



Nogales International Sanitation Project: History and Overview

**SE Arizona Citizens Forum
Tubac, Arizona**

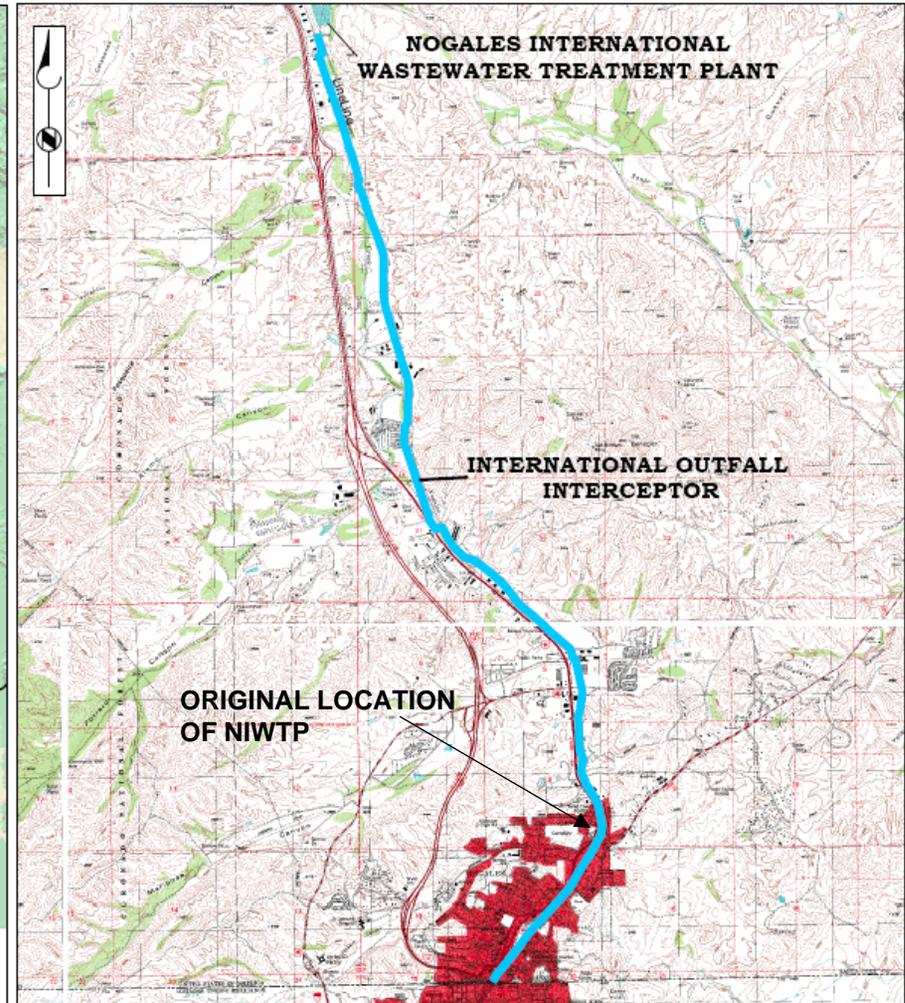
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United States Section**

Legal Affairs Office

September 21, 2017

Project Area and Sewerline Alignment





U.S.I.B.W.C.

- U.S. Section of an International Commission, the IBWC, attained its present organization in a 1944 treaty titled *Utilization of Water of the Colorado and Tijuana Rivers and of the Rio Grande*. We work in conjunction with the Mexican Section of the Commission to implement certain treaties between the U.S. and Mexico.
- Treaty Protocol states:
 - “ The works to be constructed or used on or along the boundary, and those to be constructed or used exclusively for the discharge of treaty stipulation, shall be under the jurisdiction of the Commission or of the respective Section, in accordance with the provisions of the Treaty.”

Nogales International Sanitation Project



- Study initiated in 1943; construction authorized in a 1947 Appropriations Act
- Conditions on federal participation:
 - The City agrees to furnish lands or easements free of cost;
 - The City agrees to take over operation and maintenance;
 - The City agrees to relive the U.S. Government of all liability for the Project arising from... failure to operate and maintain the Project.
- City takes over operation and maintenance of the Project in 1951.



