,970 feet to Coronado Avenue. Mendoza Elementary School, part of the South Bay Union School District, is located along the western limits of this Reach. This Reach consists of a triple RCB culvert (two 12 feet wide by 7 feet high and one 12 feet wide by 6 feet high RCB) that extends for approximately 64 feet. Then for 1,906 feet upstream is an earthen lined channel. As noted during the site visit conducted on September 10, 2015, the earthen lined portion consists of moderate vegetation throughout the Reach, with the exception of dense vegetation at the most upstream portion of the Reach. Reach 4 is bounded by Cerrissa Court to the north and Coronado Avenue to the south. It should be noted that only a portion of Reach 4, HEC-RAS Cross-sections 4167.329 to 5493.50, are being maintained by the City of San Diego. The portion of Reach 4, approximately HEC-RAS Cross Sections 3521.293 to 4167.329, contains a flowage easement, thus the private property owner is responsible for performing maintenance.

Reach 9: (HEC-RAS Cross Sections 8250.62 to 9705.227) MMP Map 132

The downstream limit of Reach 9 is the upstream limit of Reach 8. Reach 9 begins from Interstate 5 and extends upstream in an easterly direction for approximately 1,500 feet to 27th Street. Reach 9 consists of 2 culvert crossings and an earthen trapezoidal channel. The culvert crossing located at Interstate 5 is a double 7 feet wide by 5 feet high RCB and extends 390 feet. The Reach then extends upstream from the culvert approximately 540 feet through a rectangular channel with an earthen bottom and concrete side walls. From there, the Reach extends 36 feet through the culvert crossing located at Caminito Avelano Street, a triple 8 feet wide by 4 feet high RCB. Then the Reach extends 530 feet upstream through a trapezoidal channel with concrete sides and an earthen bottom. As observed during the site visit on May 13th, 2015, the open channel portions of the channel in Reach 9 have moderate vegetation along the channel bottom. Reach 9 is bounded by Interstate 5 to the west, Grove Avenue to the south, and 27th Street to the east. Reach 9 is proposed for vegetation maintenance.

Reach 11: (HEC-RAS Cross Sections 10553.02 to 11208.47) MMP Map 131

The downstream limit of Reach 11 is the upstream limit of Reach 10. Reach 11 begins from the railroad crossing at the upstream end of Reach 10 and extends upstream in an easterly direction for approximately 710 feet. Reach 11 consists of a culvert crossing, which extends 95 feet, and a concrete trapezoidal channel, which extends 615 feet upstream of the culvert. The culvert located at the railroad crossing is a double 36 inch reinforced concrete pipe (RCP). As observed in the site visit on September 10, 2015, the concrete trapezoidal portion of the channel in Reach 11 has light to moderate vegetation, as well as sedimentation, along the channel bottom.

Reach 12: (HEC-RAS Cross Sections 11208.47 to 11800.64) MMP Map 131

The downstream limit of Reach 12 is the upstream limit of Reach 11. Reach 12 begins from a gabion wall structure in the channel at the upstream end of Reach 11 and extends upstream in an easterly direction for approximately 200 feet to 30th Street. Reach 12 consists of a 42 inch RCP culvert, which extends 18 feet, and a concrete trapezoidal channel, which extends 182 feet upstream of the culvert. As observed during the site visit on September 10, 2015, the trapezoidal portion of the channel in Reach 12 has dense vegetation, as well as sedimentation, along the channel bottom.

Description of Sediment Sampling Activities (location(s), depth, shipment/deliverer to laboratory(s)):

Site visits were conducted on September 10, 2015 and November 16, 2016 to determine if dry weather flows exist. No dry weather flows were observed on either date. The field observation activities (described below) established that there are no negative water quality impacts associated with channel maintenance due to no dry weather flows in the channel. For this reason, sediment sampling activities are unnecessary, and would only serve to prove that channel maintenance has a greater positive impact on water quality than leaving the plants and sediment in place.

Description of Flow Measurement Activities (location(s) and equipment):

The flow chart found on page 2 of the IWQA Appendix A (Standard Operating Procedure (SOP)) within Appendix F (White Paper) of the Programmatic Environmental Impact Report (PEIR), states that if there is no dry weather flow, it can be concluded that maintenance will have no negative impact on water quality, and no further water quality analysis is required. This is discussed in more detail throughout the White Paper and the SOP attached to the White Paper.

Two field visits were made to the Nestor Creek Channel to determine if dry weather flows exist, on September 10, 2015 and on November 16, 2016. During each of these visits, no dry weather flow was observed within the channel.

Description of Volume Measurement Activities (interval, total number, equipment):

No dry weather flows were observed in Nestor Creek Channel. Therefore, there is no dry weather flow volume of water flowing through the channel and it cannot be measured.

