GLWA FY 2020 – 2024 Capital Improvement Plan and 10-Year Outlook

GLWA CIP Committee Meeting

October 29, 2018

3:00 p.m. – 5:00 p.m.

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Revised: 10/29/18

Agenda

- **Where We've Been & What We're Trying To Accomplish** – Jody Caldwell

- **Overall 2020-2024 CIP** – Jody Caldwell
  - Significant Project Changes
  - Project Priorities & Risk
  - High Level Water Summary
  - High Level Wastewater Summary

- **Highlighted Water CIP Projects** – Grant Gartrell / Tim Kuhns / Erich Klun

- **Highlighted Wastewater CIP Projects** – Ali Khraizat / Dan Alford / Todd King / Biren Saparia / Chris Nastally

- **CIP Schedule & Closing Remarks** – Jody Caldwell
  - CIP Roll-out Schedule
  - Questions & Answers

Where We've Been and What We're Trying To Accomplish

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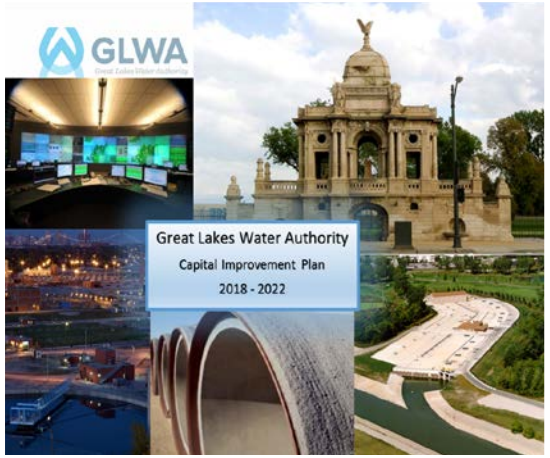
2018-2022 Capital Improvement Plan Modifications



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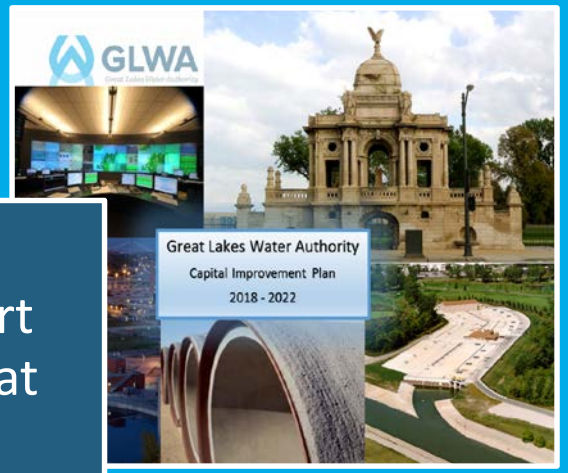
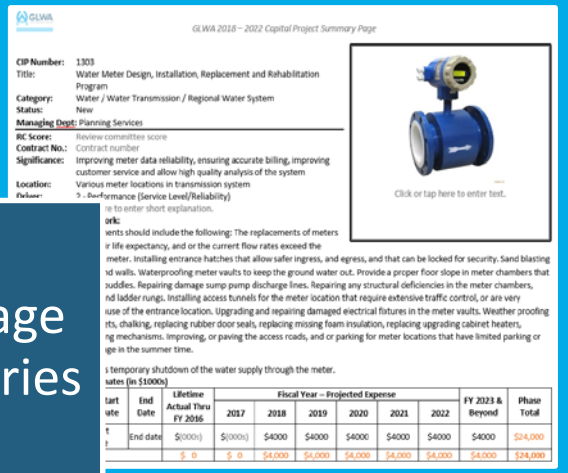
Report Format



One-page Summaries

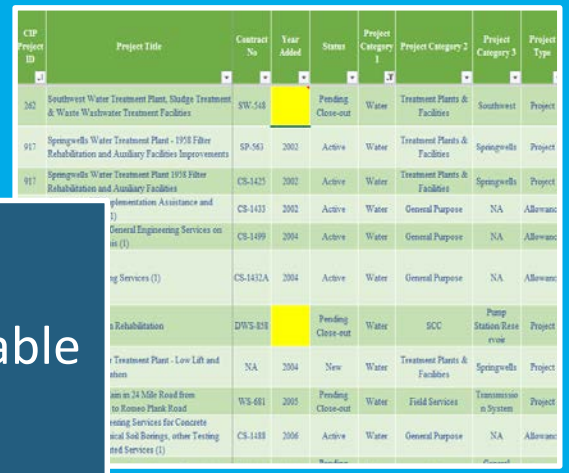

GLWA 2018 – 2022 Capital Project Summary Page

CIP Number: 1303
Title: Water Meter Design, Installation, Replacement and Rehabilitation Program
Category: Water / Water Transmission / Regional Water System
Status: New
Managing Dept: Planning Services
RC Score: Review committee score
Contract No.: Contract number
Significance: Improving meter data reliability, ensuring accurate billing, improving customer service and allow high quality analysis of the system
Location: Various meter locations in transmission system

Click or tap here to enter test.

Start Date	End Date	Lifetime Actual Thru FY 2016	Fiscal Year – Projected Expense						FY 2023 & Beyond	Phase Total
			2017	2018	2019	2020	2021	2022		
	End date	$(000s)	$(000s)	$4000	$4000	$4000	$4000	$4000	$4000	$24,000
		$ 0	$ 0	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$24,000

Excel table



CIP Project ID	Project Title	Contract No	Year Added	Status	Project Category 1	Project Category 2	Project Category 3	Project Type
262	Southwest Water Treatment Plant, Sludge Treatment & Waste Washwater Treatment Facilities	SW-548		Pending Close-out	Water	Treatment Plants & Facilities	Southwest	Project
917	Springwells Water Treatment Plant - 1958 Filter Rehabilitation and Auxiliary Facilities Improvements	SP-563	2002	Active	Water	Treatment Plants & Facilities	Springwells	Project
917	Springwells Water Treatment Plant 1958 Filter Rehabilitation and Auxiliary Facilities	CS-1425	2002	Active	Water	Treatment Plants & Facilities	Springwells	Project
	plementation Assistance and	CS-1433	2002	Active	Water	General Purpose	NA	Allowanc
	General Engineering Services on	CS-1499	2004	Active	Water	General Purpose	NA	Allowanc
	g Services (1)	CS-1432A	2004	Active	Water	General Purpose	NA	Allowanc
	Rehabilitation	DWS-838		Pending Close-out	Water	SCC	Pump Station/Rese rvoir	Project
	Treatment Plant - Low Lift and	NA	2004	New	Water	Treatment Plants & Facilities	Springwells	Project
	on 24 Mile Road from to Romeo Plank Road	WS-681	2005	Pending Close-out	Water	Field Services	Transmissio n System	Project
	esting Services for Concrete ical Soil Borings, other Testing ted Services (1)	CS-1488	2006	Active	Water	General Purpose	NA	Allowanc

2019-2023 Capital Improvement Plan Modifications

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Refinement of Project Schedules & Expenditures

11

Dates

er

re Planned Start

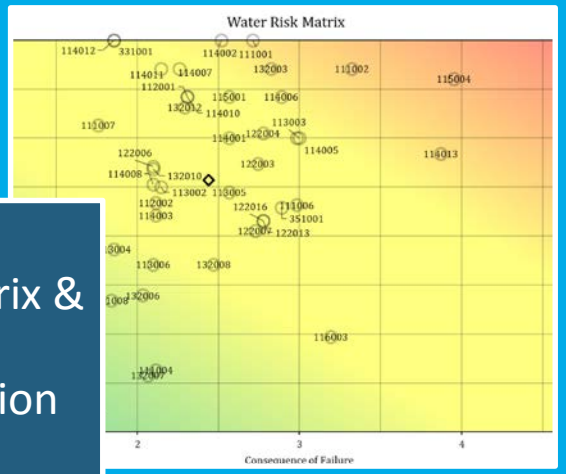
Construction

Task Name	Start Date	Dur
Scope Development	11/30/2017	
Procurement	3/1/2018	
Project Execution	1/3/2019	
Project Closeout	4/22/2021	

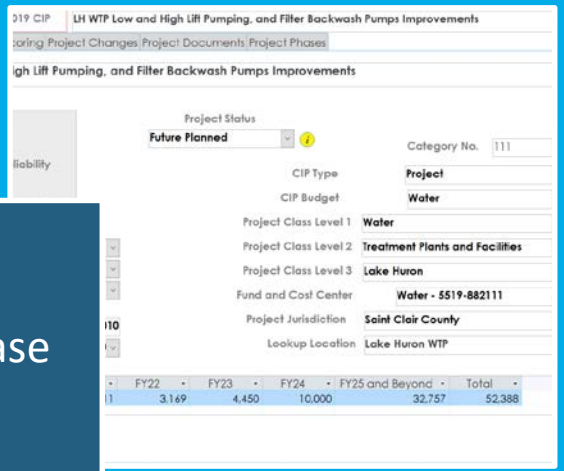
Study and Design and Construction Assista

Task Name	Start Date	Dur
Scope Development	10/1/2016	
Procurement	12/31/2016	
Project Execution	1/1/2018	
Project Closeout	4/22/2021	