USIBWC's participation in O & M

- In 1953, the City approached Government for help operating the project.
- Congress authorized USIBWC to:

enter into an agreement with the Mexico for the operation and maintenance by the IBWC of the Nogales sanitation project previously constructed by the said Commission, which agreement shall contain such provisions relating to a division between the two Governments of the costs of such operation and maintenance, or of the work involved therein, as may be recommended by said Commission and approved by the Government of Mexico and by the Secretary of State on behalf of the Government of the United States:

Provided, That no such agreement shall be entered into until the governing body of the city of Nogales, Arizona, has given assurances satisfactory to the Secretary of State that it will, so long as such agreement remains in force, contribute an equitable proportion, as determined by the United States section of said Commission, subject to the approval of the Secretary of State, of the costs of such operation and maintenance allocated to the United States



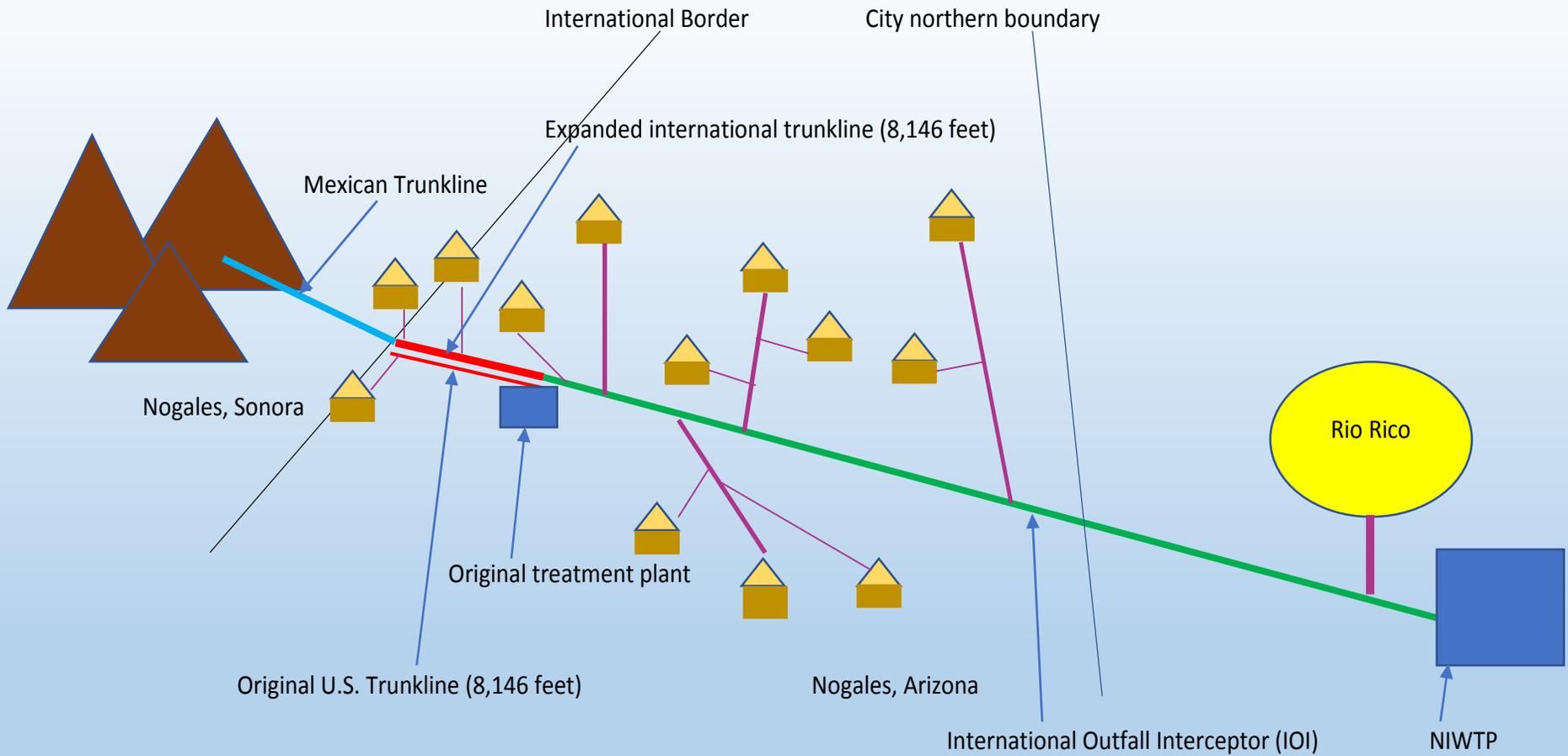
- Under the 1953 authority, USIBWC negotiated Minute 206, which provided that Mexico would reimburse the City for Mexico's use of the Nogales Sanitation Project based on its flows.
- The project as authorized consisted of (1) a sewer pipeline with 7,200 feet in Mexico; (2) 8,146 feet of sewer pipeline in U.S.; and (3) a treatment plant, the Nogales International Wastewater Treatment Plant (NIWTP), which was situated approximately 1.5 miles north of the border and had a 1.6 mgd treatment capacity.
- In 1965, the City :
 - Requested that the USIBWC negotiate an agreement for enlarging the capacity of the Nogales International Sanitation Project; and
 - Requested that the treatment plant be relocated from its present site to a site north of the City

Components of the International Project



- Minute 227 budget shared by Mexico only included enlarging 8,146 feet of U.S. trunkline, so Mexico did not agree to share construction costs for IOI.
- Minute 227 also states that Mexico does not have any responsibility for the operation and maintenance costs of the “section of sewer line from the existing plant to the site of the new enlarged plant” if it is moved north.
- Minute 227 acknowledges that the relocation was necessary for domestic, and not international, reasons and cites “urban expansion” of Nogales, Arizona as one of those reasons.
- All Minutes regarding the Nogales Sanitation Project state that the international trunkline in the U.S. is 8,146 feet- even the Minute that approved the relocation.