Description of Water Quality Sampling Activities (location(s), shipment/delivery to laboratory(s)):

Water samples were not taken since there was no observed dry weather flow to be analyzed.

Description of Wetland Assessment (Existing) Activities (personnel, general conditions):

Wetland assessment (existing) activities were not performed since the White Paper explains that if there is no dry weather flow then it can be concluded that maintenance will have no negative impact on water quality.

Description of Wetland Assessment (Recovery) Activities (personnel, general conditions):

Wetland Assessment (recovery) activities were not performed since the White Paper explains that if there is no dry weather flow then it can be concluded that maintenance will have no negative impact on water quality.

Sediment Pollutant Loading Estimates:

Field observations with no dry weather flows support the conclusion that there are no negative water quality impacts associated with channel maintenance. For this reason, sediment loading estimates are unnecessary, and would only prove that channel maintenance has a greater positive impact on water quality than leaving the plants and sediment in place.

MAINTENANCE IMPACTS

Evaluation of Benefits / Impacts:

Are there constituents that have potential impacts greater than benefits?

Yes No

After analyzing the channel per the SOP in the IWQA, it can be seen that there are no negative water quality impacts associated with channel maintenance.

If so, identify constituents here and compare measured concentrations to thresholds.

Not Applicable.

MITIGATION

If impacts are identified, list potential mitigation efforts (e.g., BMPs type(s) and number(s)) that may be implemented in the watershed:

The IWQA has determined that there are no negative impacts to water quality associated with channel maintenance.

ADDITIONAL COMMENTS OR RECOMMENDATIONS

Vegetation maintenance would help prevent large vegetation such as palm trees and other large trees that were seen along portions of the channel, both concrete and earthen portions, either within the channel, along the side slopes or at the top of the channel banks, from becoming dislodged during larger storm events and being conveyed downstream where they may become trapped at the entrance of the culverts.

It is important to note that the frequency of flooding will be increased and the capacity will be reduced in many portions of Nestor Creek should maintenance be neglected. Also, maintenance should be performed in the culvert under the Private Street at Country Aire Subdivision, owned by "Unison Investment". The City is not responsible for maintenance on properties owned by others. If the City maintains its portion, flooding frequency will be reduced; however, significant benefits with respect to increasing the capacity and further reducing the frequency of flooding would be achieved when additional privately owned areas are maintained.

The northwesterly portion of Map 134 (north of Palm Avenue), Reach 1a and Reach 1b, is mapped within the Coastal Overlay Zone. Although this IWQA analysis covers several reaches of Nestor Creek, the City will seek permit authorizations for Map 134 separately from non-coastal reaches since those segments would not require a Coastal Development Permit.

LIST OF ATTACHMENTS (Check All That Apply):

- Attachment 1 – Site Photos
- Chain of Custody Sheet(s) for Sediment Sampling
- Analytical Results of Sediment Sample(s)
- Chain of Custody Sheet(s) for Water Column Sampling
- Analytical Results of Water Column Sample(s)
- Flow Measurement Model
- Volume Measurement Model (Existing Condition)
- Wetland Land Assessment Scoring Sheet (Existing Condition)
- Wetland Land Recovery Assessment Scoring Sheet (Maintained Storm water facility)
- Sieve Analysis Laboratory Results
- Sediment Pollutant Loading Model (Load Removal in Sediment)
- Potential Water Quality Impacts Model and Comparison to Benefits
- Potential Mitigation Efforts Model
- Figures:
 - 1) Regional Location Map
 - 2) Project Vicinity Map (USGS Topography)
 - 3) Project Vicinity Map (Aerial Photo)
 - 4) Hydraulic Workmap

SITE PHOTOS

Date of Site Visit: 9/10/15

See notes below for picture locations and orientation.

1.



Nestor Creek Channel with vegetation and ponded water observed. Facing northwest near 30th Street.

2.



Nestor Creek Channel with vegetation and ponded water observed. Facing west near 30th Street

3.



Nestor Creek Channel with vegetation and ponded water observed. Facing west near 30th Street.

4.



Nestor Creek Channel with vegetation and ponded water observed. Facing south in open field near 30th Street.

SITE PHOTOS

Date of Site Visit: 9/10/15

See notes below for picture locations and orientation.

5.



Nestor Creek Channel with vegetation and ponded water observed. Facing southwest in open field near 30th Street.

6.



Nestor Creek Channel with vegetation and ponded water observed. Facing southwest in open field near 30th Street.

7.



Nestor Creek Channel with vegetation and ponded water observed. Facing southeast in open field near 30th Street.

8.



Nestor Creek Channel with vegetation and ponded water observed. Facing east on north edge of channel in open field near 30th Street.

SITE PHOTOS

Date of Site Visit: 9/10/15

See notes below for picture locations and orientation.

9.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing northeast from south edge of channel along Grove Avenue near 27th Street.

