



# Water Supply Operations CIP Presentation

*Grant Gartrell, Director of Water  
Engineering*



# CIP 111007 Lake Huron Plant Raw Sludge Clarifier and Sludge Pumping

*Project Manager*

*Brian VanHall*

# CIP 111007 Related Contracts

Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
CS-171	Brown & Caldwell	\$1,555,784	\$1,086,000	70%	9/1/17	12/1/21	71%
1803823	Weiss	\$7,969,890	\$3,576,336	67%	6/12/19	10/10/21	53%
Totals		\$8,993,956	\$6,081,000				

# Lake Huron Plant Aerial View



# Lake Huron Historic Photo of Retention Basin and Clarifiers being Constructed in 1971

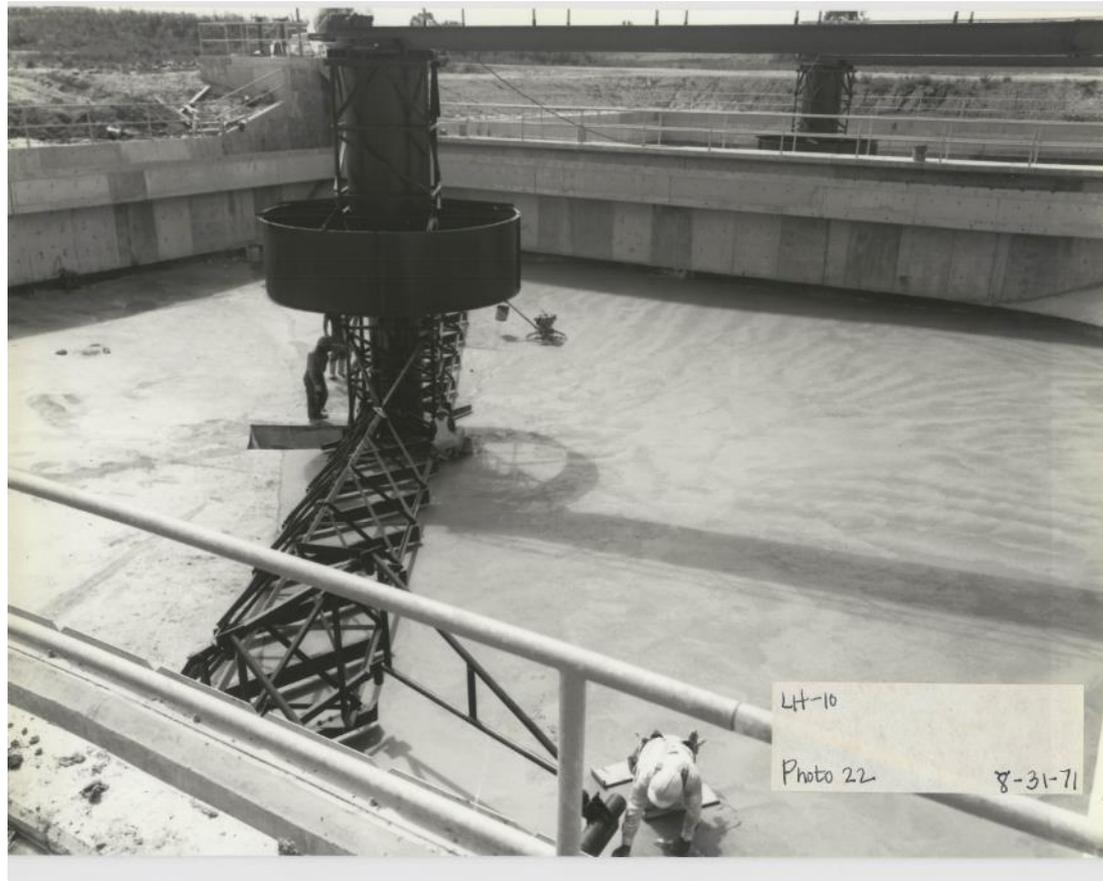


LH-10

Photo 23

10-12-71

# Lake Huron Historic Photo Clarifiers being Constructed in 1971



# Lake Huron Waste Wash Water Retention Basin Existing Clarifier Wall Conditions 2018

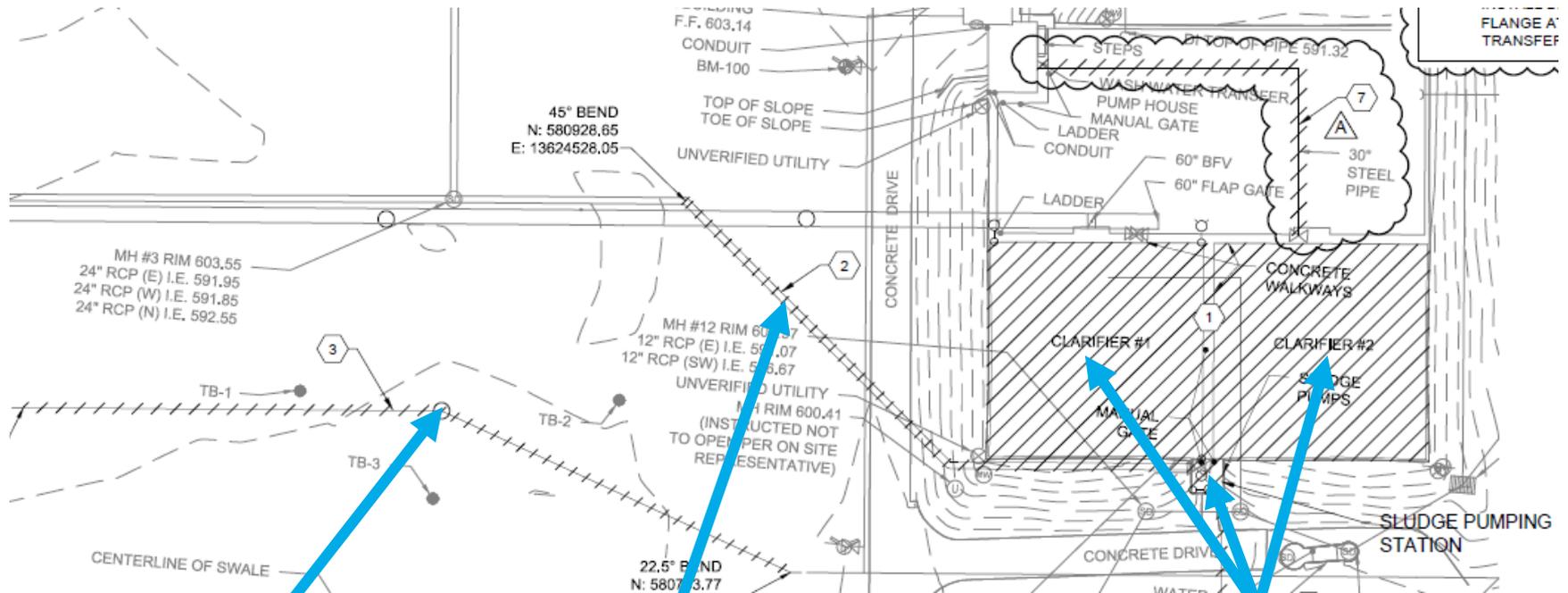
*South Clarifier Wall*



*East Clarifier Wall*



# Lake Huron Improvements Being Constructed under Contract 1803823

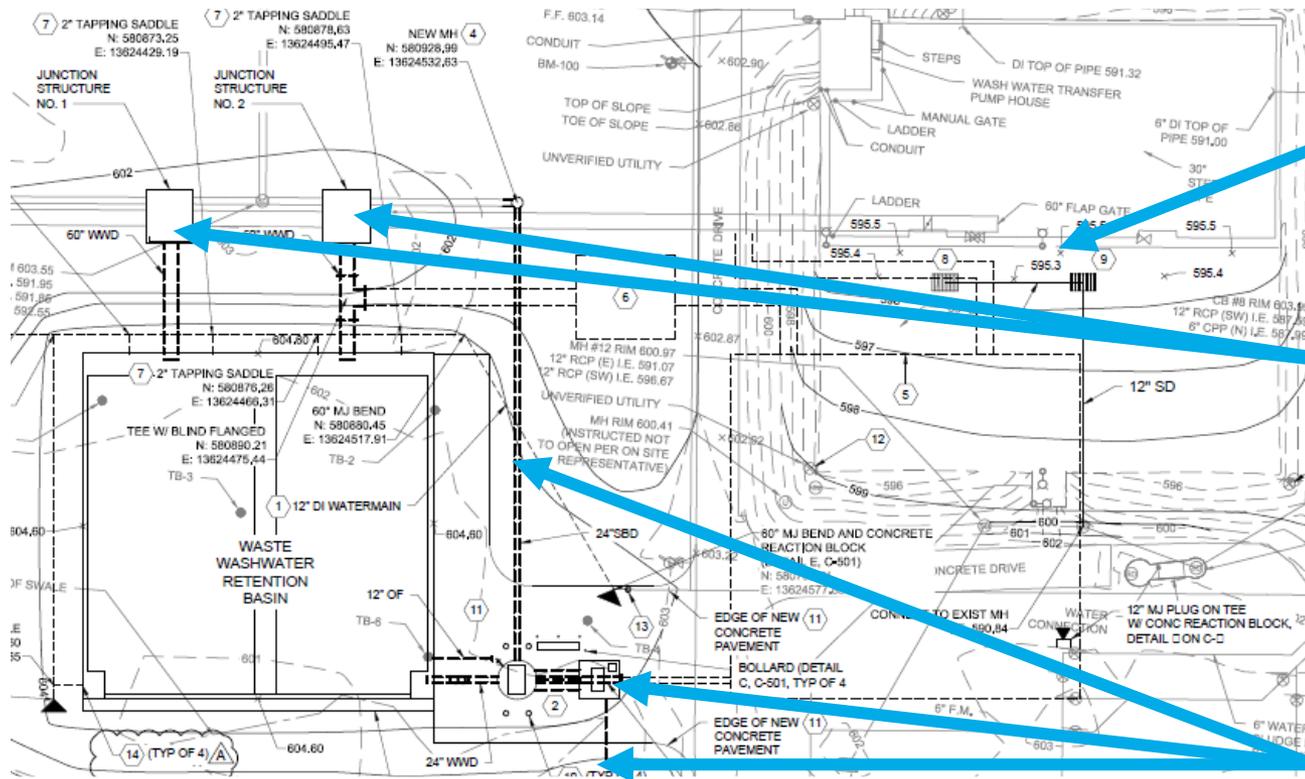


Demolish existing 12" fire loop and reroute around new retention basin.