Overview of Components





The IOI

- Whether the City or the USIBWC own the IOI, and who is responsible for breaches in the IOI, is the subject of current litigation.
- No order has been issued given the USIBWC ownership of the IOI – it is still active and pending litigation.
- The City claims that the USIBWC owns 78% of the IOI.
- The USIBWC contends that the City owns the IOI 100% and, regardless of its ownership, that the City has operation and maintenance responsibility for the IOI.

USIBWC's Emergency Authority



Expenditures for flood fighting, rescue operations, repairs or restoration of flood control or sanitation works threatened or destroyed by floodwaters of Rio Grande, Colorado, or Tijuana Rivers

On and after June 20, 1956, in addition to the funds available under the appropriation "Rio Grande emergency flood protection", the United States Commissioner is authorized to expend from any appropriation available to the International Boundary and Water Commission, United States and Mexico, American Section, such sums as may be necessary for prosecution of emergency flood fighting and rescue operations, repairs or restoration of any flood control or sanitation works threatened or destroyed by floodwaters of the Rio Grande, the Colorado or Tijuana Rivers, or other streams running across or near the boundary ...



The IOI

Here is some of the bases for the USIBWC's position.

- The IOI is not part of the international project in which the US participates. It was specifically excluded in the international agreements with Mexico. In 1967, the City contractually agreed that Mexico would not bear any operation and maintenance costs for the IOI.
- The IOI was constructed for City purposes and is the primary municipal conveyance line for the City residents. It allowed the City to extend wastewater services to its northern city limits, removed the treatment plant from its downtown area, and enabled the City to secure a contract with Rio Rico.
- The City manages the IOI – it controls and allows all City flows into the IOI.
- In 1969, the City contractually agreed that it would take over operation and maintenance of the IOI and the treatment plant when they were completed. When the USIBWC took over operation and maintenance of the treatment plant, the agreement specifically excluded the IOI from USIBWC's responsibility, as has every agreement since then.
- The City receives money for use of the IOI and has never paid the Government for conveying City flows. These monies include: EPA grant funds ; payments from Rio Rico; wastewater charges to its residents.
- The City has made numerous statements that it owns the IOI, including in letters to the USIBWC where it charges or seeks payment from the Government for use of the IOI.

City's agreement with UPRR at Manhole 89 area



5. Grantee shall bear the entire cost and expense of constructing, reconstructing and maintaining said structure upon said property. Grantee agrees that all work upon or in connection with said structure shall be done at such times and in such manner as not to interfere in any way whatsoever with the operations of Railroad. The plans for and the construction or reconstruction of said structure shall be subject to the approval of Railroad. Grantee agrees to give Railroad five (5) days' written notice prior to commencement of any work of construction or reconstruction.

Grantee agrees to reimburse Railroad for the cost and expense to Railroad of furnishing any materials or performing any labor in connection with the construction, reconstruction, maintenance and removal of said structure, including, but not limited to, the installation and removal of such falsework and other protection beneath or along Railroad's tracks, and the furnishing of such watchmen, flagmen and inspectors as Railroad deems necessary.



Agreement

7. Grantee, its agents and employees, shall have the privilege of entry on said property for the purpose of constructing, reconstructing, maintaining and making necessary repairs to said structure. Grantee agrees to keep said property and said structures in good and safe condition, free from waste, so far as affected by Grantee's operations, to the satisfaction of Railroad. If Grantee fails to keep said property and said structure in a good and safe condition, free from waste, then Railroad may perform the necessary work at the

expense of Grantee, which expense Grantee agrees to pay to Railroad upon demand.



QUESTIONS?



Rehabilitation Improvements for the Nogales Trunkline and International Outfall Interceptor (IOI)

**SE Arizona Citizens Forum
Tubac, Arizona**

**Jose A. Nuñez
Principal Engineer**

**International Boundary and Water Commission
United States Section**

Engineering Department

September 21, 2017

Purpose of Sewerline Rehabilitation Project



- To rehabilitate an almost 50-year old sewer line that has reached its useful life.
- To avert a spill or leakage of sewage in order to ensure the continued health and safety of the communities of Ambos Nogales as well as downstream communities along the Nogales Wash and Santa Cruz River in Arizona.
- To rehab and repair any existing structural damage.

