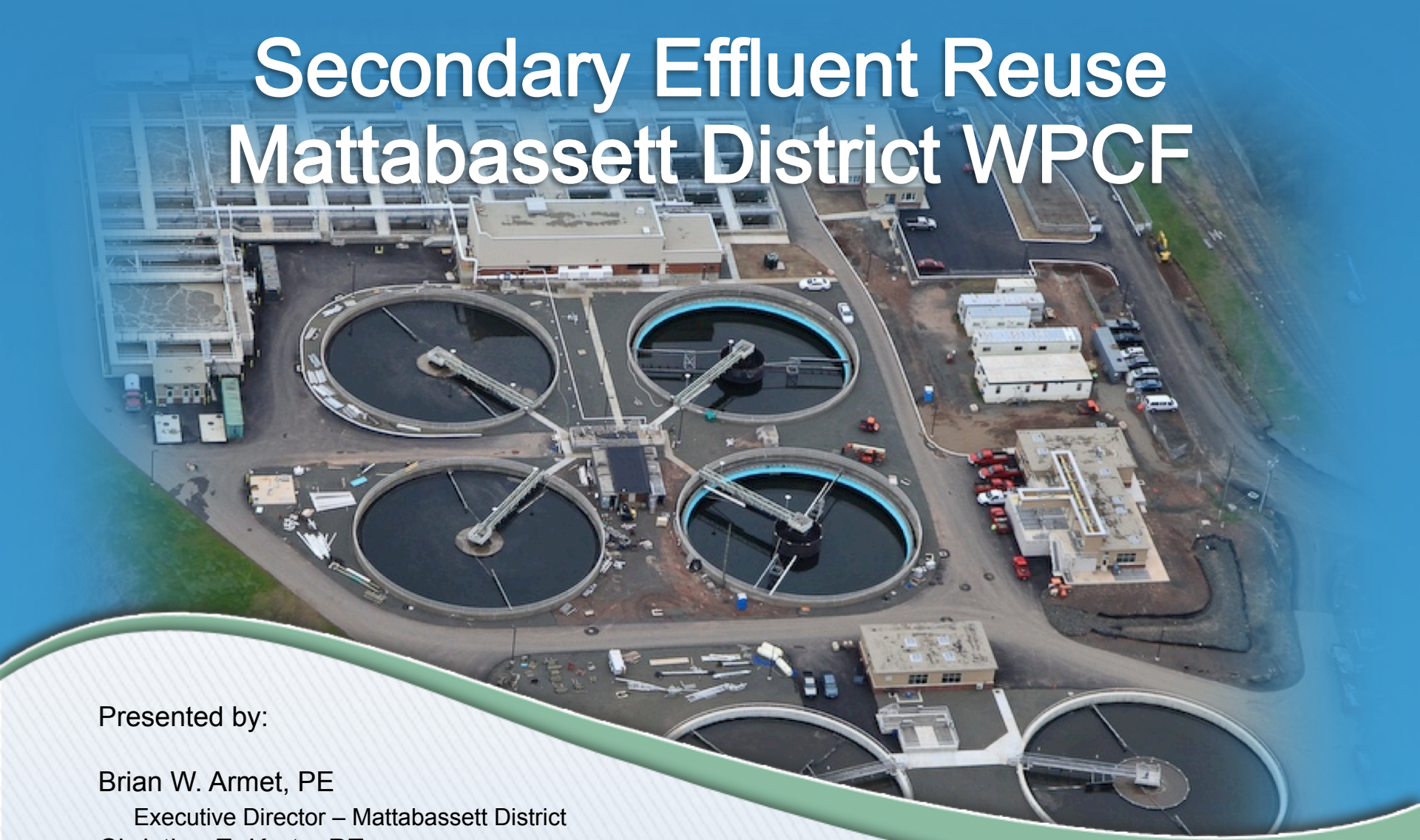
Secondary Effluent Reuse
Mattabassett District WPCF



Presented by:

Brian W. Armet, PE
Executive Director – Mattabassett District
Christine E. Kurtz, PE
Project Manager – Wright-Pierce

THE MATTABASSETT DISTRICT
Preserving the environment
for future generations to enjoy.