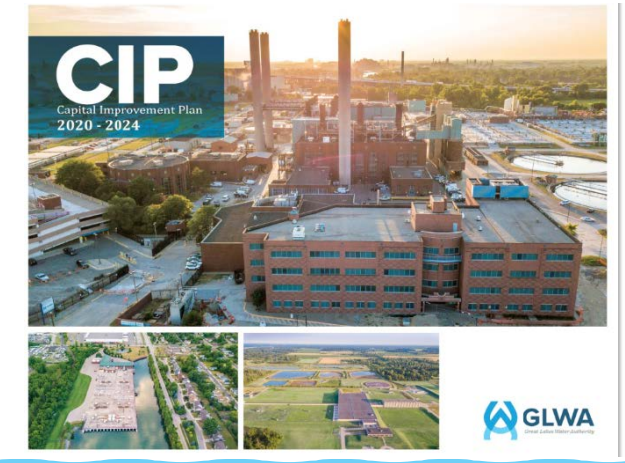
Risk Matrix & Cost Estimation



Database



2020-2024 Capital Improvement Plan Modifications



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Refinement of projects with sharp financial focus

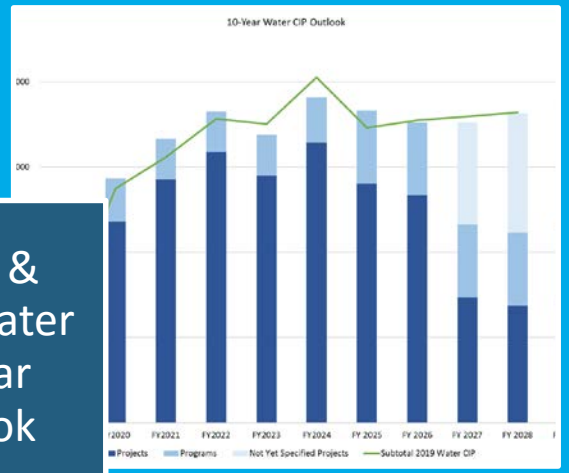
ry - WATER *All Figures are in $1,000's*

FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
66,038	137,583	155,734	178,300	175,174	NA
68,746	**143,247**	**166,599**	**182,595**	**169,006**	**190,866**
2,708	5,664	10,865	4,295	-6,168	
	4.1%	7.0%	2.4%	-3.5%	

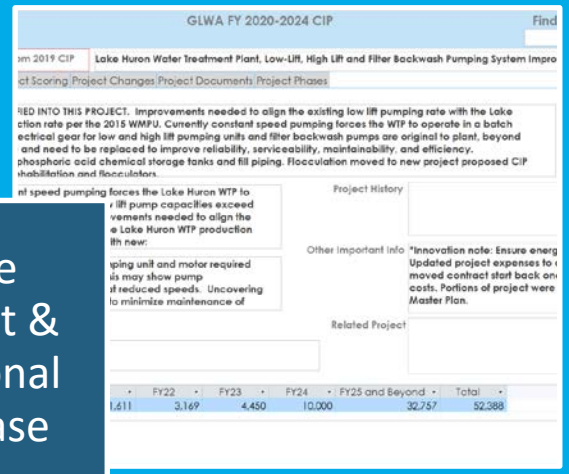
TEWATER *All Figures are in $1,000's*

FY 20	FY 21	FY 22	FY 23	FY 24
111,155	111,952	136,411	168,458	NA
139,480	**107,430**	**139,677**	**156,884**	**130,159**
28,325	-4,522	3,266	-11,574	
25.5%	-4.0%	2.4%	-6.9%	

Water & Wastewater 10-Year Outlook



More Efficient & Functional Database



What We're Trying To Accomplish

- Increased redundancy, reliability & resiliency of water and wastewater systems
- Adherence with long-term planning document recommendations
- Provide opportunity for Board, Authority Members and stakeholders to provide input
- Best-in-class planning and execution of capital program
- Sharp financial focus in coordination with Financial Services Area.

Overall 2020-2024 CIP

Jody Caldwell

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Significant Project Changes

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New Projects – 8 Water & 1 Wastewater

2020-2024 CIP New Water & Wastewater Projects *(all figures in $1,000's)*

CIP#	Title	FY19	FY20	FY21	FY22	FY23	FY24	FY25+	Total	Overall Total
111009	Lake Huron Water Treatment Plant, Two New High-Lift Pumps, Water Production Flow Meter, and Select Yard Piping Improvements	16	9,030	10,030	7,030	-	-	-	26,106	
112005	Northeast Water Treatment Plant - Replacement of Covers for Process Water Conduits	-	166	647	-	-	-	-	813	
112006	Northeast Water Treatment Plant Flocculator Replacements	3	1,356	1,356	3	-	-	-	2,718	
114016	Springwells Water Treatment Plant 1958 Settled Water Conduits Concrete Pavement Replacement	-	206	656	-	-	-	-	862	63,898
114017	Springwells Water Treatment Plant Flocculator Drive Replacement	-	-	-	10	2,314	4	-	2,328	
115005	Waterworks Park Water Treatment Plant Building Ventilation Improvements	7	507	3,907	650	-	-	-	5,071	
122017	7 Mile/Nevada Transmission Main Rehab and Carrie/Nevada Flow Control Station	-	1,040	6,050	6,910	3,750	2,750	-	20,500	
132025	Northwest Booster Station Yard Piping Improvements	-	-	50	1,700	3,750	-	-	5,500	
216008	Rehabilitation of Screened Final Effluent (SFE) Pump Station	51	1,091	991	9,475	7,805	5,535	-	24,948	*NA

*NA = This project was included in the FY2019-2023 CIP under CIP 216006.

Projects With Significant Year-To-Year Adjustments – WATER Summary

CIP#	Project Status	Title	Total Difference Between 2019 and 2020 CIP	Reasoning
111006*	Active	Lake Huron Water Treatment Plant, Filter Instrumentation and Raw Water Flow Metering Improvements	(15,527)	Removed the raw water flow meter from this CIP and have included it in a new CIP #
114002*	Active	Springwells Water Treatment Plant, Low-Lift and High-Lift Pumping Station Improvements	29,313	Added the replacement of 3 primary transformers, replacement of six (6) 84” gate valves, increased cost of the electrical switchgear and exterior windows.
114011*	Active	Springwells Water Treatment Plant Steam, Condensate Return, and Compressed Air Piping Improvements	13,368	Actual construction bids were all greater than the estimated costs and therefore budget. The construction bids received were all similar.
115001*	Active	Water Works Park Water Treatment Plant Yard Piping, Valves and Venturi Meters Replacement	(17,471)	The revised CIP budgeted amount is based on the most recent detailed cost estimate.
122006	Active	Wick Road Water Transmission Main Construction	7,496	Last year’s budgeted CIP amount was based on a conceptual cost estimate developed several years ago. This year’s estimate is based on a near 100% complete design and should better represent actual bids to be submitted.
170800	Active	System-Wide Finished Water Reservoir Inspection, Design and Rehabilitation	44,749	All previous reservoir inspection, design & rehabilitation projects have been reclassified into this program.

Projects With Significant Year-To-Year Adjustments – WASTEWATER Summary

CIP#	Project Status	Title	Total Difference Between 2019 and 2020 CIP	Reasoning
216006*	Future Planned	Assessment and Rehabilitation of WRRF yard piping and underground utilities	(29,603)	New Project 216008, Rehabilitation of Screened Final Effluent Pump Station, was previously included in this project. To improve project effectiveness, the project has been split into two.
222004	Future Planned	Collection System Infrastructure Improvements (Excluding Interceptors)	84,659	Projects 222005 and 233002 have been reclassified into this project. In addition, this project expenses have been extended into the later years of the 5-year plan. The majority of the projected expenses occur in year 2025+.
222007	Cancelled	NIEA Rehabilitation from WRRF to Gratiot Ave. and Sylvester St.	(21,003)	Based upon the completion of the condition assessment along this reach, no major rehabilitation is required during this timeframe and therefore the project has been canceled.
232002*	Active	Freud & Conner Creek Pump Station Improvements	129,948	Basis of design and life cycle costs dictate the necessity of a complete rebuild of Conner Creek and major upgrades to Freud.
260200*	Active	Sewer and Interceptor Rehabilitation Program	114,415	These project expenses have been extended into the later years of the 5-year plan. The majority of the projected expenses occur in year 2025+.
260300	Active	Scheduled Replacement Program of Critical Assets	(9,243)	This legacy program is now either being addressed in individual projects or being addressed through Capital Outlay.
260500*	Active	CSO Outfall Rehabilitation	44,851	Projects 222006 and 233001 have been reclassified into this project.
260600	Active	CSO FACILITIES IMPROVEMENT PROGRAM	18,370	These program expenses have been extended another year into the future causing the majority of the increase.
*Project will be discussed in greater detail.				