Sewerline Information



- The sewerline has 99 manholes within its alignment.
- The sewerline ranges in size between 24 inches and 42 inches in diameter and is comprised of unlined reinforced and unlined unreinforced concrete sections.



Existing Sewerline Issues



Pipe Deterioration

Inflow & Infiltration Around Lateral





Design Work

- In January 2015, the USIBWC entered a cost-share agreement with the City of Nogales, Arizona for the design of rehabilitation improvements to the pipeline.
- In May 2015, the USIBWC awarded an engineering design contract to AECOM/URS Corporation for the sewerline rehabilitation design.
- The project is divided into five (5) phases. So, five separate sets of plans and specifications will be developed.

Project Description



- This rehab will utilize the Cured-in-Place Pipe (CIPP) process. CIPP generally is considered to be a trenchless technology with little or no disruption to the existing ground conditions.
- A resin filled polyester felt tube, or liner, is inserted or inverted into an existing pipe. A Vacuum process is used to evenly distribute the resin.
- The liner is then inflated and thermally cured-in-place using either hot water, steam, or UV.



Design Work (contd.)

- Phase 1: Between MH #85 and MH #99
- Phase 2: Between MH #1 and MH #37
- Phase 3: Between MH #37 and MH #51
- Phase 4: Between MH #51 and MH #66
- Phase 5: Between MH #66 and MH #85

Note: MH = manhole;

Manhole #1 is closest to the International border.



Project Description

- Rehab will address operational defects such as current accumulation of debris, groundwater inflow and infiltration, current root intrusion in manholes and pipeline throughout the sewerline. However, vegetation along pipeline route must be managed to avoid future root intrusion.
- Rehab will address current structural defects including corrosion, cracks, wall penetrations, and invert erosion.

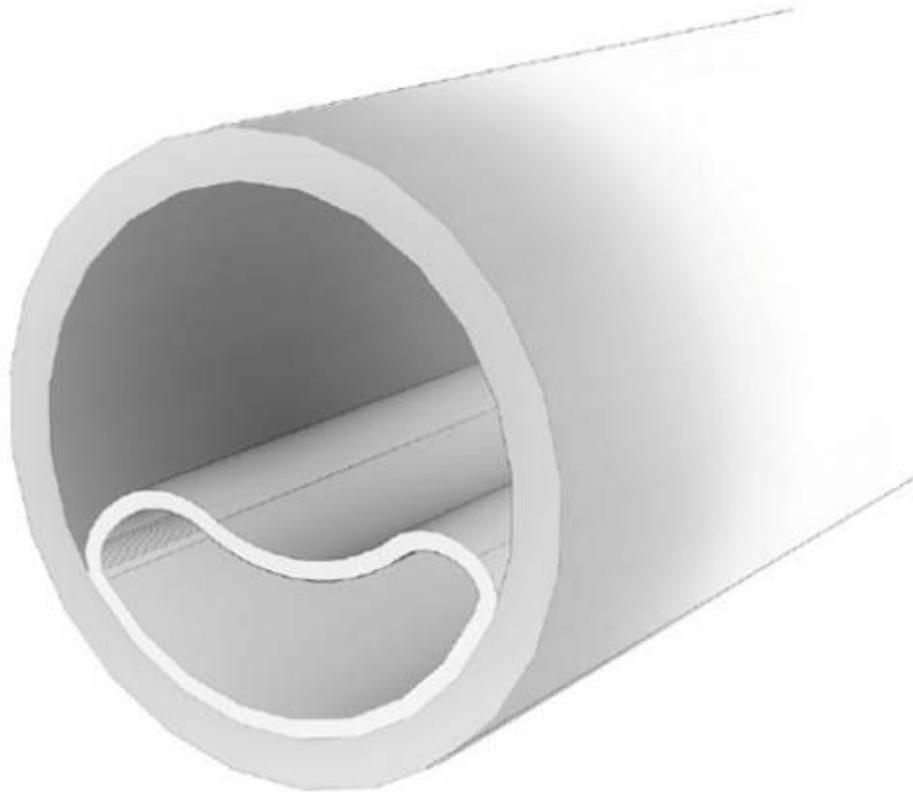
Project Description



- Temperature measurements are taken as the liner cures to ensure complete cure of the resin
- Lateral connections are restored by cutting openings after curing.
- A dimpling of the liner can aid in the identification of the position of the lateral connection.
- Resulting pipe inside of a pipe is a structural replacement of the host pipe.



CIPP Process



Flexible Liner



Finished Pipe

Cured-in-Place Pipe (CIPP)

Design Work Schedule



Currently the design for Phase 1 of this Project is 100% complete.

