CPAC Meeting
Bay View WWTP
October 23, 2017

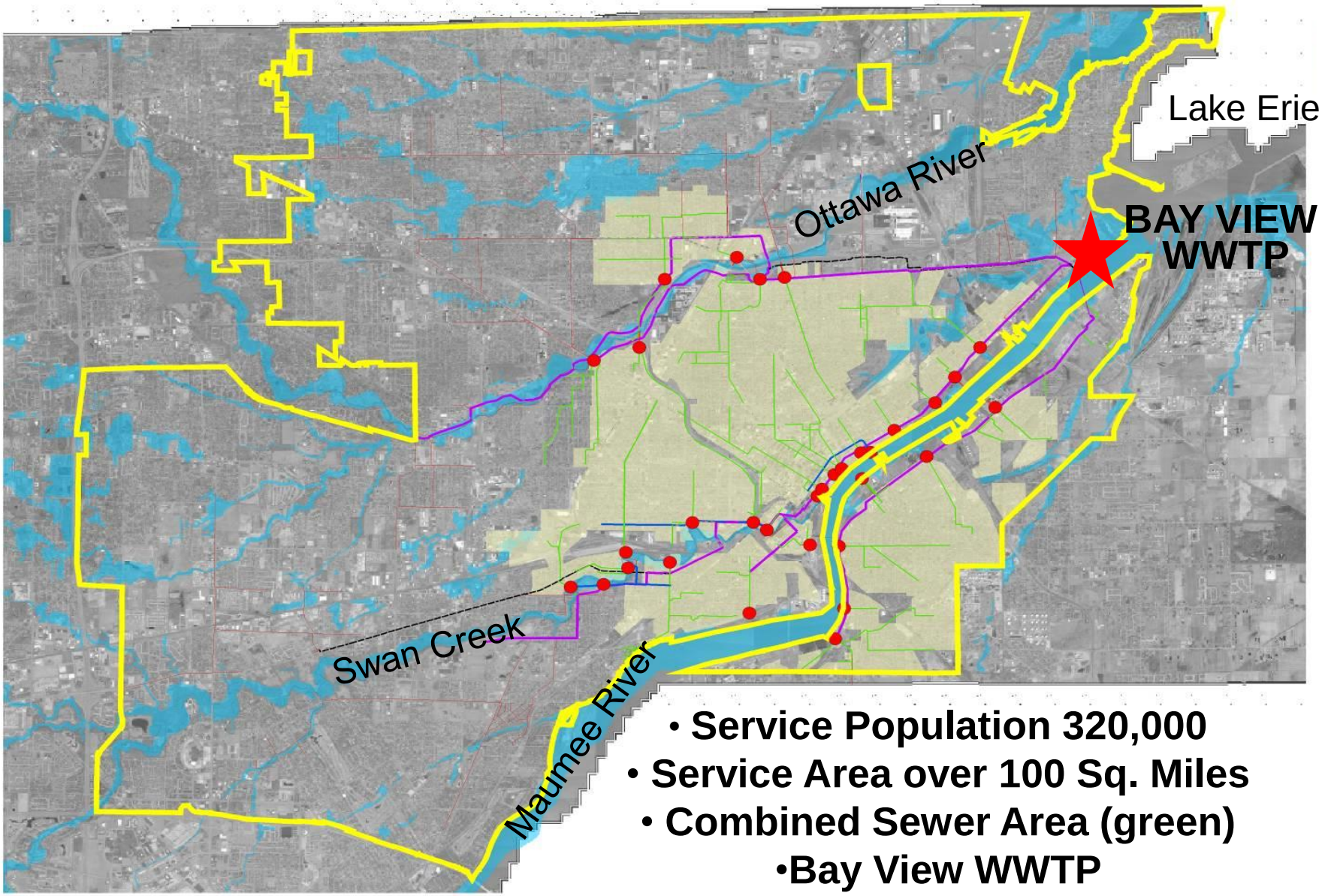
TWI Background & Current Status Summary October 2017

Toledo Waterways Initiative – TWI

Toledo's Wet-Weather Program

- Federal consent decree mandate in 2002
  - Reduce pollution impacts on area waterways from WWTP and sewers due to heavy rains
- Three action components to complete by 2020:
  - ***Eliminate WWTP Bypasses***
  - ***Eliminate Known Sanitary Sewer Discharges***
  - ***Reduce and Control Combined Sewer Overflows***

TOLEDO WASTEWATER SYSTEM



- **Service Population 320,000**
- **Service Area over 100 Sq. Miles**
- **Combined Sewer Area (green)**
- **Bay View WWTP**

TWI Component Approaches

1. **Eliminate WWTP Bypasses**

   Double capacity of plant to 400 mgd by building new wet weather treatment (WWT) facilities using HRC

2. **Eliminate Known Sanitary Sewer Discharges**

   Remove I&I, build relief sewers & build storage

3. **Control Combined Sewer Overflows**

   Develop & implement a CSO LTCP - I&I Removal, Sewer Separation, Regulator Improvements; & Pipeline, Tunnel and Basin Storage

TWI Component Approaches

1. Eliminate WWTP Bypasses

Double capacity of plant to 400 mgd by building new wet weather treatment (WWT) facilities

1. Eliminate WWTP Bypasses
Wet Weather Treatment Facilities at Bay View

1. Eliminate WWTP Bypasses
High Rate Clarification (HRC) and EQ Basin

1. Eliminate WWTP Bypasses
High Rate Clarification (HRC) Facility

1. Eliminate WWTP Bypasses
HRC Piping Gallery & Sludge Pumps

1. Eliminate WWTP Bypasses

So where are we at today!