Project Changes – Pending Closeout or Closed

CIP #	Title	2019 Status	2020 Status
116003	Genesee and Lapeer County Transmission System Improvements	Active	Pending Closeout
122010	Water Main Replacement within the City of Detroit - Joy Rd from Greenfield to Schaefer and Davison Ave from Lindwood to Livernois	Active	Pending Closeout
132004	North Service Center PS - Hydraulic Surge Control	Active	Pending Closeout
380500	Wastewater General Engineering Services on an As-needed Basis	Active	Pending Closeout
380900	General Engineering Services	Active	Pending Closeout
212001	WRRF Returned Activated Sludge (RAS) Pumps, Influent Mixed Liquor System and Motor Control Centers (MCC) Improvements for Secondary Clarifiers	Pending Closeout	Closed
212002	WRRF Study, Design, & Construction Management Services for Modified Detroit River Outfall No. 2	Pending Closeout	Closed
212005	WRRF Rouge River Outfall No. 2 (RRO-2) Segment 1	Pending Closeout	Closed
213003	WRRF Sewage Sludge Incinerator Air Quality Improvements	Pending Closeout	Closed

Project Changes – Reclassified or Canceled

CIP #	Title	2019 Status	2020 Status
112001	Phase 1 WWP to NE Transmission - Flow Control Station at NE WTP	Future Planned	Reclassified into 122003
113005	SW WTP Residuals Management	New	Reclassified - Capital Outlay
132024	Reservoir Inspection, Design and Rehabilitation @ Adams, East-side, Farmington, Ford Road, Franklin, Haggerty and Joy Road	New	Reclassified into Program 170800
211003	WRRF Rehabilitation of Primary Clarifiers	Active	Reclassified into 211001
222005	Collection System Access Hatch Improvements	Active	Reclassified into 222004
233002	Collection System In System Storage Devices (ISDs) Improvement	Future Planned	Reclassified into 222004
251002	Wastewater System-Wide Instrumentation & Control Software and Hardware Upgrade	Future Planned	Reclassified - Capital Outlay
260400	Sewage Meter Design, Installation, Replacement and Rehabilitation Program	Active	Reclassified - Capital Outlay
222007	NIEA Rehabilitation from WRRF to Gratiot Ave. and Sylvester St.	Future Planned	Canceled

Project Priorities & Risk

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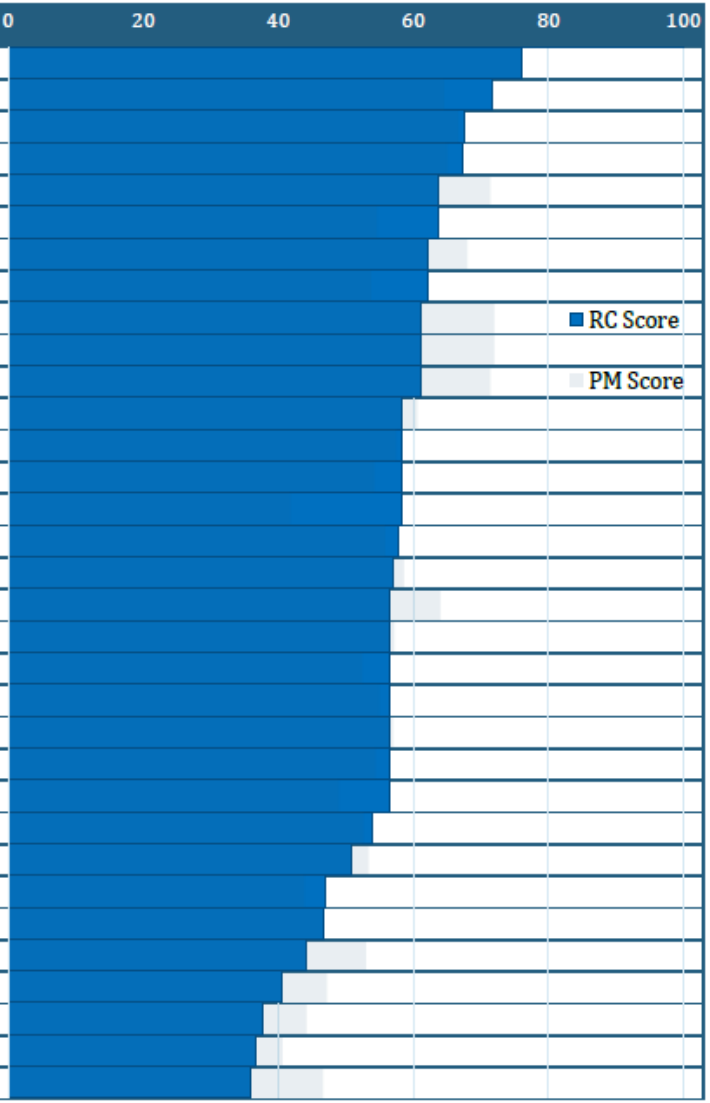
Project Prioritization – Water

Rank	CIP No.	Title
1	115005	Emergency WWP WTP Building Ventilation Improvements
2	111001	LH WTP Low and High Lift Pumping, and Filter Backwash Pumps...
3	113003	SW WTP Low & High Lift Pumping & Rapid Mix Chamber BFVs, ...
4	112006	NE WTP Flocculator Replacement
5	114007	SPW WTP Powdered Activated Carbon System Improvements
6	132025	Northwest Booster Station Yard Piping Improvements
7	111009	LH-WTP Two 35-MGD High Lift Pumps, Water Production Flow...
8	114010	SPW WTP Yard Piping and High Lift Header Improvements
9	132012	Ypsilanti PS Improvements
10	112005	NE Steel Cover Replacement
11	331001	Roofing Systems Replacement at Water Plants and BPS
12	122013	14 Mile Transmission Main Loop
13	122016	Downriver Transmission Main Loop
14	132016	North Service Center BPS Improvements
15	132021	Imlay BPS - Replace VFDs, Pumps, Motors and HVAC
16	132017	North Service Center BPS - On-Site & Off-Site Yard Piping & Valve...
17	122007	Newburgh Road Transmission Main
18	132014	Adams Road Pumping Booster Pumping & Switch Gear Improvements
19	132015	Newburgh BPS - Pumping System & Building Upgrades
20	132018	Schoolcraft BPS - Pumps, Yard Piping, Valves & Reservoir Pumps & ...
21	132019	Wick Road BPS - Switchgear, Control Valves & Hyropneumatic Tank...
22	132020	Franklin BPS - Isolation Gate Valves & Electrical Actuator...
23	132022	Joy Road BPS - Replace Reservoir Pumps, Motors and Isolation Valves
24	132013	Adams Road Pumping Booster VFD & Gate Valves to Optimize...
25	132010	West Service Center PS - Reservoir, Reservoir Pumping, and Division...
26	112003	NE WTP High-Lift Pumping Station Electrical Improvements
27	114017	SPW WTP Flocculator Drive Replacement
28	113006	SW WTP Chlorine Scrubber, Raw Water Screens & Related Improv...
29	122017	7 Mile/Nevada Transmission Main Rehab and Carrie/Nevada Flow...
30	111008	LH WTP Architectural Programming - Laboratory and Admin...
31	132007	Imlay PS - Energy Management: Freeze Protection Pump Installation
32	114016	SPW 1958 Settled Water Conduit Concrete Replacement
33	113007	SW WTP Architectural and Building Mechanical Improvements



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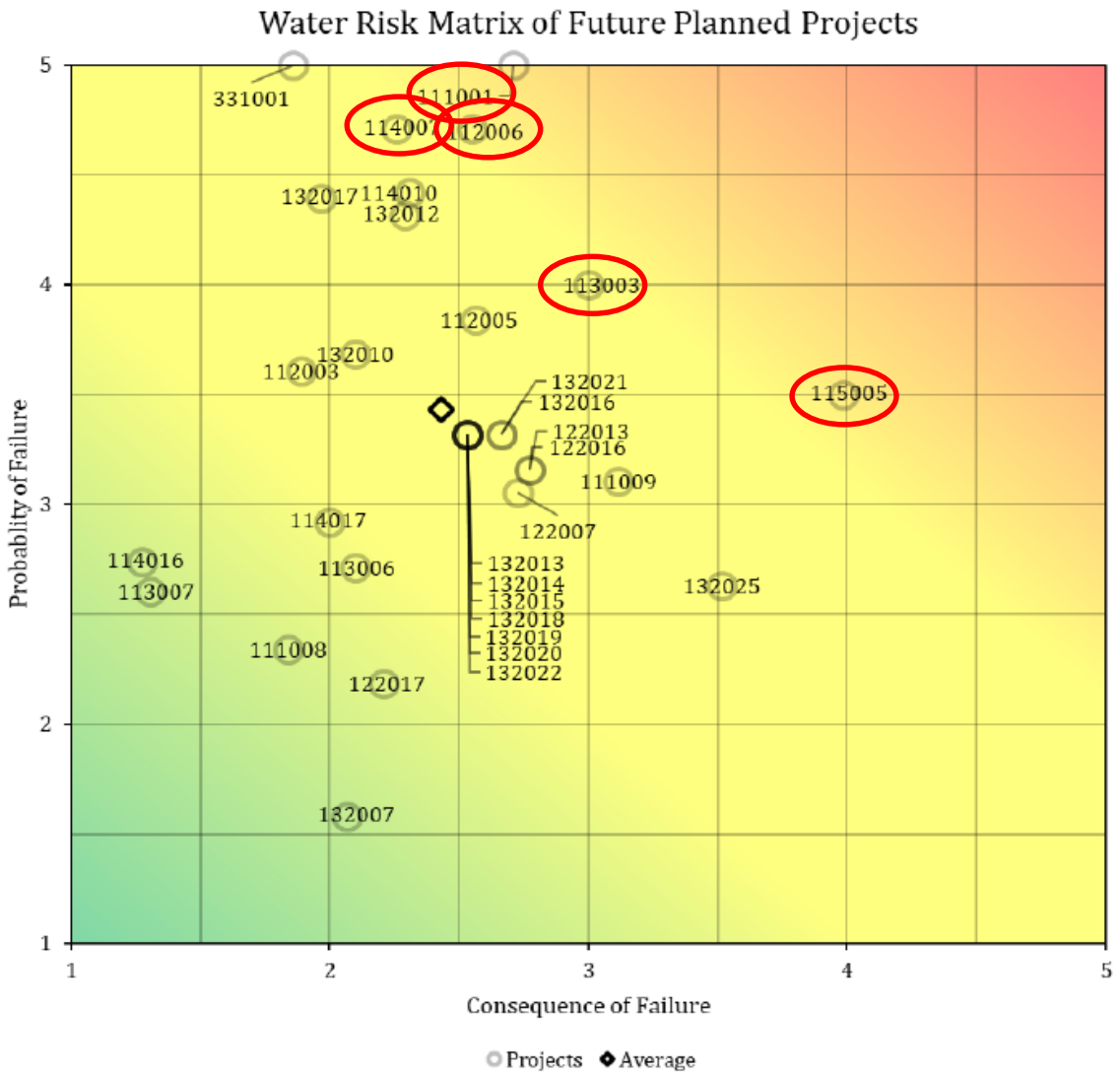
Risk Matrix - Water

