US Army Corps of Engineers ®
Los Angeles District

SANTA ANA RIVER RIGHT BANK SAN BERNARDINO LEVEE SYSTEM

SAN BERNARDINO COUNTY, CALIFORNIA
NLD SYSTEM ID # 3805030013

PERIODIC INSPECTION REPORT NO. 1
GENERALIZED EXECUTIVE SUMMARY

FINAL SYSTEM RATING: MINIMALLY ACCEPTABLE

FINAL RATING DATE: 25 JUN 2015

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

SUBMITTED: MARCH 2015
INSPECTED: AUGUST 19, 2014

EXECUTIVE SUMMARY

This Executive Summary provides an introduction to the periodic inspection, an overview of the Santa Ana River Right Bank San Bernardino (SARRBSB) Levee System, a summary of the major findings of the periodic inspection of the SARRBSB Levee System, and the overall rating for the SARRBSB Levee System.

1.1 Scope and Purpose of Periodic Inspections

The purpose of the SARRBSB 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 SARRBSB 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 SARRBSB Levee System is located on the right/west bank of the Santa Ana River in the state of California, in San Bernardino County, in the city of Colton (Figure 1.1). The SARRBSB Levee System was federally authorized and subsequently constructed by the U.S. Army Corps of Engineers, Los Angeles District (USACE LAD). Construction of the SARRBSB Levee System was completed in December 1979 (USACE LAD 1984). The SARRBSB Levee System is now entirely operated and maintained by San Bernardino County Flood Control District (SBCFCD). The National Levee Database Number (NLD No.) for the SARRBSB Levee System is 3805030013. The SARRBSB Levee System has an earthen embankment, a rectangular channel lined with reinforced-concrete, a trapezoidal channel with a riverward slope armored with either reinforced-concrete or grouted stone, a reinforced-concrete invert or a soft-bottom invert. The levee system also includes a side-drain junction structure, two side-drainage structures, utility crossings, appurtenant features, access ramps, a grade stabilizer, an earthen training dike, and landscaping.

The SARRBSB Levee System extends from the Southern Pacific Railroad (SPRR) Bridge (Warm Creek [WC] Station 10+69, which is equal to Station 3115+60) to Station 3090+00, a distance of approximately 2,560 feet (0.48 miles).

It should be noted that immediately downstream of the SARRBSB Levee System, from Station 3090+00 to Station 3080+00, the right bank of the Santa Ana River is referred to as a spoil bank on the 1975 construction drawings (USACE LAD 1975), and as a levee embankment on the 1987 as-built drawings (USACE LAD 1987). Bank protection was not placed along the spoil bank and there is no documentation in the design reports indicating the spoil bank was engineered. Since it was not an engineered feature, it was not included as part of the levee system.

A channel reach was identified during the Periodic Inspection of the SARRBSB Levee System. These are reaches where the landside levee embankment height was observed to be level with the landside ground surface and therefore not leveed. The channelized reach was along the upstream 373 feet from WC Station 10+69 to WC Station 6+96. All the deficiencies noted along this reach were included in the Flood Damage Reduction Channel checklist.

1.3 Summary of Major Deficiencies Found and Subsequent Repairs

The periodic inspection of the SARRBSB Levee System was conducted on August 19, 2014, and SBCFCD staff were present. During the inspection of the levee system, deficiencies were noted for which remedial actions are required. The following main deficiencies of the project features were noted during the periodic inspection:

- Levee Embankment:
  - Non-Compliant Vegetation Growth: Vegetation growth including trees with trunks larger than 2-inches in diameter and shrubs were present on the landward slope and the toe of the riverward slope. The vegetation on the landward slope was planted as part of the landscape drawings (USACE LAD 1976).
  - Encroachments: An unauthorized access ramp was constructed over the grouted stone on the riverward slope.
  - Underseepage Relief Wells/Toe Drainage Systems: Vegetation was observed growing out of the subdrainage system manholes. In addition, no cleaning or maintenance records of the subdrainage system were available to determine if the subdrainage system is cleaned per the *Operation and Maintenance Plan* (SBCFCD 2009).
- Interior Drainage System:
  - Culverts/Discharge Pipes: Video inspections were not available for the side-drainage structures and side-drain junction structures along the SARRBSB Levee System.
  - Flap Gates: The flap gate was missing from the outlet of the 24-inch-diameter reinforced concrete pipe (RCP) side-drainage structure. No flap gate was observed at the outlet of the unpermitted 24-inch-diameter corrugated metal pipe (CMP) side-drainage structure and no design documents or permits are available to determine if a flap gate was required.
- Flood Damage Reduction Channel:
  - Non-Compliant Vegetation: Vegetation including trees were growing on shoals within the rectangular reinforced-concrete channel at the downstream end of the WC Channel. The vegetation was beginning to impair the channel flow capacity.
  - Shoaling: Shoals stabilized by vegetation were observed within the rectangular reinforced-concrete channel at the downstream end of the WC Channel.