Below is a summary table showing the schedule of deliverables:

Task	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
90% Submittal	27 Jun 2016	17 Nov 2016	17 Nov 2016	17 Nov 2016	17 Nov 2016
90% Comments	29 Aug 2016	03 Apr 2017	03 Apr 2017	03 Apr 2017	03 Apr 2017
Pre-final Submittal	17 Nov 2016	24 May 2017	24 May 2017	24 May 2017	24 May 2017
Pre-final Comments	14 Feb 2017	14 Oct 2017	14 Oct 2017	14 Oct 2017	14 Oct 2017
100% Submittal	05 Oct 2017	05 Dec 2017	05 Dec 2017	05 Dec 2017	05 Dec 2017
Bid Services	TBD	TBD	TBD	TBD	TBD



Questions



IOI MANHOLE 89

Timeline:

July 25, 2017

- City of Nogales notified USIBWC of Manhole 89 damage; manhole dislodged due to heavy rainfall

July 26, 2017

- USIBWC started participating in the daily Santa Cruz County EOC briefings

July 27, 2017

- Confirmed that partial breach in IOI was spilling sewage into Nogales Wash





IOI MANHOLE 89

Timeline Continued:

July 28, 2017

- USIBWC contracted with KE&G Construction from Tucson, AZ to install bypass and perform repairs
- USIBWC personnel onsite to coordinate with KE&G
- Started installation of sewage bypass system

August 2, 2017

- Bypass system started operation; sewage spill contained
- CCTV Inspection of IOI performed to identify damages
- USIBWC met with USACE and City of Nogales to discuss assistance with bank stabilization behind Manhole 89

August 4, 2017

- City of Nogales plugged contributing sewer laterals at Manholes 87 and 88
- KE&G proposed options for repairs including addressing challenges for access to work site

August 8, 2017

- USIBWC notice to proceed (NTP) to KE&G to procure replacement pipe and precast manhole
- USIBWC continued reviewing implications of constructing diversion channel and shoring



IOI MANHOLE 89

Timeline Continued:

August 9, 2017

- Pipe plug at Manhole 85 failed due to debris in sewage flows causing brief sewage spill in Wash
- Plug was adjusted and re-inflated at Manhole 85

August 11, 2017

- Backup pipe plug installed Manhole 86

August 15, 2017

- USIBWC sent letter requesting assistance from City of Nogales and/or Santa Cruz County to build diversion channel and shoring for bank stabilization

August 17, 2017

- USIBWC conference call held with City, County, and AZDEMA to discuss requested assistance and State cost-sharing assistance

August 22, 2017

- USIBWC started reviewing alternate option to relocate Manhole 89 to avoid need for diversion and shoring



IOI MANHOLE 89

Timeline Continued:

August 23, 2017

- City of Nogales notified USIBWC they would not provide any assistance, despite state's offer to pay 75% of the cost
- Geotechnical testing performed for manhole foundation design

August 24, 2017

- Santa Cruz County notified USIBWC they would not provide any assistance, despite the states offer to pay 75% of the cost.
- KE&G notified USIBWC that the alternate option was to relocate Manhole 89 still requires diversion and shoring

August 25, 2017

- USIBWC investigated NEPA requirements under emergency orders
- USIBWC started coordination with UPRR for permit to work within their ROW, beyond City of Nogales IOI easement

August 28, 2017

- USIBWC sent NTP to KE&G to proceed with plan to construct diversion channel and procuring design/materials for shoring



IOI MANHOLE 89

Timeline Continued:

August 30, 2017

- USIBWC gathering City of Nogales IOI easement information and contact information for private property to request Right of Entry agreement
- State of Arizona asks if County would participate in the Manhole Repair in partnership with US Army Corps of Engineers at no cost to the County.

September 1, 2017

- County declines no-cost participation, stating, among other things “There is no current emergency that places the health and safety of our citizens in imminent danger.”

September 19, 2017

- County informs USIBWC it will no longer support the emergency repair work and will open Old Tucson Road on October 1, 2017, which will directly impact the emergency bypass pipeline



BYPASS SYSTEM



- 11,400 Linear Feet of 18" high-density polyethylene pipe (HDPE)
- Seven 12" Pumps, each with capacity of 3,500 GPM
- Total system capacity of 24,500 GPM
- Suction at Manholes 84 and 85 and discharge at Manhole 90
- Pumps monitored and adjusted 24/7
- Continuous operation since August 2nd; to be shut down once IOI is back in service