10.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing north from south edge of channel along Grove Avenue near 27th Street.

11.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing northwest from south edge of channel along Grove Avenue near 27th Street.

12.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing east from 25th Street near Grove Avenue.

SITE PHOTOS

Date of Site Visit: 9/10/15

See notes below for picture locations and orientation.

13.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing north from Grove Avenue near 25th Street.

14.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing east from 25th Street near Grove Avenue.

15.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing south from 25th Street near Grove Avenue.

16.



Nestor Creek Channel with vegetation and no dry weather flow observed.

SITE PHOTOS

Date of Site Visit: 9/10/15

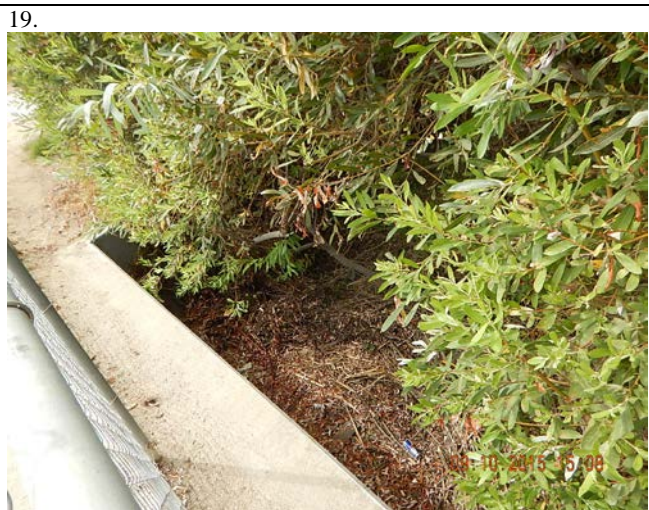
See notes below for picture locations and orientation.



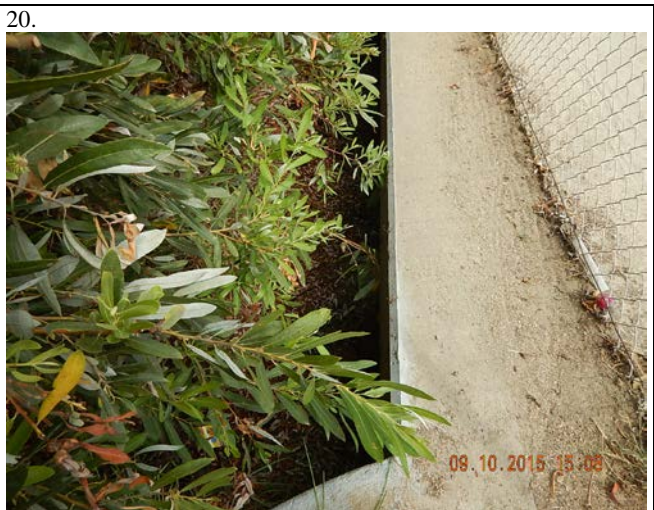
Nestor Creek Channel with vegetation and no dry weather flow observed.



Nestor Creek Channel with vegetation and no dry weather flow observed.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing northwest from Coronado Avenue.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing east from Coronado Avenue.

SITE PHOTOS

Date of Site Visit: 9/10/15

See notes below for picture locations and orientation.

21.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing north from parking lot near Pam Avenue.

22.



Nestor Creek Channel with vegetation and no dry weather flow observed. Facing northeast from parking lot near Pam Avenue.

SITE PHOTOS

Date of Site Visit: 11/16/16

See notes below for picture locations and orientation.



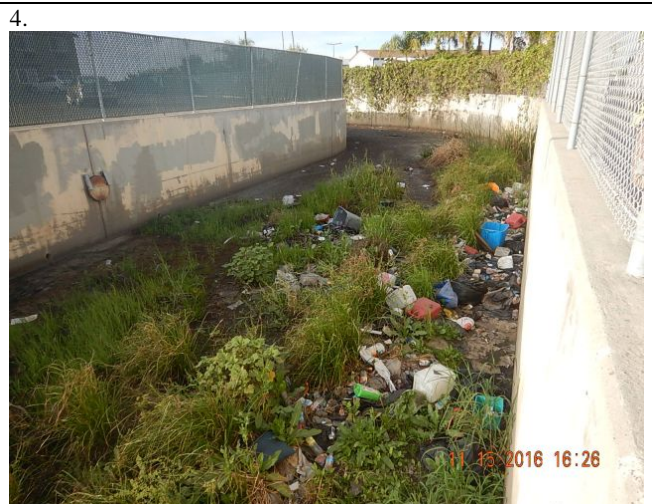
Nestor Creek Channel with vegetation and debris observed. No water observed in channel. Facing north along Palm Avenue.



