



**US Army Corps  
of Engineers** ®  
Los Angeles District



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# **INDIAN BEND WASH 4 LEVEE SYSTEM**

**MARICOPA COUNTY, ARIZONA  
NLD SYSTEM ID # 3805020009**

**PERIODIC INSPECTION REPORT NO. 1  
GENERALIZED EXECUTIVE SUMMARY**

**FINAL SYSTEM RATING: MINIMALLY ACCEPTABLE**

**FINAL RATING DATE: 10 SEPTEMBER 2015**

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

SUBMITTED: AUGUST 2015  
INSPECTED: AUGUST 5, 2014

## EXECUTIVE SUMMARY

This Executive Summary provides an introduction to the periodic inspection, an overview of the Indian Bend Wash 4 (IBW4) Levee System, a summary of the major findings of the periodic inspection, and the overall system rating.

### 1.1 Scope and Purpose of Periodic Inspections

The purpose of the IBW4 Levee System periodic inspection (PI) 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 IBW4 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

Figures 1 and 2 show the IBW4 Levee System (NLD System ID #3805020009) and leveed area as depicted in the National Levee Database (NLD). Prior to this PI, USACE-SPL performed a field reconnaissance on December 3, 2013 to confirm or modify the information in the NLD concerning this levee system, including the extent (limits) of the levee system and levee segments; the leveed area; and the number and locations of levee segments, gravity pipes, floodwalls, closure structures, and pump stations. The reconnaissance team eliminated channel reaches from the upstream and downstream ends of the levee system (a channel reach is a reach where the elevation of the ground on the landside is greater than or equal to the elevation of the levee system alignment (LSA) to a significant distance from the alignment). The reconnaissance team also recorded the number and locations of drop structures and groins, which are not included in the NLD. The reconnaissance team prepared a trip report with the findings of this reconnaissance and recommendations for updating the leveed area in the NLD. This trip report is referred to herein as the *Trip Report*.

URS was asked to confirm the upstream and downstream limits proposed in an earlier version of the *Trip Report* or to recommend a modified limit and conduct the current PI on the basis of URS' recommendations. URS was not tasked with reviewing the full extent of the portions of levee proposed for deletion, only with observing whether the endpoints appeared reasonable based on the available information and observations in the field. Based on the PI observations and other information, URS agrees with the upstream and downstream limits of the levee system. The extent of the levee system and leveed area recommended by this PI is shown on Figures 1 and 2.

The LSA recommended by this PI extends along the left bank (looking downstream) of Indian Bend Wash (IBW) from the north end of the floodwall along the east edge of the sidewalk along the east side of North Hayden Road, approximately 100 feet north of the Saguaro High School baseball diamond site (IBW Station 386+90.48) to the east end of the floodwall along the north edge of the sidewalk along the north side of East Valley Vista Drive (near the southeast corner of the Saguaro High School football stadium site) (IBW Station 373+87.98), for a total length of about 1,605 feet (0.30 miles) measured along the LSA. The LSA of the IBW4 Levee System is formed by the top of a single floodwall that extends the entire length of the system.

The IBW4 Levee System is a part of the Indian Bend Wash Project, which was authorized by the Flood Control Act of 1965, 79 Statute 1073, Public Law 89-298, 89th Congress, 1st Session, approved on October 27, 1965 and amended by the 1974 Water Resources Development Act

(O&M Manual, USACE-SPL, 1982). Construction of the levee improvements was completed by USACE-SPL on November 15, 1979 (Operation and Maintenance [O&M] Manual, USACE-SPL, 1982).

The IBW4 Levee System is located in the City of Scottsdale, in Maricopa County, Arizona. It is in Arizona's sixth congressional district and in Federal Emergency Management Agency (FEMA) Region 9. The leveed area also extends into Arizona's ninth and fourth congressional districts.

The levee system is operated and maintained by the Flood Control District of Maricopa County (FCDMC) in accordance with the local cooperation agreement for the Indian Bend Wash Project signed on September 23, 1974 (O&M Manual, USACE-SPL, 1982).

During completion of this report, the screening team provided conclusive evidence that the IBW4 Levee System and the Indian Bend Wash 3 (IBW3) Levee System (NLD System #3805020007) should be combined into one system with each of the IBW4 and IBW3 becoming separate segments. Although the PI databases and reports have not incorporated this combining of two systems into one system, all future inspections and work will reflect this.

### **1.3 Summary of Major Deficiencies Found**

A team of five professionals from URS inspected the IBW4 Levee System on August 4, 2014. Representatives from the FCDMC and the City of Scottsdale accompanied the inspection team. An engineer from the USACE-SPL Dam and Levee Safety Section acted as the Site Safety and Health Officer.

