CITY OF ASTORIA

Wastewater Treatment Plant Update and Industrial Pretreatment

Council Work Session
August 31, 2020

Overview

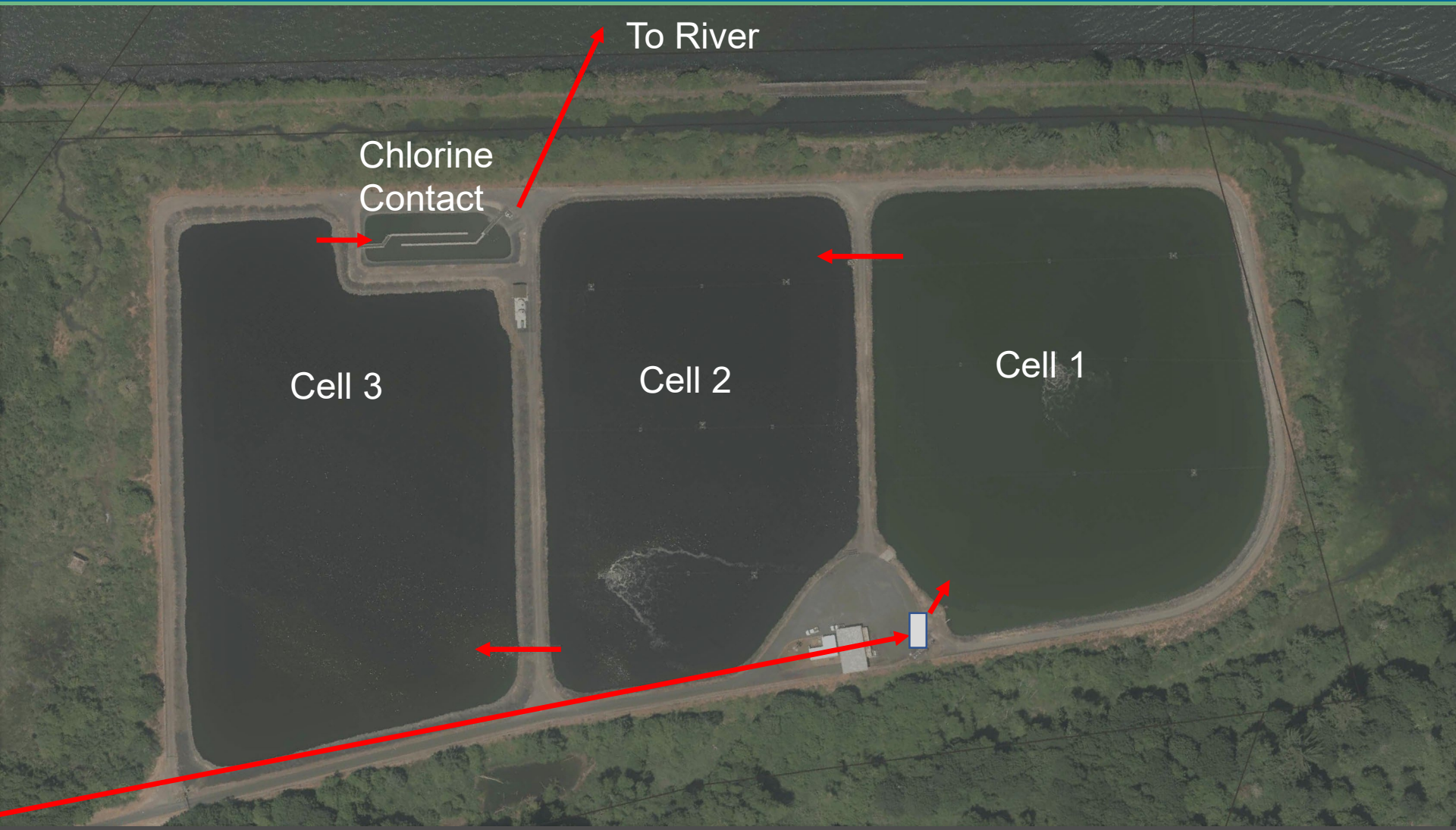
- Background
  - Wastewater Treatment Plant
  - 2012 Wastewater Facilities Plan
- Discovery Process
  - Increased Influent Loads and Collection System Impacts
  - 2019 Wastewater Facilities Plan Update
- Status Update
- Industrial Pretreatment Program
- Next Steps