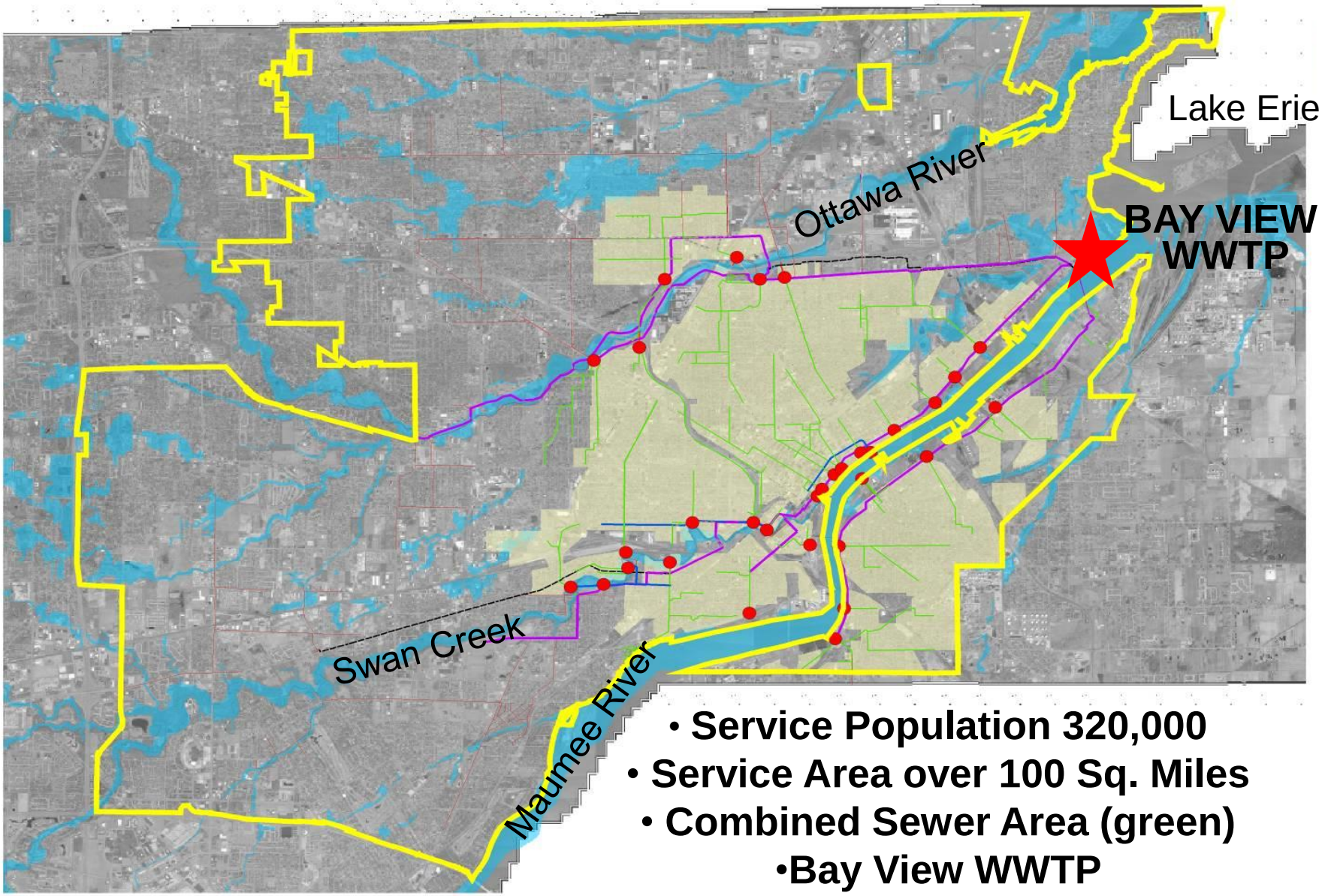
- ***12 projects at a cost of $135 M***
- ***Done! Zero bypasses since October 2006.***
- ***144 MG/year in average year - <u>eliminated</u>***
- ***Wet weather facilities are used 4-8 times/year***
- ***With 25 MG of storage provided, HRC discharges only 1-3 times/year***

TWI Component Approaches

2. Eliminate Known Sanitary Sewer Discharges

Remove I&I, build relief sewers & build storage

TOLEDO WASTEWATER SYSTEM



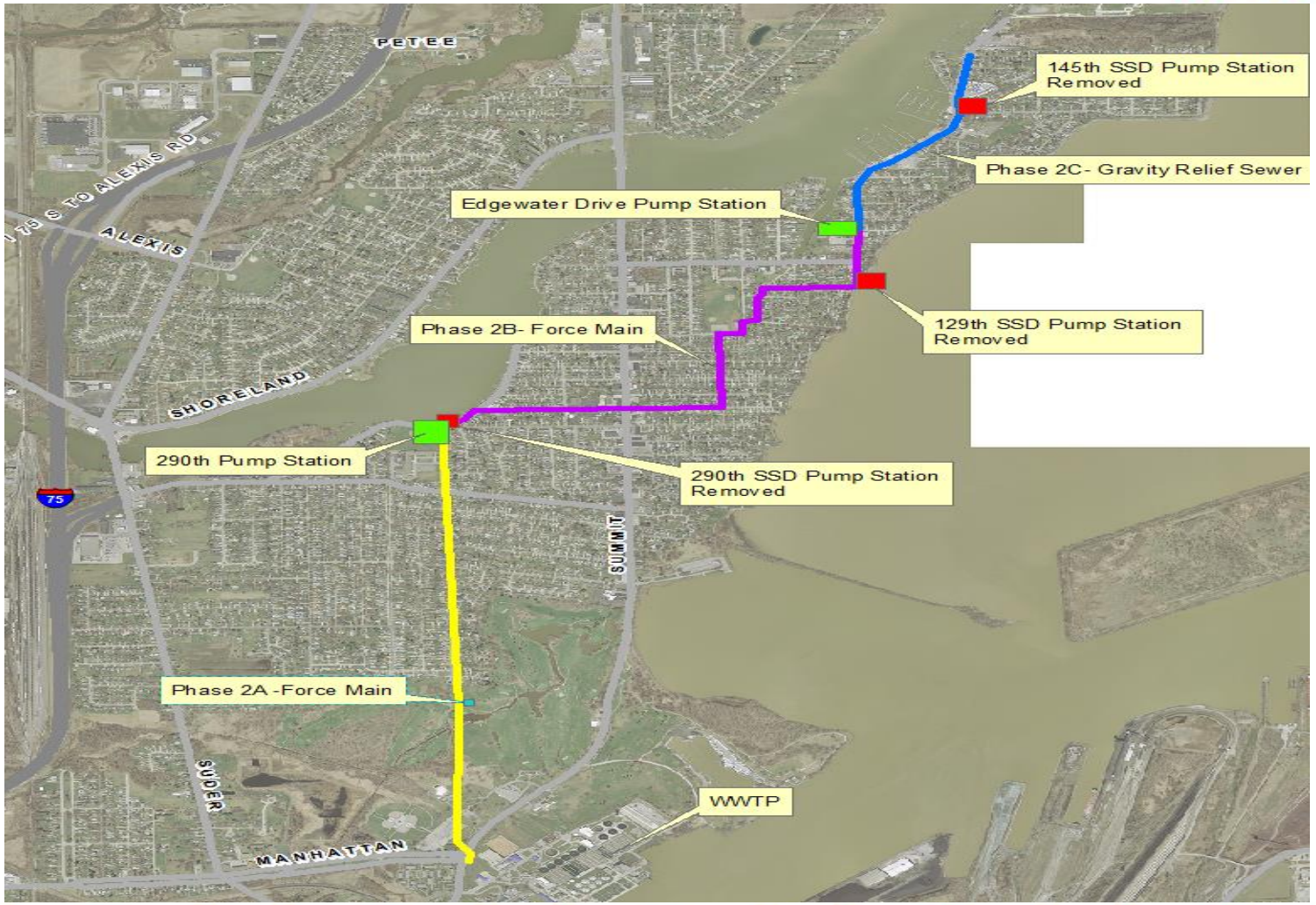
- **Service Population 320,000**
- **Service Area over 100 Sq. Miles**
- **Combined Sewer Area (green)**
- **Bay View WWTP**

2. Eliminate Sanitary Sewer Discharges

Eliminated 10 SSDs to date:

- Point Place (3)
- River Road (3)
- Detroit Avenue (1)
- Wyndhurst (1)
- Parkside (1)
- Fernhill (1)

2. Eliminate Sanitary Sewer Discharges
Point Place SSD Elimination



2. Eliminate Sanitary Sewer Discharges

Where are we today?

