

Southeast Arizona Citizens Forum

Transboundary Flow Mitigation

Naco, Sonora



ADEQ
Arizona Department
of Environmental Quality



Sierra Vista, Arizona, March 21, 2019

The Problem: TB Flows

WEST:
TB Flows
5-10 l/s



EAST:
TB Flows
5-10 l/s

Issues

Technical

Undetermined Causes
No WWC drawings
Video Insp necessary
High per capita W
Need metering
Likely High W loss
Discharge – Ag user

O&M

Lack of equipment and personnel for O&M
Old infrastructure
Needs Rehab
Needs Cleaning
Progr

Budgetary

Utility – rate & collections issues
conditions
\$\$ Electric Bills/Solar
Admin issues (Conagua)
Federal limitations
State limitations

Jurisdiction

Utility – Municipality
Border – CILA/IBWC
Water Authority- CONAGUA/Projects
State-CEA/Projects

NADB Financing

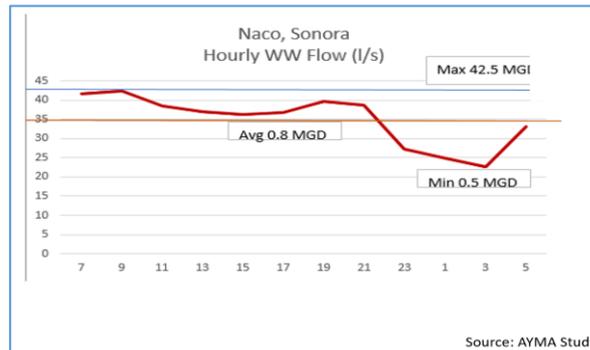
Naco TB Flows

Political

New city government
Federal Elections
Comm CONAGUA-US
New President 12/1
Naco-State of Sonora

Background

	1996	2018
Population	5,733	6,401
Water consumption per capita per day		
Liters	250	675
Gallons	66	
Average Potable Water Flowrate		
Liters per second	21	50
Gallons per minute	333	
Average Waste Water Flowrate		
Liters per second	17	40
Gallons per minute	266	



NADB/EPA Project Prioritization and Selection Process

The City of Naco applied for EPA funding, and the Project ranked high in the 2018 prioritization process, however, a diagnostic study is required to pinpoint the main issues and scope the infrastructure project appropriately; thus, EPA approved technical assistance for this study in November 2018 .

Rank	ID No.	Project Name	Location	Project Components	Connections (New or Improved)	Estimated Cost US\$	Pending Project Development Activities	Project Readiness (est. # months to certification)	Estimated PDAP	Total Points
1	5	Rehabilitation of Wastewater Collection Main Lines Poniente 1A Collector	Tijuana, B.C.	1,860 m 42-inch diameter	23,506	\$ 5,500,000	Geotechnical	9	\$ 20,000	85
2	6A	Rehabilitation of WWC of Infonavit Cucapah, Irrigación and San Marcos Areas	Mexicali, B.C.	3,005 m 8, 15 & 18-inch diameter	170,000	\$ 4,860,000	Environmental, FD by Sponsor	15	\$ 80,000	85
3	16	Rehabilitation of Wastewater Small Lift Stations	Mexicali, B.C.	13 Small Lift Stations	184,656	\$ 1,581,085	Environmental, FD by Sponsor	18	\$ 60,000	85
4	9	Rehabilitation of Wastewater Collection Main Lines Oriente Collector	Tijuana, B.C.	1,100 m 42-inch diameter	51,364	\$ 1,388,888	Environmental, FD by Sponsor	18	\$ 80,000	85
5	21	Wastewater Treatment Rehabilitation in Naco	Naco, Sonora	2.5 mgd WWTP Rehabilitation	1,863	\$ 1,000,000	Planning, Environmental, FD	15	\$ 230,000	81
6	12	Rehabilitation of Wastewater Collection Main Lines Mexicali I Phase II System	Mexicali, B.C.	17,002 m 8 to 24-inch diameter	26,083	\$ 3,860,394	Environmental, FD by Sponsor	15	\$ 60,000	80
7	7	Rehabilitation of Wastewater Collection Main Lines International Collector	Tijuana, B.C.	2,747 m 72-inch diameter	244,944	\$ 16,250,000	Diagnostic, Planning, Environmental, FD by sponsor	18	\$ 80,000	80
8	15	Rehabilitation of Wastewater Lift Stations Force Mains	Mexicali, B.C.	Pipelines 20 to 48-inch diameter in 5 Lift Stations	172,723	\$ 3,977,172	Environmental FD by Sponsor	15	\$ 60,000	75
9	8	Palo Verde Wastewater Collection and Treatment System	Palo Verde California	WWC & WWTP 164 Connections	164	\$ 4,500,000	Final Design	15	\$ 225,000	74
10	6	Pena Blanca Force Main Modification	Nogales Arizona	1000 feet of FM	4,726	\$ 650,000	Geotechnical	6	\$ 20,000	72

