Joint Water Commission

Cities of Hillsboro, Forest Grove, Beaverton, and Tualatin Valley Water District

Joint Water Commission Water Treatment Plant Virtual Tour

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Joint Water Commission

The JWC is a partnership agency between the cities of **Beaverton**, **Forest Grove**, **Hillsboro** and the **Tualatin Valley Water District (TVWD).** The City of Hillsboro manages the JWC and its employees.

Hillsboro OREGON

Beaverton OREGON

FOREST GROVE OREGON

TUALATIN VALLEY WATER DISTRICT

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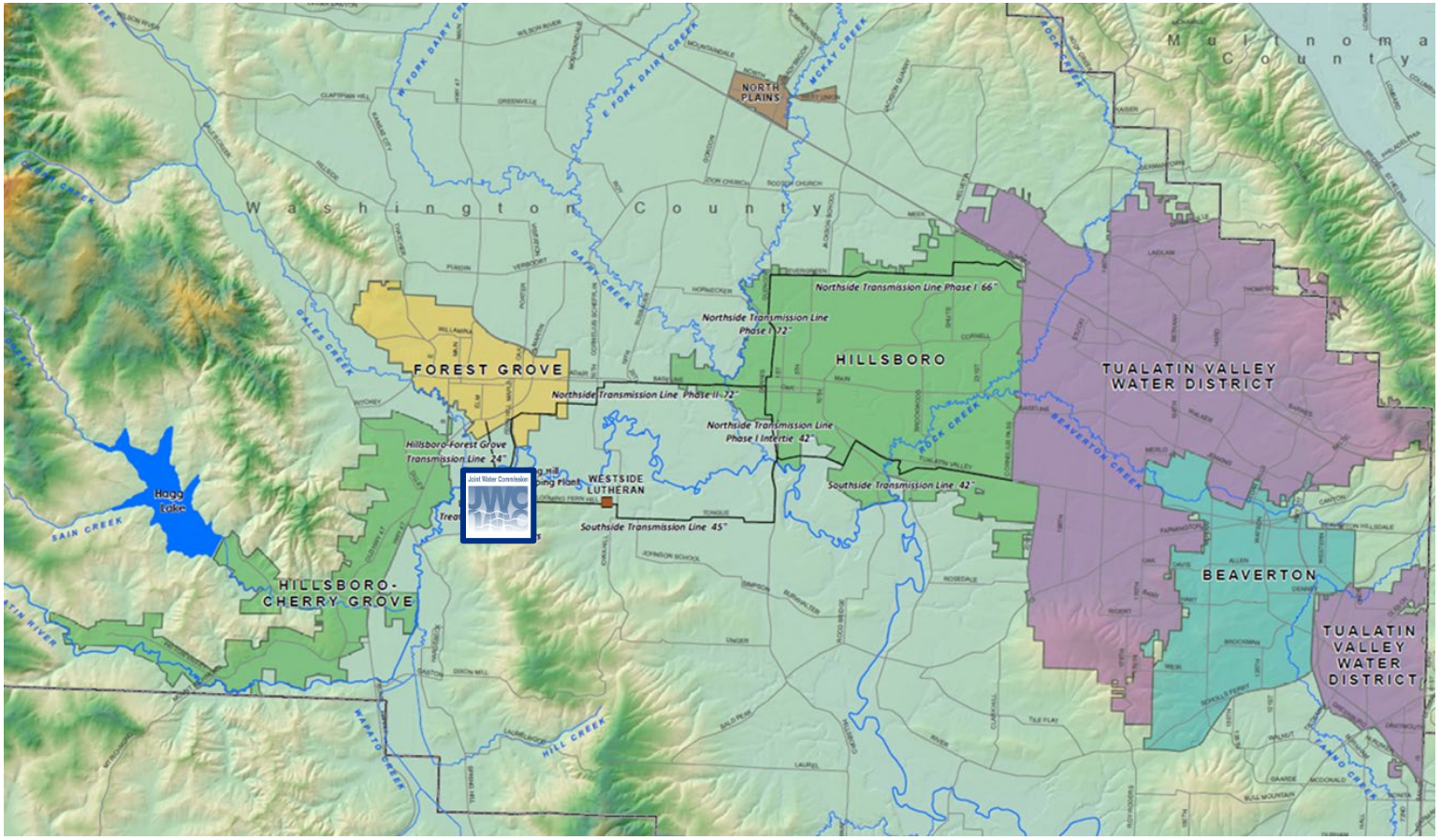
- Serves about 450,000 customers in Washington County.



