US Army Corps of Engineers ®
Los Angeles District

SAN LUIS REY RIVER 3 LEVEE SYSTEM

SAN DIEGO COUNTY, CALIFORNIA

NLD SYSTEM ID # 3805010012

PERIODIC INSPECTION REPORT NO. 1
GENERALIZED EXECUTIVE SUMMARY

FINAL SYSTEM RATING: UNACCEPTABLE
FINAL RATING DATE: DECEMBER 15, 2017

PERIODIC INSPECTION REPORT PREPARED BY THE U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT

SUBMITTED: SEPTEMBER 2017
INSPECTED: APRIL 23-25, 2013

EXECUTIVE SUMMARY

This Executive Summary provides an introduction to the Periodic Inspection of the San Luis Rey River 3 (SLR3) Levee System, an overview of the SLR6 Levee System, a summary of the major findings of the Periodic Inspection, and the overall rating for the SLR3 Levee System.

1.1 Scope and Purpose of Periodic Inspections

The purpose of the SLR3 Levee System Periodic Inspection is to identify deficiencies that pose hazards to human life or property. The inspection is intended to identify the issues in order to facilitate future studies and associated repairs as appropriate.

This assessment of the general condition of the SLR3 Levee System is based on available data and visual inspections. Detailed investigation and analysis involving hydrologic design, topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of this levee system inspection.

1.2 System Summary

The SLR3 Levee System is located on the left/south bank of the San Luis Rey River (SLRR) in the City of Oceanside, in San Diego County, in the State of California (Figure 1.1). This levee system runs 5.42 miles along the left (south) bank of the river. It is one of five levee systems on the San Luis Rey River 7.1 mile long project that were federally authorized and subsequently constructed by the U.S. Army Corps of Engineers, South Pacific Division, Los Angeles District (USACE SPL). The construction of SLR3 Levee System was completed on January 28, 2000 (USACE 2010). Per the National Levee Database (NLD), the SLR3 Levee System, is currently operated and maintained by USACE SPL Programs and Project Management Division (PPMD). In the future, responsibility will be turned over to the City of Oceanside for post-construction operation and maintenance per Local Cooperation Agreement (LCA) signed on May 13, 1988 (USACE SPL 2010). The National Levee Database Number (NLD No.) for the SLR3 Levee System is 3805010012.

The SLR3 Levee System extends along the left/south bank of the San Luis Rey River, from Station 385+00 at College Boulevard Bridge to Station 98+85 near Canyon Drive, a distance of approximately 28,615 feet (5.42 miles). It includes a floodwall, earthen levee embankment, riprap revetment, grouted stone revetment, and knee stone and toe stone revetment. Other features along the SLR3 Levee System include side-drainage structures, concrete collector channels, detention ponds, a parapet wall, relief wells, stone stabilizers, scour gages, bridge crossings, access ramps, and turnarounds. Note: College Boulevard Bridge has replaced Murray Road Bridge and Benet Road Bridge has replaced Priory Road Bridge.

1.3 Summary of Major Deficiencies Found

The Periodic Inspection (PI) No. 1 of the SLR3 Levee System was conducted on April 23 - 25, 2013 and a supplemental site investigation was performed on February 1, 2016. During the periodic inspection of the system, several deficiencies were noted for which remedial actions are required. The following major deficiencies were noted during the PI No. 1:

- Levee Embankment:
  - Non-Compliant Vegetation Growth: Significant vegetation growth including trees with trunks larger than 2-inches in diameter and shrubs were present within the vegetation-free

zone. The vegetation-free zone extends 15 feet outward from both the landward and riverward toes of the levee.

- Erosion/Bank Caving: Bank erosion threatens the stability and integrity of the levee.
- Settlement: Settled or subsided surfaces were evident over significant reaches and were observed during the inspection.
- Animal Control: Animal burrows, measuring up to 5 inches in diameter and up to 3 feet deep, were observed on the levee crown and landside slope.
- Riprap Revetments: Riprap along the levee toe was obscured by dense vegetation, making it difficult to determine the condition of the material.
- Revetments other than Riprap: Grouted stone on the riverside slope of the levee was damaged or missing at College Boulevard and Douglas Drive Bridge.