Demolish existing 24" line and reconnect into new sludge pump station.

Selective demolition of clarifiers and sludge pumping station.

# Lake Huron Improvements Being Constructed under Contract 1803823



Reinforce wall on retention basin

Install junction structures on existing 60" line to control flow to new spent filter washwater retention basin

Install new sludge pumping station, valve vault and connect to existing 24" from sedimentation basin drains and existing 12" force main to lagoons.

Other improvements not shown include connecting lagoon 6 and 7 to lagoon 8, paving, electric and controls.

# Lake Huron New Spent Filter Wash Water Retention Basin Construction Progress



# Lake Huron New Spent Filter Wash Water Retention Basin Construction Progress





**Contract DB 226:  
Rehabilitation of  
Detroit River  
Interceptor**

*Project Manager  
Mini Panicker*



# CIP 222002 Related Contracts

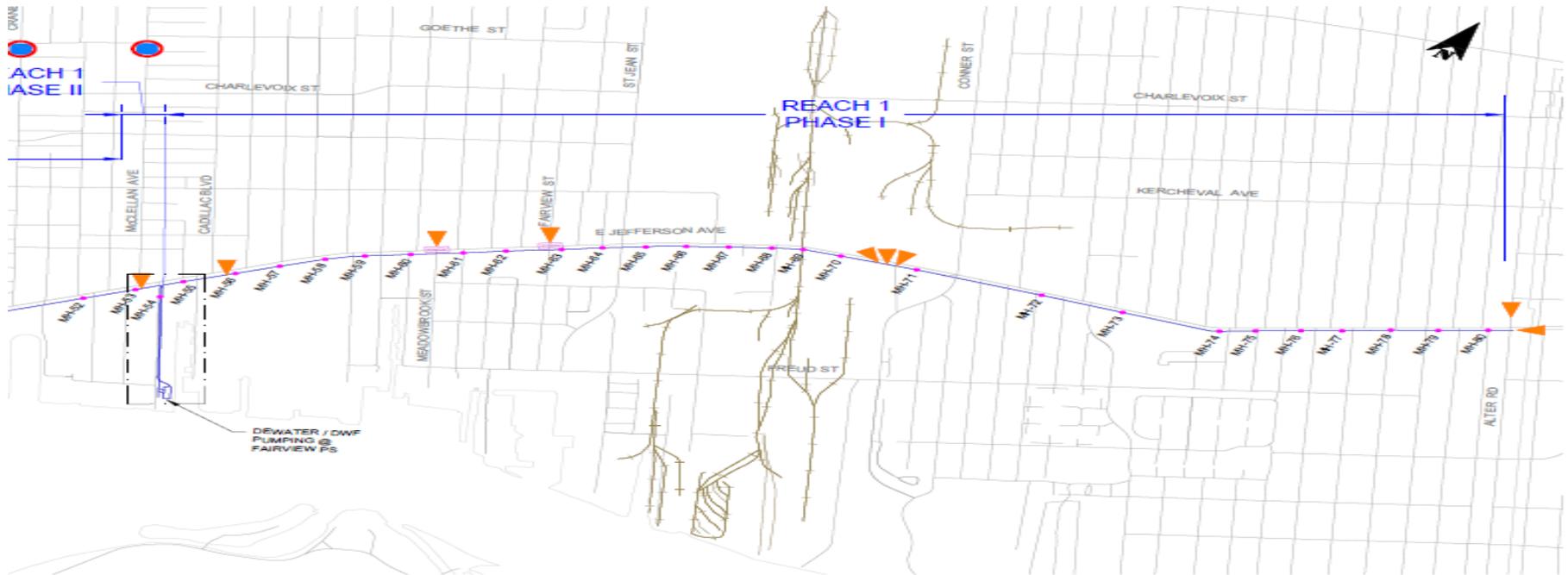
Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
DB-226	Jay Dee	\$47,993,835	\$16,089,963	34%	5/24/18	5/24/23	46%

# Detroit River Interceptor (DRI)

- 12 miles long from Alter Rd. to WRRF
- Interceptor ranges from 8 ft near Alter Rd to 16 ft at WRRF
- DRI was constructed in parallel to the Detroit River



# REACH 1 CONSTRUCTION

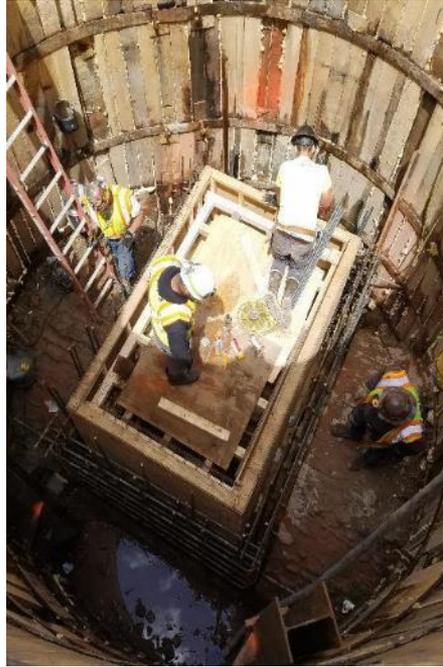


- Reach limits are Alter to McClellan
- Construction started March 2019
- Manhole Modifications
- Connor Creek Access Structure
- In sewer repairs





# CONNOR CREEK ACCESS STRUCTURE CONSTRUCTION



# REACH 1 IN SEWER REPAIRS



Brick Repair



Grout infiltration



Tap Repair



Debris Removal

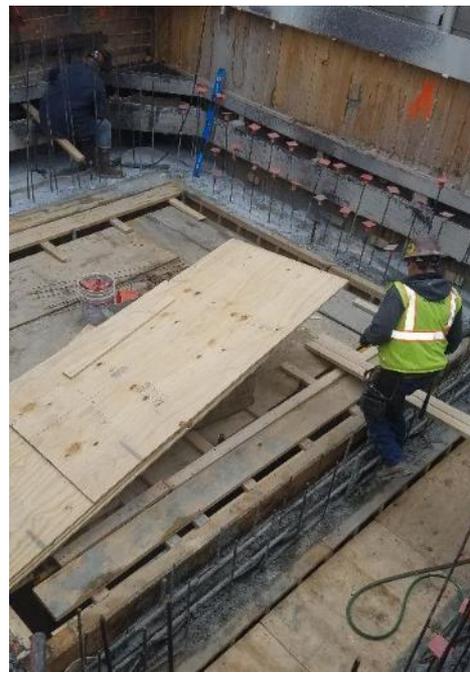
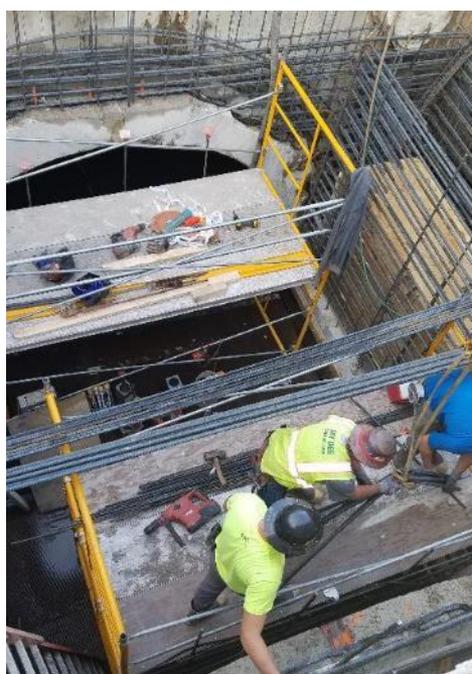
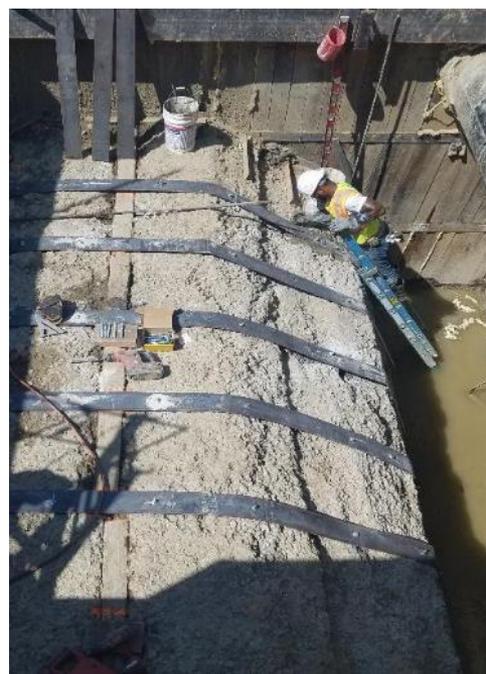
# REACH 3 FLOW CONSTROLSHAFTS