Terminology

- Wastewater Treatment Plant (WWTP)
- Influent
- Effluent
- BOD_5 – Biochemical Oxygen Demand
- TSS – Total Suspended Solids
- Fermentation Beverage Cluster
  - Breweries, Cideries and Distilleries

Astoria Wastewater Treatment Plant

Astoria Wastewater Treatment Plant



Astoria Wastewater Treatment Plant

Background

- Constructed in 1974
- Flows
  - Permitted Dry Weather Flow = 4.0 mgd
  - Average Dry Weather Flow = 1.5 mgd
  - Average Wet Weather Flow = 12.6 mgd
  - Peak Flow = 20 mgd
- Process
  - Manual Screening
  - No Grit Removal
  - 3-Stage Lagoon System
  - Gas Chlorine for Disinfection

Astoria Wastewater Treatment Plant

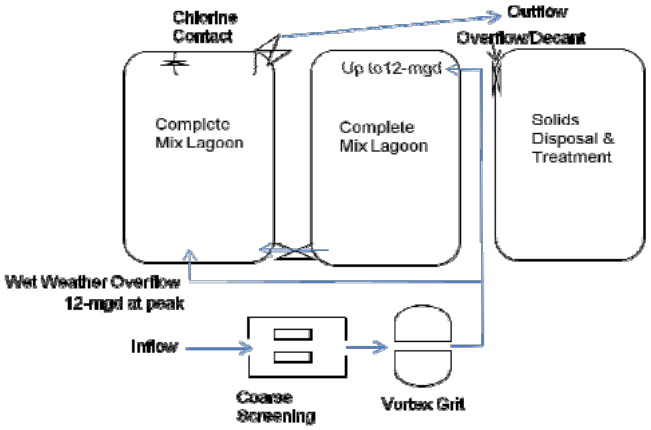
Background

- Issues Identified in 2012 Facilities Plan
  - Solids has never been removed from ponds
  - Cell #1 is full of grit and solids (< 40% of capacity)
  - Cell #2 and #3 has significant solids accumulation
  - Use of gas chlorine potential safety issues
  - pH violations during summer months
  - NPDES Permit is up for renewal
    - On Administrative Extension
    - Planned renewal in 2022

2012 Wastewater Facilities Plan

Recommended WWTP Improvements

- Keep lagoon treatment system
- Phase I – Disinfection Upgrades
- Phase II – New Headworks
- Phase III – Clean Lagoons
- Phase IV – Long-term Solids Management
- Phase V – New Lab/Office



Recent Successes in Wastewater

- Dechlorination and pH Adjustment Facilities Constructed
- Pump Station #1 Upgraded
- NPDES Permit Renewal Application Submitted on Time

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- NPDES Permit Renewal Application Submitted on Time
- Odor Control Pilot Project at Treatment Plant and PS#1
- Closed RV Dump Station
- Headworks Concept Plan Completed
- Wastewater Facilities Plan Update Completed
- Strategic Energy Management – Reducing Power Usage
- CSO projects reduced overflow volume by ~90%