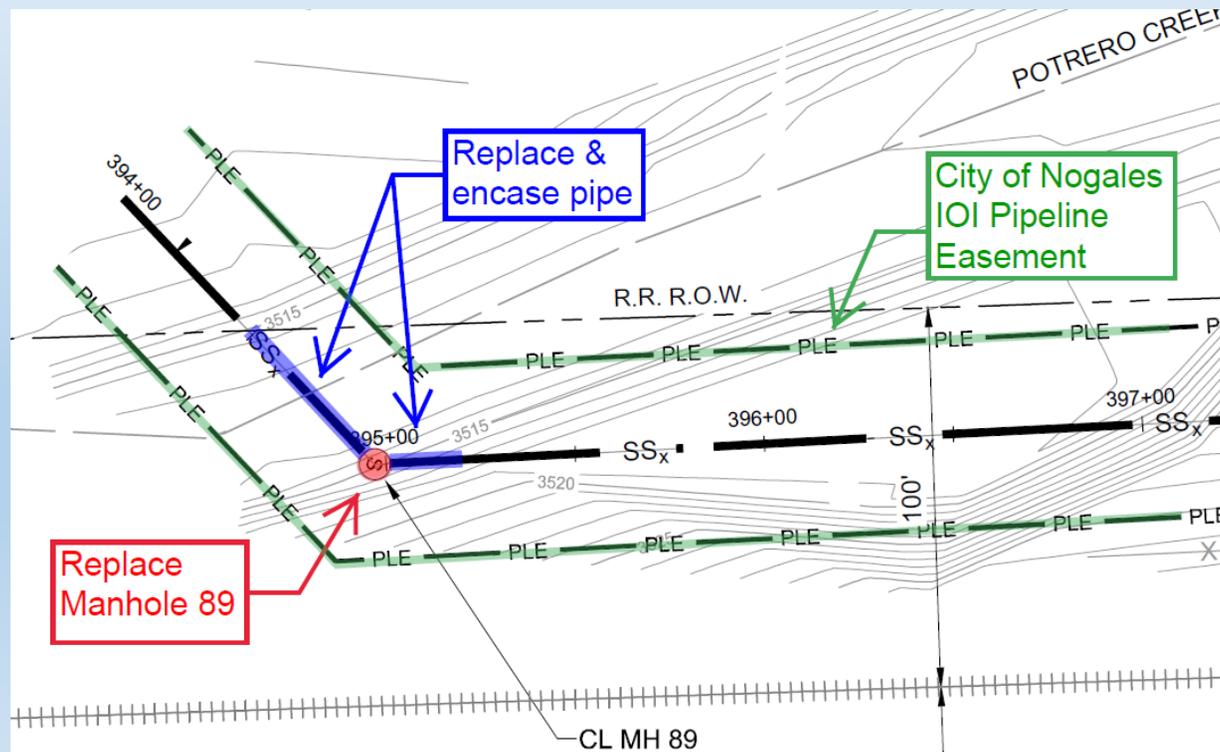
DAMAGES

- CCTV Inspection of IOI performed upstream of Manhole 89
- Identified IOI pipe damage upstream of Manhole 89 with joints misaligned; significant infiltration from Wash observed at break
- Due to infiltration, video inspection of pipe beyond break and downstream pipe could not be performed
- Manhole 89 structure dislodged and shifted, likely caused by erosion around risers within Wash or due to debris carried during floods
- Suspect IOI pipe downstream of manhole also damaged
- Wash bank east of Manhole 89 significantly eroded and riprap protection degraded
- Video inspection confirmed IOI break could not be repaired by lining pipe without digging and required complete replacement of damaged sections