Nestor Creek Channel with vegetation observed. No water observed in channel. Facing southwest toward Palm Avenue.



Nestor Creek Channel with vegetation and debris observed. No water observed in channel. Facing northwest along Reach 1b.



Nestor Creek Channel with vegetation and trash observed. No water observed in channel. Facing northwest along Reach 1b.

SITE PHOTOS

Date of Site Visit: 11/16/16

See notes below for picture locations and orientation.

5.



Nestor Creek Channel with debris observed. No water observed in channel. Facing northwest along Reach 1b.

6.



Nestor Creek Channel with vegetation and debris observed. No water observed in channel. Facing west along Reach 1b.

7.



Nestor Creek Channel with dense vegetation observed. No water observed in channel. Facing south in open field at the downstream end of Reach 1a.

8.

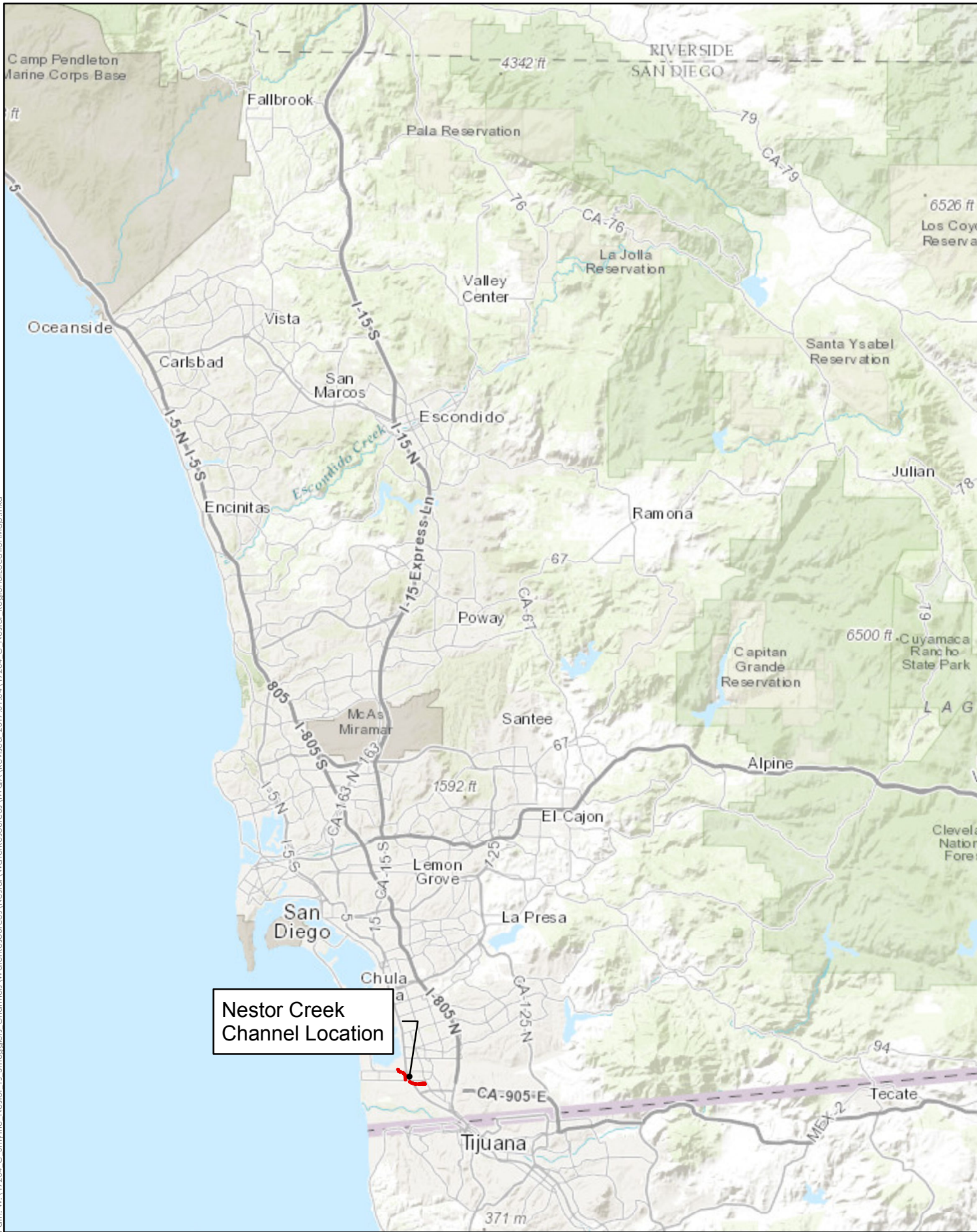


Nestor Creek Channel with dense vegetation observed. No water observed in channel. Facing east on northwest edge of channel in open field at the downstream end of Reach 1a.