- ***8 total projects at a cost of $71 M***
- ***3 basins built – 14 MG of storage***
  - ***Brookford Park, Parkside & Detroit***
- ***Relief sewers and I&I removal***
- ***Original list of Ten eliminated 2014, 2 more ID'd***
- ***The last two Arlington & Heatherdowns - 2017***
- ***36 MG/year in average year – <u>eliminated</u>***

TWI Component Approaches

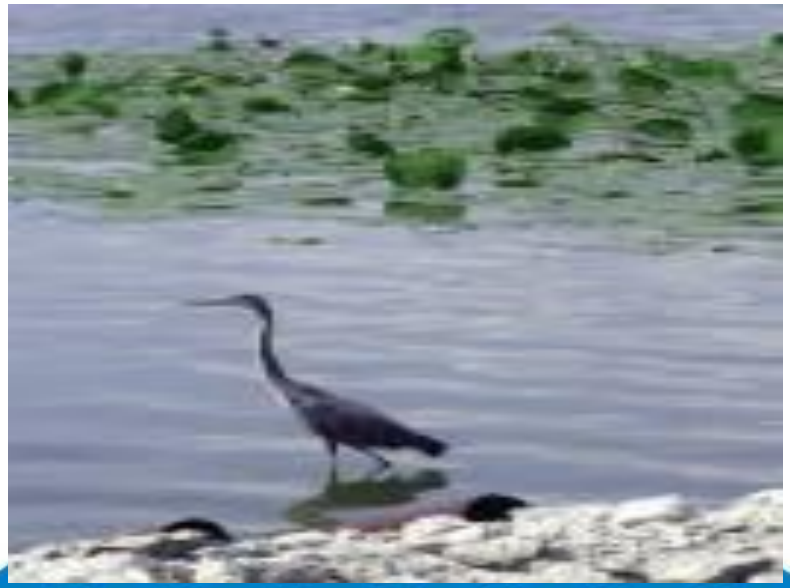
3. Control Combined Sewer Overflows

Develop & implement a CSO LTCP - I&I Removal, Sewer Separation, Regulator Improvements; & Pipeline, Tunnel and Basin Storage

3. Control Combined Sewer Overflows
CSO Long Term Control Plan - LTCP

- **Goals & Targets**
  - **Reduce Overflow Locations from 32 to 24**
  - **Reduce Annual Overflow Frequencies from 30+ to under 4**
  - **Reduce Overflow Volumes by 77%**
  - **Reduce Pollutant Discharges by 89%**

- ***Improve Water Quality & Preserve Resource for Future Generations***



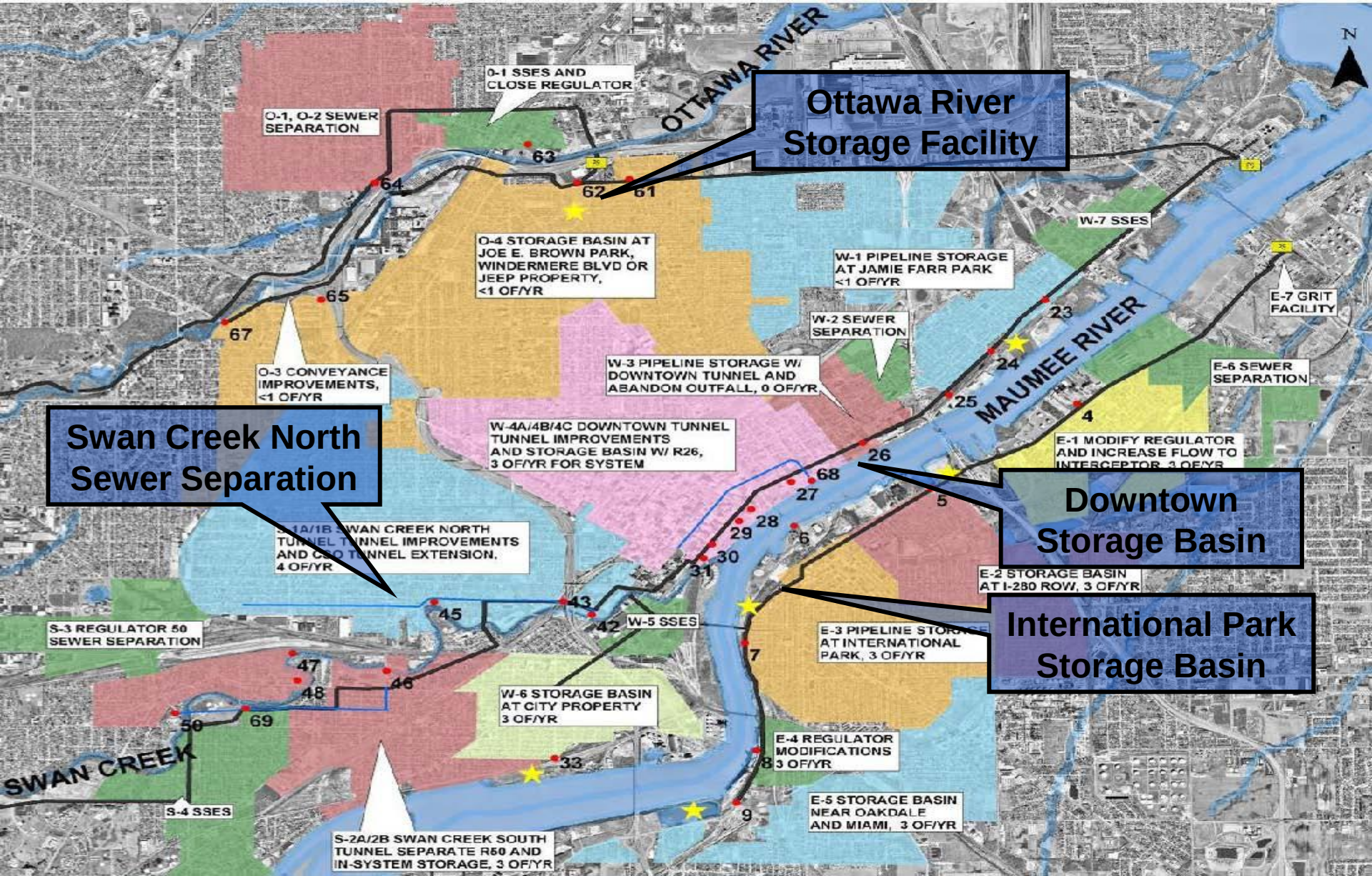
3. Control Combined Sewer Overflows
LTCP Progress Status Summary – SEP 2017

City of Toledo
Toledo Waterways Initiative
Segment 3 - CSO LTCP Implementation Progress

Number	Project	LTCP Study	Facility Site Planning	Preliminary Design	Final Design			Construction
					60%	90%	100%	
1	O-1 Lockwood/Devilbiss SSES	Done	n/a	n/a	n/a	n/a	n/a	n/a
2	O-2 Lockwood/Devilbiss Sewer Separation	Done	Done	Done	Done	Done	Done	Done
3	W-1 Ash/Columbus Storage Pipeline	Done	Done	Done	Done	Done	Done	Done
4	E-6 Wheeling Area SSES and Sewer Separation	Done	Done	Done	Done	Done	Done	Done
5	S-3 Highland Area SSES and Sewer Separation	Done	Done	Done	Done	Done	Done	Done
6	S-4 Woodsdale Area SSES & Inflow Reduction	Done	Done	Done	Done	Done	Done	Done
7	W-2 Ash Area SSES & Sewer Separation	Done	Done	Done	Done	Done	Done	Done
8	W-5 Williams/Knapp Area SSES & Inflow Reduction	Done	Done	Done	Done	Done	Done	Done
9	W-7 New York Area SSES & Inflow Reduction	Done	Done	Done	Done	Done	Done	Done
10	W-6 Maumee Storage Basin	Done	Done	Done	Done	Done	Done	Done
11	E-7 Bay View Grit Facility	Done	Done	Done	Done	Done	Done	Done
12	O-3 Ayers/Monroe Storage/Conveyance Pipeline	Done	Done	Done	Done	Done	Done	Done
13	E-5 Oakdale Storage Basin	Done	Done	Done	Done	Done	Done	Done
14	S-1A Swan Creek North Tunnel Optimization	Done	Done	Done	Done	Done	Done	Done
15	S-2A Swan Creek South Tunnel Optimization	Done	Done	Done	Done	Done	Done	Done
16	W-4A Downtown Tunnel Optimization	Done	Done	Done	Done	Done	Done	Done
17	O-4A Ottawa River Storage Facility (Conveyance)	Done	Done	Done	Done	Done	Done	Done
18	O-4B Ottawa River Storage Facility (Basin)	Done	Done	Done	Done	Done	Done	Ongoing
19	E-2 Dearborn Storage Pipeline	Done	Done	Done	Done	Done	Done	Done
20	E-3 International Park Storage Basin	Done	Done	Done	Done	Done	Done	Ongoing
21	S-1B Swan Creek North Sewer Separation	Done	Done	Done	Done	Done	Done	Ongoing
22	W-4C Downtown Storage Basin	Done	Done	Done	Done	Done	Done	Ongoing
23	S-2B Swan Creek South In-System Storage	Done	Done	Done	Done	Done	Done	Ongoing
24	E-1 Paine Regulator Modifications	Done	Done	Ongoing				Starts 9/2018
25	E-4 Fassett Regulator Modifications	Done	Done	Ongoing				Starts 9/2018