- 115005 WWP WTP Ventilation Improvements – NEW 2019
- 111001 LH WTP Low & High Lift Filter Backwash Pumping Improvements – Future Planned 2019
- 113003 SW WTP Low & High Lift Pumping, Flocculation and Filter Improvements – Future Planned 2025+
- 112006 NE WTP Flocculator Improvements – Future Planned 2019
- 114007 SPW WTP Powdered Activated Carbon Improvements – Future Planned 2025+

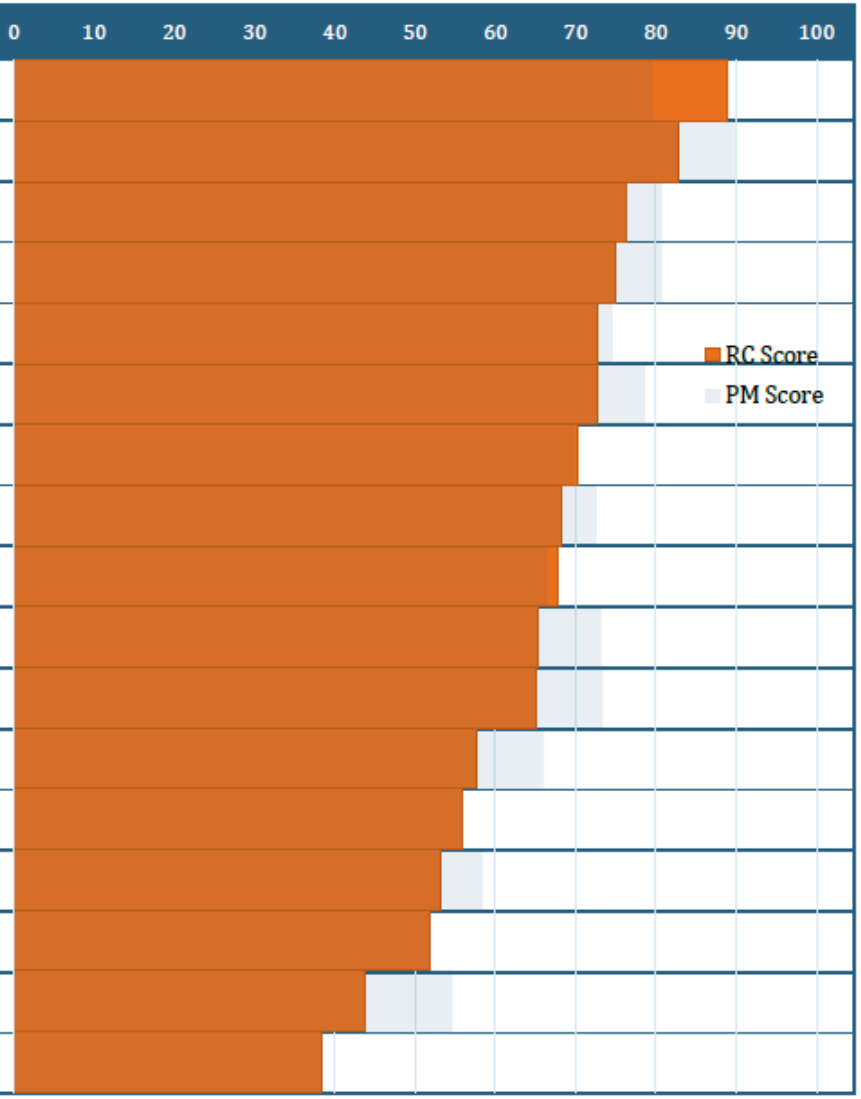
Programs (Ongoing programs are not scored)

- *170400 & 170500 Transmission System Improvement & Assessment*
- *170800 Reservoir Inspection, Repair & Rehabilitation*
- *170500 Transmission System Valve Repair & Rehabilitation*



Project Prioritization - Wastewater

Rank	CIP No.	Title	
1	232003	Northeast Pumping Station	232003
2	216007	DTE Primary Electric 3rd Feed Supply to WRRF	216007
3	216006	Assessment & Rehab of WRRF Yard Piping & Underground Utilities	216006
4	211006	WRRF PS No. 1 Improvements	211006
5	212008	WRRF Rehabilitation of Intermediate Lift Pumps (ILPs)	212008
6	211005	WRRF PS No. 2 Improvements Phase II	211005
7	211009	WRRF Rehab of Circular Primary Clarifier Scum Removal System	211009
8	222004	Collection System Infrastructure Improvements	222004
9	213006	WRRF Improvements to Sludge Feed Pumps at Dewatering Facilities	213006
10	222003	North Interceptor East Arm (NIEA) Evaluation and Rehabilitation	222003
11	211007	WRRF PS #2 Bar Racks Replacements & Grit Collection Improve...	211007
12	213008	WRRF Rehabilitation of the Ash Handling Systems	213008
13	216008	Rehabilitation of Screened Final Effluent (SFE) Pump Station	216008
14	212007	WRRF Rehabilitation of the Secondary Clarifiers	212007
15	222001	Oakwood District Intercommunity Relief Sewer Mod.	222001
16	331002	Roofing Systems Replacement, WRRF, CSO RTBs &SDFs	331002
17	213005	WRRF Complex I Incinerators Decommissioning and Reusability	213005



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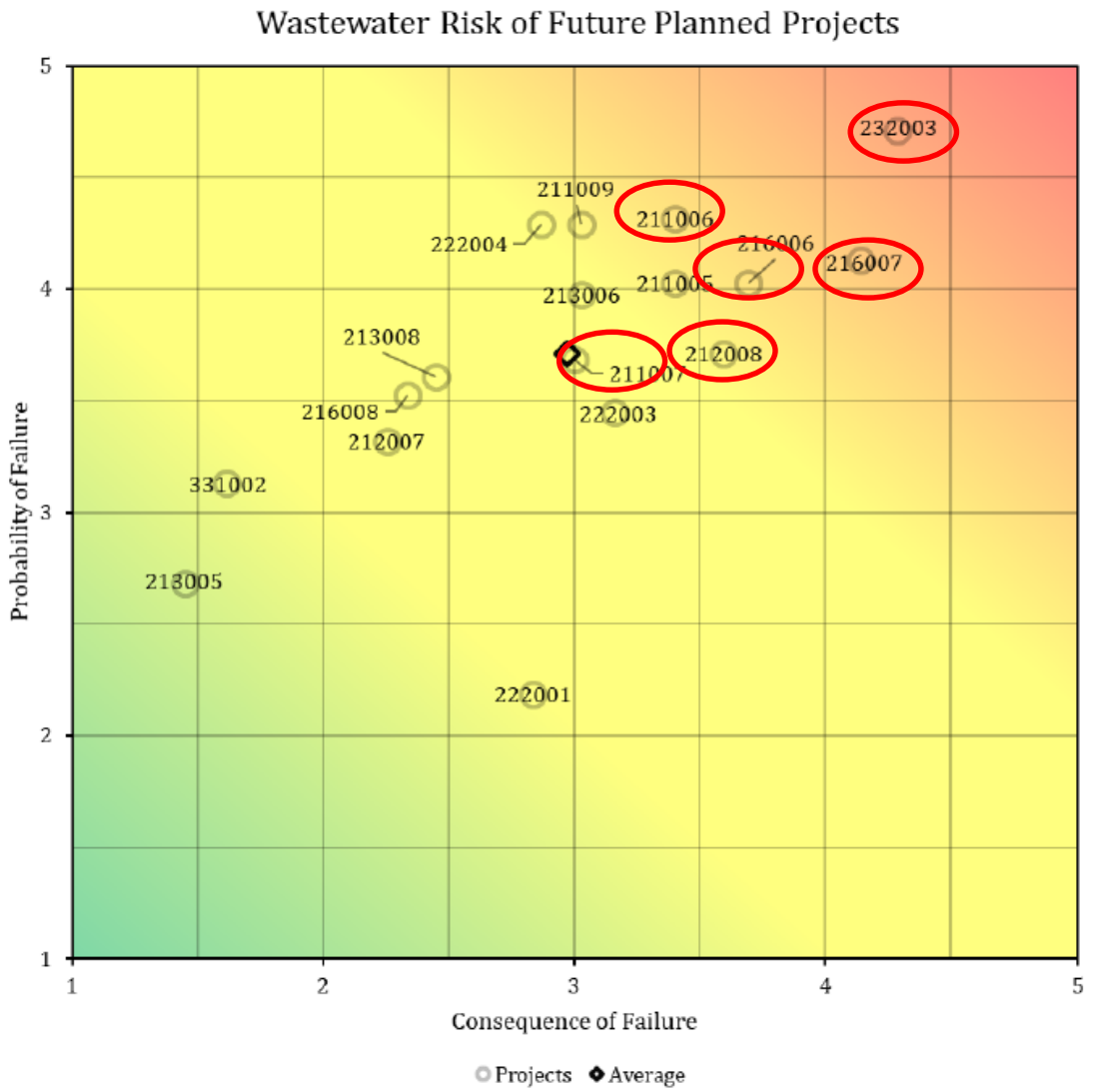
Risk Matrix - Wastewater

- 232003 Northeast Pump Station – Future Planned 2025+
- 216007 DTE Primary Electric 3rd Feed – Construction Future Planned
- 211007 WRRF PS #2 Improvements – Future Planned 2021
- 212008 WRRF Intermediate Lift Pumps – Future Planned 2020
- 211006 WRRF PS #1 Improvements – Future Planned 2019
- 216006 WRRF Yard Piping – Future Planned 2020

