US Army Corps of Engineers ®
Los Angeles District

LOS ANGELES RIVER/RIO HONDO DIVERSION 1 LEVEE SYSTEM

LOS ANGELES COUNTY, CALIFORNIA
NLD SYSTEM ID # 3805010044

PERIODIC INSPECTION REPORT NO 1
GENERALIZED EXECUTIVE SUMMARY

FINAL SYSTEM RATING: UNACCEPTABLE
FINAL RATING DATE: MARCH 20, 2013

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

SUBMITTED: AUGUST 2012
INSPECTED: SEPTEMBER 13, 2010 THROUGH OCTOBER 7, 2010

EXECUTIVE SUMMARY

This Executive Summary provides an introduction to the periodic inspection, an overview of the system, a summary of the major findings of the periodic inspection, and the overall rating for the system.

1.1 Scope and Purpose of this Periodic Inspection

The U.S. Army Corps of Engineers (USACE) Los Angeles District has authorized URS Group, Inc. (URS) to perform a Periodic Inspection (PI) of the Los Angeles River/Rio Hondo Diversion 1 (LAR/RH1) Levee System in Los Angeles County, California. This PI Report was prepared following the Scope of Work for Task Order CQ01 on USACE Contract W912P9-10-D-0501, *Indefinite Delivery A-E Contract for Dam and Levee Safety for Areas Selected by the St. Louis District, US Army Corps of Engineers.*

1.2 System Summary

The LAR/RH1 Levee System, as shown on Figure 1, is located in the County of Los Angeles, California, and is part of the Los Angeles County Drainage Area (LACDA). It comprises two levee segments:

- Los Angeles River LAR/RH1 Levee Segment which runs on the left (east) bank from the confluence with the Rio Hondo Channel to the ocean.
- Rio Hondo LAR/RH1 Levee Segment which runs on the left (east) bank from Whittier Narrows Dam to the confluence with the Los Angeles River.

The LAR/RH1 Levee System, along with other similar works in the Los Angeles County Drainage Area, was authorized initially by the Emergency Relief Act of 1935 to provide drainage and flood control. On June 30, 1937, this levee system was transferred to the more comprehensive project adopted in the Flood Control Act of June 22, 1936. Portions of the Los Angeles River channel were improved under the provisions of the Flood Control Act of 1941. The Los Angeles County Drainage Area, California Flood Control Improvements project was authorized under Title I, Section 101(b) of the Water Resources Development Act of 1990 (Public Law 101-640). (USACE, December 1999)

The USACE Los Angeles District and the Los Angeles County Flood Control District (LACFCD) entered into a Project Cooperation Agreement on August 7, 1995, as required by Public Law 99-622. The LACFCD is responsible for operating and maintaining all the non-federal features of the LACDA (USACE, December 1999). The Los Angeles County Department of Public Works (LACDPW) has assumed the functions of the LACFCD. The LACDPW is the Local Sponsor for the entire LAR/RH1 Levee System.

1.3 Field Inspection and Summary of Major Deficiencies Found

The field inspection of the LAR/RH1 Levee System was conducted September 13-27, 2010. The pump stations were inspected October 4-7, 2010. The Local Sponsors show an active participation in operation and maintenance of the project; however, some deficiencies were noted and remedial actions are required. The main system deficiencies are:

Levee Embankments

- **Unwanted Vegetation Growth**: Non-compliant vegetation in the vegetation-free zone, including the crown, riverside slope and landside slope of the levee.
- **Encroachments**: The encroachment of side drains, buildings, facilities, utilities, power poles, retaining walls, irrigation lines, sewer manholes, and cell phone towers on the landside slope and near the crown of the levee. The Levee Embankments checklist was used to record (1) any side drain that was shown on available as-built drawings but was not found during the field inspection and for which no approved permit for removal was found and (2) any side drain that was found during the field inspection but is not shown on the as-built drawings (this may include side drains where changes have occurred, such as change in pipe material, change in diameter/size, or fewer or more pipes/conduits) and no approved permit for installation/modification was found. Side drain encroachments are important because they may have been removed or installed using unacceptable methods that could cause seepage and erosion along the pipe/conduit or leakage of water and backfill into the pipe/conduit. A total of 54 side drain encroachments were identified.
- **Erosion/Bank Caving**: Erosion on the landside slope and crown, typically caused by broken irrigation pipes or drainage runoff from the crown.
- **Settlement**: Settlement of a concrete ditch on landside slope.
- **Depressions/Rutting**: Depressions and rutting on the crown and landside slope.
- **Cracking**: Cracking of the paved crown.
- **Animal Control**: Large animal burrows occurring on the crown and landside slope.
- **Culverts/Discharge Pipes**: See Culverts/Discharge Pipes under the Interior Drainage System heading for details.
- **Riprap Revetments & Bank Protection**: Several depressions and unauthorized removal of riprap on the riverside slope.
- **Revetments other than Riprap:** Significant disturbance due to erosion and several cracks in grouted riprap.
- **Underseepage Relief Wells/Toe Drainage Systems**: Vegetation and debris obstructing the weep holes.