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- Largest conventional water treatment plant (WTP) in Oregon with a peak capacity of **85 million** gallons of water per day (MGD).

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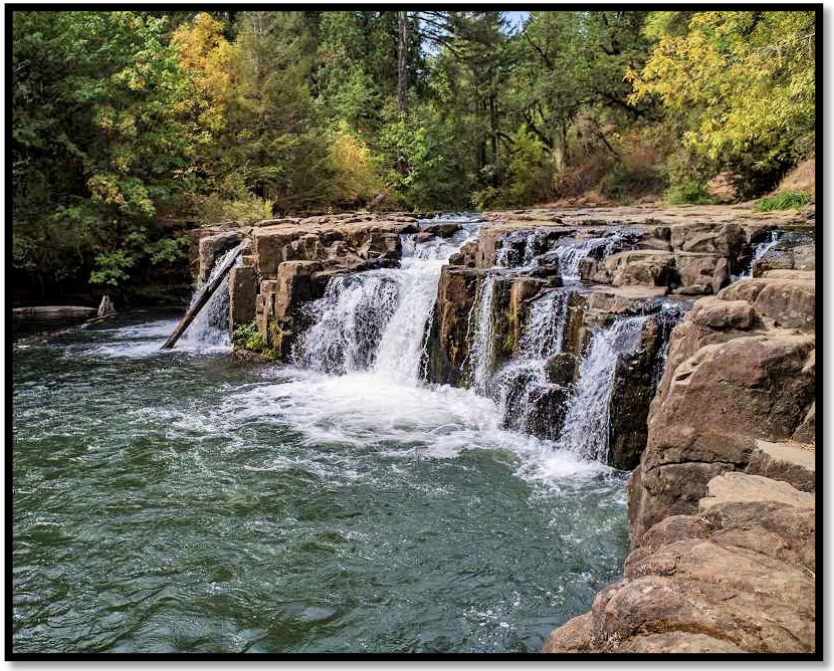
Tualatin River



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Hagg Lake & Barney Reservoir

Spring Hill Pumping Plant

- Shared with Tualatin Valley Irrigation District
- Owned by the Bureau of Reclamation

Raw Water Pumps

4 Pumps (Brand new)

- 400 HP/16,000 GPM each

2 Raw Water Pipelines to WTP

- 36” & 42”

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Rapid Mix

Rapid Mix

- Alum and chlorine added (Powdered Activated Carbon and Caustic Soda if needed).
- Rapid Mix Valve (new).
- Rapid Mix Pumps (new).
- Flow sent to Sedimentation Basins A-G.

Rapid Mixing

Coagulation

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Flocculation Chambers

Flocculation Chambers

Sedimentation Basins

Sedimentation Basins

Plate settlers D-G

Basins D-G

Basins A-C

Sedimentation Basins (fall lines)