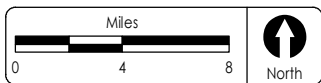
Figures:

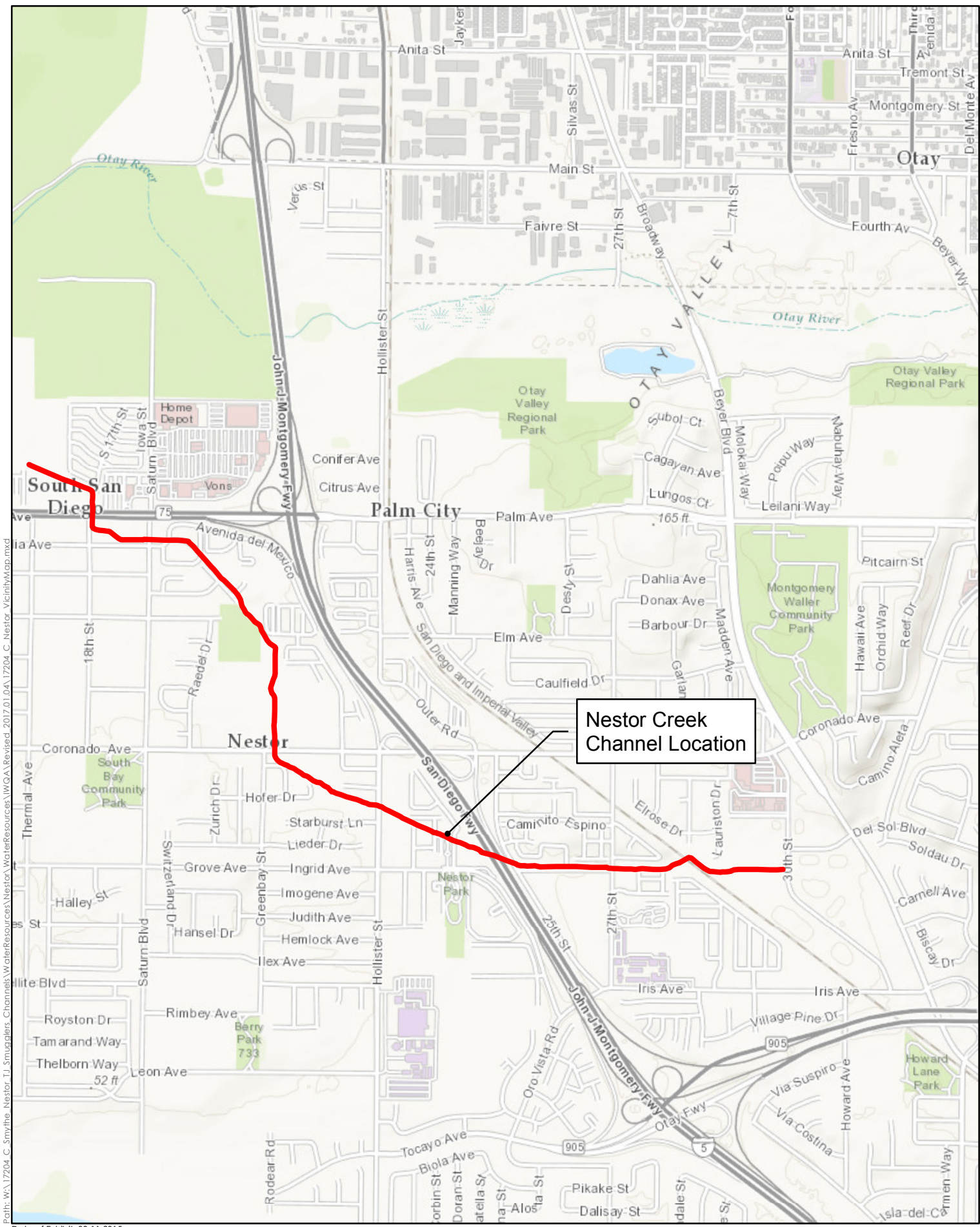
- 1) Regional Location Map
- 2) Project Vicinity Map (USGS Topography)
- 3) Project Vicinity Map (Aerial Photo)
- 4) Hydraulic Workmap

Path: W:\17204_C_Smythe_Nestor_IJ_Smudgers_Channels\WaterResources\Nestor\WaterResources\IWQA\Revised_2017\01\04\17204_C_Nestor_RegionalLocationMap.mxd



Date of Exhibit: 01.05.2017
Source: ESRI World Topographic Baselayar





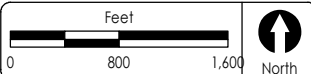
Path: W:\17204_C_Smythe_Nestor_IJ_Smudglers_Channel\WaterResources\WQA\Revised_2017\01\04\17204_C_Nestor_VicinityMap.mxd

