

WELCOME

FRSG 20th Anniversary Annual Meeting

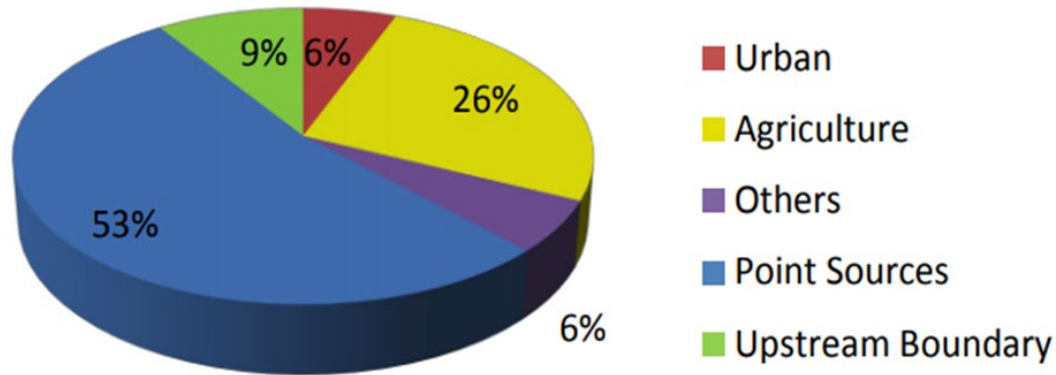
November 9, 2023

**Local Agency Upgrades for Watershed
Improvements**



WWTP Phosphorus Removal

Fox Total, long-term average annual TP load



Area between Stratton Dam and Fox River confluence with Illinois River
Determined from calibrated HSPF model runs for 1991-2011

- Improve Gulf Hypoxia
- Improve Fox River
- Watershed Approach with Fox River Study Group
- Phosphorus Reduction by 2/3
- Mandated in NPDES Permit

Fox Metro Phosphorus Improvements – Key Points

- **Almost \$100 million spent to date just on capital improvements**
 - South Plant -- \$89 million
 - Waubonsie Interceptor -- \$5.5 million
 - North Plant -- \$4 million
- **All completed by December 2019**
- **Limit of 1.0 mg/l annual average effective June 2021**
- **Limit of 0.5 mg/l annual geometric mean effective by Dec. 2030**