Programs (Ongoing programs are not scored)

- *260200 Sewer Rehabilitation Program*
- *260500 Sewer Outfall Rehabilitation Program*
- *260600 CSO Improvement Program*



High Level Water Summary

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FY2020-2024 WATER Summary

FY2020 - 2024 CIP Summary - WATER *All Figures are in $1,000's*

CIP Document	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	5-Year Total (2019-2023)	5-Year Total (2020-2024)
Approved CIP FY 2019-2023	66,038	137,583	155,734	178,300	175,174	NA	712,829	NA
Draft CIP FY2020-2024 V1.0	**68,746**	**143,247**	**166,599**	**182,595**	**169,006**	**190,866**	**730,193**	**852,313**
Difference ($)	2,708	5,664	10,865	4,295	-6,168		17,364	
Difference (%)	4.1%	4.1%	7.0%	2.4%	-3.5%		2.4%	

- 2.4% Increase in years 2019-2023 between FY19 and Proposed FY20 CIP
- Total 5-Year projected expenditures (2020-2024) is $852,313

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FY2020-2029 Draft 10-Year WATER CIP Outlook

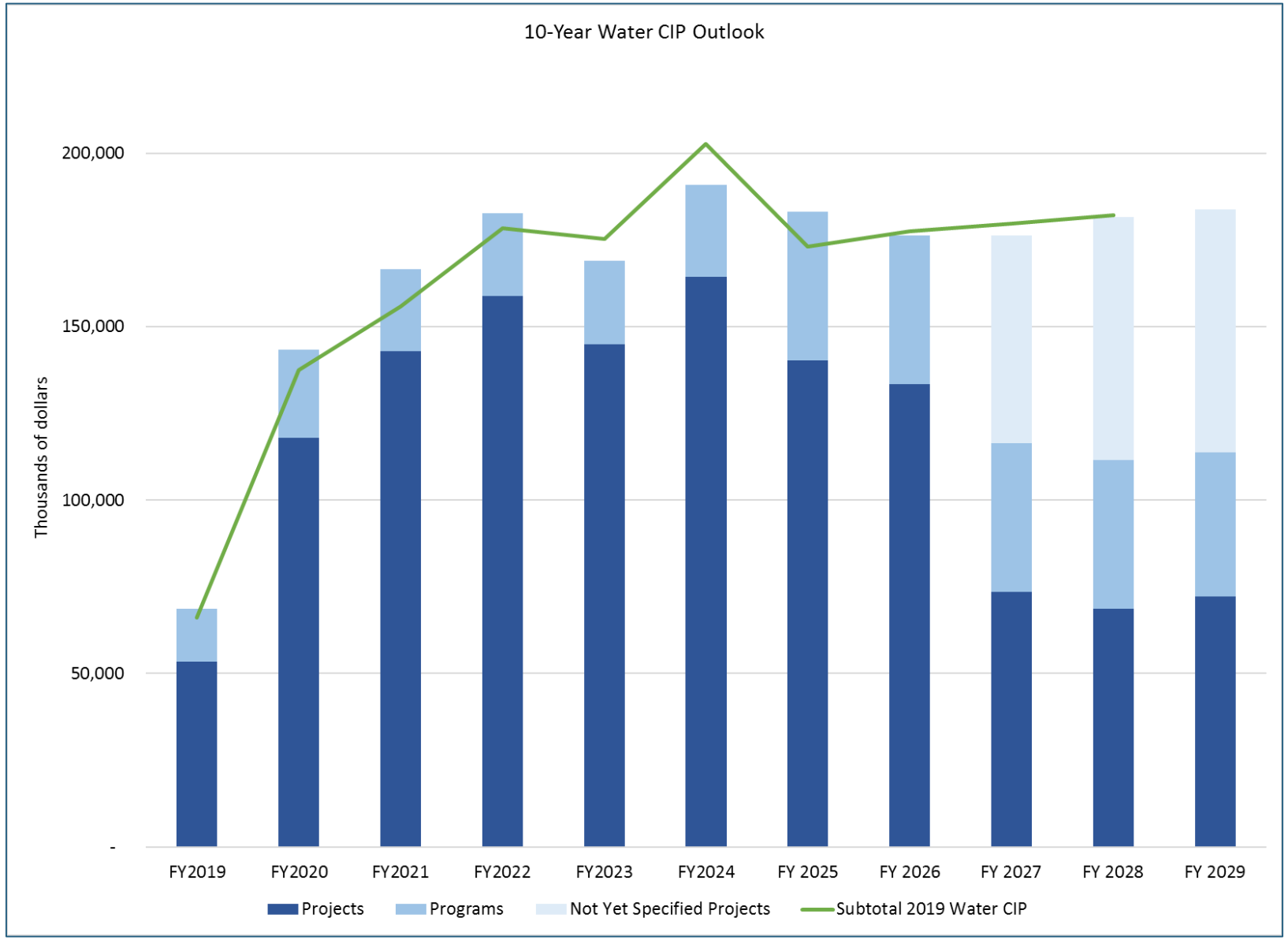
10-Year Water CIP Outlook

Note: Figures below are in thousands of dollars

2019 Outlook	FY2019	FY2020	FY2021	FY2022	FY2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total 2019-2028
Projects	46,785	116,870	130,656	157,209	148,672	152,017	126,675	112,980	60,711	58,426	NA	1,111,001
Programs	19,253	20,713	25,078	21,091	26,502	50,733	46,309	49,539	49,033	48,675	NA	356,925
Not Yet Specified Projects								15,000	70,000	75,000	NA	160,000
Subtotal 2019 Water CIP	**66,038**	**137,583**	**155,734**	**178,300**	**175,174**	**202,750**	**172,984**	**177,519**	**179,744**	**182,101**	**NA**	**1,627,926**

Proposed 2020 Outlook	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total 2020-2029
Projects	53,341	117,829	142,981	158,855	144,811	164,373	140,250	133,489	73,450	68,604	72,152	1,216,795
Programs	15,405	25,418	23,618	23,740	24,195	26,493	42,875	42,875	42,875	42,875	41,681	336,643
Not Yet Specified Projects									60,000	70,000	70,000	200,000
Subtotal 2020 Water CIP	**68,746**	**143,247**	**166,599**	**182,595**	**169,006**	**190,866**	**183,125**	**176,364**	**176,325**	**181,478**	**183,833**	**1,753,438**

FY2020-2029 Draft 10-Year WATER CIP Outlook (Cont'd)



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High Level Wastewater Summary

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FY2020-2024 WASTEWATER Summary

FY2020 - 2024 CIP Summary - WASTEWATER *All Figures are in $1,000's*

CIP Document	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	5-Year Total (2019-2023)	5-Year Total (2020-2024)
Approved CIP FY 2019-2023	105,183	111,155	111,952	136,411	168,458	NA	633,159	NA
Draft CIP FY2020-2024 V1.0	**104,931**	**139,480**	**107,430**	**139,677**	**156,884**	**130,159**	**648,402**	**673,630**
Difference ($)	-252	28,325	-4,522	3,266	-11,574		15,243	
Difference (%)	-0.2%	25.5%	-4.0%	2.4%	-6.9%		2.4%	

- 2.4% Increase in years 2019-2023 between FY19 and Proposed FY20 CIP
- Total 5-Year projected expenditures (2020-2024) is $673,630