Recent Milestones



MAR 28, 2018 – EPA prioritization/funding letter to CONAGUA

- (1) fully eliminated the current intermittent transboundary sewage flows;
- (2) arranged for sustainable utility management to prevent future emergencies; and
- (3) instituted systems to promptly address future emergencies, if they occur.

APR 15, 2018 - NADB and CILA start coordinating actions in preparation of MONSOON season (Min 273)

JUN 11, 2018 – CONAGUA’s letter B00.7.04.-115 to answer EPA’s Naco Project Conditions

AUG 27, 2018 – ADEQ-NADB agreement

OCT 04, 2018 – OOMAPAS NACO- NADB Agreement

Recent Milestones

NOV 21, 2018 – EPA instructs NADB to initiate the Naco infrastructure diagnostic and preliminary engineering and organizational structure analysis.

DEC 03, 2018 – Meeting with ADEQ’s Director

DEC 11, 2018 – Meeting with CEA and ADEQ at Nogales, BTC

DEC 18, 19 and 25, 2018 – NADB – Engineering & Construction Contractor (ECC) Meetings

DEC 28, 2018 – ECC Engineer hired

JAN 13, 2019 – Libertad Bypass completed

FEB 12, 2019 – Meeting Cochise County Board

FEB 20, 2019 – Meeting EPA Headquarters

Actions

- Focused cleaning actions to north west area of WWC system (Nov 26, 2018)
- Installed metering rod and established monitoring MH#01 Bad Muro (Dec 6, 2018)
- Meeting with CEA to discuss possible procurement for construction (Dec 5 & 25, 2019)
- NADB proposed hiring Engineering & Construction Contractor (ECC) in Dec. 2018
- Technical Review with ECC/Supervisor (Dec 18, 19 and 25, 2018)
- Contracted ECC on December 28, 2019 to :
 - Provide faster response/monitoring and lead cleaning/dredging actions
 - Provide technical support/engineering/repairs as necessary
 - Verify grade and flow directions in the northwest area of Naco (Bad Muro)