Date of Exhibit: 09.11.2015
 Source: ESRI World Topographic Basemap

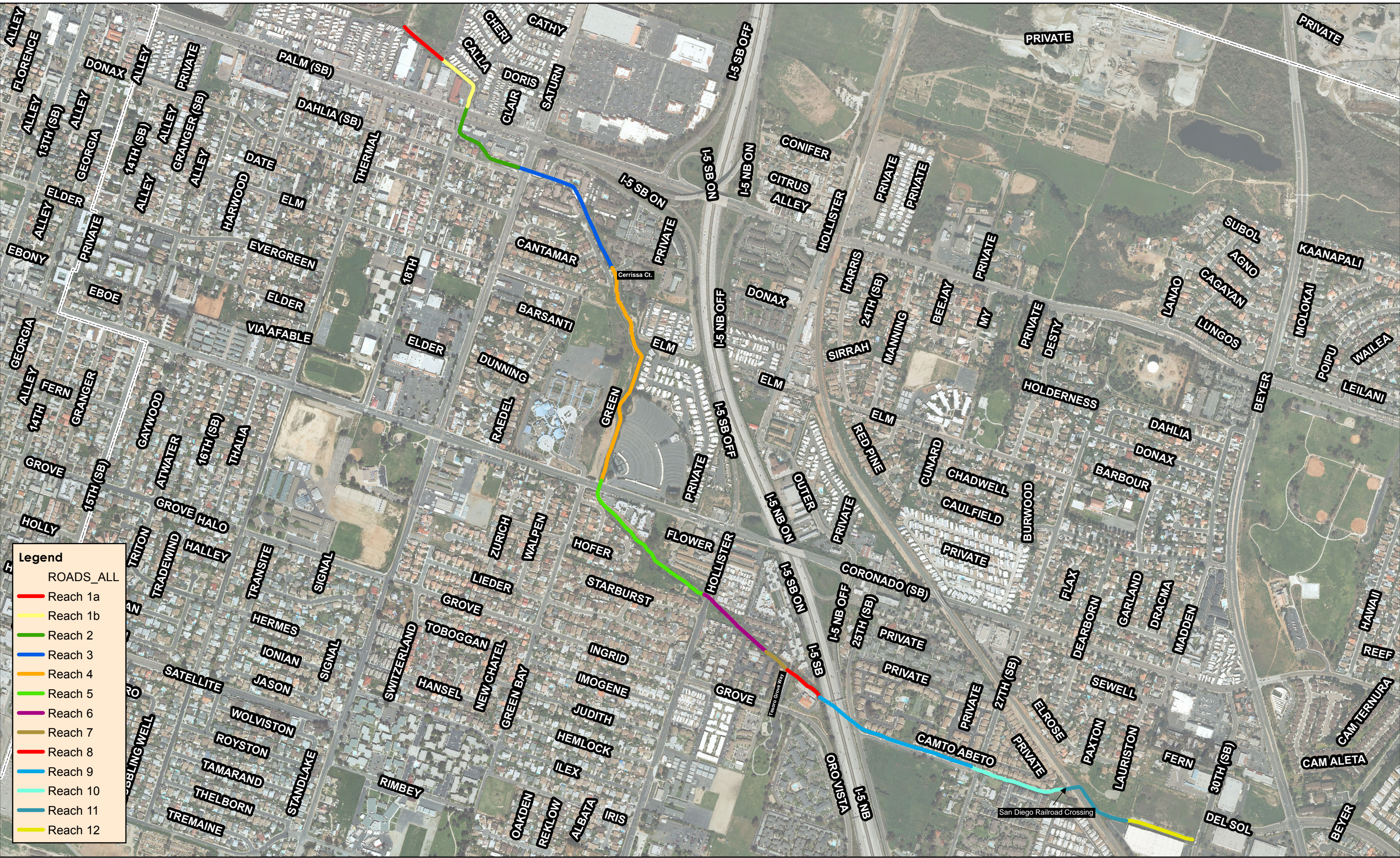
IWQA Report - Project Vicinity Map (USGS Topography)

Nestor Creek Channel

J-17204 K



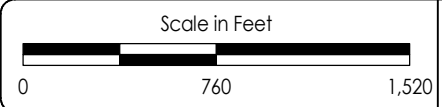
Path: W:\17204_C_Smythe_Nestor_TJ_Smuggler_Channels\WaterResources\WQA\Revised_2017.01.04\17204_C_Nestor_VicinityMap_Aerial.mxd