Progress Through October 23, 2017

3. Control Combined Sewer Overflows
Map of TWI CSO Projects in Construction



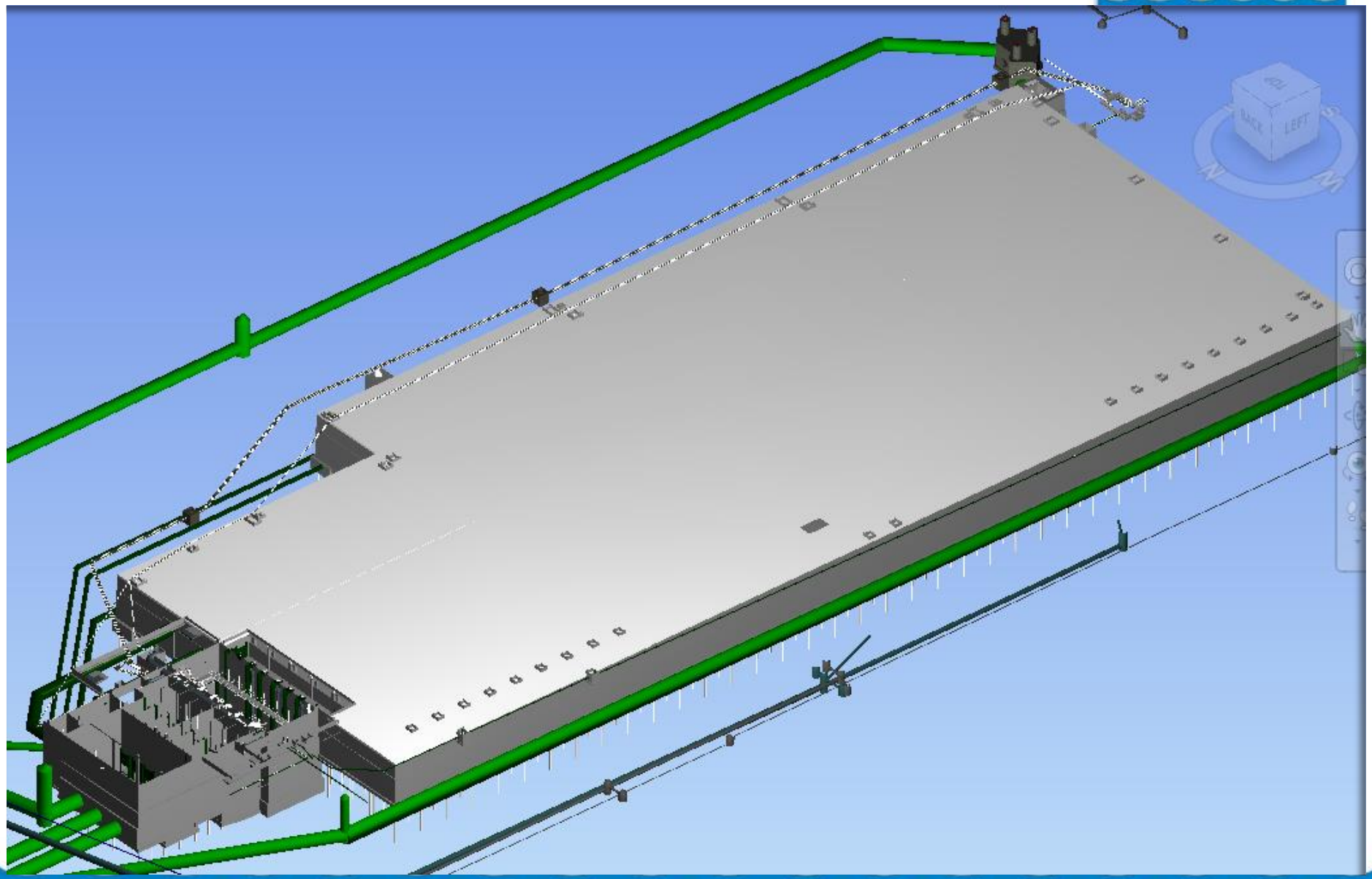
3. Control Combined Sewer Overflows

Project Highlight :

Ottawa River Storage Facility (ORSF)

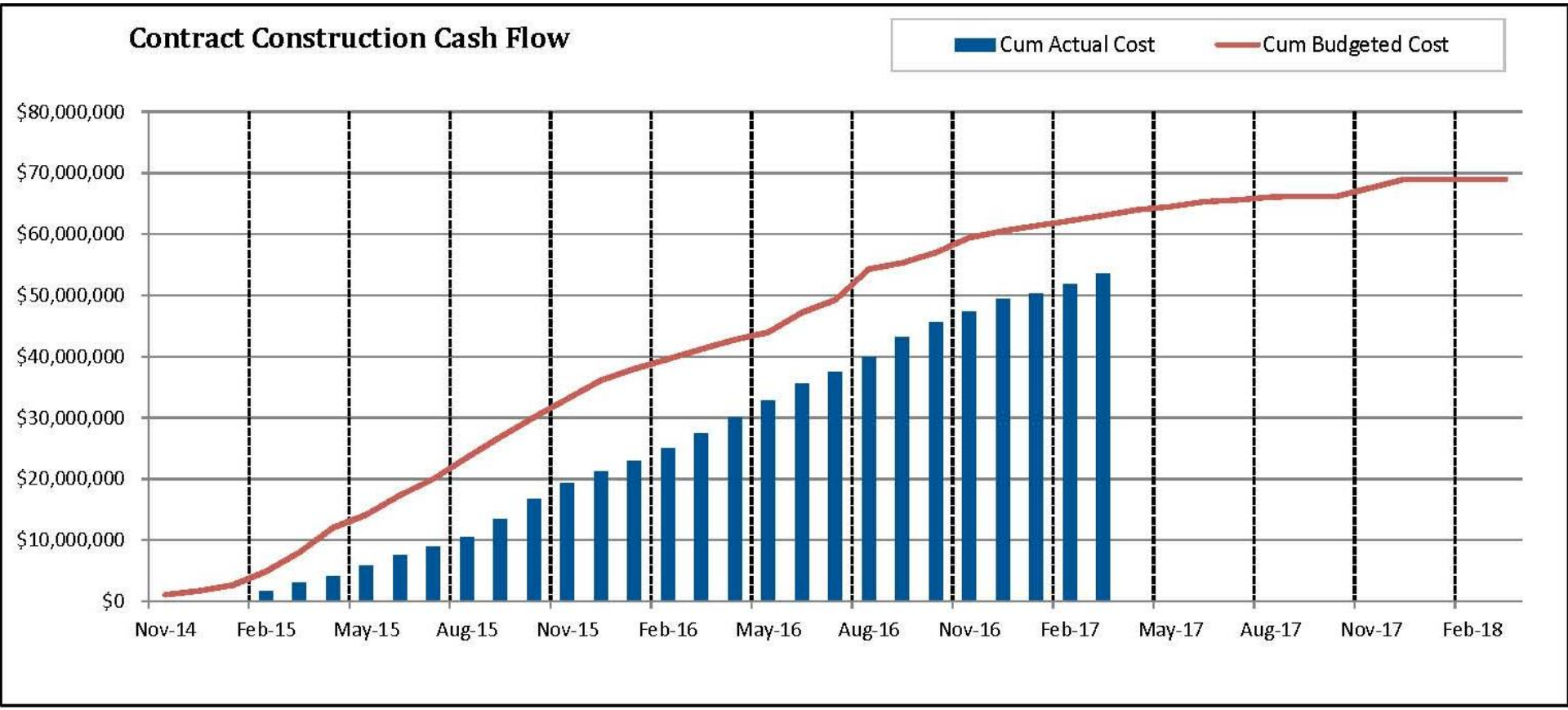
- ***Our largest single TWI project @ $70 M***
- ***Located in Joe E. Brown Park***
- ***36 MG of underground storage***
- ***212 MGD capacity influent pumping station***
- ***450,000 cubic yards of excavation***
- ***50,000 cubic yards of concrete***