- Reach 3 From Rivard/Franklin to GLWA WRRF
- Two Gate Structures installed
- Provide flow control in Reach 3 for repairs and inspection





# RIVARD STRUCTURE CONSTRUCTION



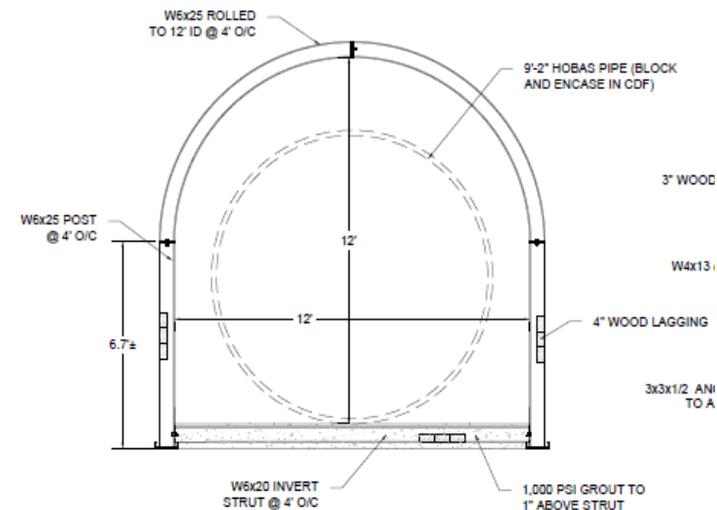


# EIGHT STREET STRUCTURE CONSTRUCTION

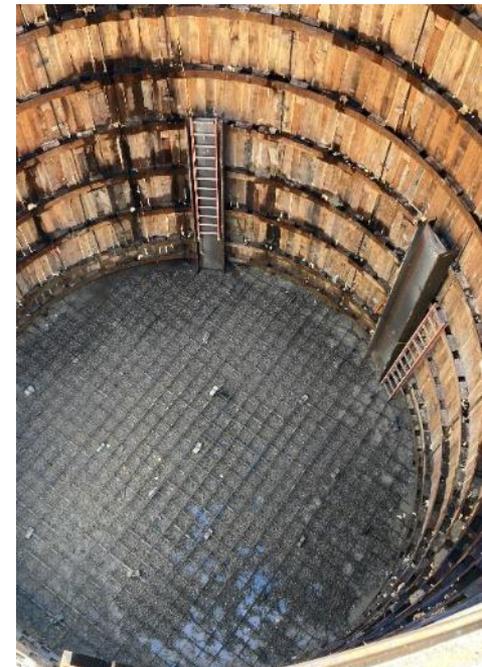


# NIEA TUNNEL DETAILS

- TBM excavation will be approximately 980 linear feet
- 9'-2" Internal Diameter Hobas Pipe grouted in tunnel with 12 ft Diameter rib and lagging tunnel liner between Fort St. and Jefferson
- Hand mine Tunnel excavation from North structure to NIEA about 80 ft
- TBM Launch Shaft at W. Grand Blvd East of Fort st
- TBM Retrieval Shaft and DRI gate shaft at W. Grand Blvd and Jefferson



# NIEA CONSTRUCTION STATUS



- North Shaft excavation started 8-10-2020
- North Shaft Concrete mud mat was placed on 9-3-2020
- DRI Gate Shaft excavation on hold for DTE overhead line relocation
- Projected Tunnel completion December 2020 to January 2020



# CIP 122013- 14 Mile Transmission Loop Project

*Project Manager*

*Sara Mille*

# CIP 122013 Related Contracts

Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
1903315	Hesco	\$213,744	\$0	0%	12/12/19	12/12/21	37%
1903312	Major Cement	\$5,978,000	\$0	0%	8/10/20	9/9/21	8%
2002047	TBD	-	-	-	-	-	-
2002048	TBD	-	-	-	-	-	-
200208	TBD	-	-	-	-	-	-
1802448	Brown & Caldwell	\$7,969,890	\$3,576,336	45%	3/12/19	1/12/24	31%
Totals		\$14,161,634	\$3,576,336				

# 14 Mile Transmission Main System

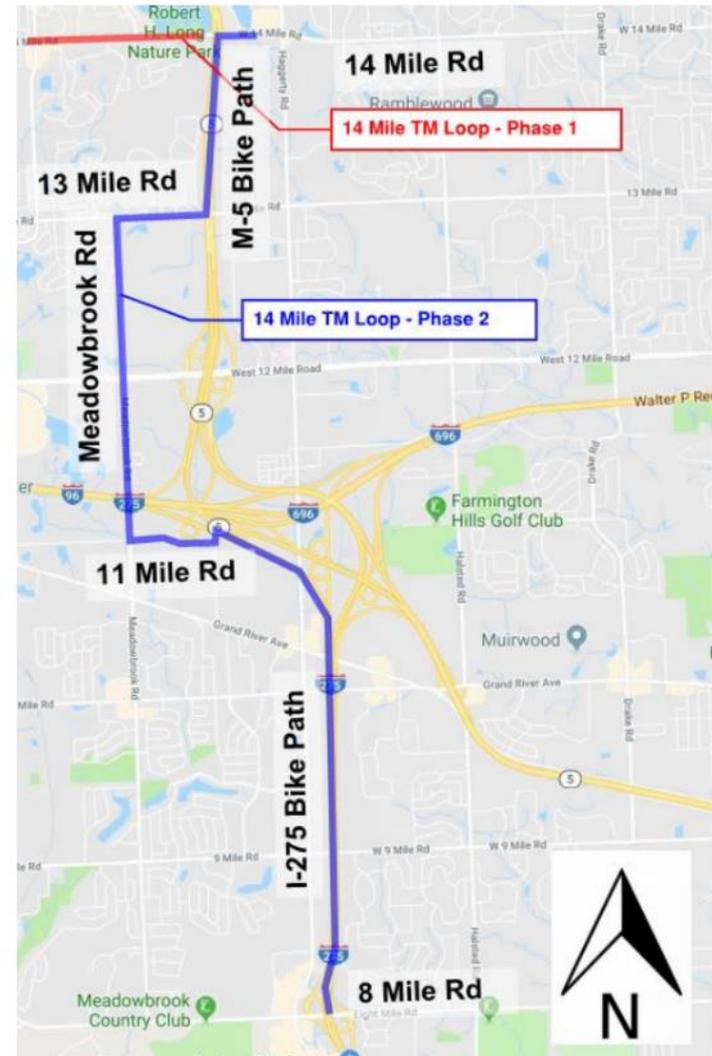


Break in the existing 48-inch PCCP pipeline along 14 Mile Rd.,  
October 2017

- Single-feed system
- Break or repair would leave more than 150,000 customers without supply

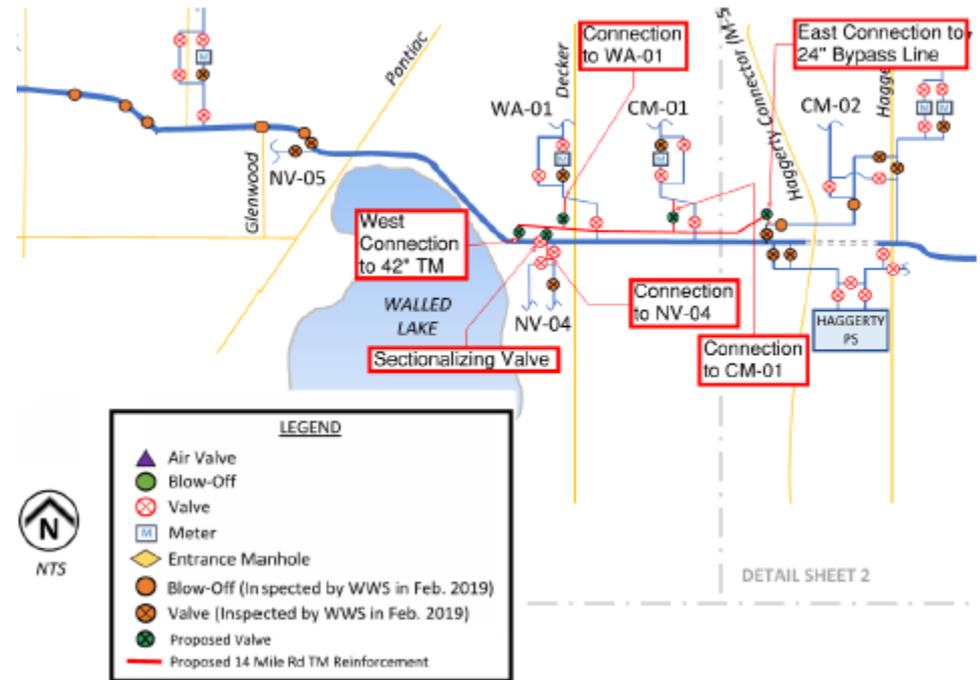
# Contracts for CIP 122013

- A. **Contract No. 1820448 Design Engineering Services**
- B. **Contract No. 1903312 Phase I Construction- 14 Mile Rd.**  
Reinforcement TM (under construction)
  - *1-mile-long 24-inch-diameter main runs parallel to the existing 42-inch between M-5 and Novi Rd.*
- C. **Contract No. TBD Phase II Construction- 14 Mile Rd. to 8 Mile Rd.**  
Loop (90% design near complete)
  - *8-mile-long 54-inch-diameter runs in the Cities of Farmington Hills and Novi*