Each item on the levee system inspection checklists observed during the site inspection was rated Unacceptable (U), Minimally Acceptable (M), Acceptable (A) or Not Applicable (NA) following criteria incorporated in the Levee Inspection System. During the PI of the system, any deficiencies (Unacceptable or Minimally Acceptable observations) were noted, for which remedial actions are required. The following major deficiencies were noted during the PI of the IBW4 Levee System features:

- Floodwalls
  - Non-Compliant Vegetation Growth—Significant non-compliant vegetation—consisting of brush and trees with trunks greater than 2 inches in diameter—was observed during the PI. The most concerning trees were located near the floodwall, within the VFZ, or have roots that are expected to intrude into the root-free zone. The vegetation appears unlikely to impair adequate levee system inspection or to present a serious obstacle to flood-fighting activities. The tree roots have the potential to cause some damage to the floodwall. Decaying roots could also result in preferential seepage pathways. Underseepage is generally of particular concern for a floodwall (relative to a levee embankment) due to the short distance needed to connect the riverside to the landside.
  - Monolith Joints— Joint seals are deteriorating along the entire floodwall and could allow floodwater to pass, resulting in inundation of the leveed area.
- Interior Drainage System
  - Culverts/Discharge Pipes— The interior condition of the pipes has not been verified using television camera videotaping or visual inspection methods within the past 5 years.

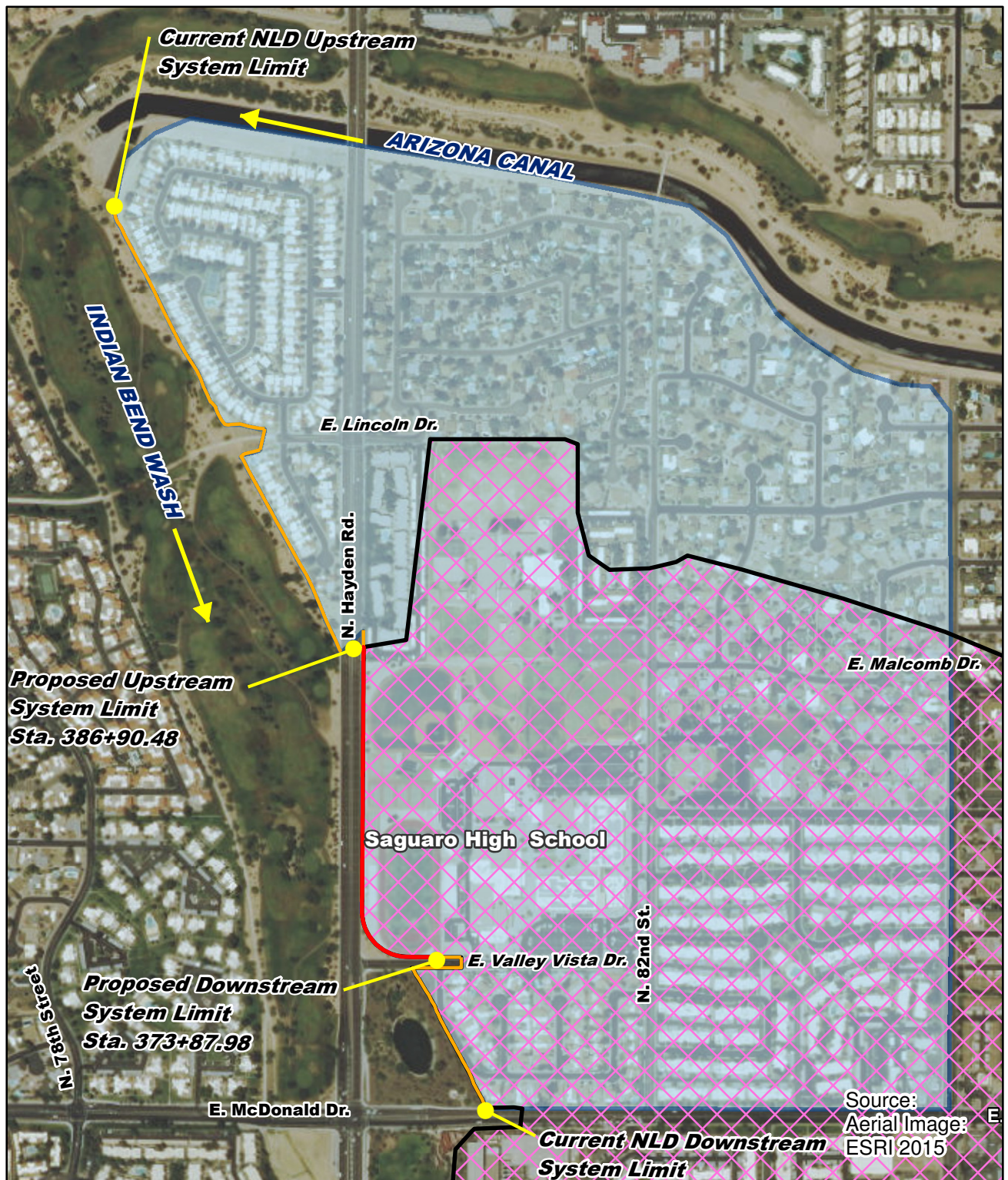
#### **1.4 Overall Rating**

The Levee Safety Out-Brief Meeting for the IBW4 Levee System was held on March 11, 2015 at the USACE-SPL headquarters, with representatives of the FCDMC and the City of Scottsdale participating by webinar. (The City of Scottsdale has one or more intergovernmental agreements with the FCDMC for maintenance of parts of the levee system.) 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, Los Angeles District, has determined the overall rating of the IBW4 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.





### Legend

- NLD LSA
- Recommended LSA
- Leveed Area per NLD
- Recommended Leveed Area



0 1 2 Miles

INDIAN BEND WASH 4 LEVEE SYSTEM  
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## LOCATION AND LEVEED AREA MAP

**URS**



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