Ottawa River Storage Facility
Underground Basin & Pumping Station Exposed

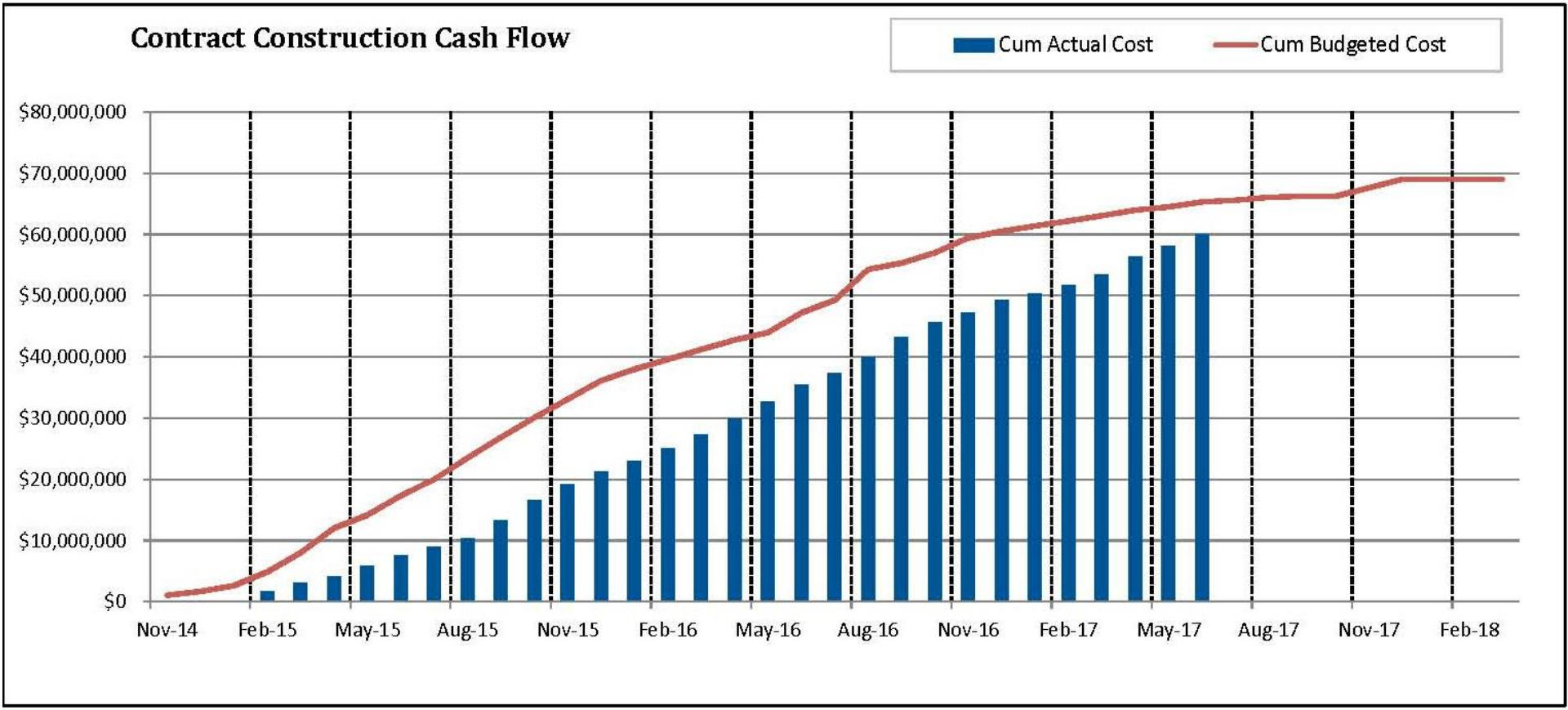


Ottawa River Storage Facility
Pumping Station Section View

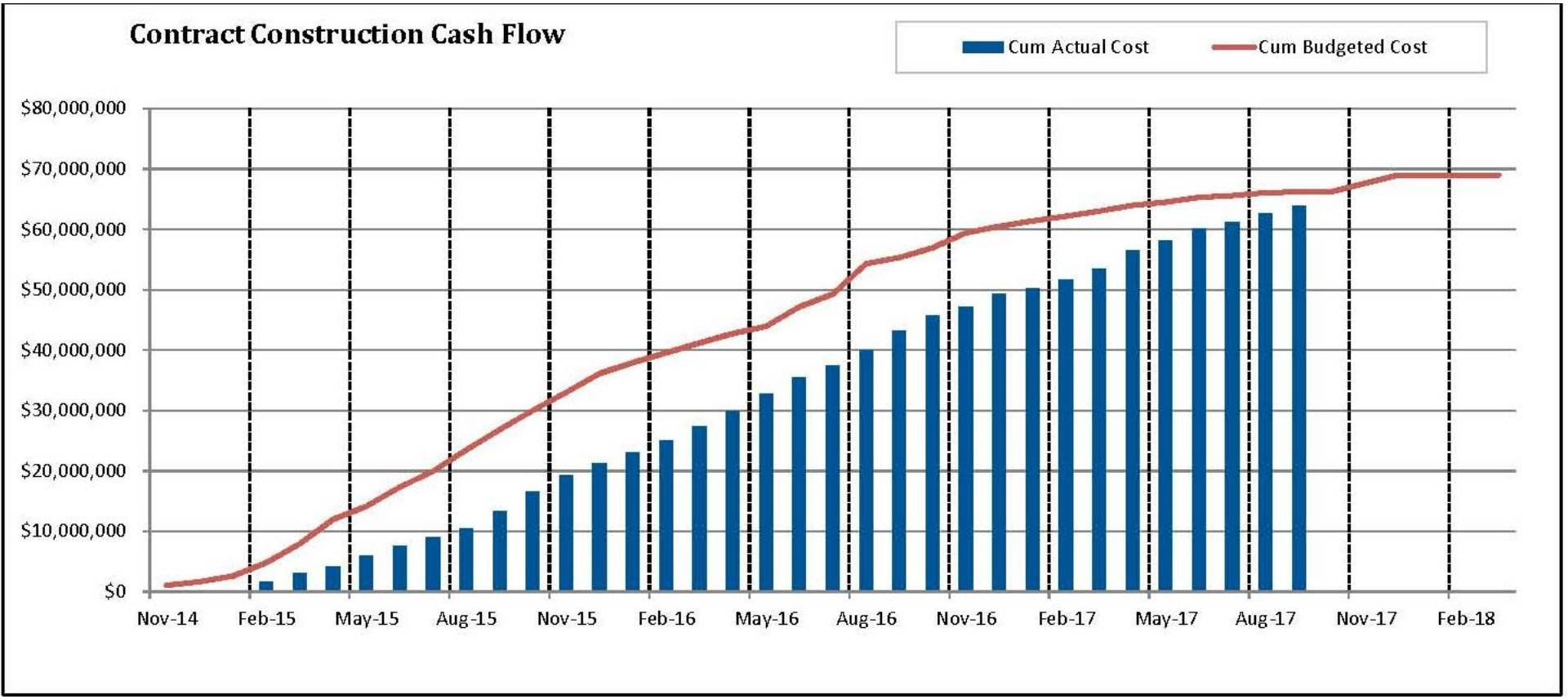
Ottawa River Storage Facility – Thru March 2017 Costflow Progress