# Contract No. 1903312

- NTP: Aug 10, 2020
- Awarded: \$5.9 M
- Pipeline: 24-inch, 1-mile-long
- Trenchless excavation: 350 ft
- Valves and valve vaults (5#), appurtenances (blow-offs, air valve)
- Redundancy: the project connects the new 24-inch main and the existing customers at NV-04, CM-01, and WA-01



# Contract No. TBD Phase II Construction

- Pipeline: 8 Mile Rd. to Haggerty Pumping Station at 14 Mile Rd.
  - 8-mile-long 54-inch-diameter
- Design progress: near 90%
- Anticipated bid: January 2021; Construction: July 2021-January 2024
- 60% cost estimate: \$ 91M
- Trenchless crossings(7#): Auger bore, HDD, micro-tunneling
- Flow control valves
- Appurtenances: valve and valve vaults, blowoffs, air valves



# CIP 114003 Water Production Flow Metering Improvements at Northeast, Southwest and Springwells Water Plants

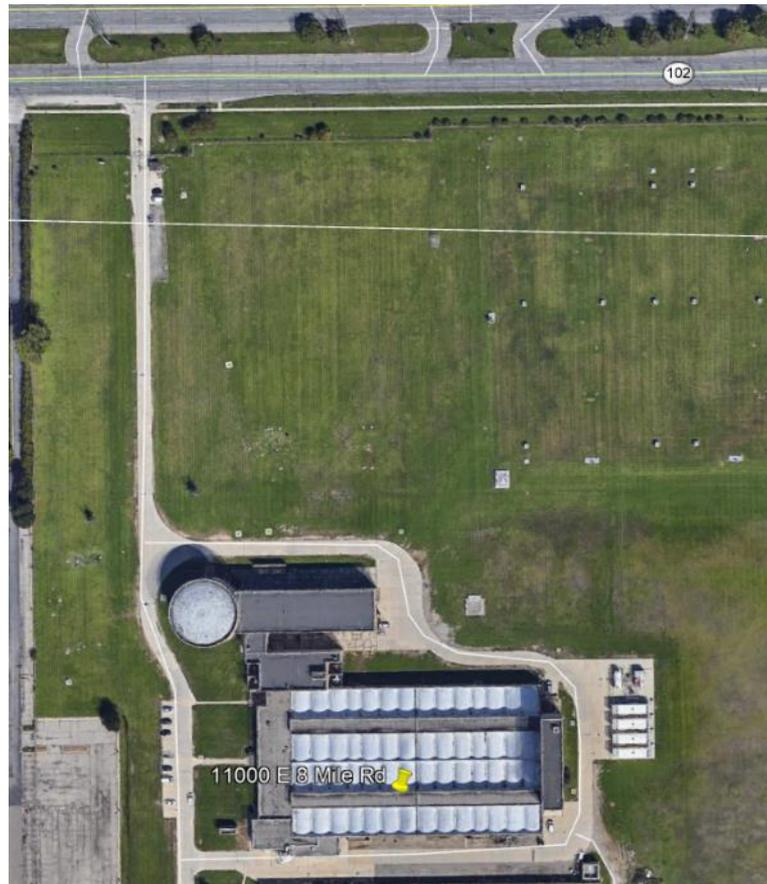
*Project Manager*

*Jorge Nicolas*

# CIP 114003 Related Contracts

Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
CS-1656	ASI	\$1,495,459	\$1,495,459	100%	10/19/15	7/31/20	100%
CON-133	LGC Global	\$6,847,237	\$6,847,237	100%	7/13/17	7/15/20	100%
Totals		\$8,342,696	\$8,342,696				

# Northeast Water Treatment Plant



# NEWTP

## 36" Gate valves



## Existing 36" Cone Valve (typical)



GREAT LAKES WATER AUTHORITY  
CON-133: Water Plant Production Flow Measurement and  
Related Facility Improvements.  
CONTRACTOR: LSG GLOBAL  
DATE TAKEN: 06-13-2016 PHOTO NO: 67  
LOCATION: UM-4 Cone valve leaking after isolation.  
11000 E EIGHT MILE RD, Detroit, MI, 48234

# NEWTP

*Installed 36" new gate valve*



*Removed 36" Old Cone valve*



# NEWTP

*Staged new 36" gate valve*



*Removed 36" cone valve*



# NEWTP

*Venturi meter no. 3 exterior after rehab*



*Venturi meter exterior no. 3 before rehab*



# NEWTP

*Installing steel support - improving metering chamber access*



*Formed removed from riser*



# NEWTP

*New sump pump control panels*



*Installed new VM control cabinet  
and sump pump control panel (typ)*



# NEWTP

*Finished installation and rehab work in metering chamber (typ)*



*Interior of Venturi meter*



# NEWTP

*Interior of venturi meter no. 6*



*Interior of venturi meter no. 4*



# NEWTP

*Interior of venturi meter no. 5*



*Exterior of VM-4*



# NEWTP

## *Rehabbed and painted interior of VM-6*



*Photo 3: Second coat of paint applied at the divergent section of VM-6 at the NEWTP.*

## *Rehabbed and painted interior of VM-3*



*Photo 6: First coat of paint applied to VM-3 by Dycon at the NEWTP.*

# NEWTP

## *VM-6 throat and diversion section*

Meter 6 Cast Iron Converging, Throat and Diverging Section. Cast Iron Cleaned and Recoated, Bronze Throat Ring Cleaned.



800 Wellington Avenue  
Cranston, RI 02910  
Ph. 877-737-3569  
Fax 401-461-4450



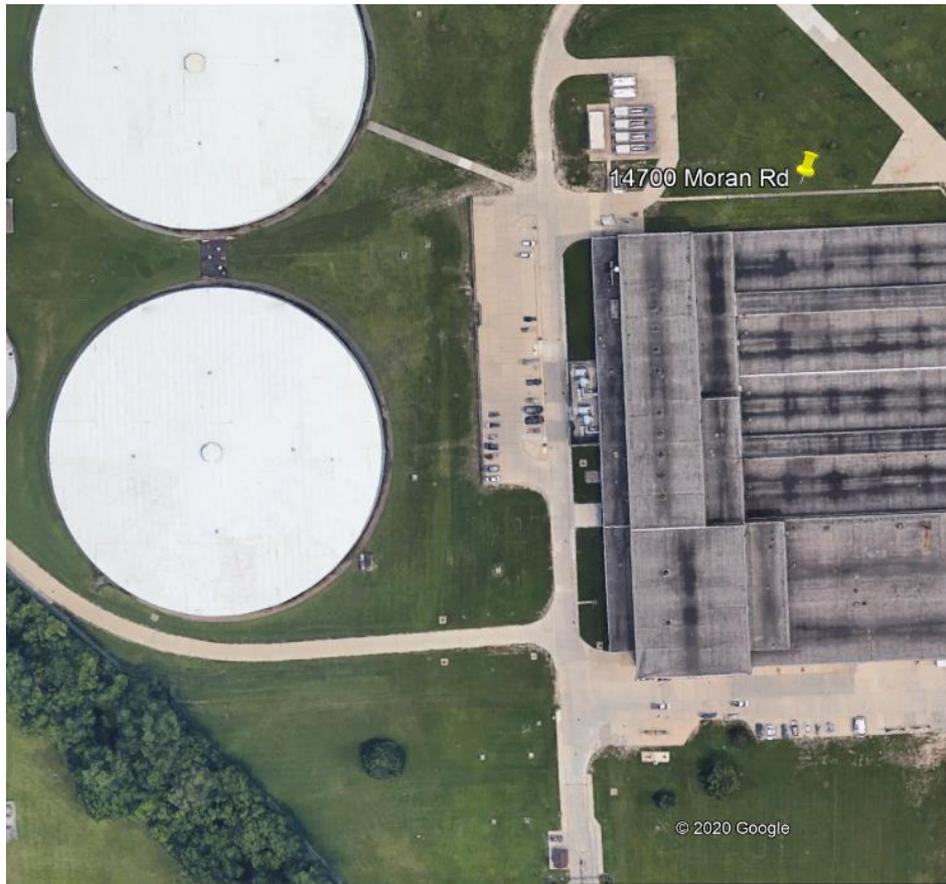
## *Rehabbed and painted exterior of VM-3*

Meter 3 Exterior Cleaned and Recoated.