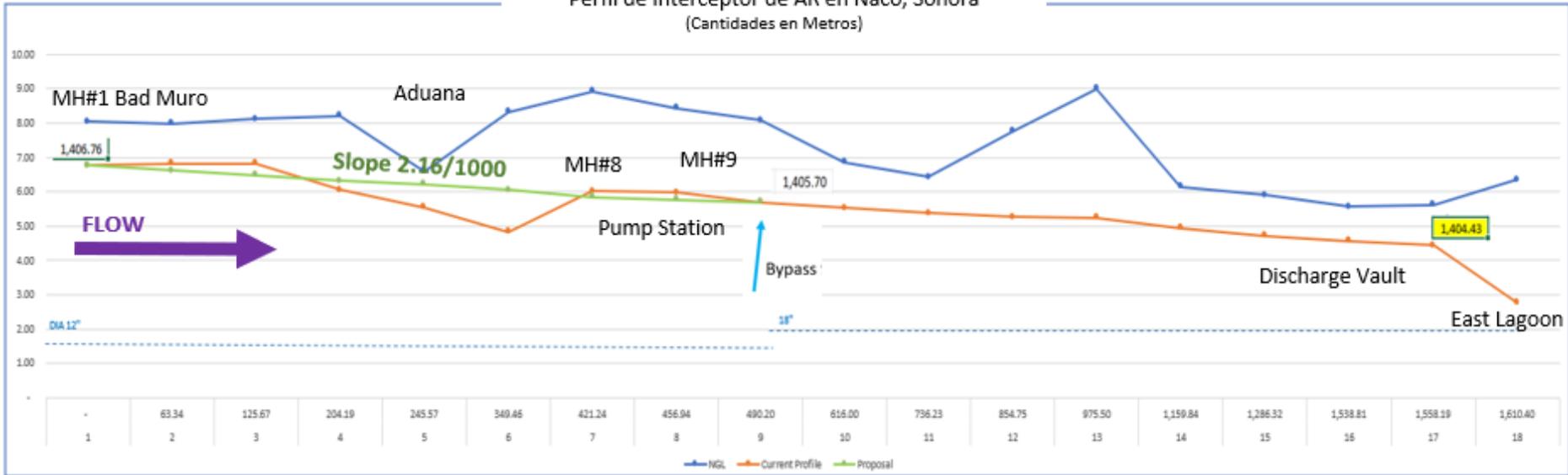
Actions

- ❑ At the Mayors' request, **contacted SOLAR contractor** (SOLAREX) and estimated amount to complete the solar field approx. **US \$150,000** (construction \$50K, transformers and CFE connection \$100K)
- ❑ Installed **metering** rod and established **East Lagoon** monitoring (Jan 9, 2018)
- ❑ Identified **location** to **divert flows** from west to east to relieve West MH#01 Bad Muro
- ❑ Built **Libertad Bypass** to redirect flows (Jan 11, 2019)
- ❑ Obtained support from Nogales, AZ to inspect potential **DW leak area**
- ❑ Continued flow analysis and cleaning (DW Leak Area, MH#01 and MH#9)
- ❑ Started **Lagoon Analysis** coordination with CONAGUA