Ottawa River Storage Facility – Thru June 2017 Costflow Progress



Ottawa River Storage Facility – Thru Sept. 2017 Costflow Progress



Ottawa River Storage Facility – DEC 2015

North End Basin Mass Excavation – Cells 2 and 1

Ottawa River Storage Facility – JUL 2016

Left - Basin Top Deck Complete
Middle - Under Construction
Right - Open Basin to Bottom Slab

Ottawa River Storage Facility– JUL 2016

Basin Cell 2 and Cell 1 & PS Far Right

Ottawa River Storage Facility – Mar 2017

Basin Cell 1 Top Deck and Pumping Station

Ottawa River Storage Facility – May 2017

Pumping Station Block Walls – View NW

Ottawa River Storage Facility – May 2017

Pumping Station South Wall

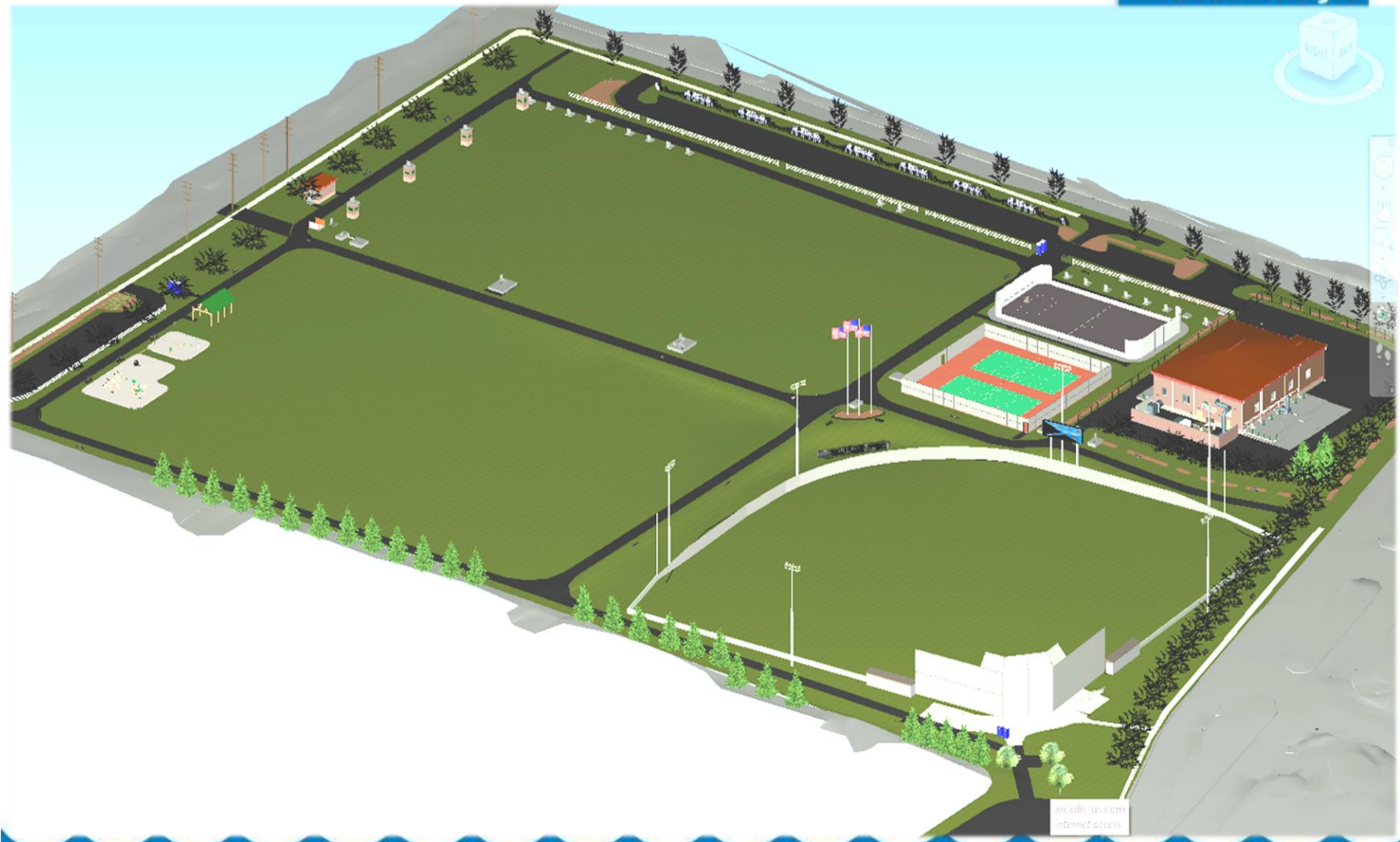
Ottawa River Storage Facility – August 2017