800 Wellington Avenue  
Cranston, RI 02910  
Ph. 877-737-3569  
Fax 401-461-4450

# Southwest Water Treatment Plant



# SWWTP

*Excavation for electrical ductbank at chamber L*



*Removing concrete riser at chamber L*



# SWWTP

*Manual cleanout assembly delivered at site*



*Four new venturi meters delivered*



# SWWTP

## Installing new venturi meter



## New venturi meter at chamber L



# SWWTP

*New venturi meter no. 1*

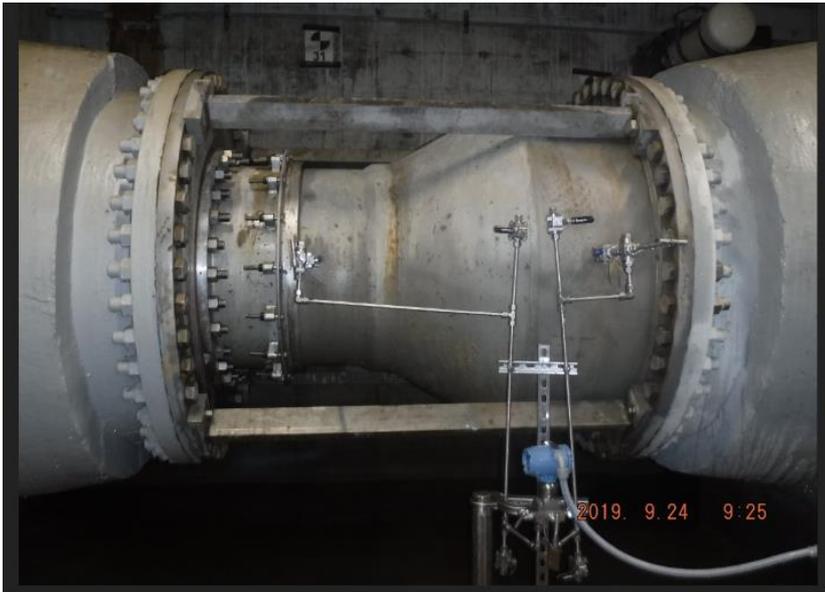


*New venturi meter no. 2*



# SWWTP

*New venturi meter no. 4*



*New venturi meter no. 5*



# SWWTP

*Demolition of a segment of the 72-inch main adjacent to VM-5*



*Demolition of a segment of the 72-inch main adjacent to VM-5*



# SWWTP

*New finished VM-typical for four*



*New finished VM-typical for four*

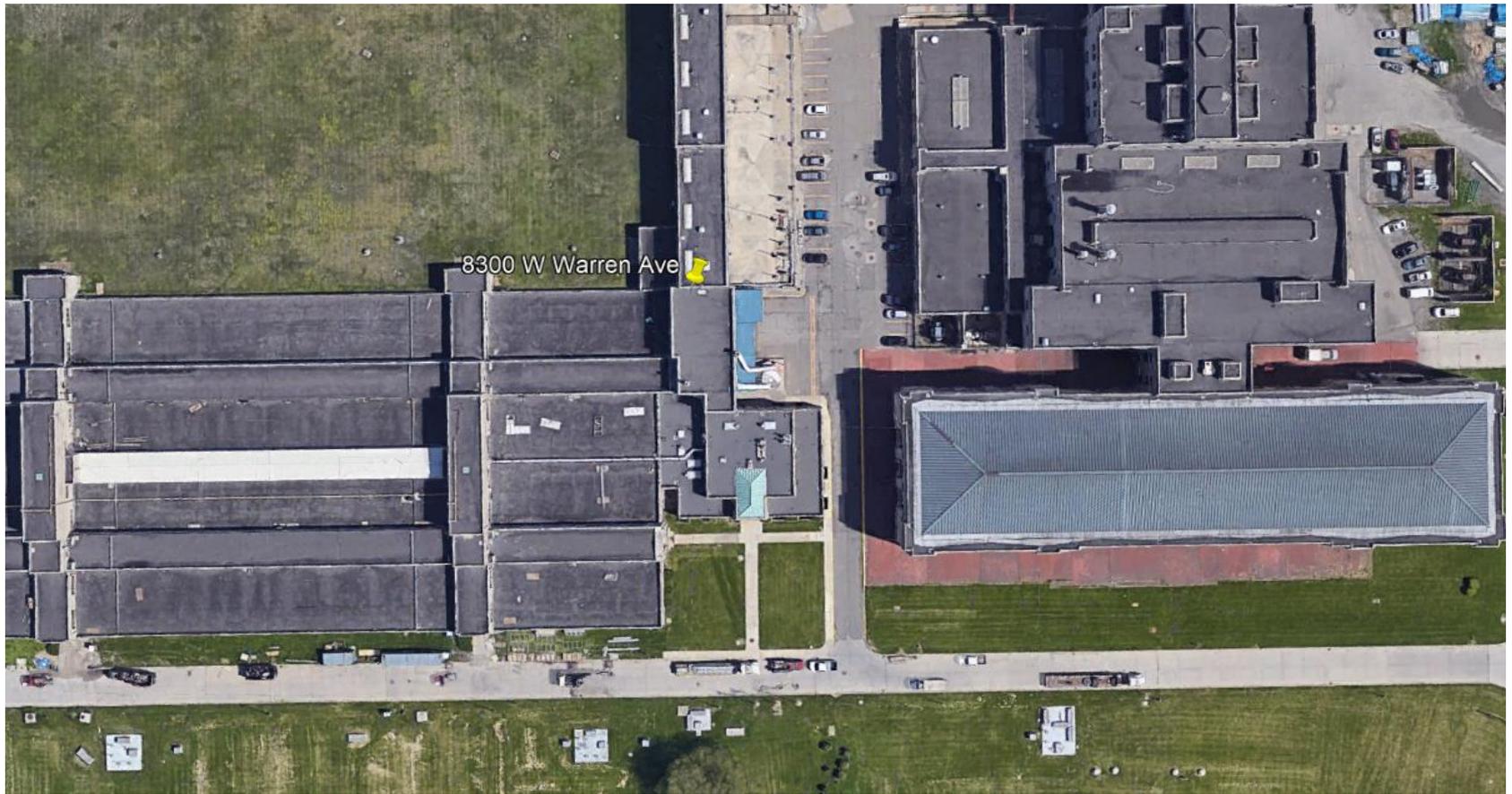


# SWWTP



Photo 3: VM-2, VM-1, and VM-3, as seen from foreground to background, in the Venturi Vault at the SWWTP facing east.

# Springwells Water Treatment Plant



# SPWTP

*Modification of concrete risers at metering chamber*



*Water proofing concrete risers for metering chamber*



# SPWTP

*Installing new hatches at metering chamber*



*Existing pressure port for venturi meter*



# SPWTP

*New pressure port for venturi meter*



*Interior rehab work for venturi meter*



# SPWTP

*Coating of interior of venturi meter*



*Rehabbed pressure port for venturi meter*



# SPWTP

*Rehab work inside venturi meter*



*Super metal applied to joint in  
metering chamber*



# SPWTP

## Installing Hastelloy fittings



## Existing venturi meter no. 5



# SPWTP

*New Hartzell ventilation fan at VM chamber 3-4. typ.*



*New sump pump in chamber 6. typ.*



GLWA  
Great Lakes Water Authority  
CORN-132 Water Meter Installation  
at  
Pond Facility Improvements  
DATE TAKEN: July 12, 2019 PHOTO NO: 19  
LOCATION: Sump Pump piping in Chamber 6  
555 N. Western Ave., Troy, MI 48068

# SPWTP

## New Manual cleanout on VM-6



## VM-5 Exterior



# SPWTP

*VM-5 Exterior after coating with Belzona 5812 DW coat*



*VM-5 Exterior after coating with Belzona 5812 DW coat*



# SPWTP

*Existing VM-5 exterior*



*New Rosemount differential pressure transmitter and new concrete pipe support in VM-5 chamber.*



# SPWTP

*Typical New electrical and sump pump control cabinets*



*Typical new VM-6 Flood float/switch and sum pumps system.*





# CIP 122006 Wick Road 48" Water Transmission Main Construction

*Project Manager*

*Corey Brecht, AECOM*

# CIP 122006 Related Contracts

Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
1803621	Ric-Man	\$20,961,361	\$6,031,134	29%	8/26/19	8/25/21	52%

# Description of Work CIP No. 122006

- Includes installation of roughly 17,000 LF of 48-inch Prestressed Concrete Cylinder Pipe (PCCP) in Romulus, MI.
  - Completion of this project will provide GLWA parallel mains from Wick Road Pump Station to Ypsilanti Pump Station, improving the system reliability and redundancy
  - Includes two (2) Jack and Bore installations under CSX Railway and Wayne Road
  - Includes six (6) 48-inch Gate Valves, three (3) 42-inch Gate Valves and one (1) 36-inch Gate Valve
  - Includes three (3) interconnect locations with the existing 42-inch transmission main
  - Additional feed to Romulus Master Meter RS-03 off the new 48-inch transmission main

# Project Overview



\* Previous 48-inch transmission main was installed in 2013 under MOU-4848, which included roughly 4,000LF of 48-inch main installed to the West of Wick Road Pump Station