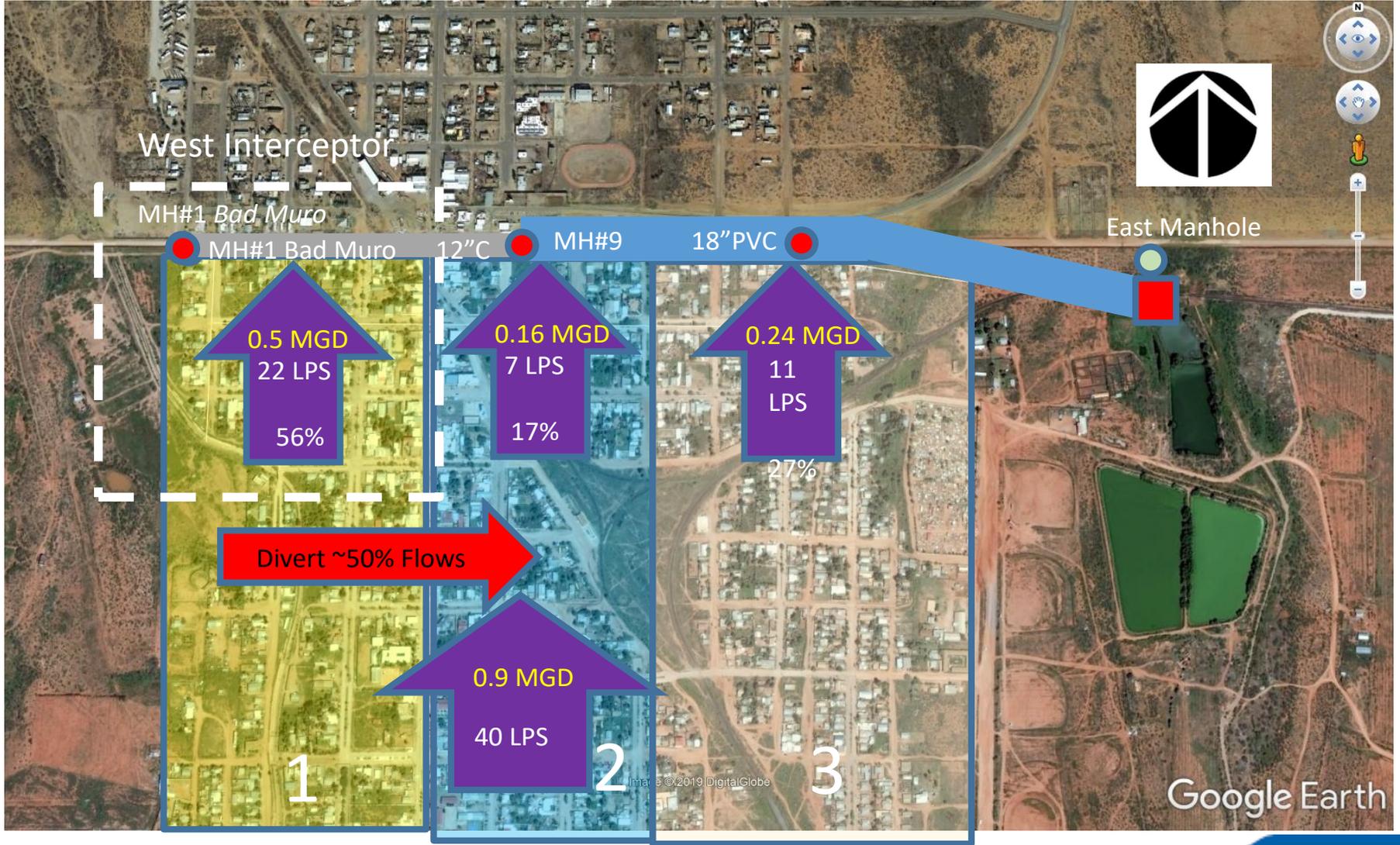
Proposed West Interceptor Replacement (mh#1 to mh#9)