WRIGHT-PIERCE
Engineering a Better Environment

Presentation Overview

- ✓ History of Mattabassett District
- ✓ History of water reuse proposals
- ✓ Planned comprehensive upgrade
- ✓ Accommodations for water reuse
  - ✓ Design considerations
  - ✓ Ownership considerations
  - ✓ Contractual relationships
- ✓ Ultimate design
- ✓ Questions/Answers

The Mattabassett District

Mattabassett Trunk Sewer

New Britain

Berlin

Cromwell

Middletown

The Mattabassett District Water Reuse History

aso

Pistol Creek Golf Course 2010

NRG Energy 2009

Kleen Energy 2006/2007

New Britain

Cromwell

Berlin

Middletown

District Comprehensive Upgrade

Wastewater Treatment

- Planned $100 M upgrade
- Accommodate Middletown
  - Increase avg. flow to 35 MGD
  - Peak flows to 110 MGD
- Upgrade for nitrogen removal
  - Required effluent pump station
  - Needed at high river levels

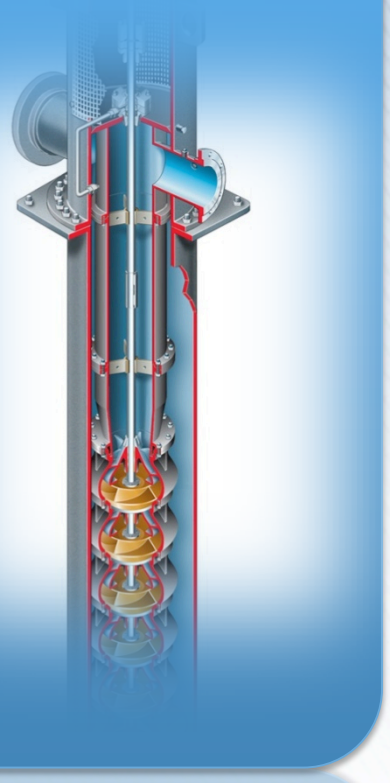
District Comprehensive Upgrade Design

NRG Energy

- Met with NRG during design
- Demand for cooling water
  - 2.3 MGD average
  - 3.65 MGD peak flow
- 2,500 gpm pumps
- Turndown to 1,250 gpm min.
- Disinfection

Accommodations for Water Reuse

Pump Design & Control



- Sufficient submergence at WPCF low flows
- Control signal between power plant & WPCF
  - radio
  - fiber
- Turndown
- Redundancy
- Future increased capacity

Accommodations for Water Reuse

Pump Station Design Considerations

- Power plant construction vs. WPCF upgrade
  - Initial power plant was first
- Designed pump station with space for future reuse pumps
  - flow-through wet well design
    - water always available
  - Power consumption provided by power plant engineers
  - Standby power considerations

Accommodations for Water Reuse

Disinfection

- Effluent pump station ahead of chlorination point
- Seasonal disinfection
- Power plant requires year-round disinfection
- Chlorine residual control feedback
- Potential for UV disinfection for treated effluent