Floodwalls

- **Unwanted Vegetation Growth**: Vegetation on top of the floodwall or at its base.
- **Encroachments**: Encroachments by bridge structures and utilities.
- **Tilting, Sliding or Settlement of Concrete Structures**: Tilting and opening in floodwalls.

Interior Drainage System

- **Vegetation and Obstructions**: Vegetation and debris obstructing drainage.
- **Concrete Surfaces:** Minor spalling and cracks in headwalls of side drain structures.

- **Culverts/Discharge Pipes**: Documentation of the interior condition of the pipes (via video or visual inspection methods) was not provided.
- **Sluice/Slide Gates**: Some sluice gates were rusted, inoperable, and blocked by sediment.
- **Flap Gates/Flap Valves/Pinch Valves**: Flap gate hinges bent/broken and flap gates were missing.

Pump Stations

- **Pump Stations Operating, Maintenance, Training & Inspection Records**: A complete set of records was not present.
- **Pump Station Operations and Maintenance Equipment Manuals**: Manuals were not at some pump stations and were not readily available. The pump station Operation and Maintenance equipment manuals were present and updated but incomplete.
- **Plant Building:** Building structure not in good condition and had safety issues.
- **Pumps:** Water level was inadequate for proper inspection and testing of the pumps.
- **Motors, Engines, Fans, Gear Reducers, Back Stop Devices, etc.:** Water level was inadequate for proper inspection and testing of the motors.
- **Sumps/Wet Well**: Sump pumps with no records for tests conducted. Wells contained significant trash, debris and sediment.
- **Non-Mechanical Trash Racks:** Trash racks, if present, were either not in good condition or were not inspected due to confined space entry restrictions.
- **Electrical Systems**: A portion of the interior lighting system in a pump station was not operational. The electrical systems showed signs of aging and minor corrosion.
- **Megger Testing on Pump Motors and Critical Power Cables**: The megger testing programs for the pump stations were not available.
- **Enclosures, Panels, Conduit and Ducts**: Major conduits critical to the operation of the station were rusted and missing junction box covers. Enclosures and panels were rusted.
- **Intake and Discharge Pipelines:** The intake and discharge pipelines not inspected due to confined space entry restrictions.
- **Sluice/Slide Gates:** Sluice gates not maintained or not operable.
- **Flap Gates/Flap Valves/Pinch Valves:** Flap gates not in good condition due to lack of maintenance.
- **Cranes**: An 8-ton outdoor crane was not functioning.

Flood Damage Reduction Channels

- **Shoaling (sediment deposition)**: Sediment deposits are present at the bottom of the flood-damage reduction channel, facilitating vegetation growth and obstructing flow in the channel.
- **Encroachments**: Permit for radial gate facility could not be located.

- **Concrete Surfaces:** Longitudinal, transverse and desiccation cracks on concrete surface and minor spalling areas observed. Areas of depression, breaks and cracks were also found.
- **Slab and Monolith Joints**: The monolith joints of the concrete surfaces were observed to have deteriorated and/or vegetation was found growing within the joints.
- **Flap Gates/Flap Valves/Pinch Valves**: See Flap Gates/Flap Valves/Pinch Valves under the Interior Drainage System heading for further details.
- **Revetments other than Riprap:** Cracks and holes were observed in grouted riprap.

URS presented an out-brief concerning Periodic Inspection No. 1 to the Los Angeles District Levee Safety Officer, reviewers of the draft report, and other interested USACE personnel. The USACE Los Angeles District has determined the overall system rating for the LAR/RH1 Levee System as described in section 1.4 below.