Fox Metro South Plant Overview

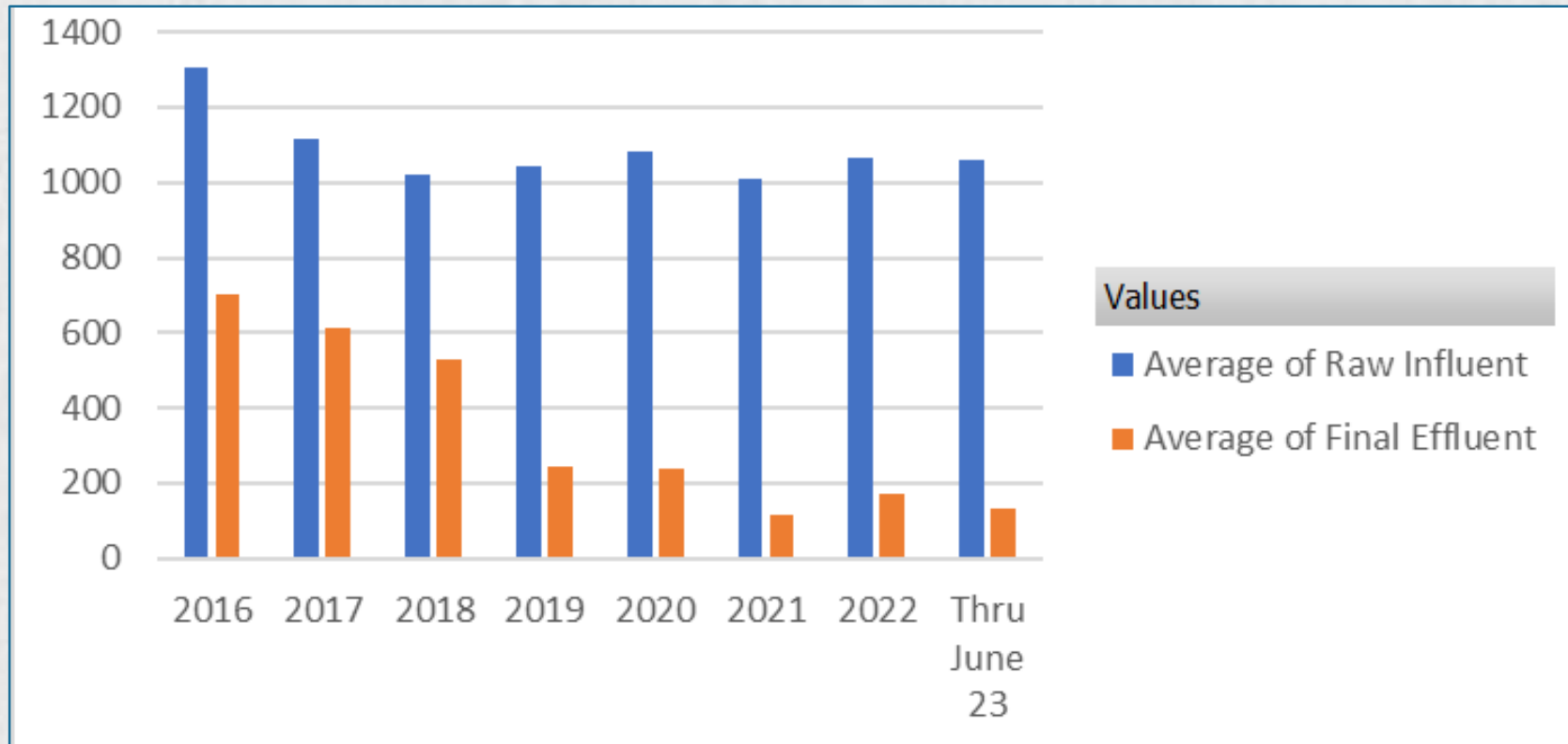


Fox Metro Phosphorus Improvements – Operationally Challenging

- 1.5 years of optimization
- Biological phosphorus removal not working well in winter
- Filament problems
- Lots of struvite
- Small operational margin of safety with future NPDES permit limits



Fox Metro Phosphorus Removal Loadings



Fox Metro Phosphorus Removal Results

4 years of Fox Metro Phosphorus Removal. Effluent Total P in mg/L

	August 2019- July 2020	August 2020- July 2021	August 2021- July 2022	August 2022- July 2023
Rolling Annual Average	0.71	0.41	0.44	0.71
Monthly Minimum	0.11	0.13	0.13	0.17
Monthly Maximum	3.30	1.49	2.37	1.71

Fox Metro Phosphorus Improvements – Key Points

- Meeting a 1.0 mg/l limit = \$6.87 present worth cost per pound of P removed (capital costs plus 20 year present value)
- Meeting a 0.5 mg/l limit = \$7.22 per pound of P removed
- Meeting a 0.1 mg/l limit = \$71.97 per pound of P removed
- Submitted to IEPA in 2016 as part of the phosphorus removal feasibility study as part of NPDES permit compliance
- Ratepayer implications?



Batavia Wastewater Improvements



**CITY OF
BATAVIA**



Batavia Wastewater Improvements – Key Points

- **Phase 1 Rehabilitation – 2019 Completion -21 Million**
 - Implement Chem – P for phosphorus removal
 - Construction New Main Building and Digesters
 - Rehabilitated Anaerobic Digester and Excess Flow Disinfection
- **Phase 2A – 2023 Start – 26 Million**
 - Construction New Headworks, Primary Clarifiers, Additional Excess Flow Capacity, and Primary Clarifier with Raw Sewage Pump Stations
 - Replace WAS Thickening and UV Disinfection
 - Rehabilitate Final Clarifiers and Aeration Basins