# Project Photographs

*Rigging of Precast 48-inch Valve Vault Wall Section*



*Installation of Steel Transition Pipe in Gate Valve Vault*



# Project Photographs

*48-inch Gate Valve  
(Manuf. in Wuhan, China)*



*48-inch Pipe with Air Release Valve  
Appurtenance*



# Project Photographs

*Compaction Efforts on installed 48-inch Pipe*



*Positioning of Transition Pipe Prior to Placing Lid on Vault Structure*





# CIP 122011 Park-Merriman 24" Water Transmission Main Construction

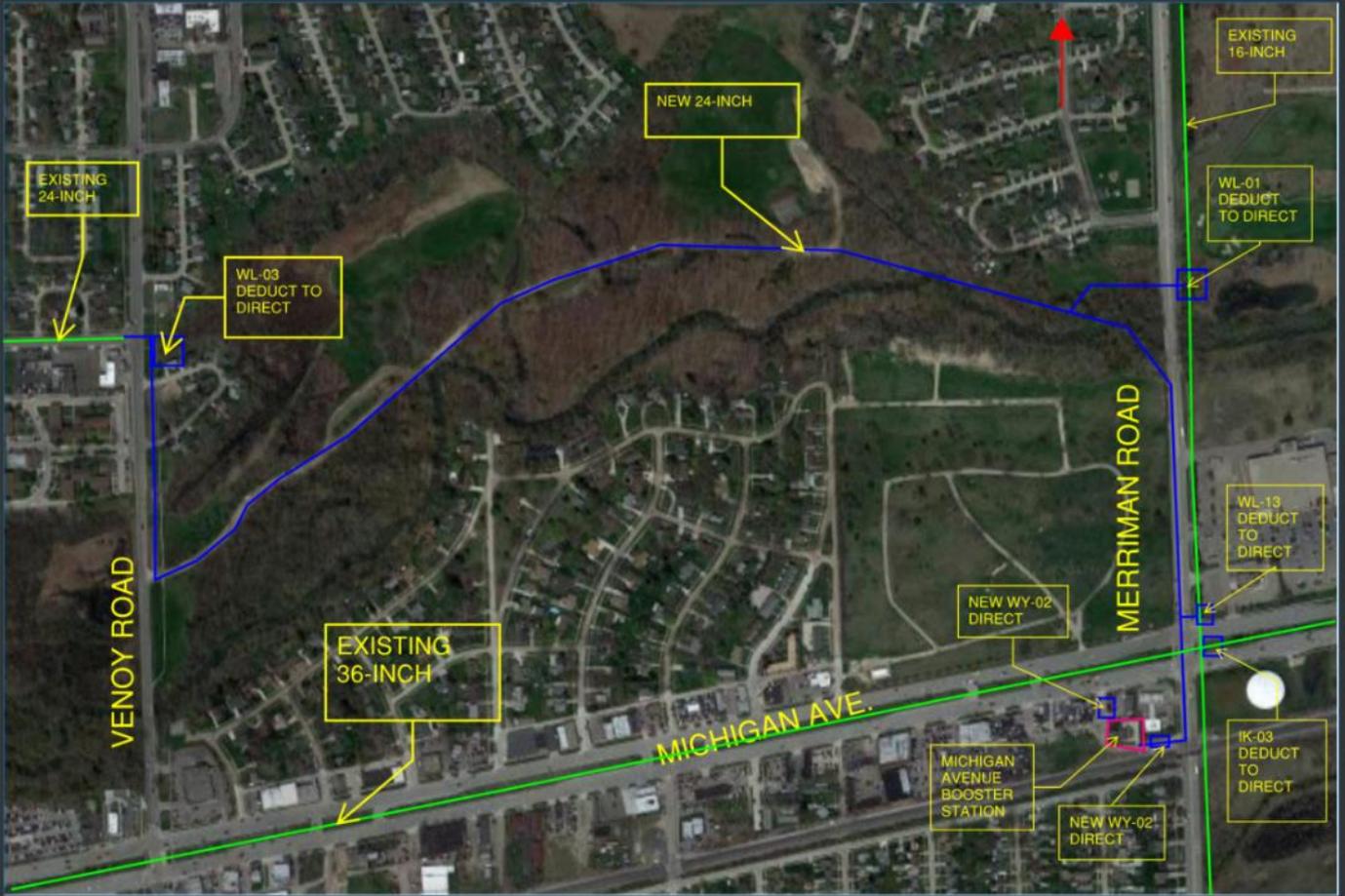
*Project Manager*

*Pete Fromm*

# CIP 122011 Related Contracts

Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
1802775	Salenbien	\$8,890,566	\$2,522,552	72%	3/11/19	5/4/21	70%

# Project Overview



# Work Description for CIP No. 122011

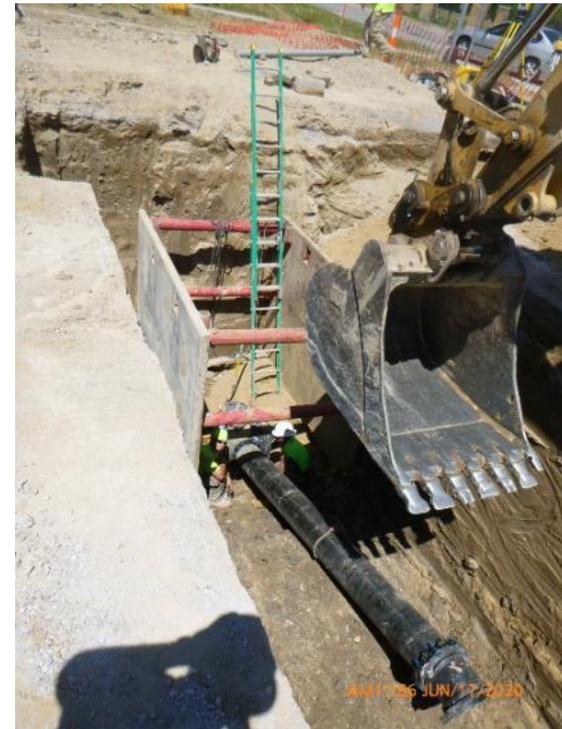
- Installation of 7,000 linear feet of 24-inch ductile iron pipe including:
  - Two (2) horizontal directional drills under the lower Rouge river
  - One (1) jack and bore under Michigan Avenue on Merriman Road
  - Installation of two (2) new direct meter pits to serve the City of Wayne. WY-02 and WY-03.
  - Replacement of four (4) indirect meter pits to direct meter pits that serve the City of Inkster and Westland. IK-03, WL-01, WL-03, and WL-13.

# Project Photographs

*Jack and Bore under Michigan Avenue*



*Installation of 12-inch to IK-03*



# Project Photographs

*Installation of 16-inch Valve*



*Installation of 24-inch Pipe*



# Project Photographs

*Re-steel for encasement of 24-inch pipe*



*Backfill Trench on Merriman Road*



# Project Photographs

*Installation of 24-inch Pipe*



*New Concrete on Merriman Road*





# **CIP 113002 Southwest WTP High-Lift Pump Discharge Valve Actuators Replacement**

*Project Manager*

*Shakil Ahmed*

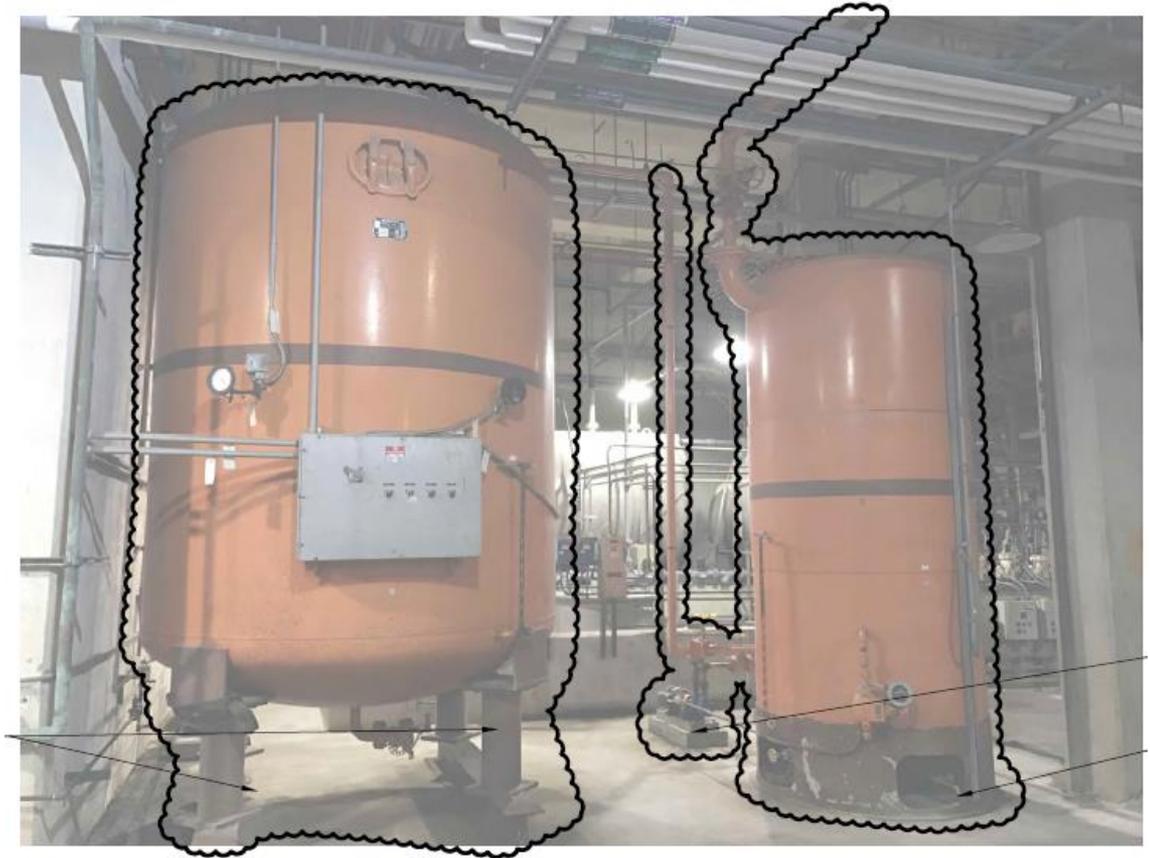
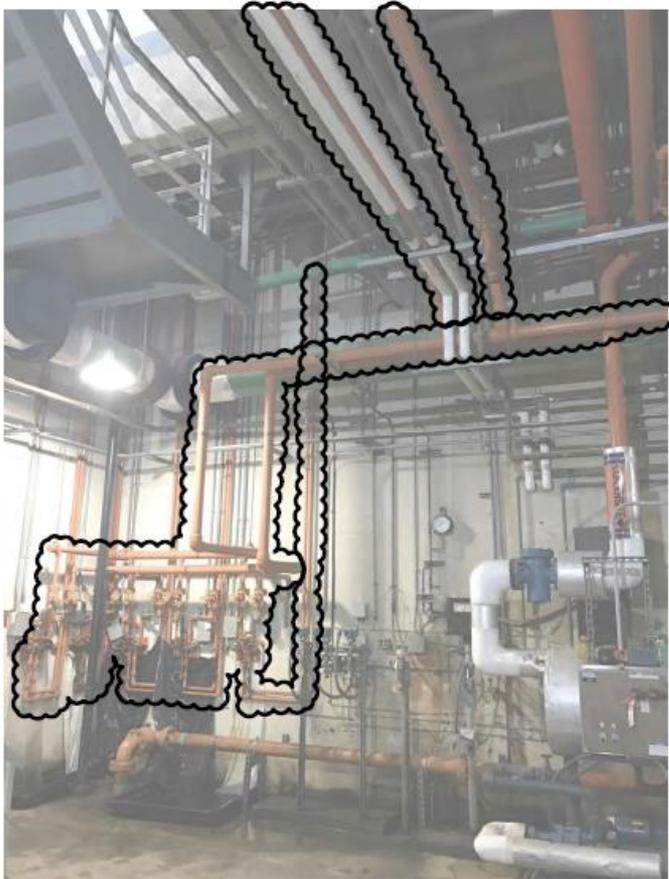
# CIP 113002 Related Contracts