Influent Pumping Station

Ottawa River Storage Facility – September 2017

Influent Pumping Station – Discharge Pipes

Ottawa River Storage Facility
Planned Park Restoration



Ottawa River Storage Facility – September 2017

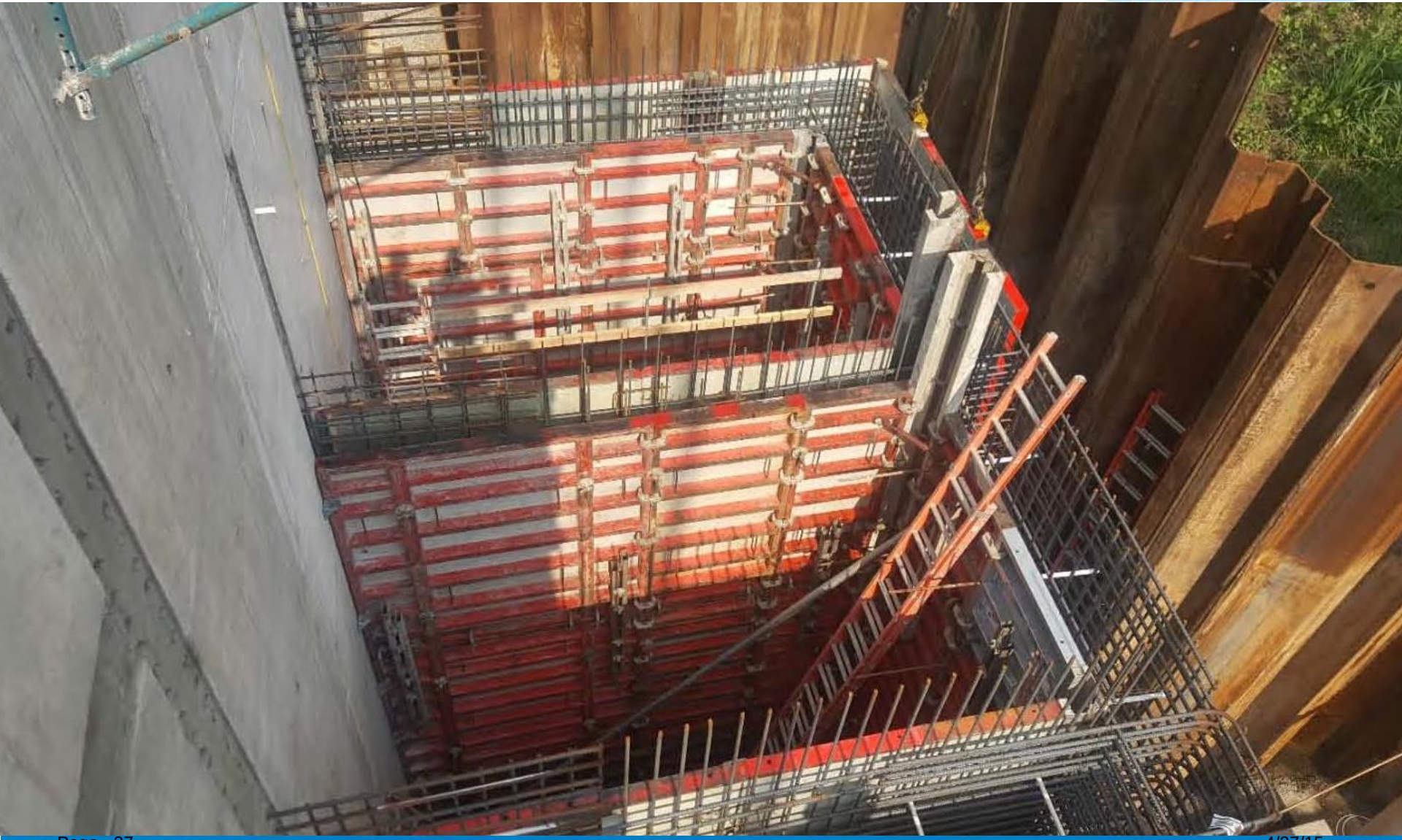
Sitework Progress – Tennis Courts

Ottawa River Storage Facility – September 2017

Sitework Progress – Playground Equipment

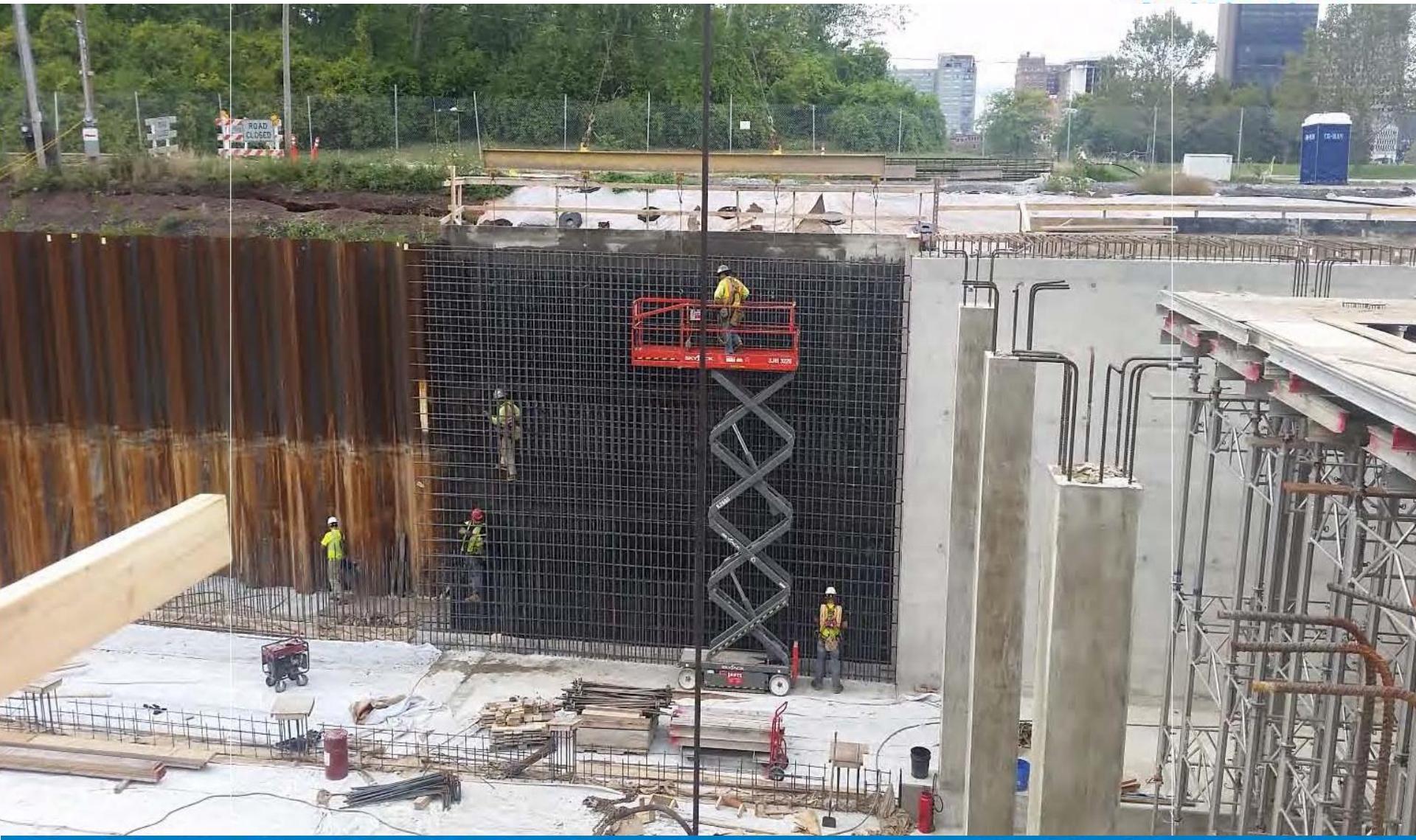
International Park Storage Basin – Sept. 2017