1.4 Overall Rating

The Levee Safety Out-Brief Meeting was held on December 17, 2014. An engineering determination has concluded that the observed deficiencies would not prevent the systems from performing as intended during the next significant runoff event. Therefore, the Levee Safety Officer (LSO), Los Angeles District, has determined the overall rating of the SARRBSB Levee System to be "Minimally Acceptable."

A "Minimally Acceptable" system rating is defined as, "One or more items are rated Minimally Acceptable or one or more items are rated Unacceptable and an engineering determination concludes that the Unacceptable items would not prevent the segment/system from performing as intended during the next significant runoff event."

The local sponsor will be notified of the overall rating of the levee system by letter with instructions to correct the "Unacceptable" rated items as soon as possible, not to exceed two years,

and to correct the "Minimally Acceptable" rated items so that they do not deteriorate further and become "Unacceptable."

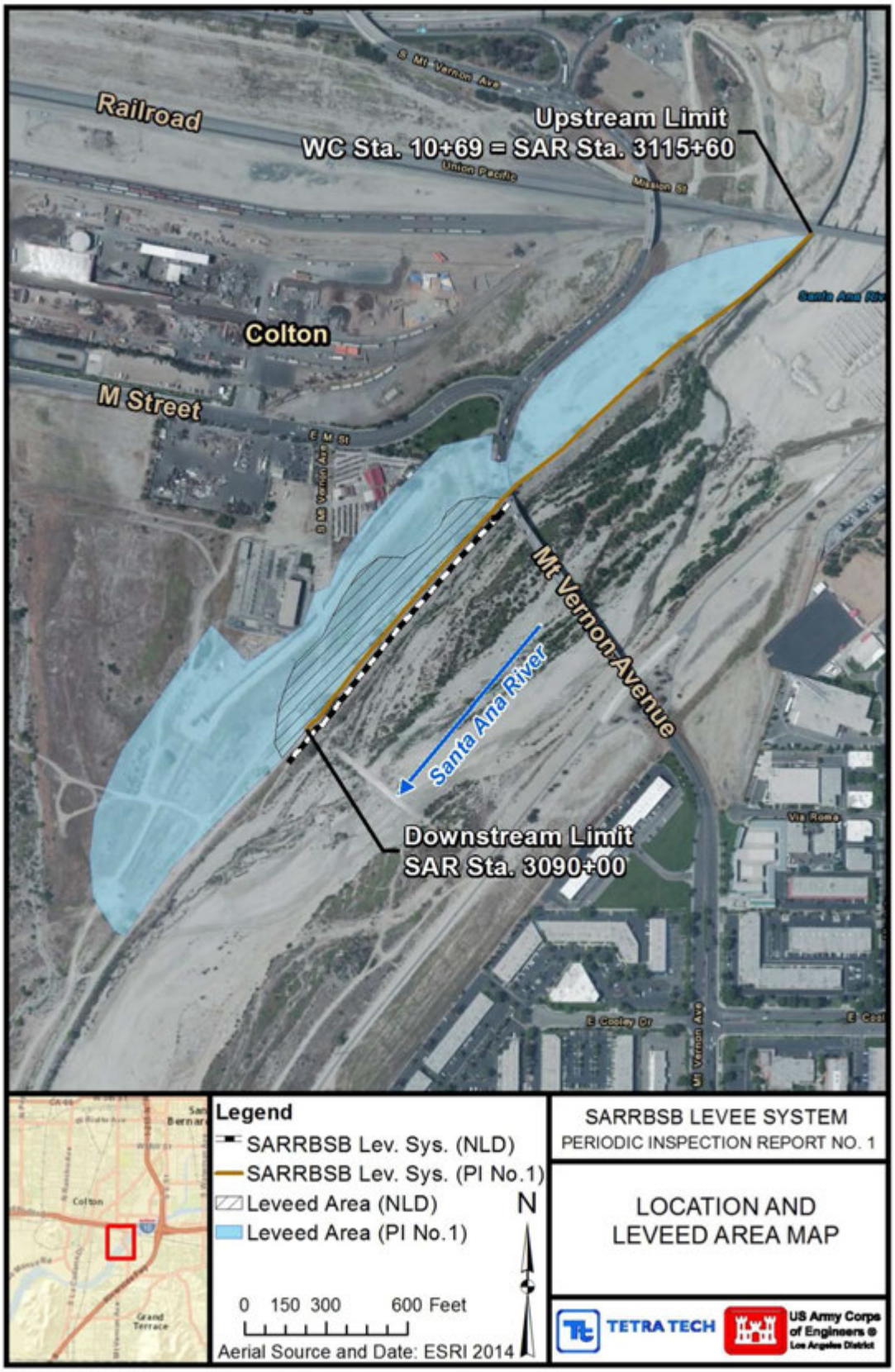

Figure 1