GLWA Great Lakes Water Authority

FY2020-2029 Draft 10-Year WASTEWATER CIP Outlook

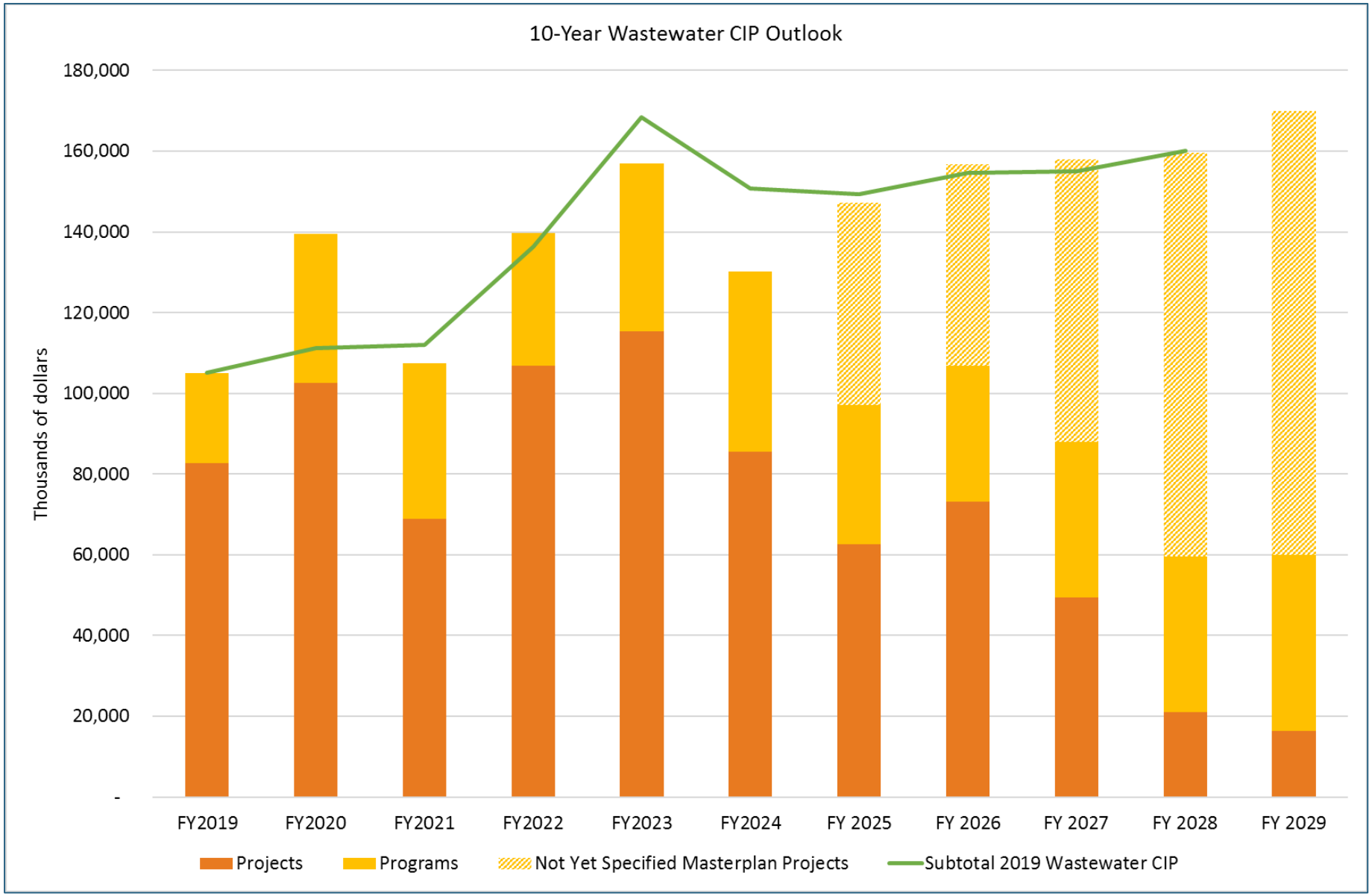
10 -Year Wastewater CIP Outlook

Note: Figures below are in thousands of dollars

FY2019 Outlook	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total 2019-2028
Projects	80,114	86,482	81,237	105,004	131,867	89,123	43,800	29,867	15,100	15,100	NA	732,944
Programs	25,069	24,673	30,715	31,407	36,591	31,683	35,568	34,708	34,852	35,001	NA	335,649
Not Yet Specified Masterplan Projects						30,000	70,000	90,000	105,000	110,000	NA	405,000
Subtotal 2019 Wastewater CIP	**105,183**	**111,155**	**111,952**	**136,411**	**168,458**	**150,806**	**149,368**	**154,575**	**154,952**	**160,101**	**NA**	**1,473,593**

Proposed FY2020 Outlook	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total 2020-2029
Projects	82,780	102,674	68,830	106,826	115,357	85,596	62,592	73,206	49,393	21,000	16,438	701,911
Programs	22,151	36,806	38,600	32,851	41,527	44,563	34,600	33,600	38,600	38,600	43,600	383,347
Not Yet Specified Masterplan Projects							50,000	50,000	70,000	100,000	110,000	380,000
Subtotal 2020 Wastewater CIP	**104,931**	**139,480**	**107,430**	**139,677**	**156,884**	**130,159**	**147,192**	**156,806**	**157,993**	**159,600**	**170,038**	**1,465,258**

FY2020-2029 Draft 10-Year WASTEWATER CIP Outlook (Cont'd)



GLWA Great Lakes Water Authority

Highlighted Water CIP Projects

Grant Gartrell, Tim Kuhns & Erich Klun

GLWA
Great Lakes Water Authority

122013

CIP Number: 122013
Project Title 14 Mile Transmission Main Loop

Project Status	Future Planned
Class Lvl 1	Water
Class Lvl 2	Field Services
Class Lvl 3	Transmission System
Location	Oakland County

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☑ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 58.4


Example transmission main

Project Engineer/Manager Timothy Kuhns
Manager Grant Gartrell

Project Significance The 14 Mile Transmission Main that currently serves West Bloomfield Township, Farmington Hills, Commerce Township, Novi, Walled Lake, and Wixom is a single feed transmission system. If a disruption to service were to occur on this transmission main, many of the users along this main would experience a complete loss of pressure and flow. This project would provide a transmission main loop to the 14 Mile system to increase redundancy on this branch of the system.

Scope of Work Install approximately 6 Miles of 48-inch transmission main from 8 Mile Road to 14 Mile Road along Haggerty Road. The work will also include connections to the yard piping and reservoir fill line at the Haggerty Booster Station as well as a control valve to regulate flows along the transmission main.

Challenges Routing and construction staging for the proposed piping in the vicinity of the Haggerty and 8 Mile Intersection appears to be a significant challenge as this intersection is one of the highest traffic volume intersections in Southeast Michigan.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018		1,300	10,500	12,000	6,000				0	0	29,800
2019	0				751	1,315	1,507	13,420	37,433	0	54,426
2020	0	0		0	751	1,315	1,507	13,420	12,000	25,433	54,426

GLWA Great Lakes Water Authority

122016

CIP Number: 122016
Project Title Downriver Transmission Main Loop

Project Status	Future Planned
Class Lvl 1	Water
Class Lvl 2	Field Services
Class Lvl 3	Transmission System
Location	Wayne County - Outside Detroit

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☑ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 58.4

Example transmission main

Project Engineer/Manager Timothy Kuhns
Manager Grant Gartrell

Project Significance The Downriver Transmission Main that currently serves Brownstown, Riverview, Woodhaven, Trenton, Flat Rock, Gibraltar, Rockwood, South Rockwood, and Berlin Township is a single feed transmission system. If a disruption to service were to occur on this transmission main, many of the users along this main would experience a complete loss of pressure and flow. This project would provide a transmission main loop to the Downriver system to increase redundancy on this branch of the system.

Scope of Work Install approximately 6 Miles of 16-inch transmission main and 3 Miles of 24-inch transmission main from along the Electric Avenue corridor to parallel the existing transmission system in this branch of the system.

Challenges Assuming ownership of the 24-inch transmission main through the City of Trenton may require condition assessment of this portion of pipeline.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2019	0				297	964	3,051	10,763	22,122	0	37,197
2020	0	0		0	297	964	3,051	10,763	22,122	0	37,197

GLWA Great Lakes Water Authority

112006 (NEW)

CIP Number: 112006
Project Title Northeast Water Treatment Plant Flocculator Replacements

Project Status	New
Class Lvl 1	Water
Class Lvl 2	Treatment Plants and Facilities
Class Lvl 3	Northeast
Location	City of Detroit

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☐ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 67.4

Project Engineer/Manager Peter Fromm
Manager Grant Gartrell

Project Significance Most of the existing flocculators are not operable and are beyond repair, which reduces sedimentation effectiveness and creates a greater load on the filtration process.

Scope of Work Replace 1/2 of the existing flocculators, including drives, motors, shafts, and paddles with new.

Challenges Water production during construction

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2020	0	0		3	1,356	1,356	3				2,718

GLWA Great Lakes Water Authority

115005 (NEW)

CIP Number: 115005
Project Title WWP WTP Building Ventilation Improvements

Project Status	New
Class Lvl 1	Water
Class Lvl 2	Treatment Plants and Facilities
Class Lvl 3	Water Works Park
Location	City of Detroit

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☐ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 76

Project Engineer/Manager Mike Dunn
Manager Terry Daniel

Project Significance Design and construction of ventilation system improvements for certain chemical storage rooms and the ozone generator and destruct rooms at the Water Works Park Water Treatment Plant to improve employee and visitor safety.

Scope of Work

Challenges

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2020	0	0		7	507	3,907	650	0	0	0	5,071

GLWA Great Lakes Water Authority

111001

CIP Number: 111001
Project Title Lake Huron Water Treatment Plant, Low-Lift, High Lift and Filter Backwash Pumping System Improvements

Project Status	Future Planned
Class Lvl 1	Water
Class Lvl 2	Treatment Plants and Facilities
Class Lvl 3	Lake Huron
Location	Saint Clair County

- [x] Innovation
- [x] Water MP Right Sizing
- [x] Reliability/Redundancy
- [ ] NEWTP Repurposing

Project Score 71.6


Lake Huron WTP

Project Engineer/Manager Eric Kramp
Manager Grant Gartrell

Project Significance 111003 RECLASSIFIED INTO THIS PROJECT. Improvements needed to align the existing low lift pumping rate with the Lake Huron WTP production rate per the 2015 WMPU. Currently constant speed pumping forces the WTP to operate in a batch mode. Existing electrical gear for low and high lift pumping units and filter backwash pumps are original to plant, beyond useful service life and need to be replaced to improve reliability, serviceability, maintainability, and efficiency. Replacement of phosphoric acid chemical storage tanks and fill piping. Flocculation moved to new project proposed CIP Project for filter rehabilitation and flocculators.