Legend

ROADS_ALL

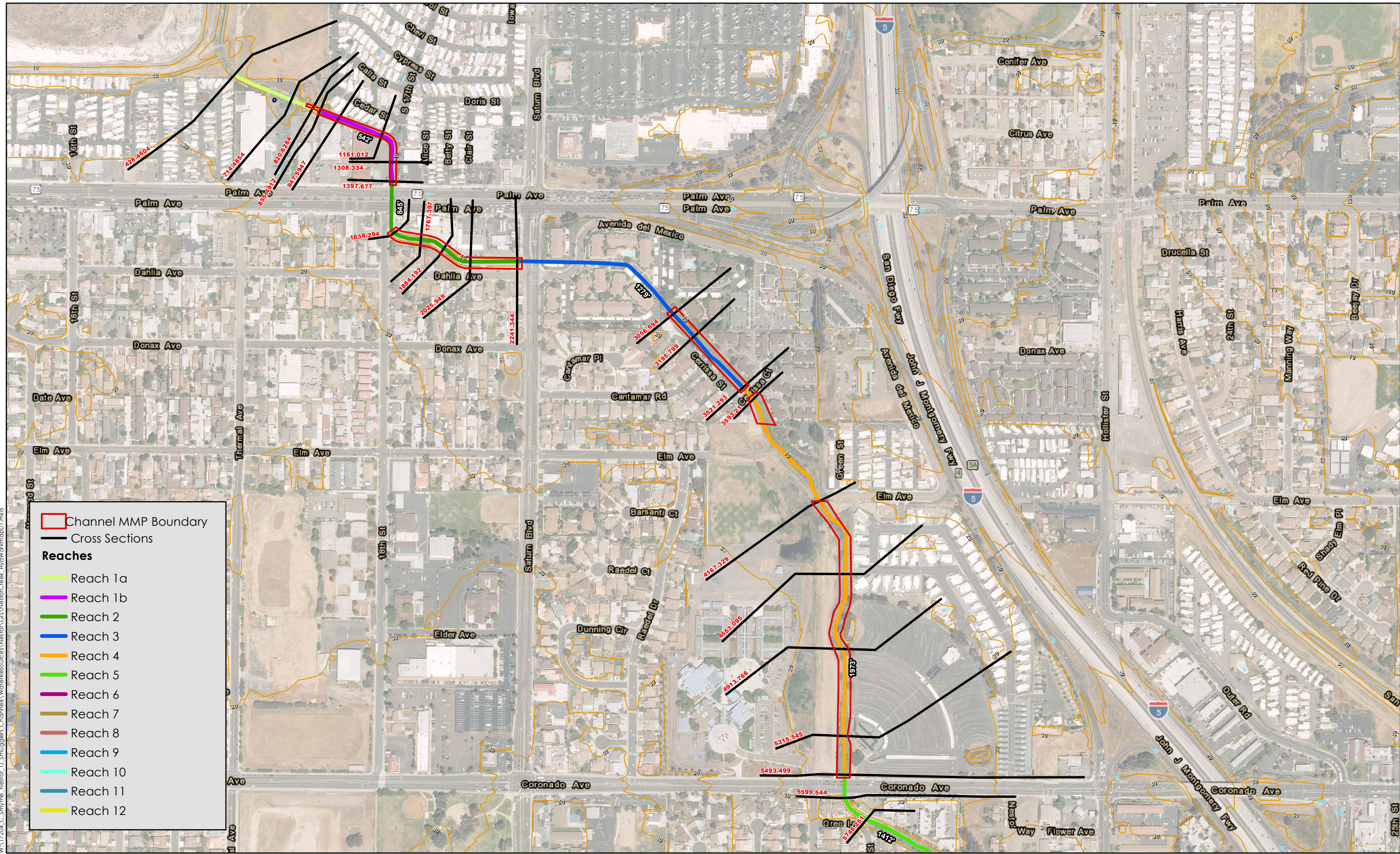
- Reach 1a
- Reach 1b
- Reach 2
- Reach 3
- Reach 4
- Reach 5
- Reach 6
- Reach 7
- Reach 8
- Reach 9
- Reach 10
- Reach 11
- Reach 12



Date of Exhibit: 1/9/2017
Eagle Aerial Image: 3/2009

IWQA Report - Project Vicinity Map (Aerial Photo)
Nestor Creek Channel

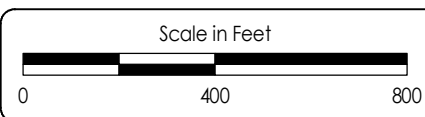
W:\17204_C_Smythe_Nestor_IJ_Smugglers_Channels\WaterResources\Nestor\GIS\NestorCreek_hydw\crmap01.mxd