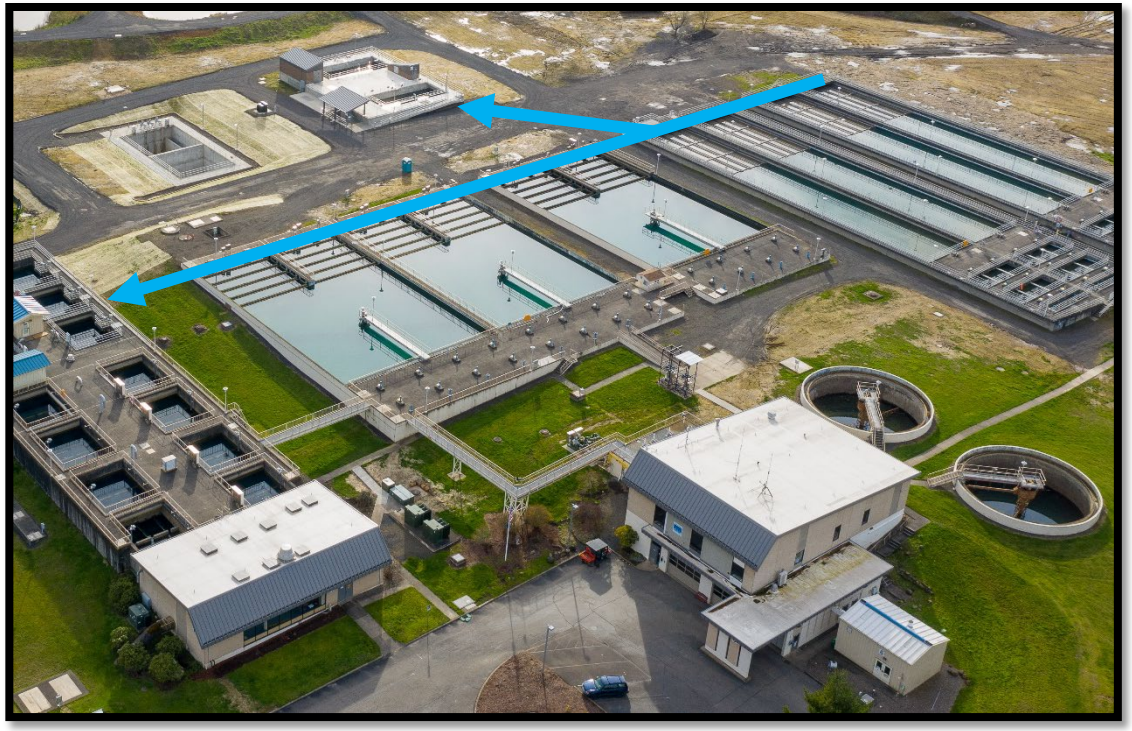
Sedimentation Basins (drained)

Basins A-C

Basins D-G

Flume

- Runs at end of the Sedimentation Basins to Filters
- Cl2 and Poly are added



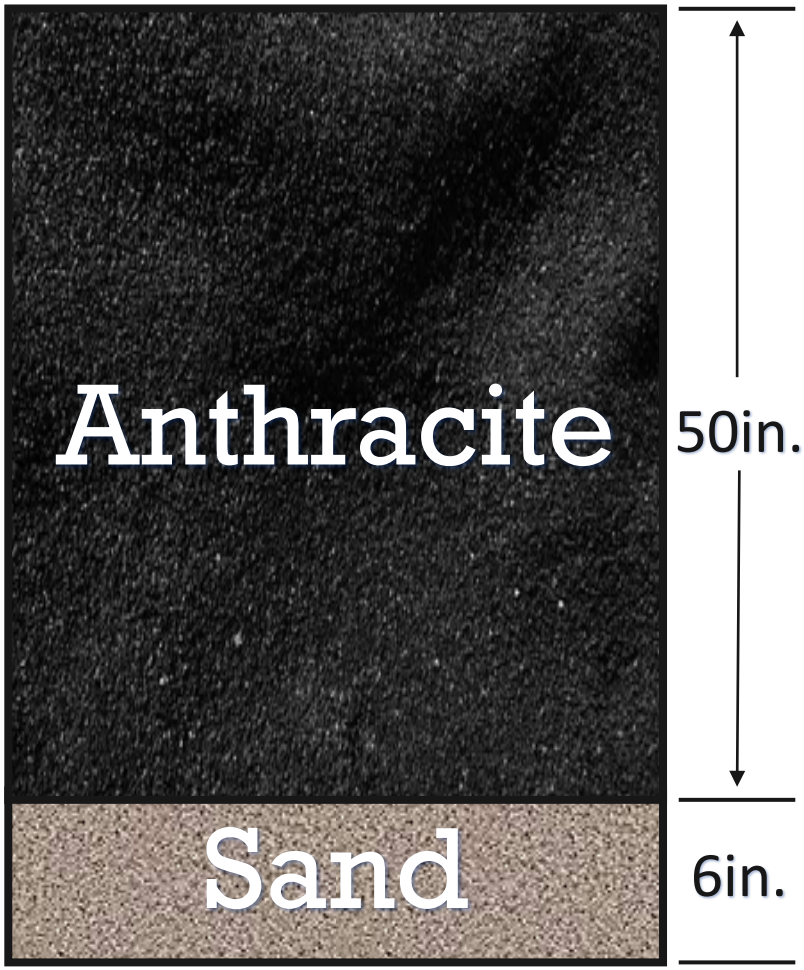
Filters 1-14

- 14 Filters x 462 sqft x 8.7 GPM/sf (4,019 GPM each filter)
- Cl2 is added

Filter Media Configuration

Filters 1-14:

- 50” Anthracite
- 6” Sand
- Total media depth: 56”



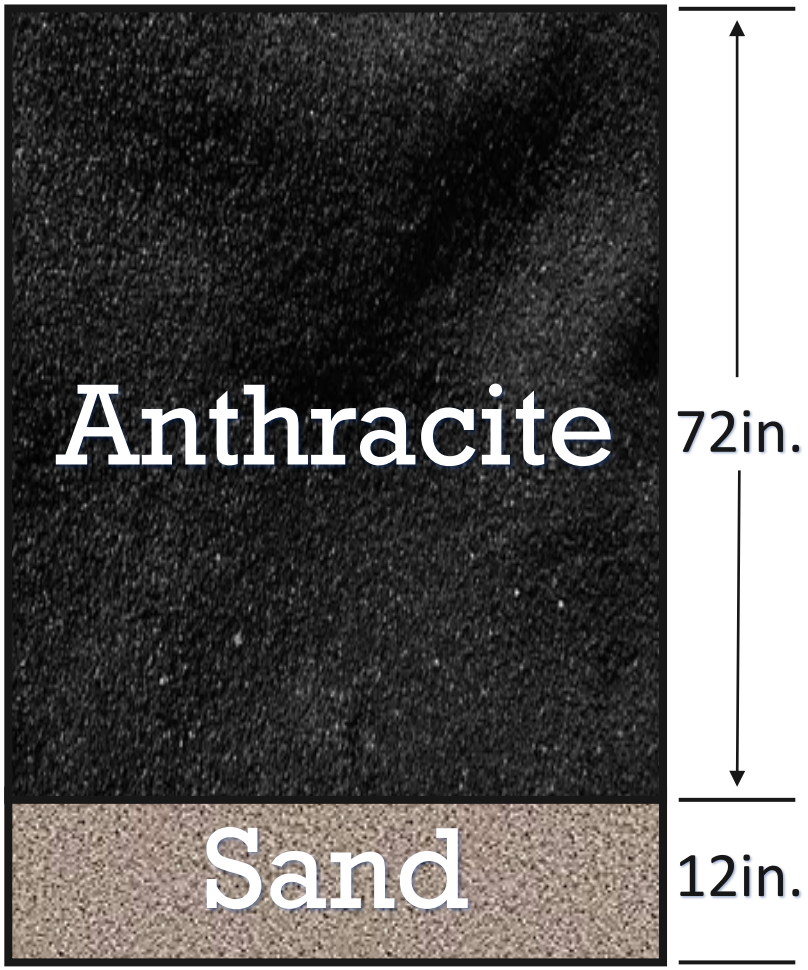
Filters 15-16

- 2 Filters x 924 sqft x 12 GPM/sf (11,088 GPM each filter)
- Cl2 is added

Filter Media Configuration

Filters 15-16:

- 72” Anthracite
- 12” Sand
- Total media depth: 84”