Scope of Work Currently constant speed pumping forces the Lake Huron WTP to operate in a batch mode as the low lift pump capacities exceed the high lift pump capacities. Improvements needed to align the existing low lift pumping rate with the Lake Huron WTP production rate per the 2015 WMPU. Replace with new:
1. High-voltage electrical system
2. Replace LL Pumps 3 and 4 with new pumps to meet 2015 WMPU
3. Improve HL Pump resilience & flexibility
4. Improve WW Pump capability and update as necessary
4. Phosphoric acid system upgrades

Challenges Coordination between existing pumping unit and motor required during design. Critical speed analysis may show pump improvements needed to operate at reduced speeds. Uncovering an innovative rehabilitation design to minimize maintenance of existing drives.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018		200	2,500	3,000					0	0	5,700
2019	0				401	1,611	3,169	4,450	42,757	0	52,388
2020	0	0		0	401	1,611	3,169	4,450	10,000	32,757	52,388

GLWA Great Lakes Water Authority

114007

CIP Number: 114007
Project Title Springwells Water Treatment Plant, Powdered Activated Carbon System Improvements

Project Status	Future Planned
Class Lvl 1	Water
Class Lvl 2	Treatment Plants and Facilities
Class Lvl 3	Springwells
Location	Wayne County - Outside Detroit

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☐ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 63.8


Springwells WTP

Project Engineer/Manager TBD
Manager Grant Gartrell

Project Significance Although the existing powdered activated carbon (PAC) system is operable, it is difficult to operate and maintain when needed for taste and odor control. The PAC system needs to be replaced with a new system using a different design that provides for improved operation and maintainability.
The plant is able to feed powdered activated carbon (PAC) when needed but only through extraordinary measures because the existing PAC feed systems does not operate as intended. The extraordinary measures cause additional operation and maintenance expense and inefficiencies that should be corrected in the long term. Due to the infrequent need to feed PAC, there is not an immediate need to replace the entire existing PAC system at Springwells. If raw water quality deteriorates unexpectedly and taste and odor causing compound concentrations steadily increase, then replacement of the PAC system at an earlier date would be warranted.

Scope of Work Replace the existing PAC system with a new system of a different design that provides improved operations and maintainability when PAC dosing is needed to control taste and odor in the raw water supply.

Challenges Layout of piping to correct existing problems and drainage difficult. Diffuser replacement/relocation/installation will require plant shutdowns to complete, so it will be seasonal demand dependent.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018					900	2,000			0	0	2,900
2019	0								3,939	0	3,939
2020	0	0		0	0	0	0	0	0	3,938	3,938

GLWA Great Lakes Water Authority

113003

CIP Number: 113003
Project Title Southwest Water Treatment Plant, Low- and High-Lift Pumping Station, Flocculation and Filtration System

Project Status	Future Planned
Class Lvl 1	Water
Class Lvl 2	Treatment Plants and Facilities
Class Lvl 3	Southwest
Location	Wayne County - Outside Detroit

- ☐ Innovation
- ☑ Water MP Right Sizing
- ☐ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 67.6

Example of a butterfly valve

Project Engineer/Manager Shakil Ahmed
Manager Grant Gartrell

Project Significance Replacing improperly functioning as well as cracked valves and gates, causing operational and maintenance concerns. Low and High Lift Pumping Improvements: Existing pumping station equipment including pumps, motors, switchgear, controls, gates, valves, etc. are all original to the plant and are over-sized for the current and projected system water demands for at least the next 20 years. The station's electrical system and controls are difficult and costly to maintain and have reduced reliability due to age and lack of available parts on the market. Large size and age of pumps and motors are inefficient. Flocculation & Filtration System Improvements: Existing filter media, auxiliary scour, backwash, and related appurtenances are all original to the plant construction (circa 1962) and need to be replaced for reliability and efficiency improvements. Flocculator equipment upgrades were identified in the 2015 WMPU project.

Scope of Work The work includes study, design, and construction services for the replacement of 2 - 72" diameter butterfly valves, 4 motorized sluice gates, 7 potable sluice gates, and 1 - 36" flag valve. Replacement of high and low lift pumps, motors, motor controls, medium-voltage switchgear, and MCCs. Replace and improve filtration system equipment and components as well as flocculator equipment upgrades.

Challenges

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018								2,940	0	0	2,940
2019	0								148,286	0	148,286
2020	0	0		0	0	0	0	0	0	148,286	148,286

GLWA Great Lakes Water Authority

Highlighted Wastewater CIP Projects

Dan Alford, Ali Khraizat, Todd King, Biren Saparia & Chris Nastally

GLWA
Great Lakes Water Authority

CIP Number: 216006
Project Title Assessment and Rehabilitation of WRRF yard piping and underground utilities

Project Status	Future Planned
Class Lvl 1	Wastewater
Class Lvl 2	WRRF
Class Lvl 3	General Purpose
Location	City of Detroit

- [x] Innovation
- [ ] Water MP Right Sizing
- [x] Reliability/Redundancy
- [ ] NEWTP Repurposing

Project Score 76.4

GLWA WRRF

Project Engineer/Manager Ali Khraizat

Manager Ali Khraizat

Project Significance Yard piping and underground utilities are vital to the operations of the WRRF. The integrity of these systems will be maintained with this project. The Secondary Water system needs to be relocated or completely refurbished to provide uninterrupted water for fire protection and process applications such as seal water to the pumps. Some of the yard piping is original to the plant and requires a condition assessment.

Scope of Work This project will include the study, design, and construction for the needed improvements to yard piping and underground utilities. This includes right sizing, as-built confirmation and condition assessment of our yard piping and underground utilities. It is possible that the secondary water system may need to be relocated. The distribution models for the water systems will also be updated. A redundant potable water feed to the WRRF will also be evaluated.

Challenges Maintaining the adequate supply of our water systems required for treatment processes during assessment and rehabilitation of underground utilities will be the most significant challenge on this project. Temporary power, air, water, natural gas system shutdowns may also be required to perform the work.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018			1,700	2,000	12,000	15,600	16,279	4,141	0	0	51,720
2019	0				1,718	4,008	7,174	17,530	24,026	0	54,456
2020	0	0		0	323	5,258	3,849	4,500	3,500	7,423	24,853

GLWA Great Lakes Water Authority

211006

CIP Number: 211006
Project Title WRRF PS No. 1 Improvements

Project Status	Future Planned
Class Lvl 1	Wastewater
Class Lvl 2	WRRF
Class Lvl 3	Primary Treatment
Location	City of Detroit

- [x] Innovation
- [ ] Water MP Right Sizing
- [x] Reliability/Redundancy
- [ ] NEWTP Repurposing

Project Score 75

Pump Station 1 Interior

Project Engineer/Manager Alfredo Lava

Manager Ali Khraizat

Project Significance Condition assessment and rehabiliation of all pumps at Pump Station No. 1 to increase efficiency and reliability.

Scope of Work The study/design work will identify all major parts including impellers and wear rings to be refurbished for each pump and all related appurtenances. The construction services will provide rehabilitation and/or replacement as determined in the study and design along with the sequencing of pump shutdown throughout the rehabilitation period.
Investigation and evaluation of all the inlet gates, outlet gates and associated actuators, Motor Control Centers (MCCs) and other related equipment, HVAC system, Control System and provide recommendation and design for rehabilitation or replacement are also part of the scope.

Challenges Maintaining the adequate pumping capacity during construction.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018			600	5,350	5,125	2,054			0	0	13,129
2019	0			500	1,800	2,462	9,394	9,245	719	0	24,120
2020	0	0		498	1,803	2,325	8,424	8,370	811	84	22,315

GLWA Great Lakes Water Authority

260600

CIP Number: 260600
Project Title CSO FACILITIES IMPROVEMENT PROGRAM

Project Status	Active
Class Lvl 1	Wastewater
Class Lvl 2	Programs
Class Lvl 3	Programs
Location	Multiple Counties

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☑ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 90.6

Retrofitted chemical feed pump replacement at Puritan-Fenkell RTB and makeshift wooden stairs to enter Basin Valve Gallery

Project Engineer/Manager Chris Nastally

Manager Chris Nastally

Project Significance This program is being established to facilitate the study, design, construction administration, and construction of improvements necessary to maintain the facilities which contribute to the CSO Control Program and compliance herewith.

Scope of Work This program is intended to include studies, design, construction administration, and construction projects which serve to improve process areas or functions of the CSO Facilities. The overall scope of this program is to complete the following: Needs Assessment, Condition Assessment, and update to the 2013 Scheduled Replacement Plan (SRP); Replacement of CSO Facilities Fire Alarm Systems; Structural Condition Assessment Design/Build project; and flushing improvements to Baby Creek CSO Facility. A direct product of the Needs/Condition Assessment and SRP is identification of facility needs with projects identified, prioritized, and conceptual cost estimates. From this output, RFP's will be developed to address these needs. For this purpose, Design and Construction dollars have been identified in the later years of this Program to facilitate design and construction of those identified needs. It is anticipated that the primary drivers of these improvements will be obsolescence/end of service life, excessive O&M problems, reliability, efficiency and system standardization which arise from feedback from operation & maintenance, the scheduled replacement plan, and the needs/condition assessment. Following completion of the Wastewater Master Plan, new projects may be otherwise defined which will be incorporated into the CIP. These projects will likely be entered into the CIP as stand-alone projects rather than falling under this program. Furthermore, upon completion of the NPDES permit, new regulatory requirements may arise which require capital improvements. Depending on the nature of those improvements, they may be stand-alone projects or fall within the elements of this Program.

Challenges As this program starts off, there is a lot of design RFPs in the beginning which will lead to la refined projects aimed at improving operations, which lead to RFPs for design and large scale construction projects in the later years (3-5). A significant challenge to be faced will be maintaining the CSO facilities

260600 (Cont'd)

CIP Number: 260600
Project Title CSO FACILITIES IMPROVEMENT PROGRAM

in current operations without the benefit of large-scale improvements of the CSO Systems. Another significant challenge of this program will be unforeseen conditions that may be encountered as facility inspections & condition assessments begin. For example, finding significant structural distress of a basin could lead to increase of budget or extension of timeline of improvements. Considering much of the equipment/systems identified for inclusion in this program are at or near obsolescence or are actively causing O&M issues, delays in improvements could possibly cause operational or compliance issues.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018		3,428	2,247	6,400	9,000	7,200	3,610		0	0	31,885
2019	0	764	1,658	9,277	6,218	2,351	4,351	9,351	11,251	0	45,221
2020	0	0	481	8,442	5,604	4,553	5,825	10,325	13,361	15,000	63,591

232002

CIP Number: 232002
Project Title Freud & Conner Creek Pump Station Improvements

Project Status	Active
Class Lvl 1	Wastewater
Class Lvl 2	SCC
Class Lvl 3	Pumping Stations
Location	City of Detroit

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☑ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 79.6

Freud Pump Station

Project Engineer/Manager Mini Panicker
Manager Biren Saparia

Project Significance The primary objective of this project is to study the overall performance of Connor Creek and Freud sewage pumping stations and develop design, and build an operational strategy to optimize the utilization of interconnected piping and operation between both pumping stations and the Connor Creek Retention and Treatment Basin.