Accommodations for Water Reuse

O&M Costs

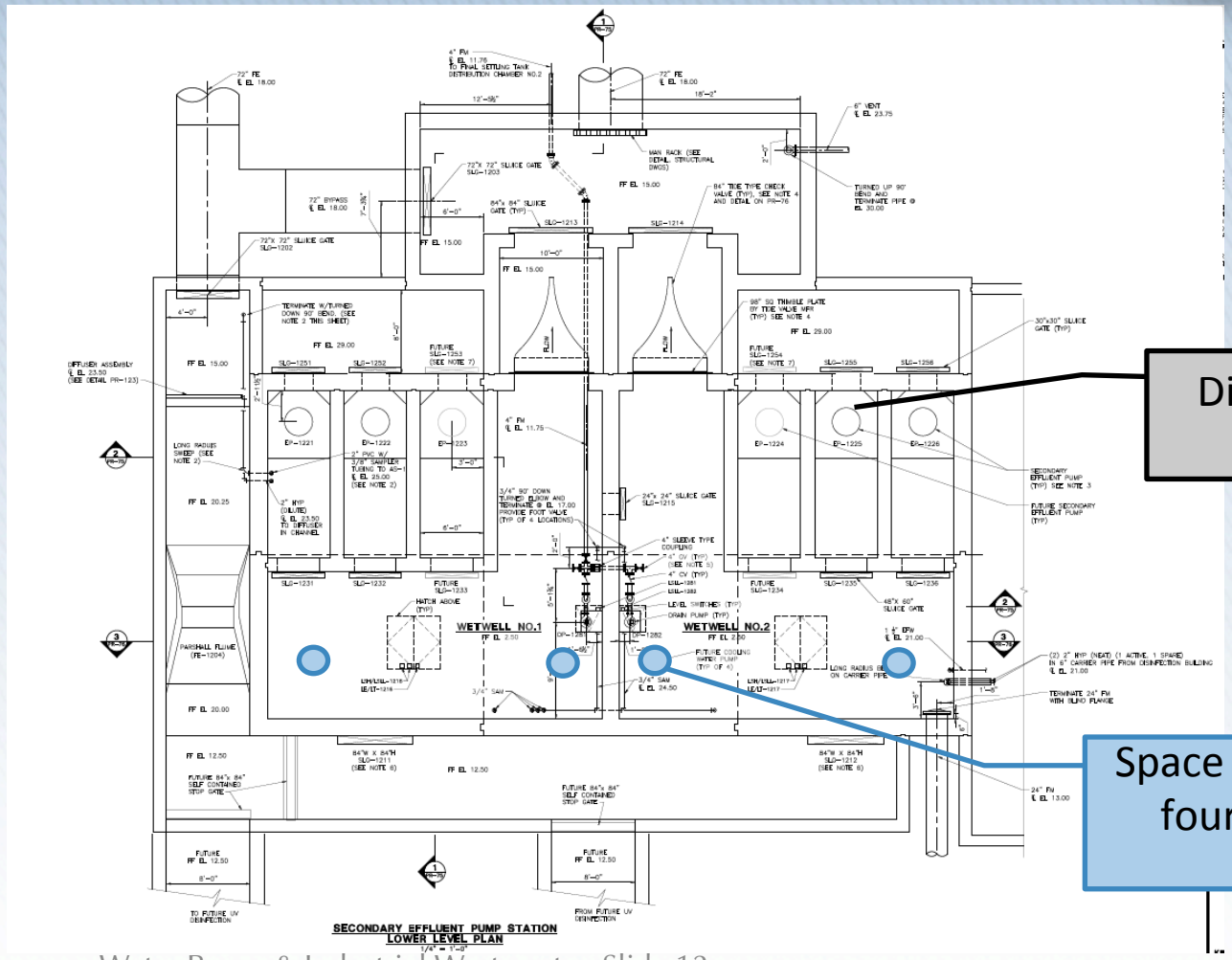
- Ownership of pumps
  - District vs. Power Company
- Operational costs
  - Power, chemical disinfection
- Maintenance costs
- Cost for water
  - Unit cost to accommodate all O&M costs?