Channel MMP Boundary
 — Cross Sections

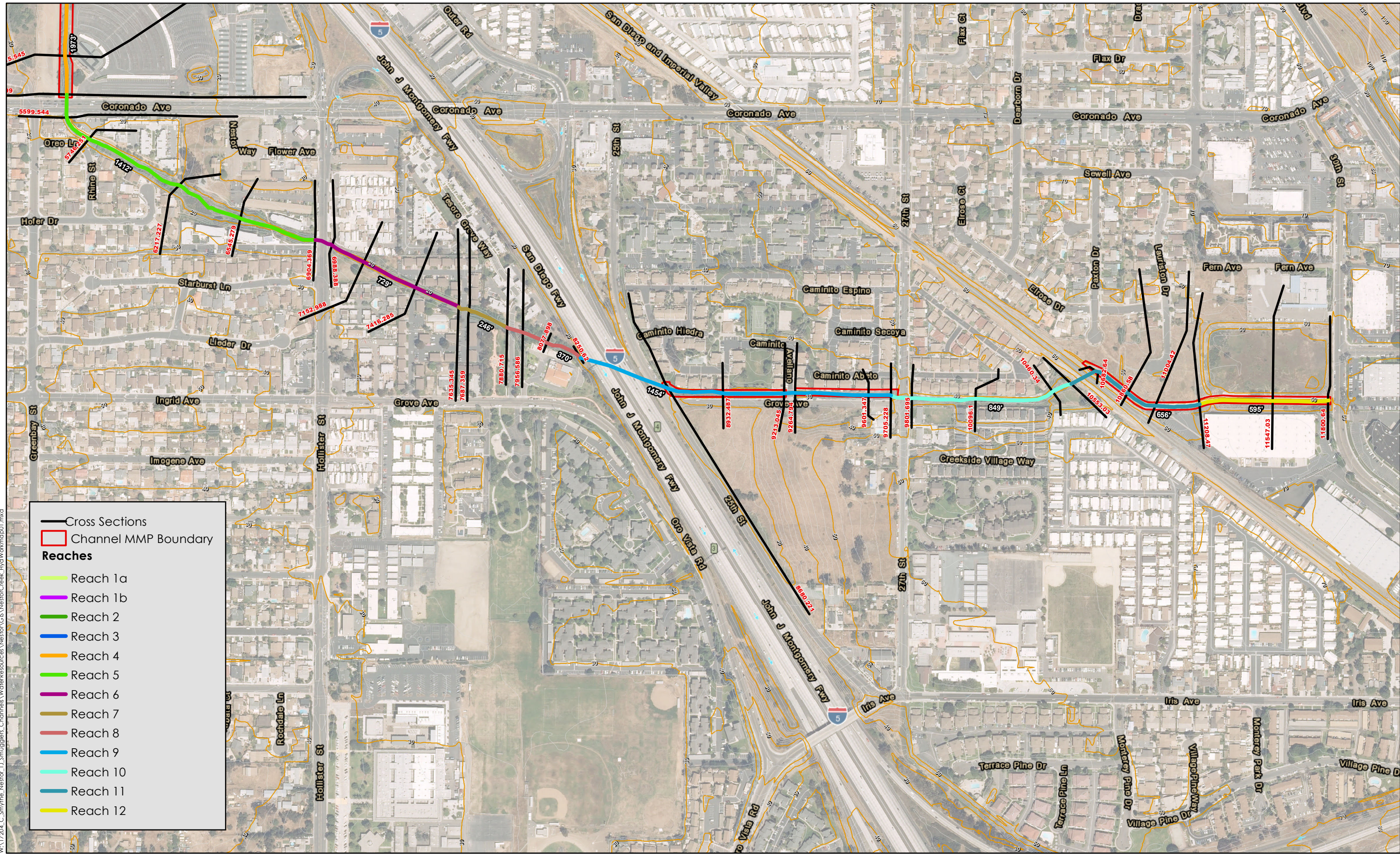
Reaches

- Reach 1a
- Reach 1b
- Reach 2
- Reach 3
- Reach 4
- Reach 5
- Reach 6
- Reach 7
- Reach 8
- Reach 9
- Reach 10
- Reach 11
- Reach 12



Date of Exhibit: 06.02.2015
SANGIS Topo 2' Contours: 1999
DigitalGlobe Aerial Image: 04.2013

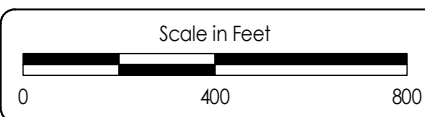
W:\17204_C_Smythe_Nestor_TJ_Smugglers_Channels\WaterResources\Nestor\GIS\NestorCreek_Hydr\Workmap01.mxd



— Cross Sections
 □ Channel MMP Boundary

Reaches

- Reach 1a
- Reach 1b
- Reach 2
- Reach 3
- Reach 4
- Reach 5
- Reach 6
- Reach 7
- Reach 8
- Reach 9
- Reach 10
- Reach 11
- Reach 12



Date of Exhibit: 06.02.2015
SANGIS Topo 2' Contours: 1999
DigitalGlobe Aerial Image: 04.2013