Dewatering Pumping Station – Midlevel Walls



International Park Storage Basin – Sept. 2017

Placing Rebar - West Basin Walls

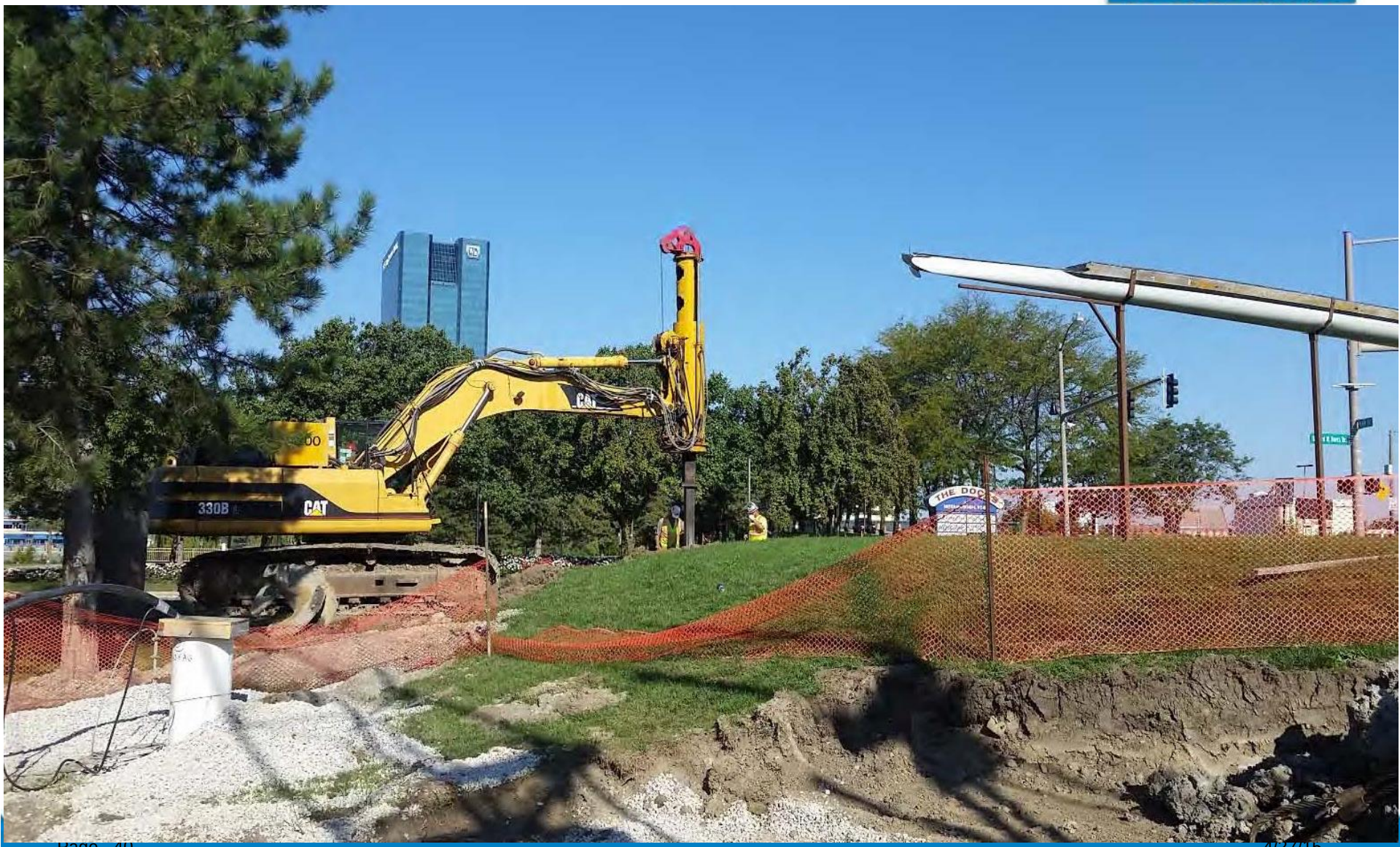


International Park Storage Basin – Sept. 2017

Formwork & Rebar – North End Deck Slab

International Park Storage Basin – Sept. 2017

Placing Rebar - West Basin Walls



3. Control Combined Sewer Overflows

Where are we today?

CSO Storage in the System will be significant!

- *95 MG Combined Sewer System storage at completion*
  - *20 MG of tunnel storage completed in 1990s*
  - *15 MG of storage in 5 projects completed in last 5 years*
  - *36 MG of storage in start-up – Ottawa (Joe E. Brown)*
  - *24 MG of storage in construction – Int'l Park & Downtown*

3. Control Combined Sewer Overflows

Where are we today?

- *Design 98% complete & Construction 70% complete*
- *7 of 8 CSO outfalls eliminated….1 to go*
- *470 MG /year on average will be eliminated when complete*
  - *8 Inflow reduction & sewer separation projects complete*
  - *3 Optimization projects for ex. CSO Storage Tunnels complete*
  - *6 Storage/conveyance projects complete*
  - *1 Storage project in start-up*
  - *4 Storage projects & 1 sewer separation under construction*
  - *2 Regulator projects in design*

TWI – Total Program…
Where are we today?

We are over 84% program complete & on schedule:

- ***All 145 Consent Decree milestones to date have been met***
- ***66 on Phase 1 and 79 on Phase 2***

Out of 45+ projects, 9 remain:

- ***1 in start-up***
- ***6 under construction***
- ***Final 2 in design***

CSO LTCP Construction Safety– September 2017

PHASE 2 LTCP PROGRAM-TO-DATE (92 Months – from 02/10 to 09/17)							
Contract	Total PH Worked (1)	Recordable Injury/Illness Rate (IIR) (2)	IIR Frequency Rate (2) x 200K /(1) (3)	Lost Work Day Injury (LWDI) (4)	Days Lost Due To LWDI (5)	LWDI Frequency Rate (4) x 200K /(1) (6)	Severity Rate (5) x 200K/(1) (7)
O-2A	11,191	0	0.0	0	0	0.0	0.0
O-2B	48,140	0	0.0	0	0	0.0	0.0
O-2C	19,948	0	0.0	0	0	0.0	0.0
O-3	24,735	0	0.0	0	0	0.0	0.0
W-1	32,594	0	0.0	0	0	0.0	0.0
E-7	74,288	1	2.7	0	0	0.0	0.0
W-6	38,519	1	5.2	1	6	5.2	31.2
E-5	86,491	2	4.6	1	13	2.3	30.1
W-4A/S-1A/S-2A	69,837	1	2.9	0	0	0.0	0.0
W-4A (Madison)	1,598	0	0.0	0	0	0.0	0.0
E-2	51,070	0	0.0	0	0	0.0	0.0
O-4A/O-4B	438,179	8	3.7	2	25	0.9	11.7
E-3	44,226	2	9.0	1	11	4.5	49.7
W-4C	4,293	0	0.0	0	0	0.0	0.0
PROGRAM TOTAL	**934,642**	**15**	**3.2**	**5**	**55**	**1.1**	**11.8**

- ***935,000 const. hours + 355,000 eng. hours = 1.3 M total***
- ***15 recordable injuries. 3.2 IIR. Nat. ave. is 3.5***
- ***5 lost workdays due to injuries. 1.1 LWDI. Nat. ave. is 1.1***

- *Rudolph Libbe*
- *Barton Malow*
- *Mosser*
- *ES Wagner*
- *Gleason*
- *Anderzack Pitzen*
- *Crestline*
- *Salenbien*
- *Inland Waters*
- *Miller Brothers*
- *PHC*
- *Ed Kelly & Sons*
- *Irish*
- *Kokosing*
- *Doetsch*
- *Hank's Plumbing*
- *Underground Utilities*
- *LD A'gostini & Sons*

TWI Program Participating General Contractors

TWI Program Participating Planning/Design/CM/PR Firms

The Black & Veatch Team

Jones & Henry

ARCADIS

Tetra Tech

Stantec

- *TTL*
- *Hull & Associates*
- *Vision Design Group*
- *G Stephens*
- *Northwest Consultants*
- *Funk Lutke Skunda*
- *Hart Associates*

TWI – Total Program….
Where are we today?

Program cost @ complete projection: $527 M

1. **Eliminate WWTP Bypasses - $135 M & 12 projects**

   Done! Zero bypasses since 2006 144 MG/yr. removed

2. **Eliminate Sanitary Sewer Overflows - $71 M & 8 projects**

   Completed in 2014/2017 36 MG/yr. removed

3. **Control Combined Sewer Overflows - $321 M; 25 projects**

   Design ~98% complete & Const. ~70% complete

   When complete 470 MG/yr. removed

Questions??

Please visit: *toledowaterwaysinitiative.com*