Secondary Effluent Pump Station Design

SEPS

- Designed for District's needs
- Designed to accommodate future cooling water pumps
- Flow-through wet well design to ensure pump suction submergence
- 24-inch force main to property line
- Provisions for chlorination

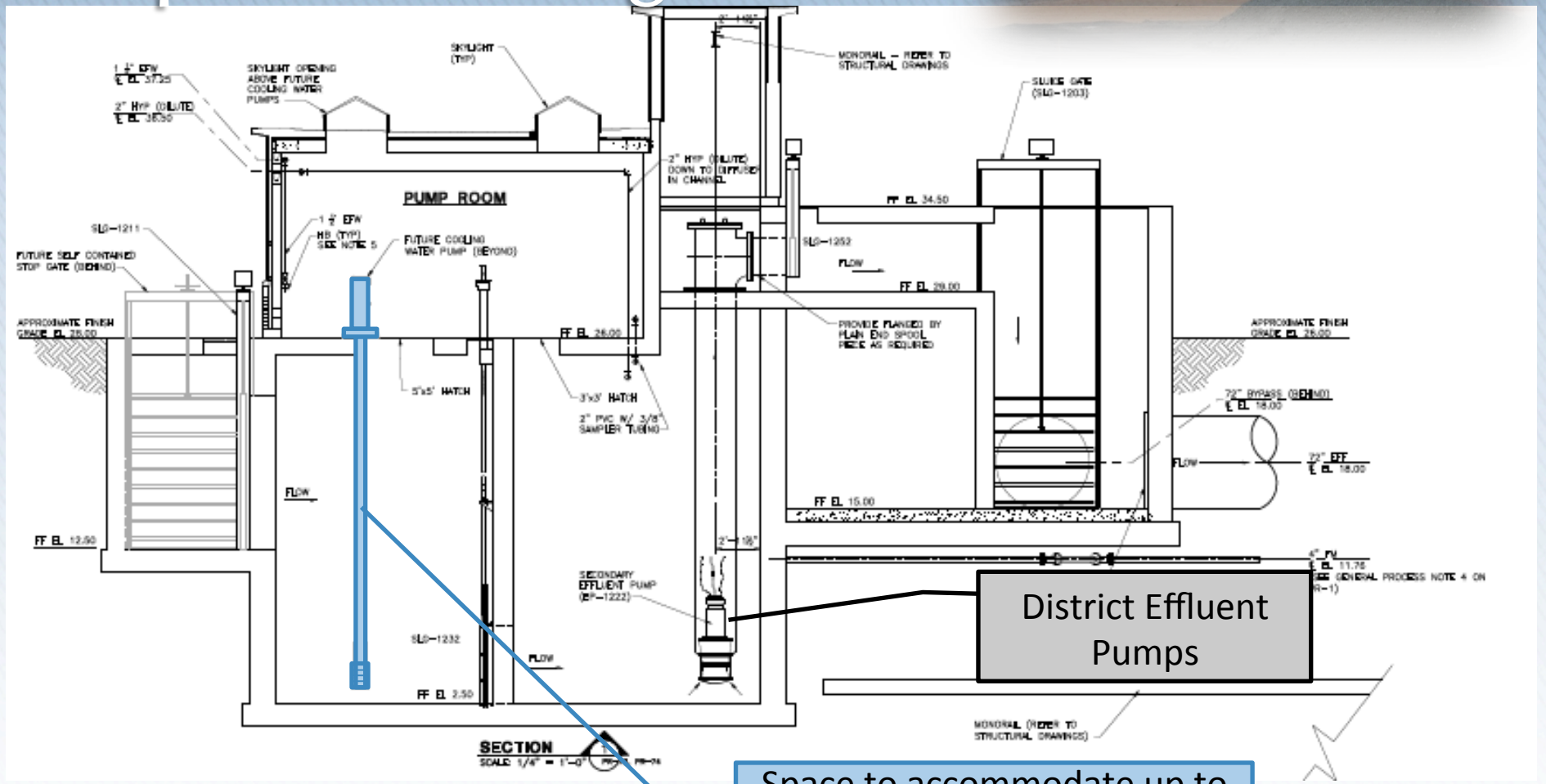