1.4 Overall System Rating

The Levee Safety Officer, Los Angeles District, has determined the overall system rating of Los Angeles River/Rio Hondo Diversion 1 Levee System to be "Unacceptable." An "Unacceptable" system rating is defined as:

> *The Periodic Inspection has identified one (or more) System Components which are rated Unacceptable and require immediate correction. An engineering determination has concluded that the Unacceptable System Components identified seriously impair the functioning of the levee system, would prevent the system from performing as intended, and pose unacceptable risk to public safety.*

The Local Sponsor will be notified of the overall rating of the levee system by letter with instructions to correct "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." Because this levee system is rated as "Unacceptable" a public notice will be prepared and coordinated between the USACE and LACDPW. Additionally, due to the "Unacceptable" rating, the levee system will be removed from the USACE Rehabilitation and Inspection Program (RIP). Once the "Critically Unacceptable" deficiencies are corrected by the sponsor and verified by the USACE, the system rating will be revised to "Minimally Acceptable" and the system will be reevaluated for eligibility in the RIP.

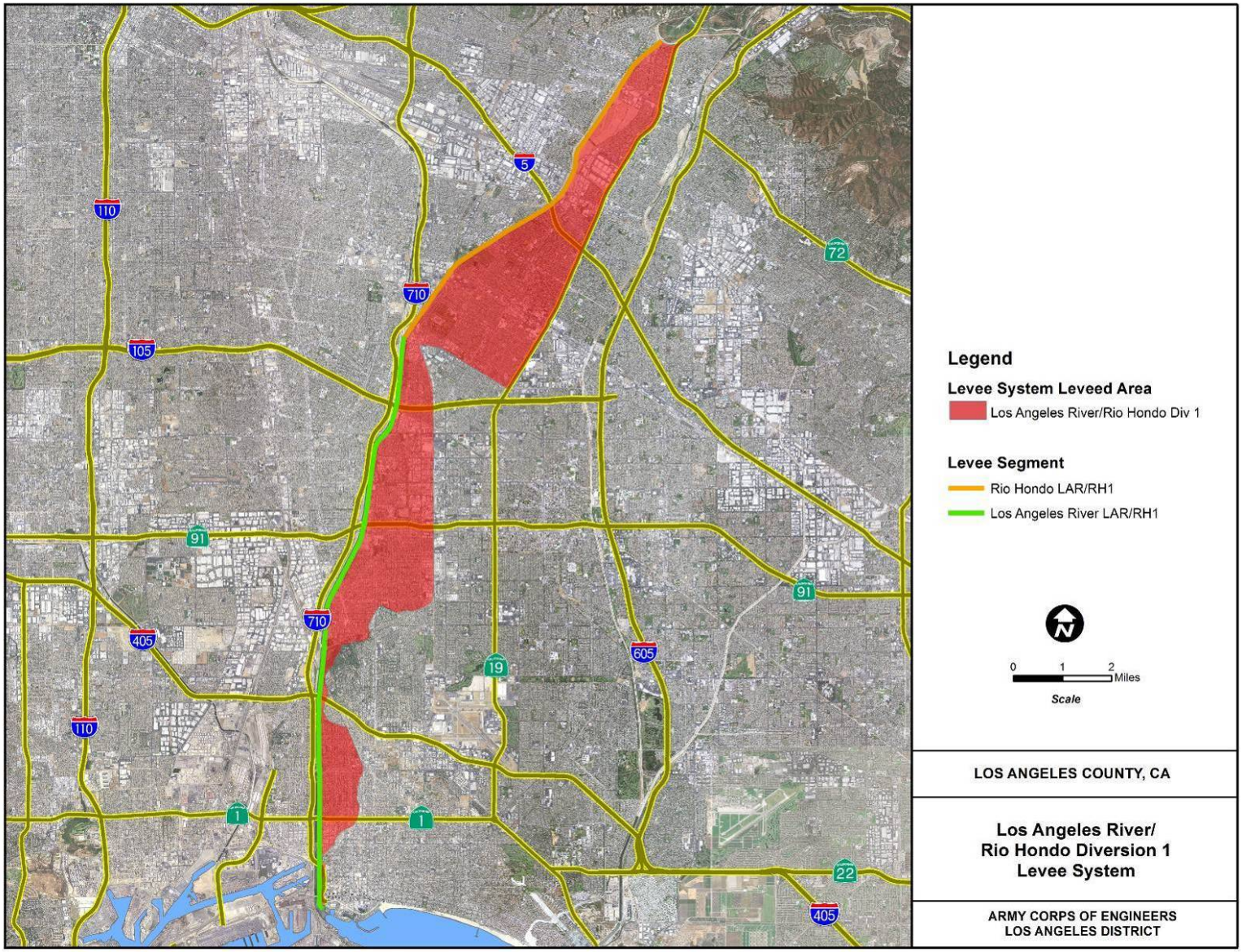

Figure 1. Los Angeles River/Rio Hondo Diversion 1 Levee System