Filters: Media

Sand

Anthracite

Pipe Gallery: Filters 1-14

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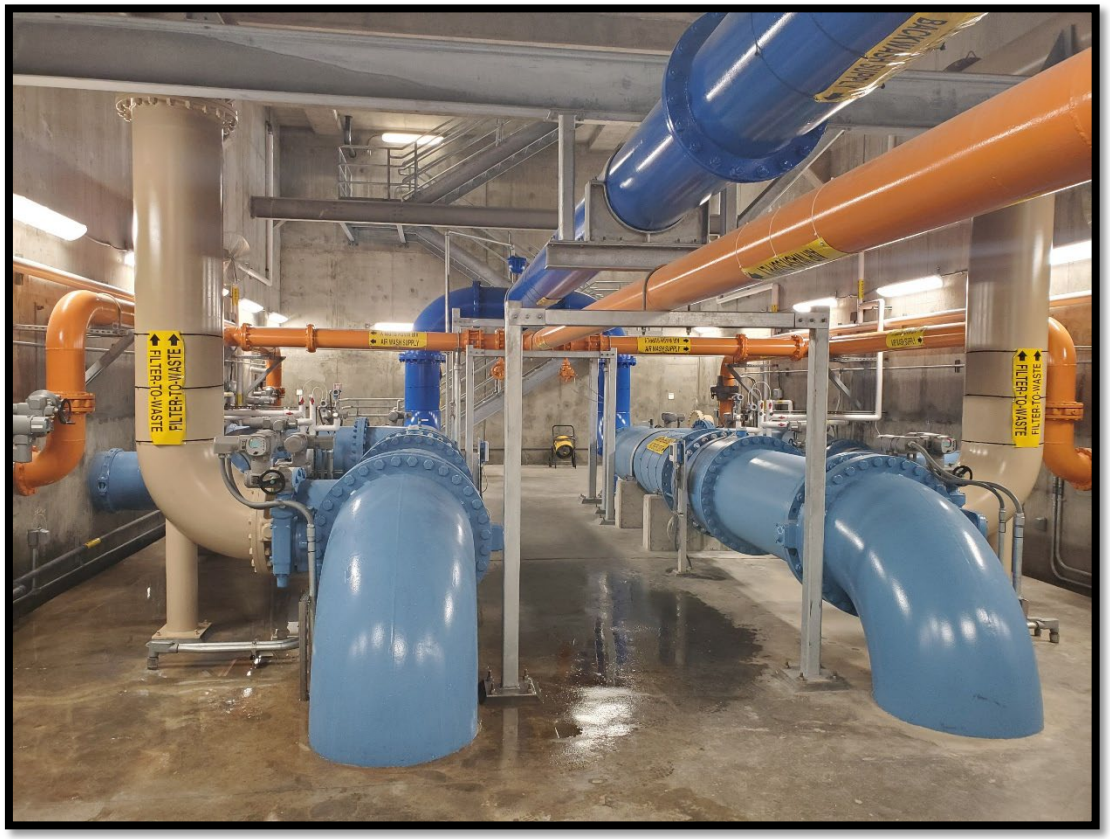
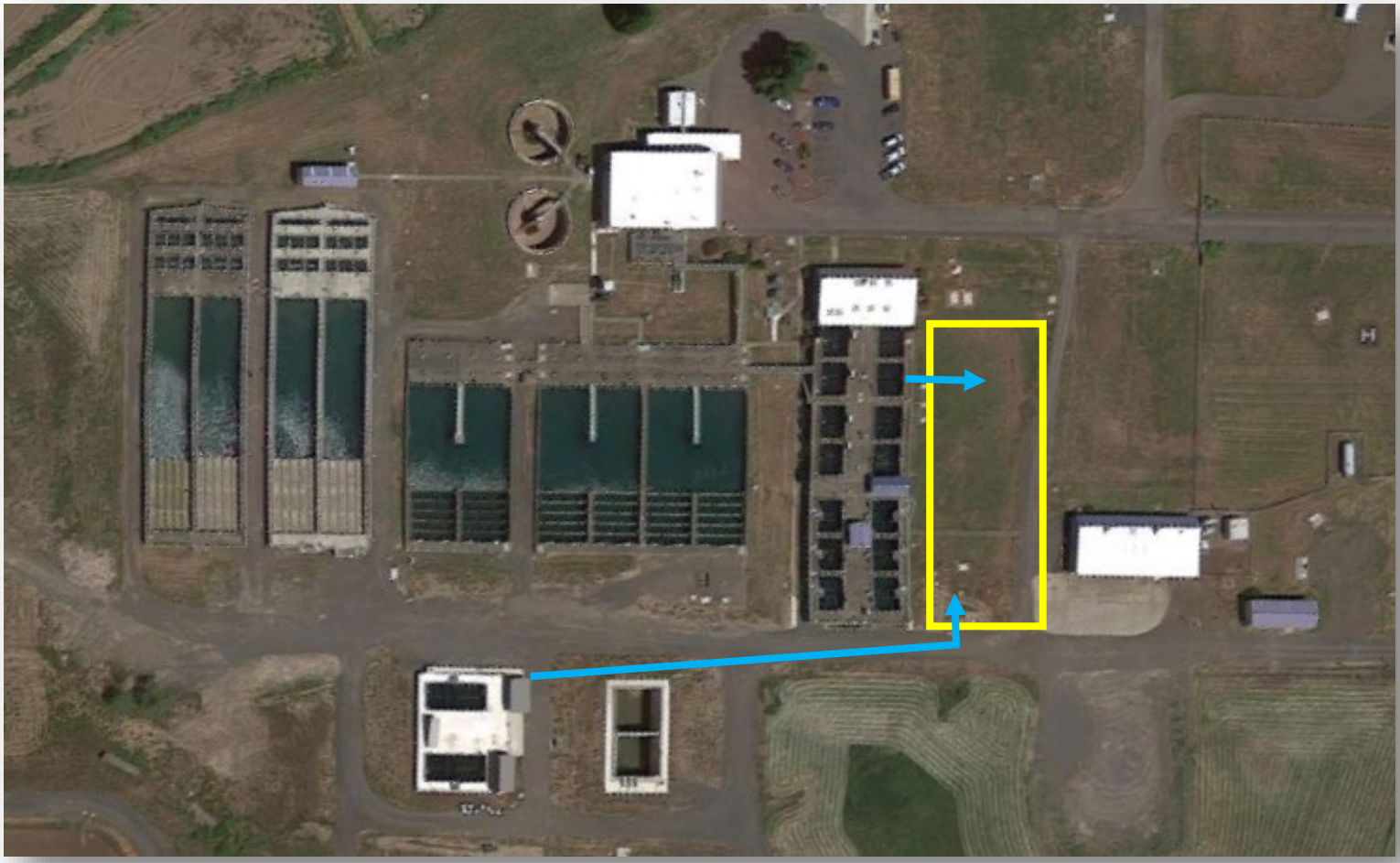
Pipe Gallery: Filters 15-16