Contract	Contractor	Contract Amount	Earned Value	% Complete	Start	End	% Elapsed Time
CS-034	TetraTech	\$665,353	\$618,830	93%	1/16/17	11/1/21	76%
CON-281	Weiss	\$5,271,632	\$4,666,951	89%	10/1/18	11/1/21	63%
Totals		\$5,936,985	\$5,285,782				

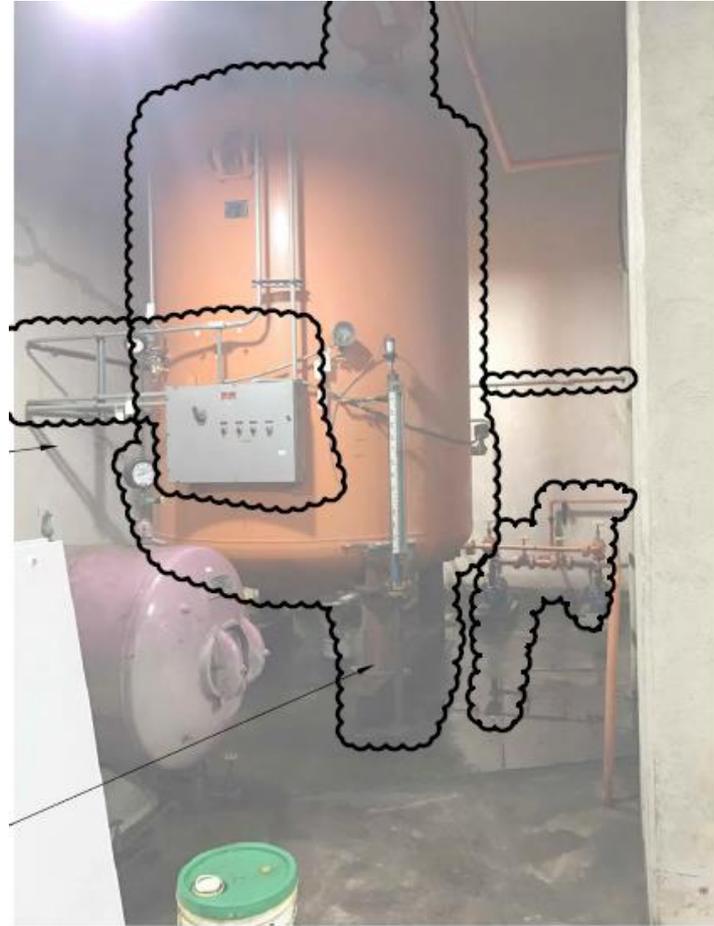
# Southwest Plant



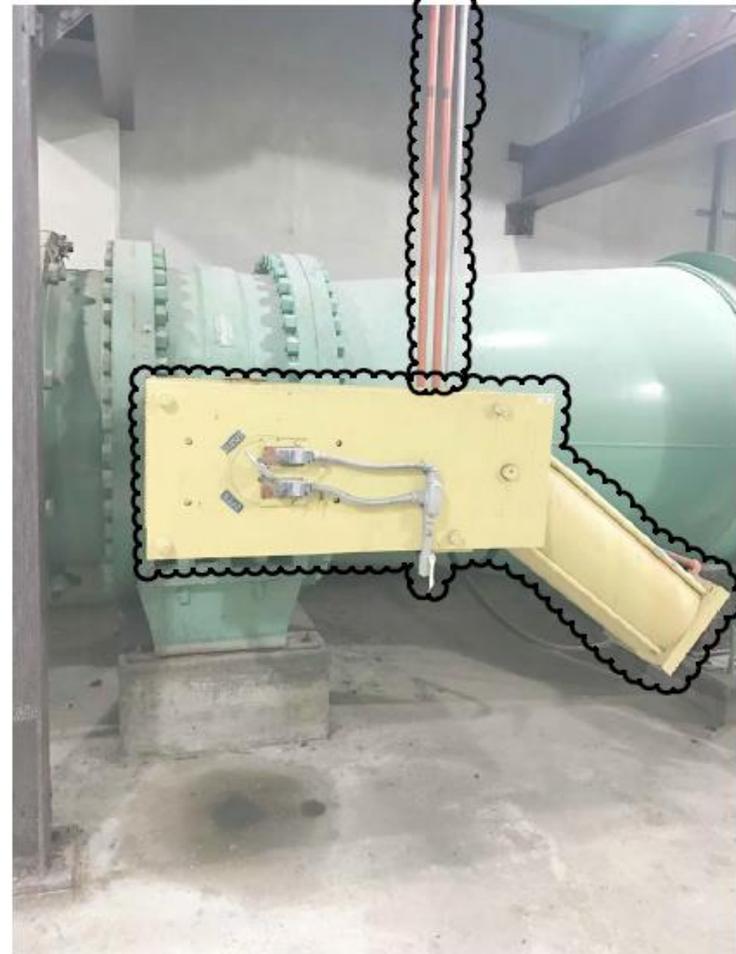
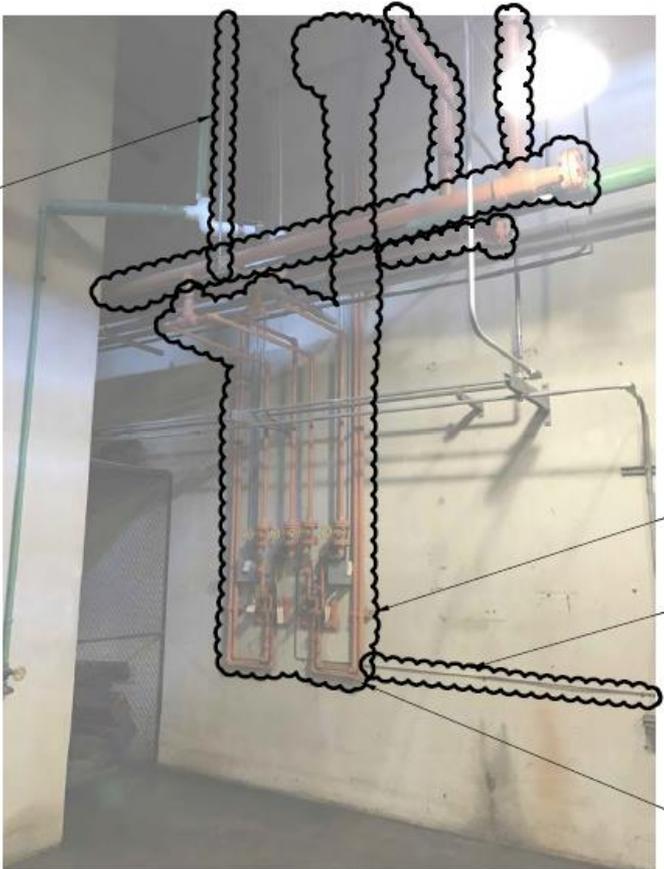
# Old Pneumatic Piping & Tank