Batavia Wastewater Improvements – Key Points

- **Phase 2B Expansion - Future**
 - **Construction of BNR for Expanded Facility**
 - **4.9 MGD to be able to treat to 0.5 mg/l**



City of Batavia Waste Water Plant



Geneva Wastewater Improvements

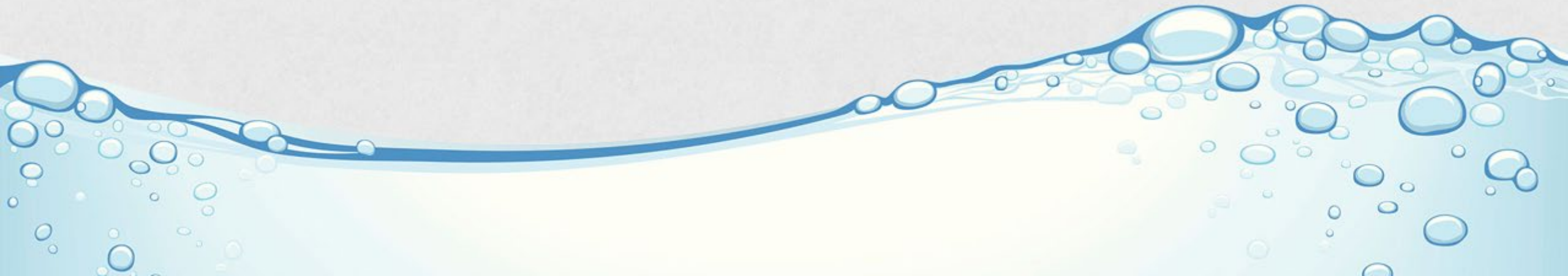


GENEVA



Geneva Wastewater Improvements – Key Points

- **Rehabilitation and Plant Modifications – 2019 Completion**
 - APWA Fox River Branch Award Winner
 - Pumping Station, Metering, Grit Removal, Blower, Secondary Clarifier, Return Activated Sludge (RAS) / Waste Activated Sludge WAS Improvements
 - Aeration Tank Modification to Implement A2/O Process to Achieve Enhanced Biological Phosphorus Removal (EBPR) and Denitrification
 - Currently Meeting the 1 mg/l permit limits



City of Geneva Wastewater Plant



St. Charles Improvements



CITY OF
ST. CHARLES

ILLINOIS ♦ 1834



St. Charles West Side Wastewater Improvements – Key Points

- **Westside Plant Phase 3 Modifications – 2023 Completion – 21 M.**
 - **Increase Capacity to 1.05 MGD**
 - **Pumping Station, Grit Removal, Blower, Secondary Clarifier, Digester, Return Activated Sludge (RAS) / Waste Activated Sludge WAS Improvements, UV, Belt Press and Sludge Storage**
 - **Additional Tertiary Disc Filters, Aeration Tank Modification to Implement Bardenpho Biological Phosphorus Removal**
 - **Plant is designed to meet future 0.5 mg/l Phosphorus permit limits**



City of St. Charles West Wastewater Plant



St. Charles Main Plant Wastewater Improvements – Key Points

- **Main Plant Modifications – 2019 Completion – 16 Million**
 - **Blower, Digester, Sludge Storage Tanks, Recycled Pump Station and Ferric Storage Tanks.**
 - **Aeration Tank Modification to Implement a Flexible Biological Phosphorus Removal Process**
 - **Plant is designed to meet Current 1.0 mg/l and Future 0.5 mg/l Phosphorus Permit Limits at the Current Capacity**



City of St. Charles Main Wastewater Plant



7th Avenue Creek Flood Reduction and Stream Rest. – Key Points



- 7th Avenue Creek Phase 1 – 2022 Completion – 3.6 Million
- 2022 APWA Fox Valley Branch Award
- Project Benefits
 - Removal of 314 Tons of Sediments
 - Reduction of 17,000 Lbs. of TSS Per Year
 - Reduction of 287 Lb. of P and 715 Lbs. of N Per Year
 - Improved FEMA Map and 50 Yr. Flood Event



Questions?



BEFORE



AFTER