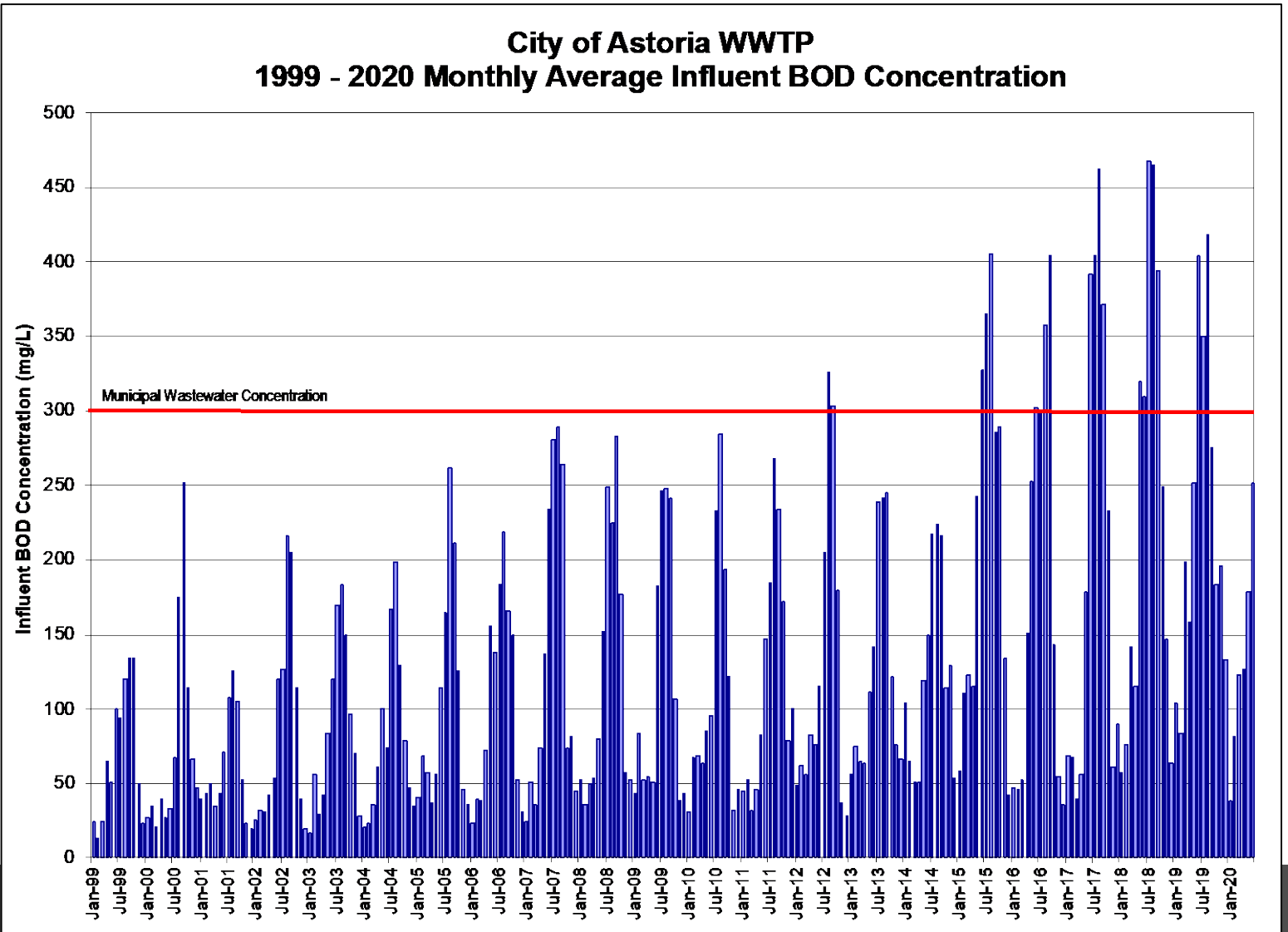
Discovery Process

Since 2012 WWTP Facilities Plan

- Increase in WWTP influent/effluent BOD_5 concentration
- Increase in WWTP effluent BOD_5 NPDES permit exceedances
- Odors at Pump Station No. 1
- Increase in treatment/odor issues in summer and fall
- Implemented bioaugmentation (bugs) in collection system