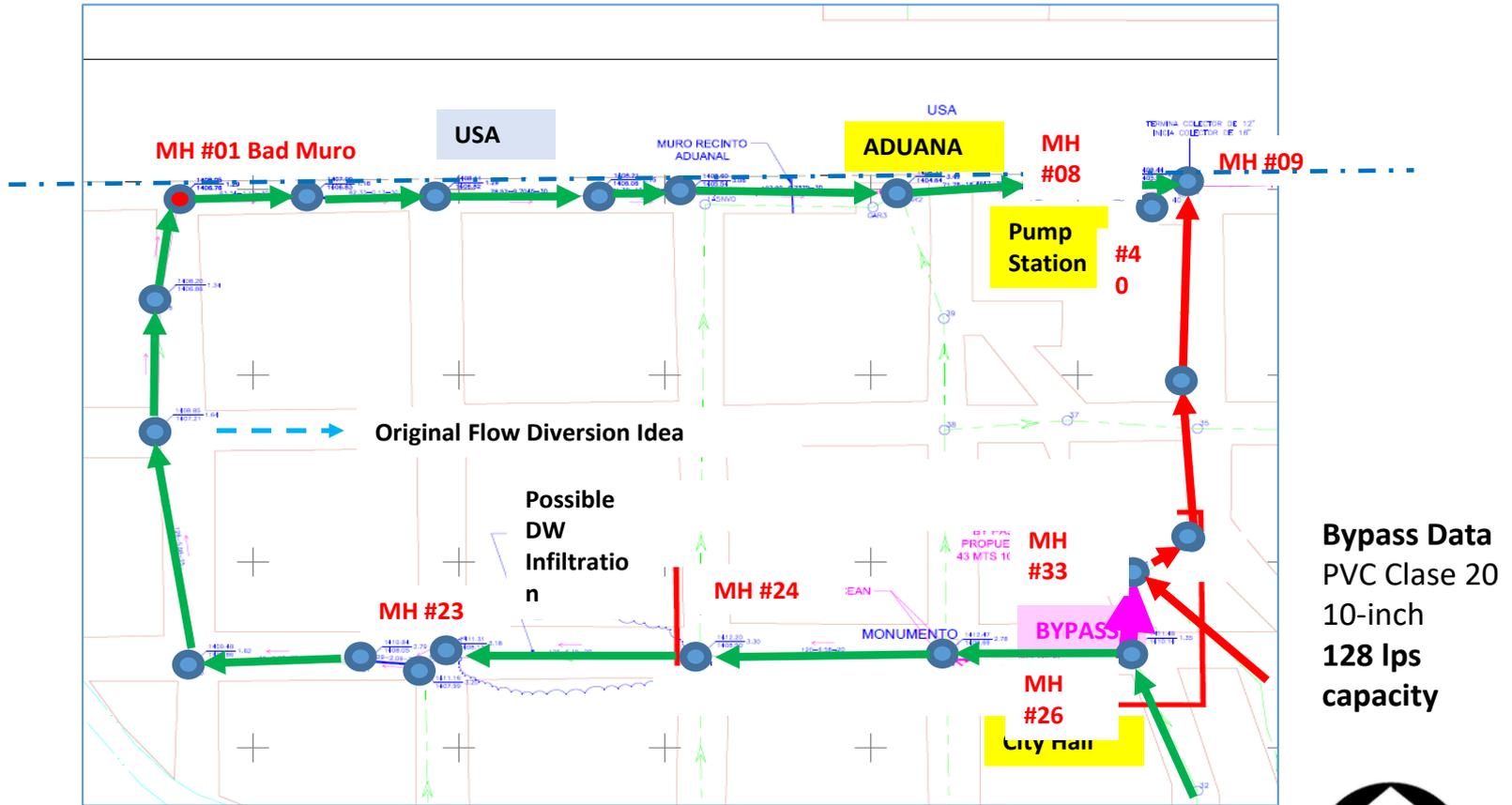
Perfil de Interceptor de AR en Naco, Sonora
(Cantidades en Metros)



WW Collection, Naco, Sonora



North West Area WW Flow Diversion



Bypass Data
 PVC Clase 20
 10-inch
 128 lps
 capacity





Manhole #9

Bypass 43 meters
PVC Clase 20
10-inch
128 lps capacity

North View

Proposed Actions

- Continue **monitoring** Manhole #1, East Lagoon and Manhole #9

- Replace West Interceptor** (Manhole#1 to #9)
Open trench construction

- Identify **mid-term** solution
Implement redundancy system using **by-passes** or pumping
Improve **East Lagoon** Operation and Discharge

- Start EPA **Diagnostic Study** to find **Long Term Solution** (May 2019)



Manhole #9

West Interceptor
Replacement 493 meters
PVC Class 20
12-inch

Manhole #1

East View



West Interceptor Replacement ESTIMATED COST

WEST INTERCEPTOR (12-inch Diameter)

Crossing Mexican Aduana using Open Trench Construction

NACO, SONORA

Mar-2019

SUMMARY

	LABOR	MATERIALS	TOTAL (US)
<i>WEST INTERCEPTOR mh #1-#9 (490 meters, 12-inch dia PVC)</i>	\$28,408.91	\$15,220.44	\$43,629.35
		IMPORTE	\$43,629.35
		Value Added Tax	\$6,980.70
		TOTAL	\$50,610.05