Scope of Work Provide basis of design, and final design for an operational strategy to optimize the utilization of interconnected piping and operation between Connor Creek and Freud pumping stations and the Connor Creek Retention and Treatment Basin. Provide construction of the emerging project and construction assistance during construction of the emerging project.

Challenges Meeting the collection system transport capacity during the construction

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018		8,040	5,900	5,100	2,460	1,000			0	0	22,500
2019	0	2,101	1,384	1,192		223	1,582	11,000	15,000	0	32,482
2020	0	0	5,111	1,984	17,029	13,014	50,014	50,014	25,007	257	162,430

GLWA Great Lakes Water Authority

260500

CIP Number: 260500
Project Title CSO Outfall Rehabilitation

Project Status Active
Class Lvl 1 Wastewater
Class Lvl 2 Programs
Class Lvl 3 Programs
Location Multiple Counties

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☑ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 72.8

Sewer tap piping in B009 outfall (left) and sludge buildup and poor masonry in B007 outfall (right)

Project Engineer/Manager Mini Panicker

Manager Biren Saparia

Project Significance PROJECTS 222006 AND 233001 HAVE BEEN INCORPORATED INTO THIS PROJECT. Rehabilitation of the CSO outfalls is essential to properly discharge the uncontrollable combined sewer overflows to the receiving waters and to prevent sewer back up into the Conveyance System. Recent inspections of the outfalls revealed structural deficiencies like fractures, missing mortar from bricks etc. There are sediment and debris deposits in many of them.

Scope of Work Preliminary Scope of Work of the project is construction. Contract CS-168 will review the existing records, evaluate the existing conditions, and provide the necessary design to rehabilitate the outfalls.

Challenges Some outfalls are below the river elevation; rehabilitation may be challenging.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018			6,000	6,000	6,000	6,000	6,000	6,000	0	0	36,000
2019	0			507	3,826	10,001	10,001	10,001	10,001	0	44,337
2020	0	0	9	4,000	15,102	17,947	10,926	15,102	15,102	11,000	89,188

GLWA Great Lakes Water Authority

260200

CIP Number: 260200
Project Title Sewer and Interceptor Rehabilitation Program

Project Status	Active
Class Lvl 1	Wastewater
Class Lvl 2	Programs
Class Lvl 3	Programs
Location	Multiple Counties

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☑ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 0


An example interceptor

Project Engineer/Manager Mini Panicker
Manager Biren Saparia

Project Significance Rehabilitation and replacement program of the existing sewers and interceptors based upon structural deficiencies identified from the evaluation results. This replacement, rehabilitation and cleaning program is essential to optimize the transportation capacity of the GLWA collection system and to increase its life expectancy.

Scope of Work Provide CCTV and/or sonar inspection of the GLWA Collection System Interceptors and Trunk Sewers to reveal the existing conditions as per the National Association of Sewer Service Companies' (NASSCO) Pipeline Assessment Certification Program (PACP) standards, evaluate the existing conditions, and provide the necessary cleaning/rehabilitation/replace to optimize the design capacity of the collection system and to minimize the inflow and infiltration into the collection system.

Challenges Large sewers and interceptors may have flow control challenges for both inspection and rehabilitation.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018		2,612	8,000	8,000	20,000	20,000	20,000		0	0	78,612
2019	0	3,397	7,751	10,601	10,400	11,400	11,400	11,400	11,400	0	77,749
2020	0	0	13,555	8,609	15,000	15,000	15,000	15,000	15,000	95,000	192,164

GLWA Great Lakes Water Authority

216007

CIP Number: 216007
Project Title DTE Primary Electric 3rd Feed Supply to WRRF

Project Status	Future Planned
Class Lvl 1	Wastewater
Class Lvl 2	WRRF
Class Lvl 3	General Purpose
Location	City of Detroit

- ☐ Innovation
- ☐ Water MP Right Sizing
- ☑ Reliability/Redundancy
- ☐ NEWTP Repurposing

Project Score 82.8

The new 3rd 120/13.8 kV Transformer installed and owned by the Great Lakes Water Authority waiting for the 3rd Primary Electric Feed Line to be installed and energized

Project Engineer/Manager Phillip Kora

Manager Philip Kora

Project Significance GLWA's WWTP will have a redundant primary electrical service to power the WRRF equipment.

Scope of Work The scope of this design-build project includes design and construction of 3rd 120 kV primary electric supply transmission line owned by DTE tapping into the 120-kV Waterman-Zug line in the vicinity of Dearborn St. and Copland St right-of-way at Tower 1368. The design-build services also include securing the property right-of-way easements from the property owners, as well as the design and construction of power transmission supply line. This primary transmission power line will energize the already installed new 120-13.8 industrial substation owned by GLWA near EB-1.

Challenges Negotiation with private property owners and testing of the automatic switch over will require co-ordination with operations.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018			3,500	3,500					0	0	7,000
2019	0	15		2,002	1,326	3,326				0	6,669
2020	0	0	583	2,108	1,381	3,374	0	0	0	0	7,446

GLWA Great Lakes Water Authority

211007

CIP Number: 211007
Project Title WRRF PS #2 Bar Racks Replacements and Grit Collection System Improvements

Project Status	Future Planned
Class Lvl 1	Wastewater
Class Lvl 2	WRRF
Class Lvl 3	Primary Treatment
Location	City of Detroit

- [x] Innovation
- [ ] Water MP Right Sizing
- [x] Reliability/Redundancy
- [ ] NEWTP Repurposing

Project Score 65.2

WRRF Pumping Station 2: Bar Racks and Grit Collection System

Project Engineer/Manager Beena Chackunkal

Manager Ali Khraizat

Project Significance Replacement of all bar racks and associated equipment for more reliable and efficient operations. Improvements to the grit collection system will prevent the grit affecting the downstream equipment. These improvements will enable WRRF to be in compliance with NPDES permit.

Scope of Work The work consists of evaluation, design and construction for the replacement of Bar Racks and Grit Collection System including their associated motors and electrical panels as necessary to meet the long-term wet weather capacity requirements at thePS-2.

Challenges Maintaining the MDEQ-NPDES required capacity during the construction phase of the project.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018			650	2,900	3,300	2,817			0	0	9,667
2019	0			7	402	1,980	2,404	6,956	8,814	0	20,563
2020	0	0		6	269	1,329	2,039	6,306	7,838	49	17,836

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212008

CIP Number: 212008
Project Title WRRF Rehabilitation of Intermediate Lift Pumps (ILPs)

Project Status	Future Planned
Class Lvl 1	Wastewater
Class Lvl 2	WRRF
Class Lvl 3	Secondary Treatment & Disinfection
Location	City of Detroit

- [x] Innovation
- [ ] Water MP Right Sizing
- [x] Reliability/Redundancy
- [ ] NEWTP Repurposing

Project Score 72.8


Intermediate Lift Pump Station N.2

Project Engineer/Manager Beena Chackunkal
Manager Ali Khraizat

Project Significance The ILPs are old and reached the end of life cycle. The ILPs convey primary effluent to the secondary bioreactors. Therefore a replacement or rehabilitation will help to comply with the permit capacity requirement for the Secondary Process Area.

Scope of Work Feasibility study, design and construction of the existing process flow to maximize conveyance redundancy/distribution, pump sizing to accommodate dry and wet weather operations for the five intermediate lift pumps that lift primary effluent to the aeration basins for secondary treatment.

Challenges Maintaining the required wet weather secondary capacity of 930 MGD while operating efficiently during dry weather flows.

Project Expenses Compared to Previous CIP Versions (All figures are in $1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2019	0				230	1,141	6,569	5,767	6,809	0	20,516
2020	0	0			229	500	656	6,727	5,910	6,811	20,833

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CIP Schedule & Closing Remarks

Anticipated CIP Roll-Out Schedule - TENTATIVE

FY2020 - 2024 CIP SCHEDULE (Revised 10/24/18)

Completed	Date	Meeting Type	Notes
✓	8/20/2018	NA	Distribute & Train Business Case Evaluation Database
✓	9/26/2018	NA	BCE's Due
✓	10/1/2018	Water Review Committee Meeting	Review existing project priorities, identify new project priorities and potentially adjust schedules for projects in order to align with overall CIP projected expenditures previously approved
✓	10/3/2018	Wastewater Review Committee Meeting	
✓	10/18/2018	Executive Leadership Team review of BCEs and Modifications to CIP	Review of New BCEs & CIP Modifications
✓	10/25/2018	Charges Roll-Out Mtg #1 - CIP @ AM/CIP Work Group	1st Member Partner Review of CIP - **Version 1.0**
✓	10/29/2018	GLWA CIP Committee	1st CIP Committee Review of CIP - **Version 1.0**
	11/19/2018	NA	Member Partner & Board Comments Due
	11/30/2018	GLWA CIP Committee	
	12/18/2018	AM/CIP Committee Work Group Meeting	2nd Member Partner Review of CIP - **Version 2.0**
	12/18/2018	GLWA CIP Committee	2nd CIP Committee Review of CIP - **Version 2.0**

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Questions

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Have a Great Day!