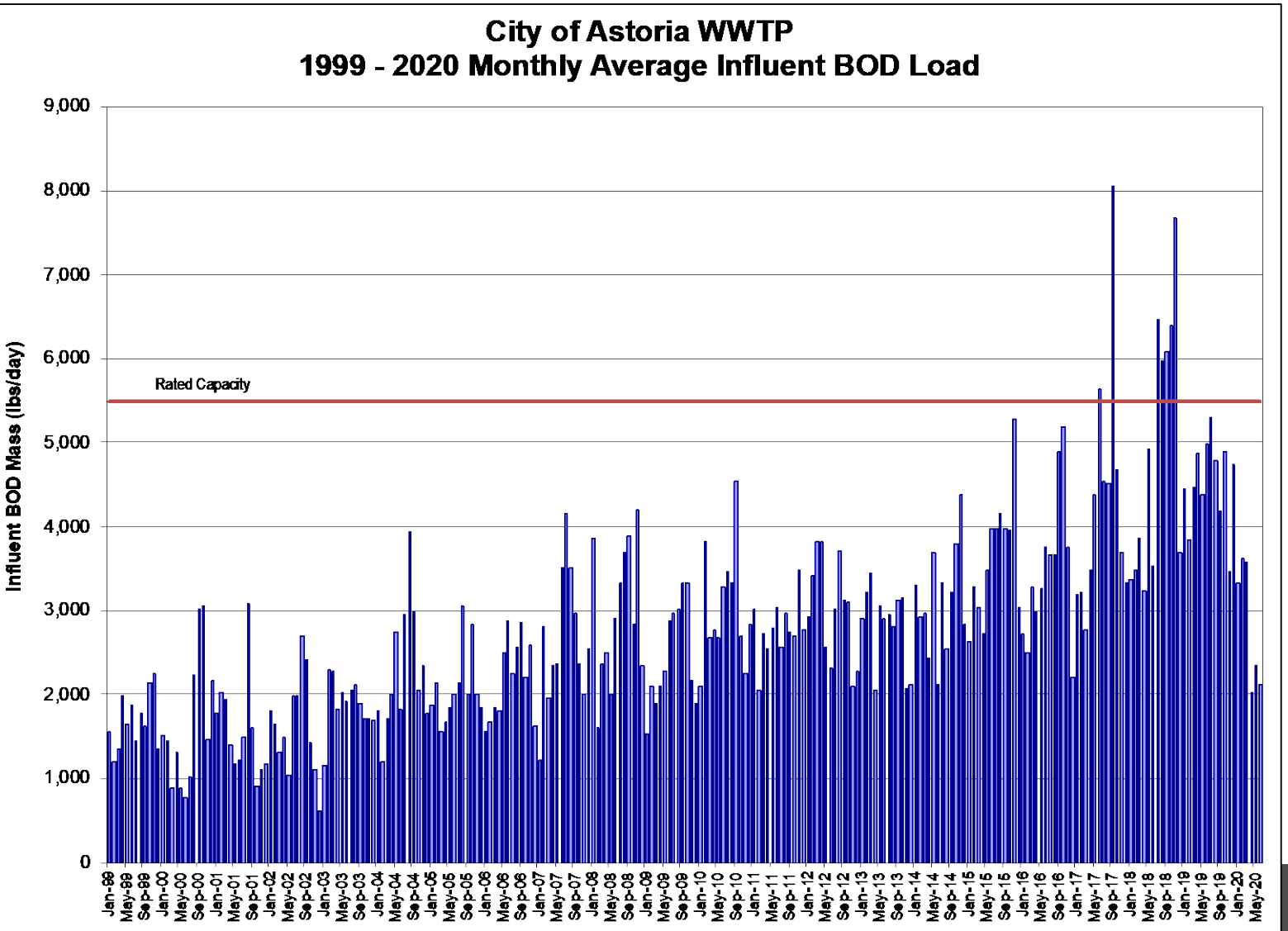
Discovery Process

Increased Wastewater BOD_5 Concentration



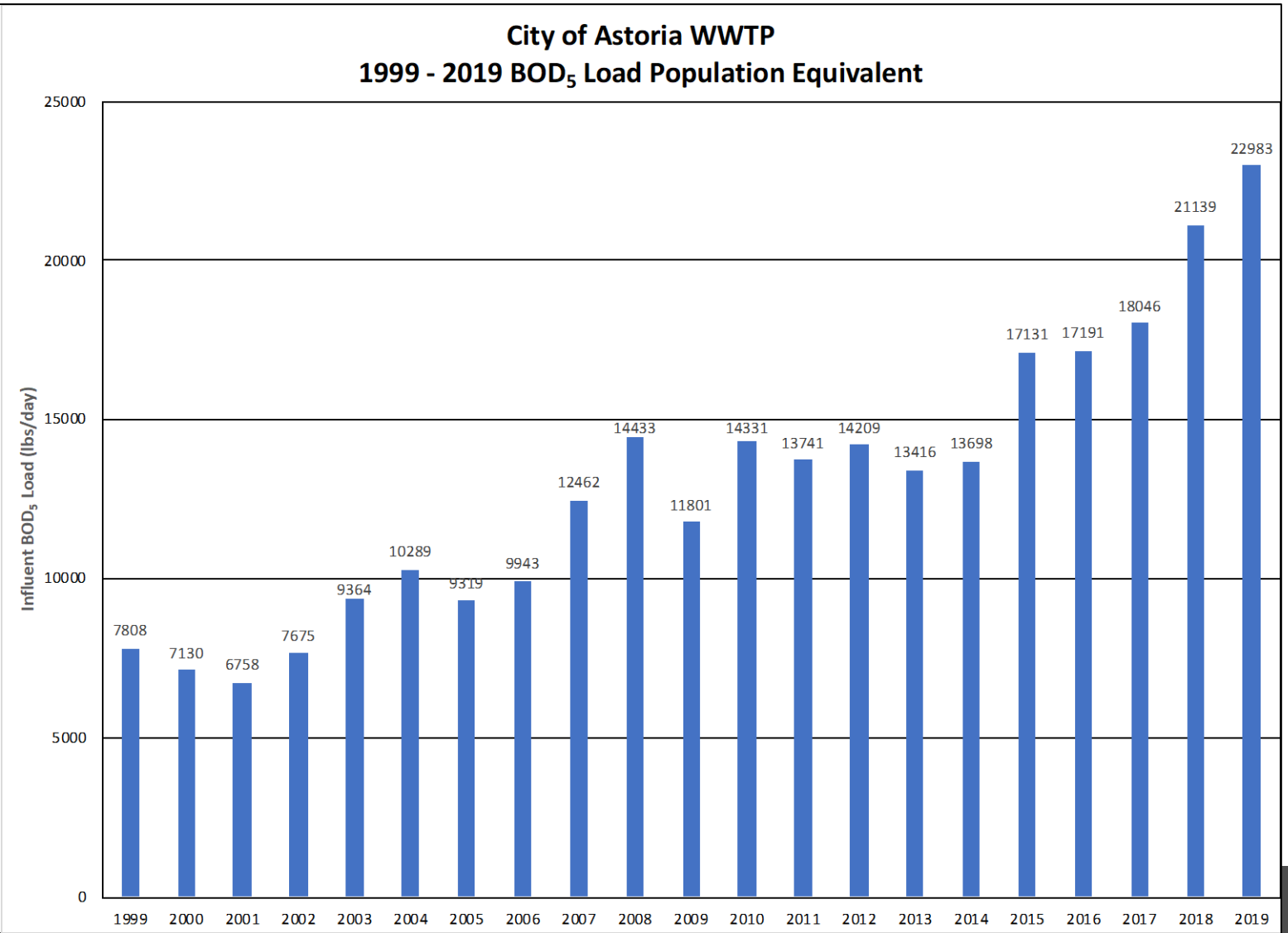
Discovery Process