PROPOSED REPAIRS

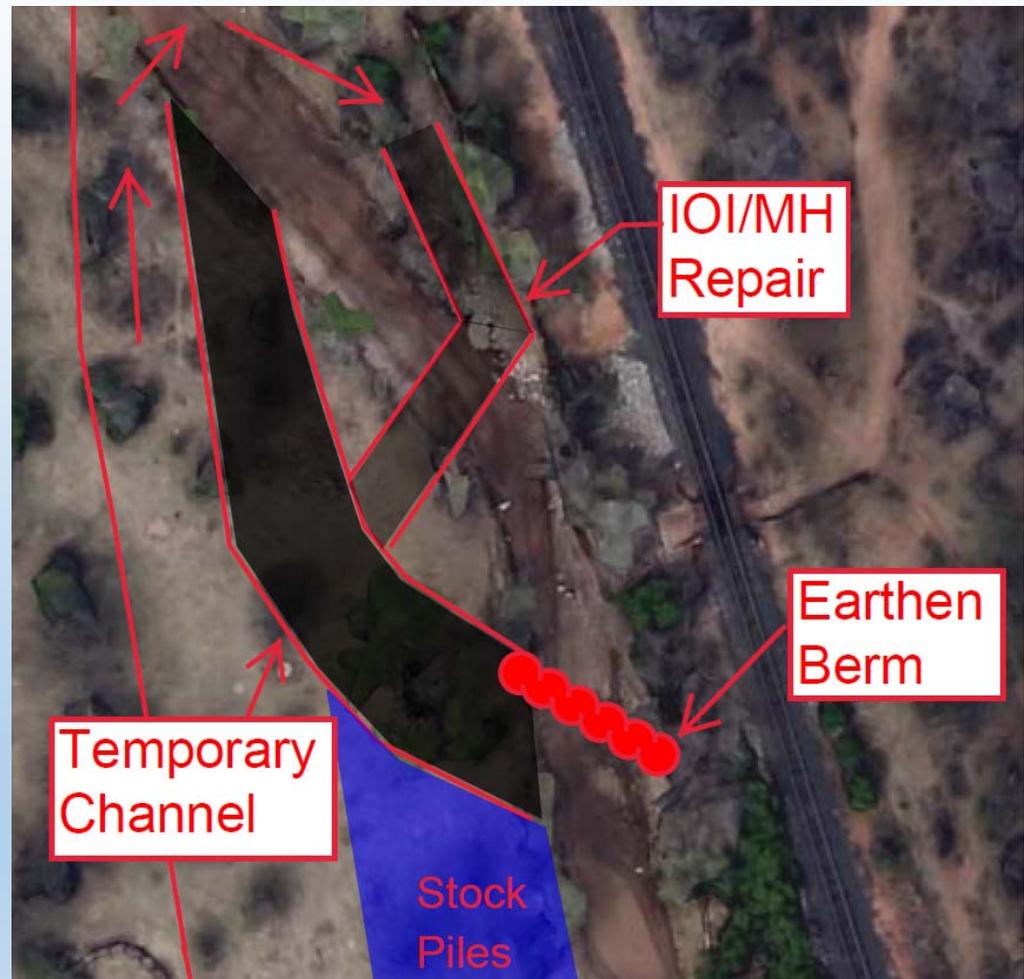
- Replace Manhole 89 with shallow manhole to prevent future damage
- Geotechnical testing performed for foundation design
- Replace about 50' damaged IOI pipe with new 30" RCP pipe
- Concrete encase exposed pipe within Wash and new pipe section downstream with manhole





CHALLENGES

- High, fluctuating flows in August within Wash prevented access
- Wash flow levels subsided in September, but may quickly rise due to rain events south of Nogales
- Build earthen berm and temporary diversion channel to divert Wash flows around work site
- Temporary staging and diversion channel work within private property, requiring Right of Entry Agreement