- Interior Drainage System:
  - Vegetation and Obstructions: Due to environmental constraints, side drain structures could not be inspected for vegetation, obstructions, debris, or sediment that may impair channel flow capacity.
  - Culverts/Discharge Pipes: The side-drainage structures could not be visually inspected due to environmental constraints and have not been video inspected.
  - Flap Gates/Flap Valves: The condition of the flap gates could not be determined due to environmental constraints.
  - Trash Racks: Environmental constraints prevented the inspection of the trash racks.
  - Revetments other than Riprap: Environmental constraints prevented the inspection of the grouted stone protection.
- Floodwalls:
  - Non-Compliant Vegetation Growth: Significant vegetation growth including trees with trunks larger than 2-inches in diameter and shrubs were present within the vegetation-free zone. The vegetation-free zone extends 15 feet outward from both the landward and riverward face of the floodwall.
  - Underseepage Relief Wells/Toe Drainage Systems: There are no maintenance records available nor any documentation of the required pump testing for the relief wells.
- Flood Damage Reduction Channels:
  - Vegetation and Obstructions: Accumulated vegetation and sediment was observed within the channel which has substantially reduced the flow conveyance of the SLRR Flood Control Project from the authorized 71,200 cubic feet per second (cfs). This loss of capacity due to sedimentation within the channel was verified in the referenced *2015 Vegetation Management Plan* (USACE SPL 2015a).

    Shoaling: See comment from the previous rated item above.