Increased Wastewater BOD_5 Load



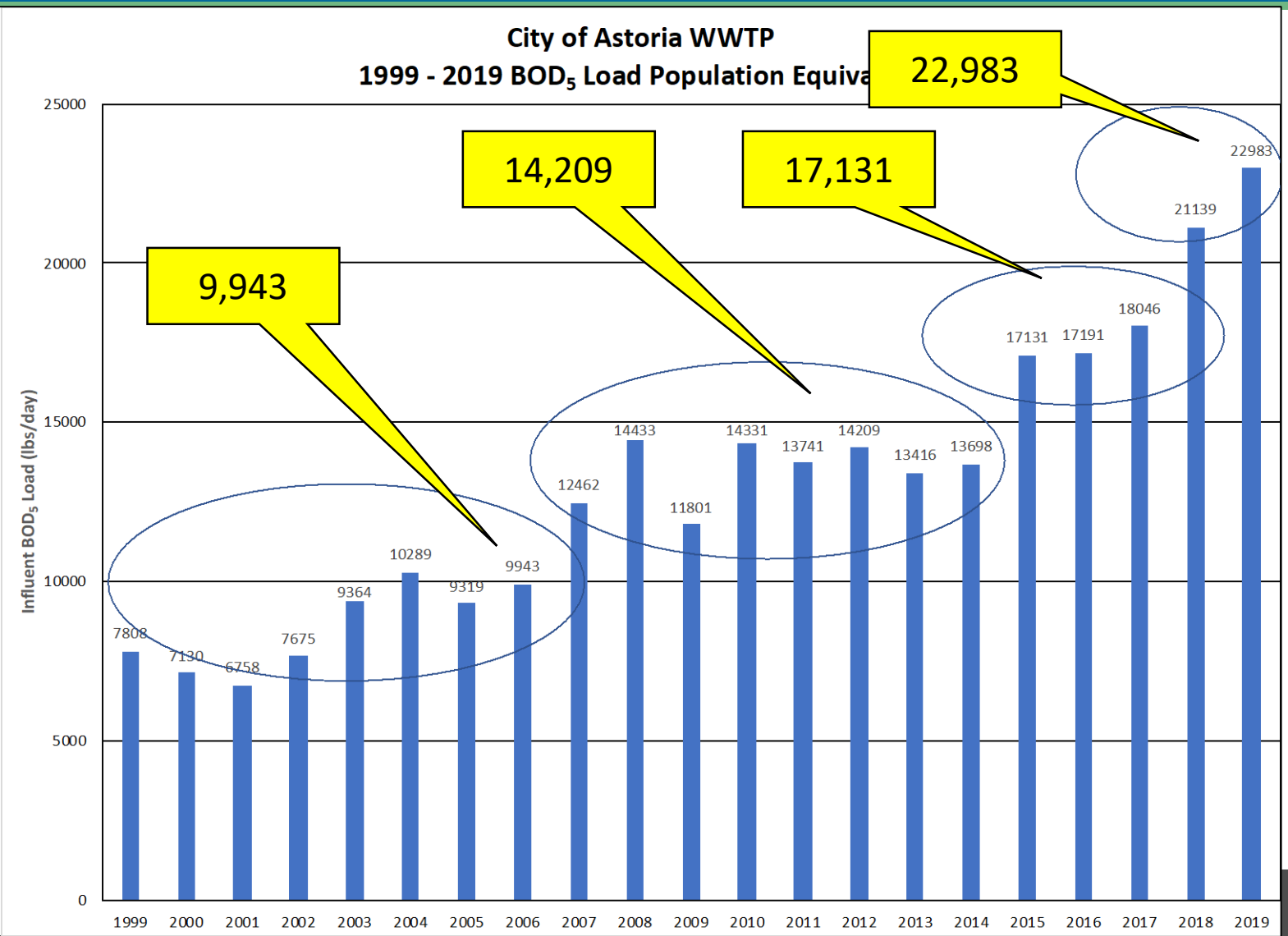
Discovery Process

BOD_5 Load Population Equivalent



Discovery Process

BOD_5 Load Population Equivalent