West Interceptor Replacement CONSTRUCTION SCHEDULE

WEST INTERCEPTOR (12-inch Diameter) NACO, SONORA	Construction Schedule													
	MESES													
	MARCH	APRIL				MAY				JUNE				
	WEEKS													
CONCEPT	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>WEST INTERCEPTOR (From manhole #1 to #9)</i>														
<i>ADUANA CROSSING</i>														



Naco Transboundary Flow Monitoring Report

Prepared by North American Development Bank

18-Mar-19



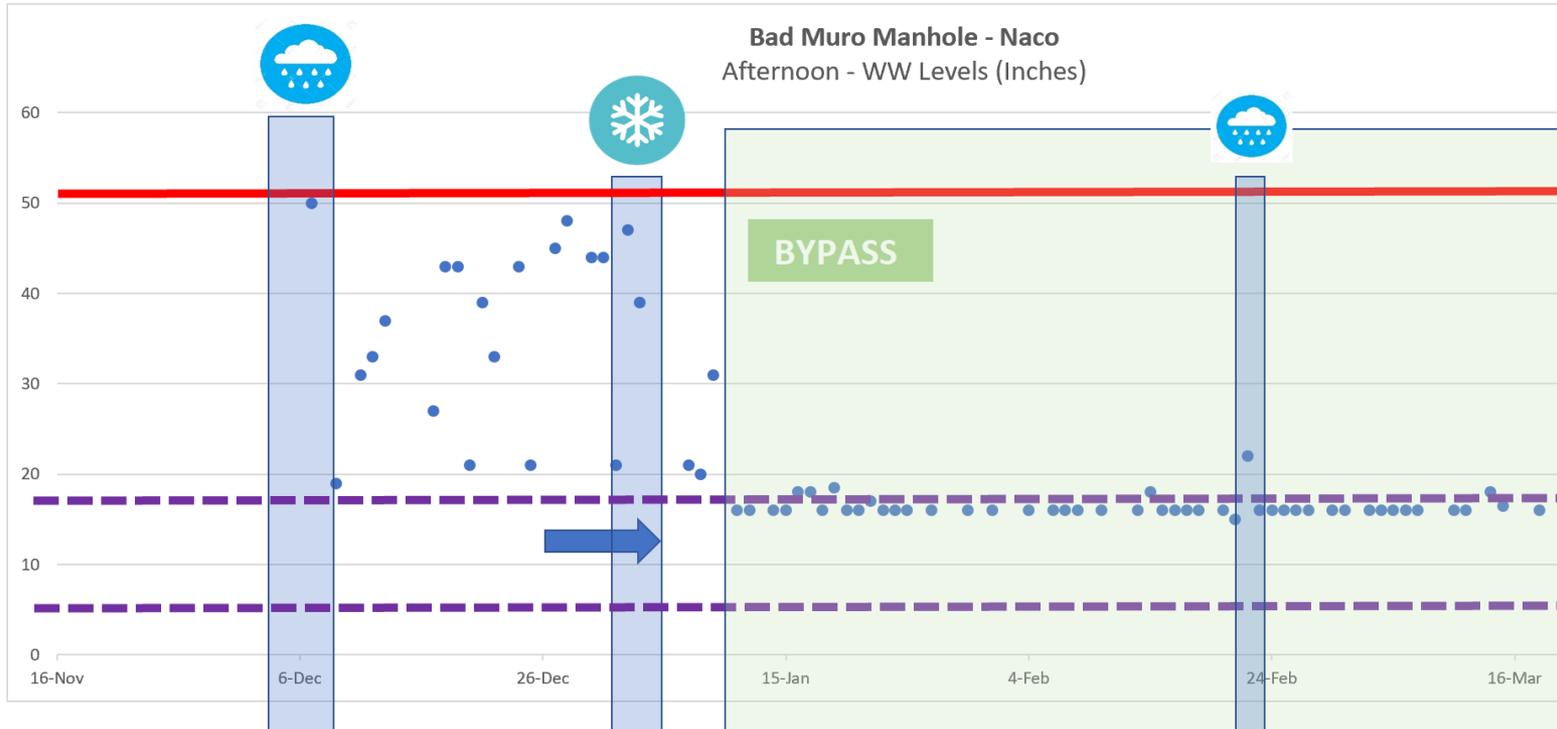
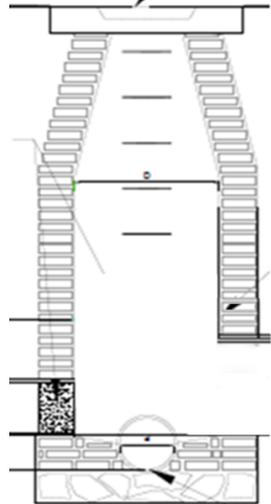
Weather