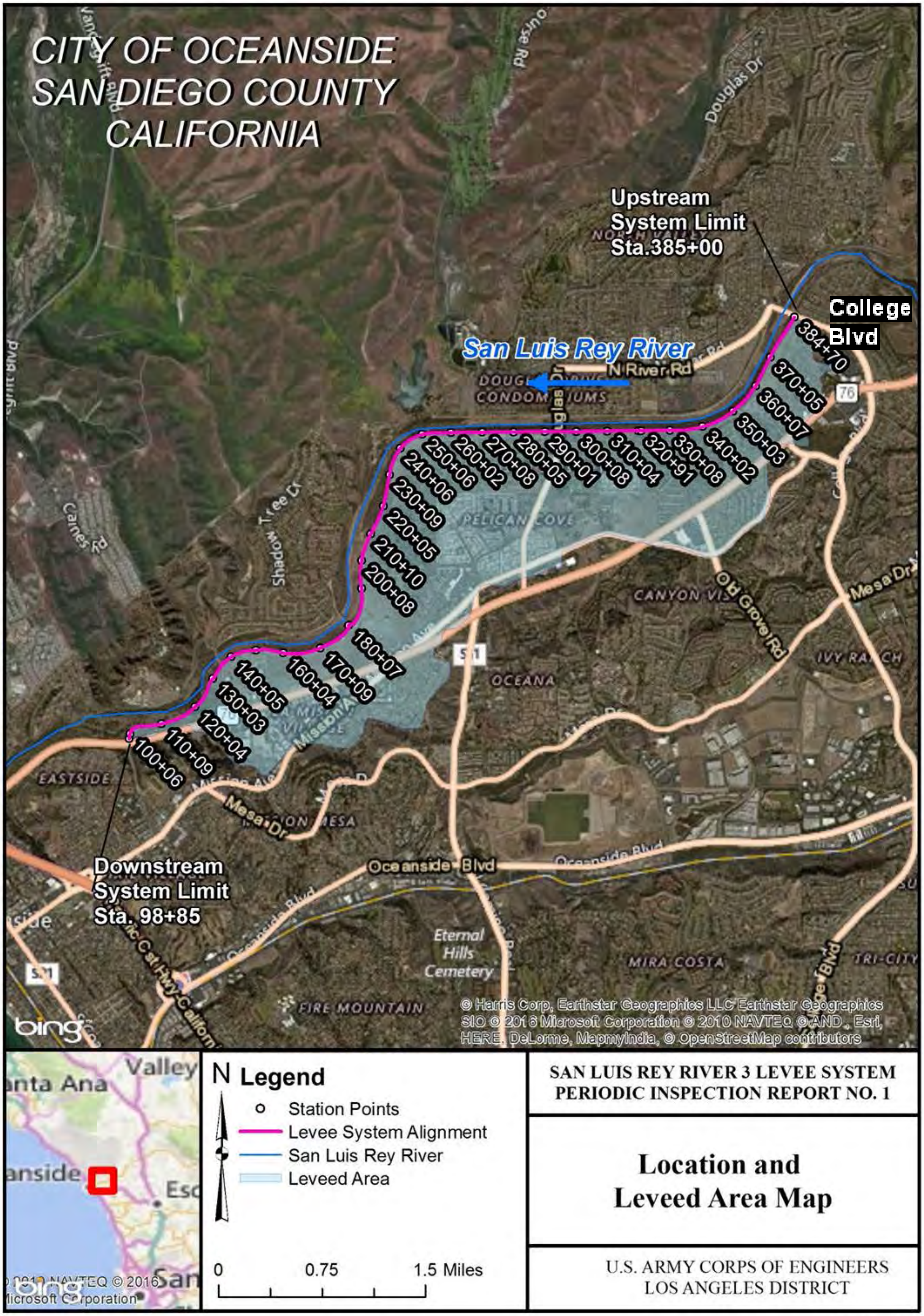
1.4 Overall Rating

The Levee Safety Out-Brief Meeting was held on May 4, 2016. An engineering determination has concluded that the observed deficiencies could prevent the SLR3 Levee System from performing as intended during the next significant runoff event. Therefore, the Levee Safety Officer (LSO),

Los Angeles District, has determined the overall system rating of the SLR3 Levee System to be "Unacceptable."

> *An "Unacceptable" system rating is defined as: "One or more items are rated as Unacceptable and would prevent the segment/system from performing as intended, or a serious deficiency noted in past inspections (which had previously resulted in a minimally acceptable system rating) has not been corrected within the established timeframe, not to exceed two years."*

The USACE SPL Programs and Project Management Division will be notified of the overall rating of the levee system by letter with instructions to correct the Critically Unacceptable rated items immediately, Unacceptable rated items as soon as possible, and to correct the Minimally Acceptable rated items within two years so that they do not deteriorate further and become Unacceptable. A public notice will be prepared and coordinated between the USACE SPL and the City of Oceanside. Once the Critically Unacceptable deficiencies are corrected by the USACE SPL in cooperation with the City of Oceanside, the overall system rating will be revised to "Minimally Acceptable." The Critically Unacceptable rated items included the heavy vegetation growth in the channel invert and embankment may be impairing channel flow capacity. Many of the observations of the vegetation need further analysis to determine how vegetation is affecting the levee and how critical the issue is. At this point in time, it was determined that vegetation along this system is a levee safety issue because it (1) prevented inspection of the existing embankment protection, (2) hindered access for the inspection team along the riverward toe, and (3) could potentially prevent the knee/toe stone from launching as intended. Also, there are numerous reoccurring voids along the riverside levee crest and areas of damaged or missing grouted stone protection.


CITY OF OCEANSIDE
SAN DIEGO COUNTY
CALIFORNIA
Upstream
System Limit
Sta.385+00
College
Blvd
San Luis Rey River
N River Rd
384+70
370+05
360+07
350+03
340+02
330+08
320+91
310+04
300+08
290+01
280+05
270+08
260+02
250+06
240+06
230+09
220+05
210+10
200+08
180+07
170+09
160+04
140+05
130+03
120+04
110+09
100+06
PELICAN COVE
CANYON VIS
Old Grove Rd
Mesa Dr
IVY RANCH
OCEANA
EASTSIDE
Mesa Dr
Oceanside Blvd
Downstream
System Limit
Sta. 98+85
Eternal
Hills
Cemetery
MIRA COSTA
TRI-CITY
FIRE MOUNTAIN
Shadow Tree Dr
Douglas Dr
© Harris Corp, Earthstar Geographics LLC Earthstar Geographics SIO © 2016 Microsoft Corporation © 2010 NAVTEQ © AND, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors
Legend
Station Points
Levee System Alignment
San Luis Rey River
Leveed Area
0
0.75
1.5 Miles
SAN LUIS REY RIVER 3 LEVEE SYSTEM
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Location and
Leveed Area Map
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Figure 1