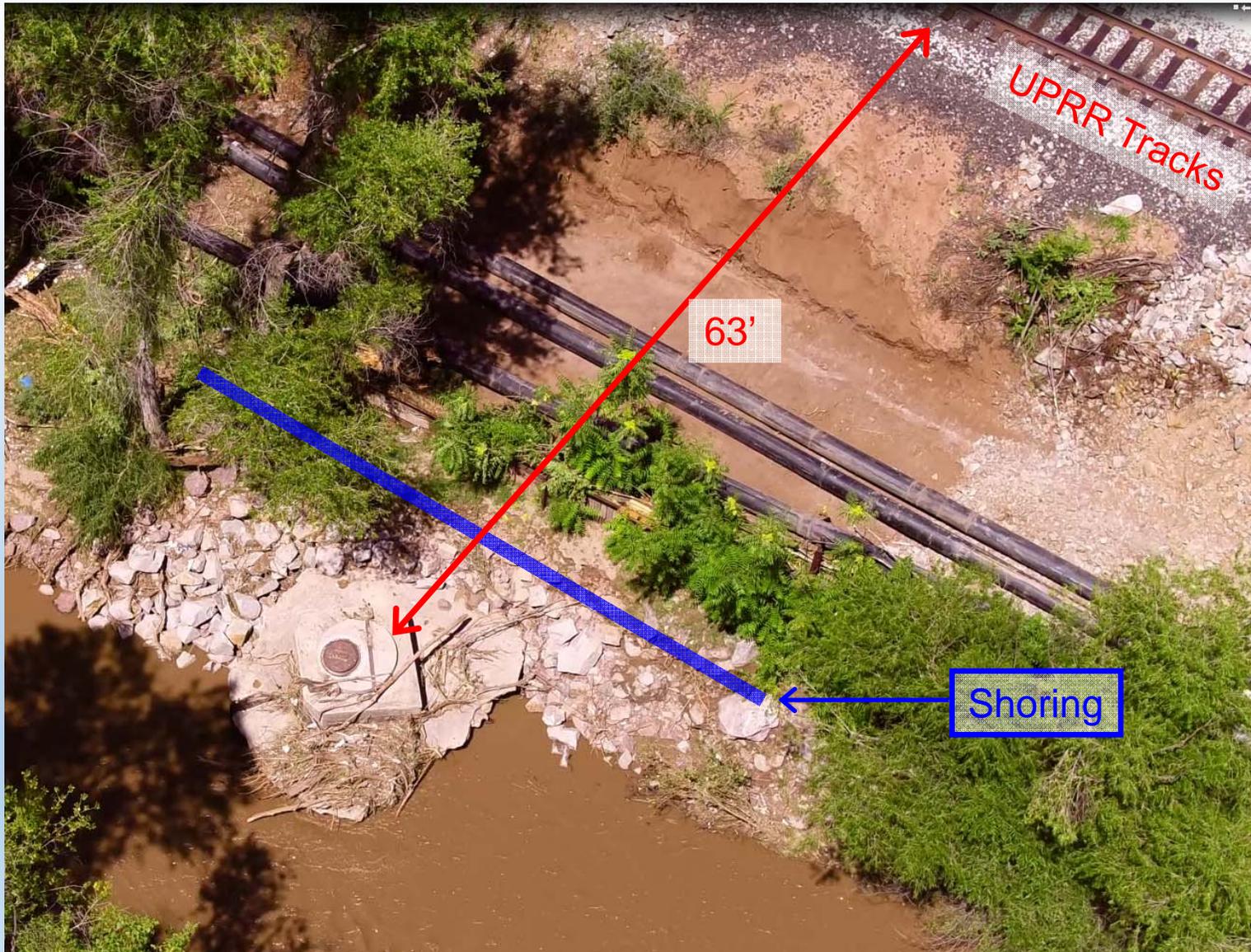




CHALLENGES

- Excavate about 8'-10' below bed of Wash to remove and replace Manhole 89 and IOI pipe
- Eastern bank of Wash is unstable due to erosion requiring shoring for safety and slope protection
- Union Pacific Railroad located about 60' from excavation and 50' from shoring
- Repair work located within UPRR and City Right-of-Way, requires:
 - Compliance with UPRR Shoring Guidelines
 - UPRR review/approval of shoring design
 - Compliance with UPRR Insurance Requirements
 - UPRR Agreement granted after all of above completed
- The repair at Manhole 89 and necessary stabilization of the site.
- Lack of County and City participation

CHALLENGES





PHOTOS



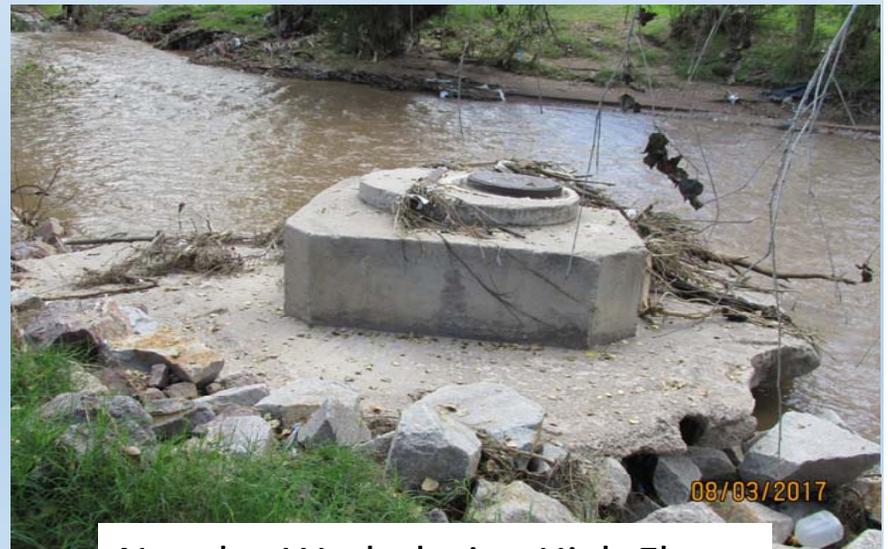
Manhole 84 Pump Station (3 Pumps)



Manhole 89 (View from East bank)



Manhole 85 Pump Station (4 Pumps)



Nogales Wash during High Flows



STATUS OF REPAIRS

- ✓ Right of Entry Agreement finalized September 11th for work within private property
- ✓ UPRR provided guidelines for temporary shoring design
- ✓ New 30" RCP pipe and shallow manhole fabricated and completed September 13th
- ✓ Geotechnical report and foundation design completed September 13th
- Shoring design in progress; to be submitted to UPRR engineering for review
- After UPRR engineering approval:
 - Procure shoring materials
 - Obtain insurance documents per UPRR requirements
 - UPRR to finalize agreement and release construction within ROW
- ❖ Scheduled to start construction October 2nd
- ❖ Estimated completion date of October 27th
- ❖ Construction schedule depends on UPRR process and approval



Questions