89 days to monsoon season
13 weeks

WW System Key Point Level Measurements -- TODAY

	Measurement	Target	Comments	Trend
Man hole #01 "Bad Muro"	16-inches (0.4 meters)	12-inches (0.3 meters)	Stable since 1/11	↔
East Lagoon	24-inches	Level Zero (1,414 m SL)	Stable	↔

Status March 18, 2019





Effluent PS

Facultative Section

Inter-lagoon PS

Anaerobic Section

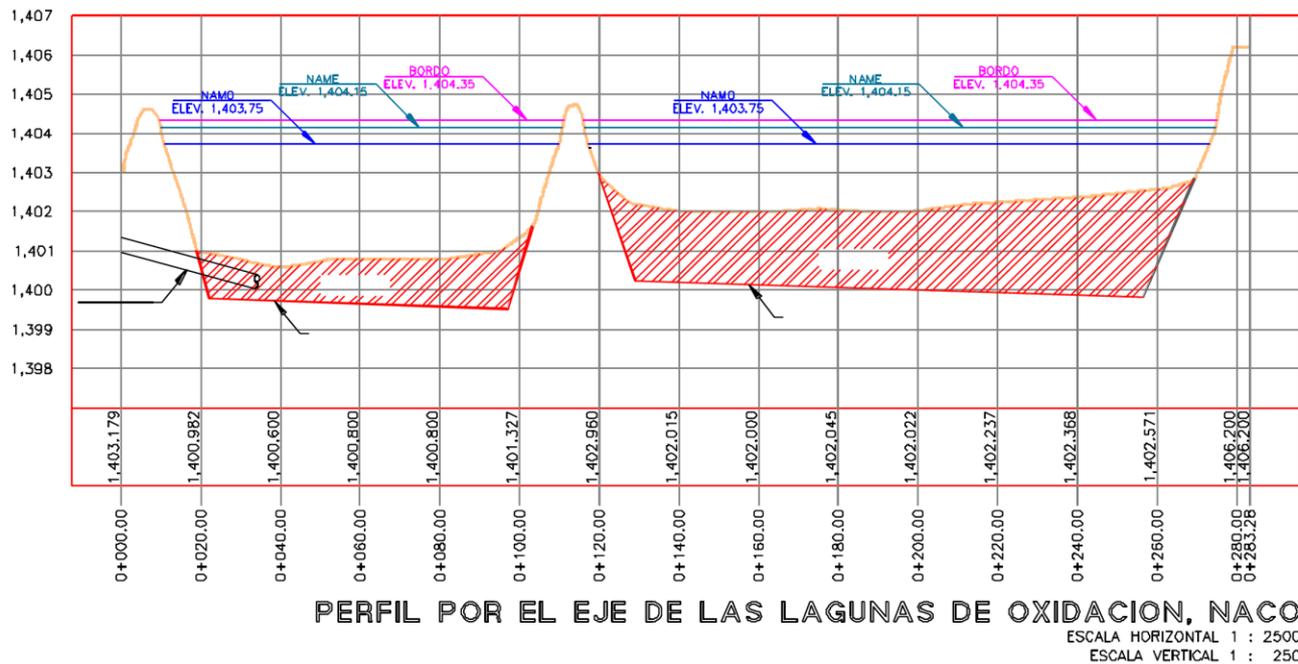
East Lagoon System
Area 9 acres

South View

Interceptor

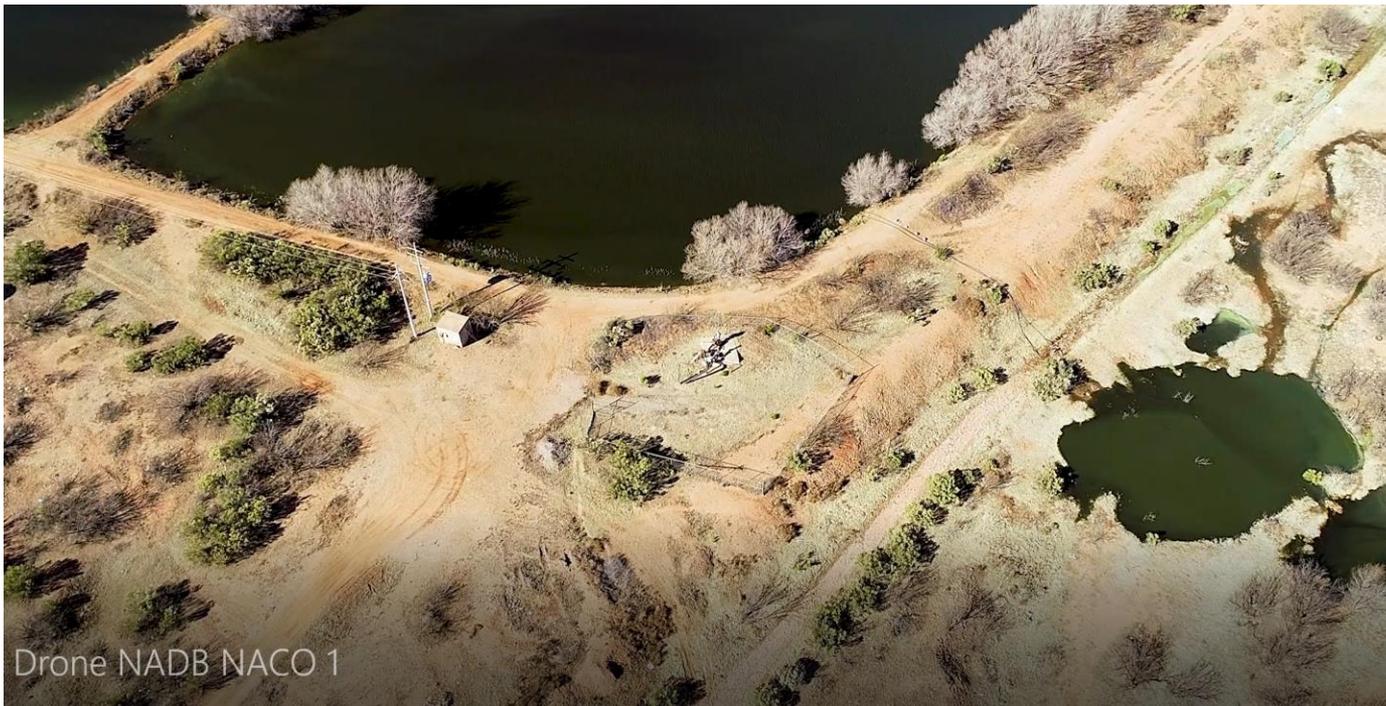
NADB NACO 1

East Lagoon System – BATHYMETRY Study



Issues and Risks

1. Collapse of obsolete segment (MH#1 to MH#9) of West Interceptor.
2. Discharge caused by High water Levels of Facultative Lagoons and/or Insufficient inter-lagoon and effluent pumping.





New Lagoons and/or
Wetlands

Effluent PS

Facultative Section

Potential Areas
For Reuse

EAST LAGOON SYSTEM

South View

Thank you.

Roberto Molina, MS, PMP

Program Manager West Region

Grants Projects Development and Implementation

North American Development Bank

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