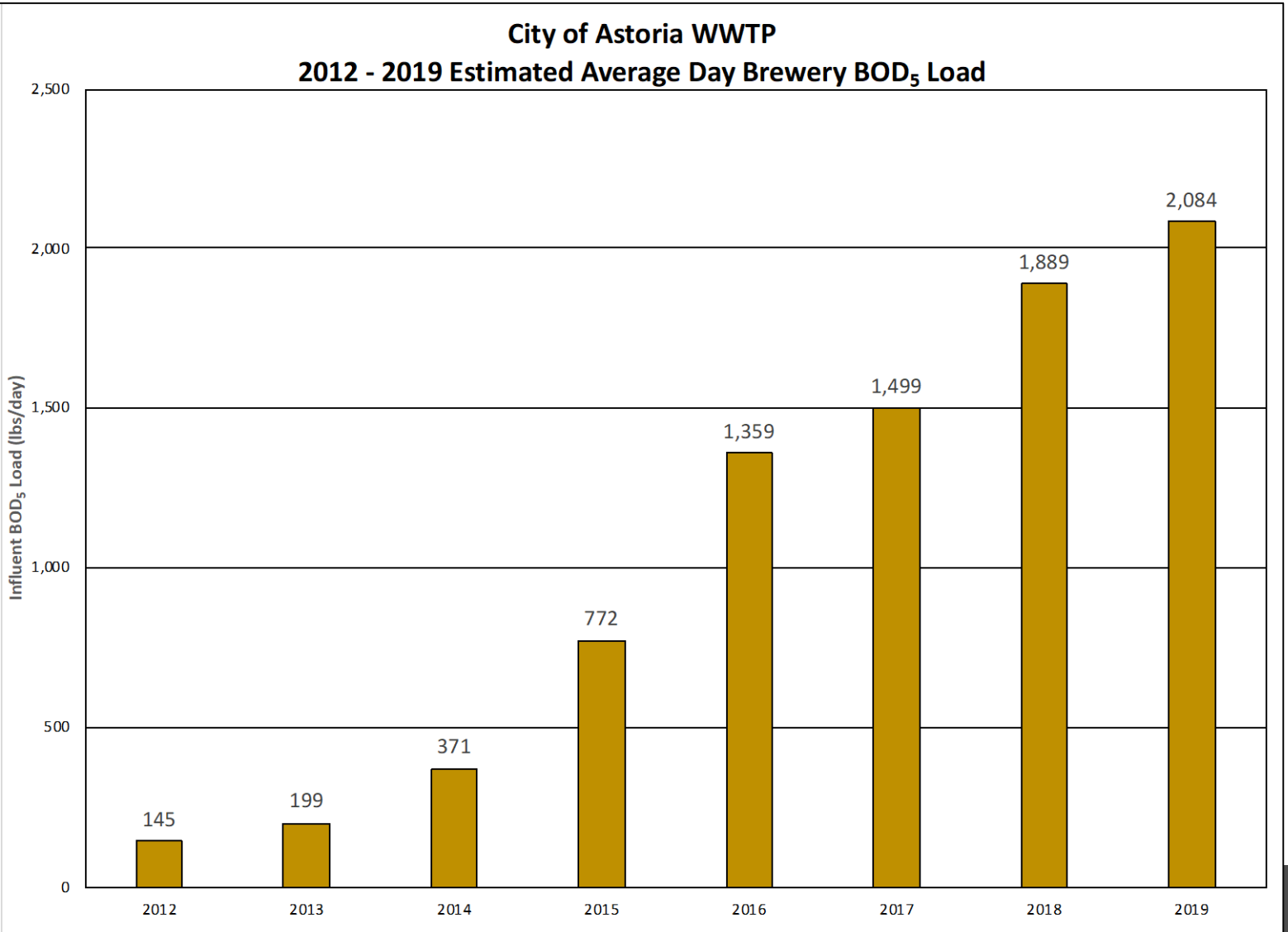


Discovery Process
Continues

- WWTP is exceeding BOD_5 load rated capacity
- Still increased odors at WWTP and pump station
- Biological growth in collection system downstream of breweries
- Steam in the manholes downstream of breweries
- Slug flows observed at Pump Station #1
- Brewery odors at WWTP