# Old Pneumatic Tank



# Old Pneumatic Piping & Actuator



# Support Structure for 3<sup>rd</sup> Header



# Temporary Support for 42" Fittings



# Tie-in for 3<sup>rd</sup> Header



# Side Profile of 3<sup>rd</sup> Header



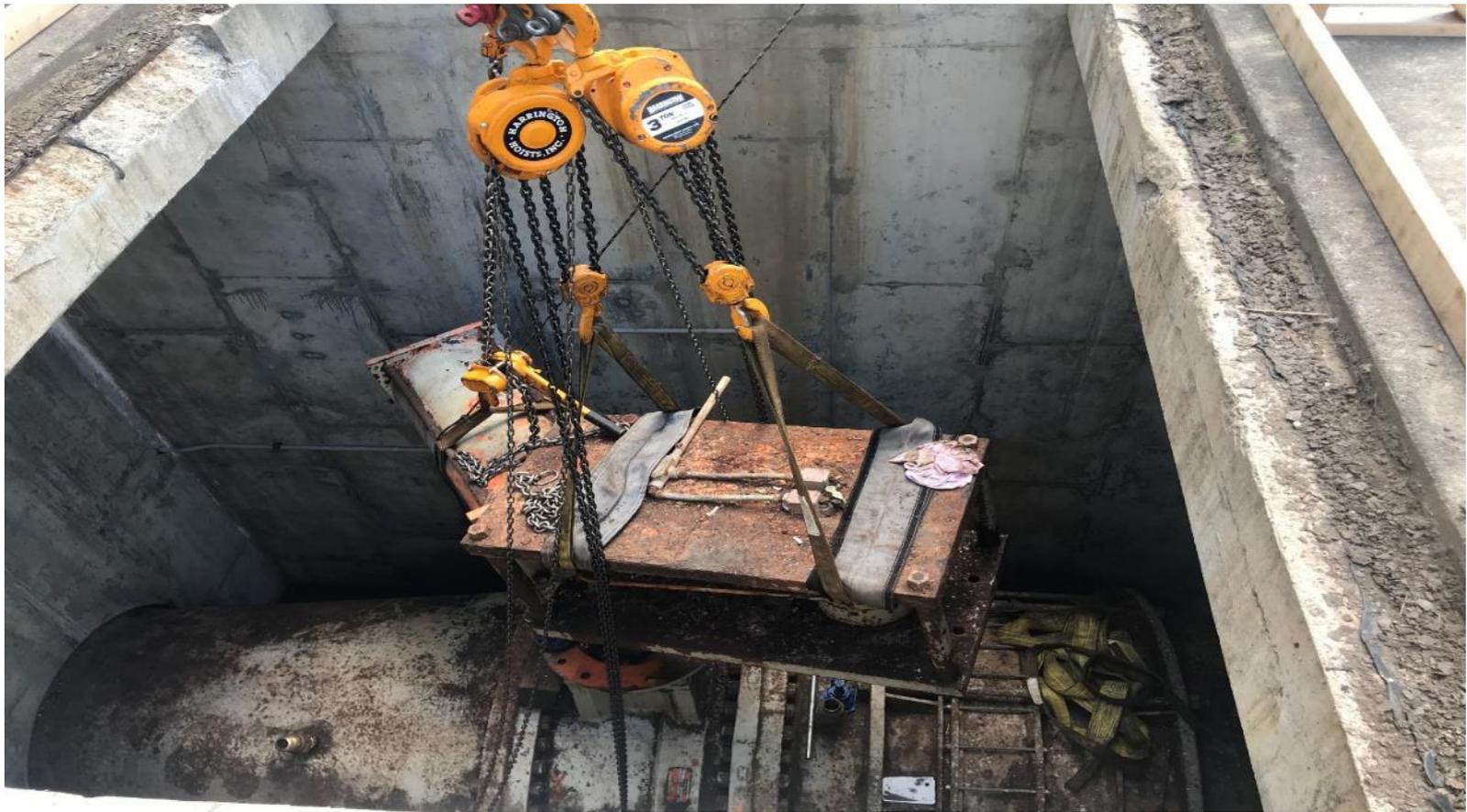
# Tie-In of 3<sup>rd</sup> Header w/ Header No.1&2



# Valve 6 Underground Pit



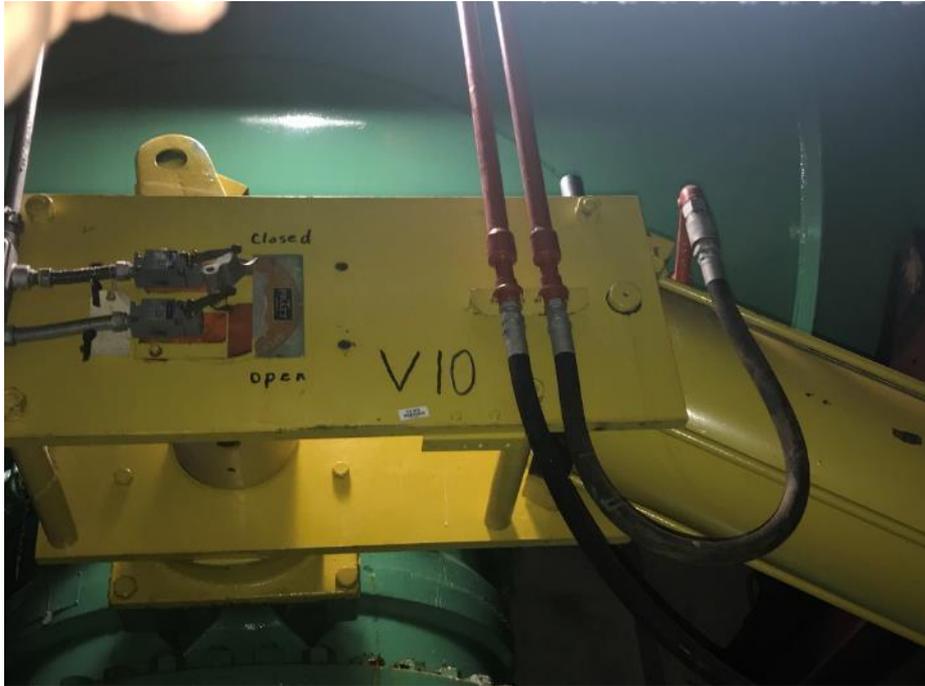
# Valve 6 Underground Actuator Being Removed



# New Actuator For Valve 6 Aboveground



# Old Actuator



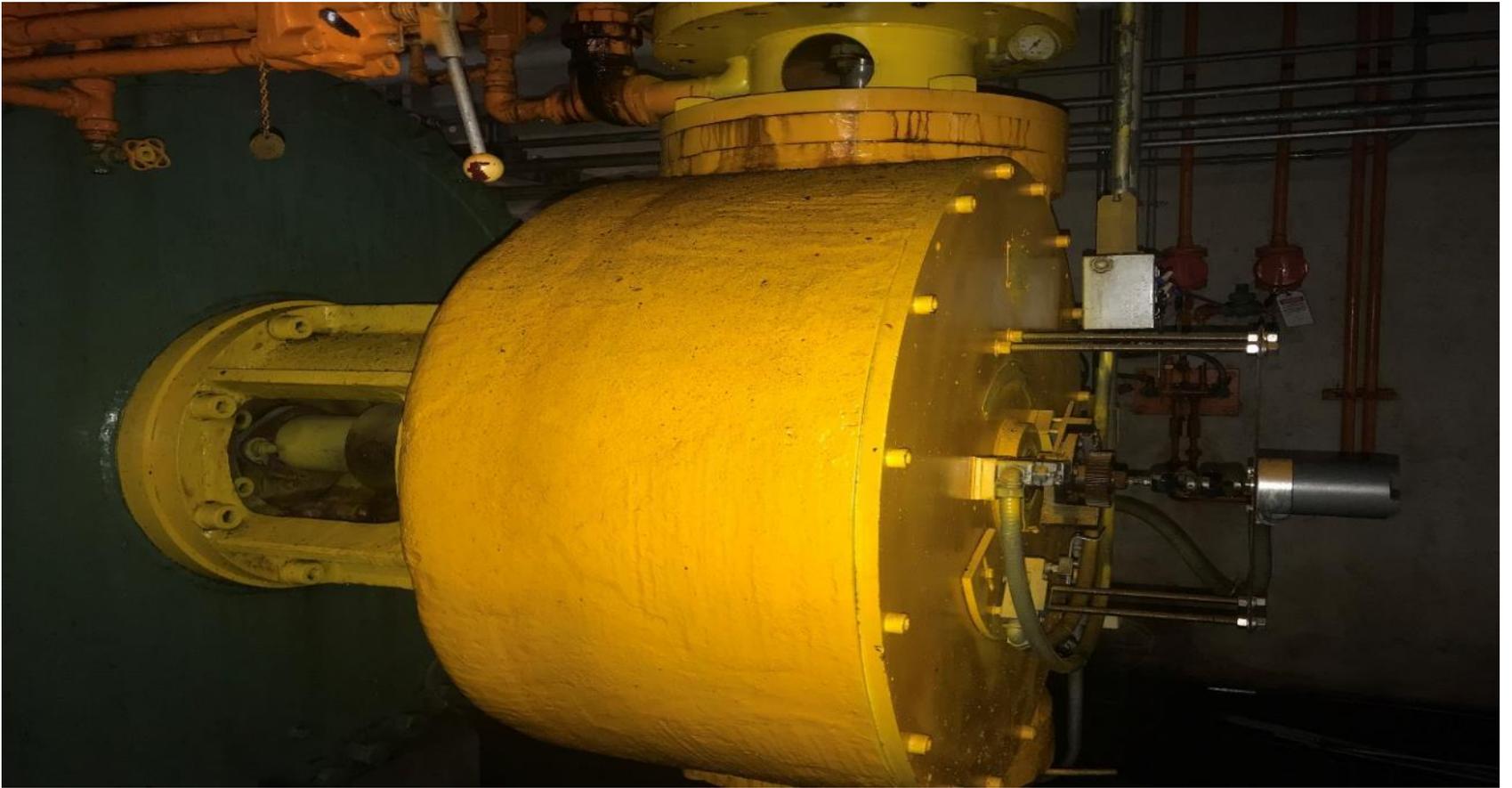
# New Butterfly Valve Actuator



# Old Cone Valve w/ Pneumatic Piping



# Old Cone Valve



# Old Pneumatic Control Piping



# Old Pneumatic Tank



# Old Cone Valve



# New Cone Valve



# New Cone Valve





**GLWA**

*Great Lakes Water Authority*