Secondary Effluent Pump Station Design



District Effluent Pumps

Space to accommodate up to four 200-hp reuse water pumps in future

Secondary Effluent Pump Station Design



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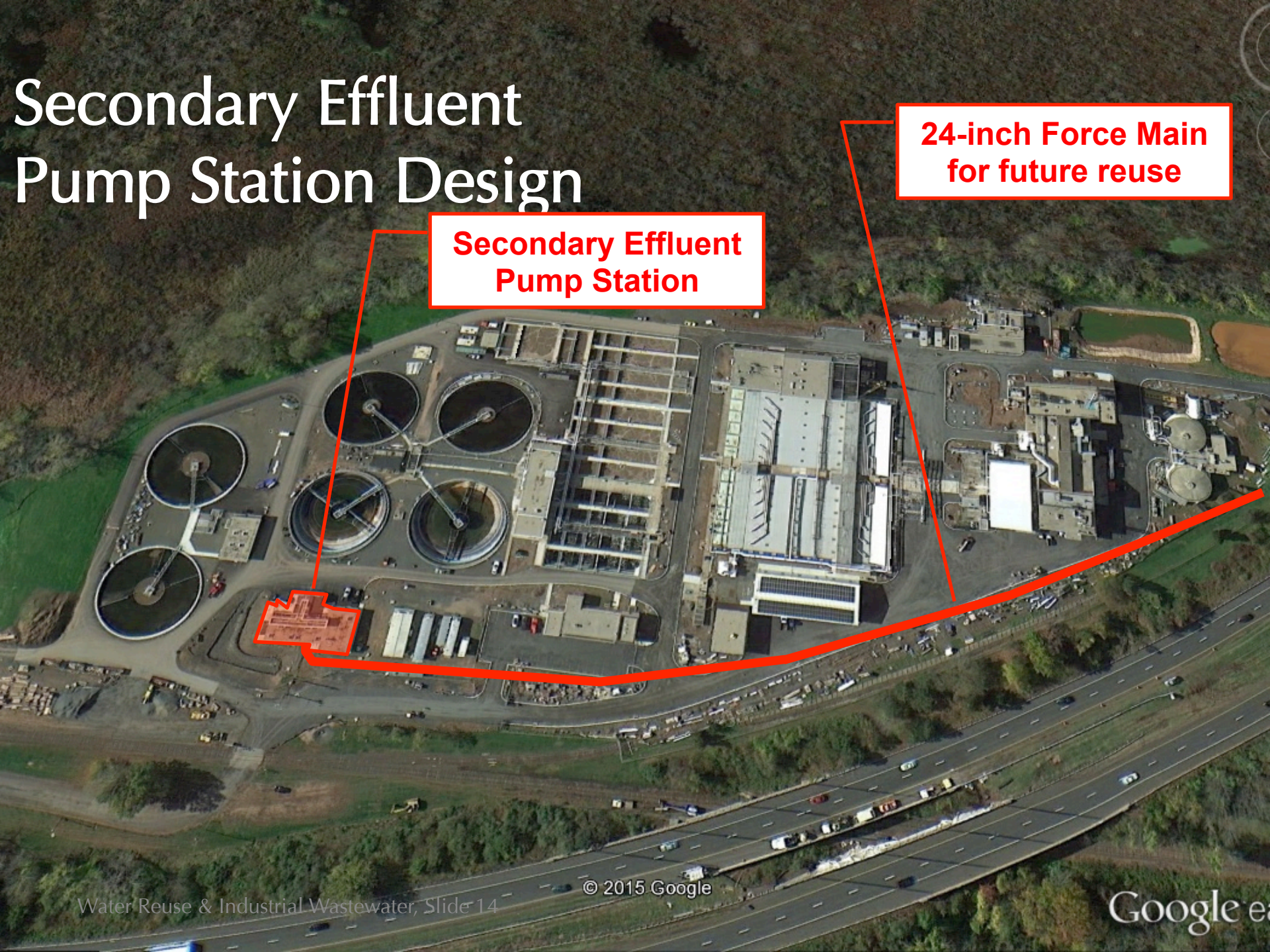
Secondary Effluent Pump Station Design



Questions & Discussion

Thank you!