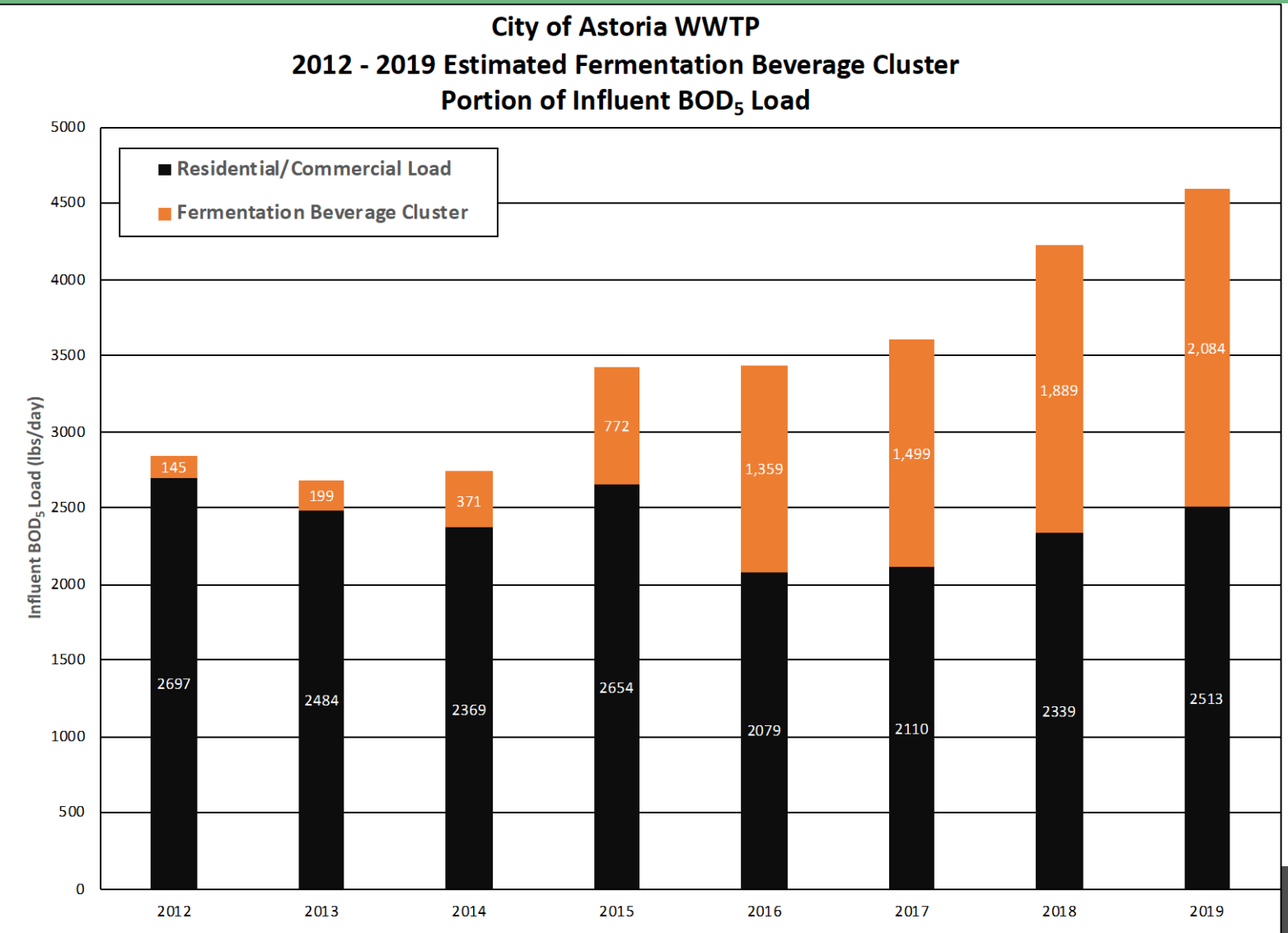
Fermentation Beverage Cluster

Estimated BOD_5 Discharge



Fermentation Beverage Cluster

Estimated % of Plant Load



Discovery Process

Update

- 2017 Tour of WWTP and Breweries with DEQ
- City-hired professional engineer completed analysis of Fermentation Beverage Cluster loads on WWTP
- 2019 WWTP Facilities Plan Update completed
  - WWTP exceeding BOD_5 load-rated capacity
  - Headworks Project estimated at $5 million with baffles to increase capacity
- BOD_5 loads from Fermentation Beverage Cluster categorized as Significant Industrial User per EPA
- Increase in Fermentation Beverage Cluster has caused issues in wastewater treatment nationwide

Discovery Process

Update

- Specifically identified Fort George Brewery and Buoy Beer as significant industrial users
- Fort George Brewery and Buoy Beer hired consultant
- Meetings with City, Fort George Brewery, Buoy Beer, Regional Solutions Team (Business Oregon, DEQ, Governor's Office)
- Industrial Pretreatment Program a tool for managing high strength waste dischargers

Industrial Pretreatment Program

Framework

- Locally-Regulated versus State-Regulated Program
- User classifications
- Individual permits for industrial users
- Discharge limits (BOD_5, TSS, pH, temp)
- Excess strength charge for industrial users
- Rates for user classifications and excess strength charge
- Sampling and testing requirements
- Enforcement
- DEQ approval of locally-regulated Industrial Pretreatment Program

Other Considerations

- 2012 WWTP Facilities Plan and 2019 Update - existing lagoon process expected to meet population growth needs through 2045
- Without appropriate industrial BOD_5 limit a mechanical plant will be required to handle the loads
- Mechanical plant capital cost range is $40M – 60M depending on size to treat wet weather flows
- O&M costs will be higher with mechanical plant

Other Considerations

- NPDES Permit limits will be more stringent with mechanical plant
- State-regulated Industrial Pretreatment Program likely to be required without Locally-regulated Industrial Pretreatment Program
- City denied fish processor requests to discharge to sewer system

Next Steps

- Another Council Work Session to discuss details of a City of Astoria Industrial Pretreatment Program
- Finalize Industrial Pretreatment Program strategy for Council authorization
- Prepare Industrial Pretreatment Permits for Fort George Brewery and Buoy Beer to support facility expansion timeline
- Create Locally-Regulated Industrial Pretreatment Program
- Develop Sewer Ordinance to support Industrial Pretreatment Program

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QUESTIONS