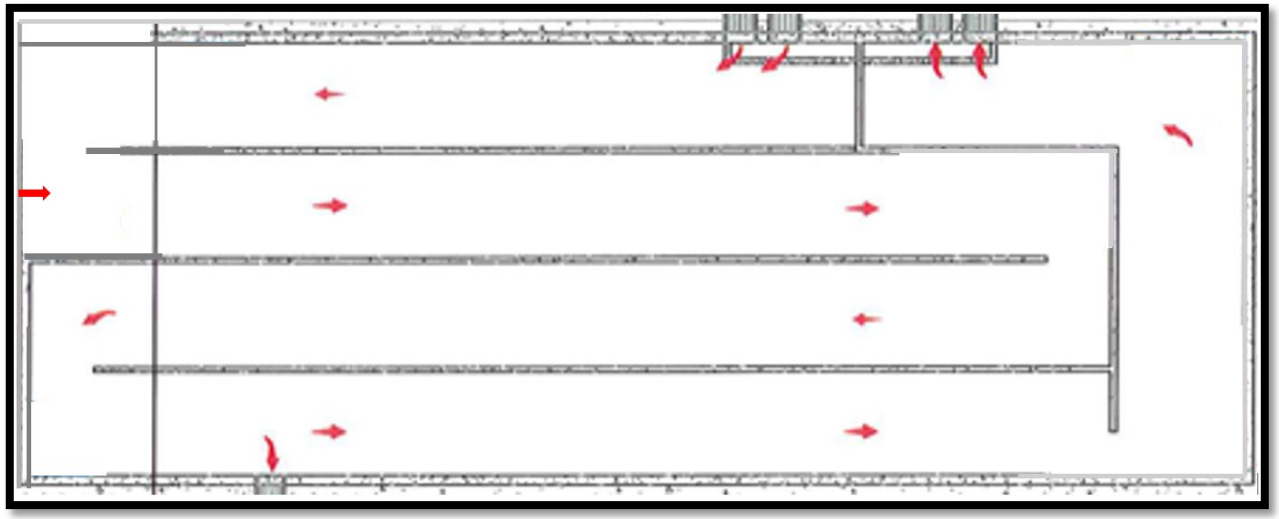
Filters to Clearwell



Clearwell

- Caustic Soda is added
- Cl2 is added
- Holds 1.3 million gallons of water

Clearwell



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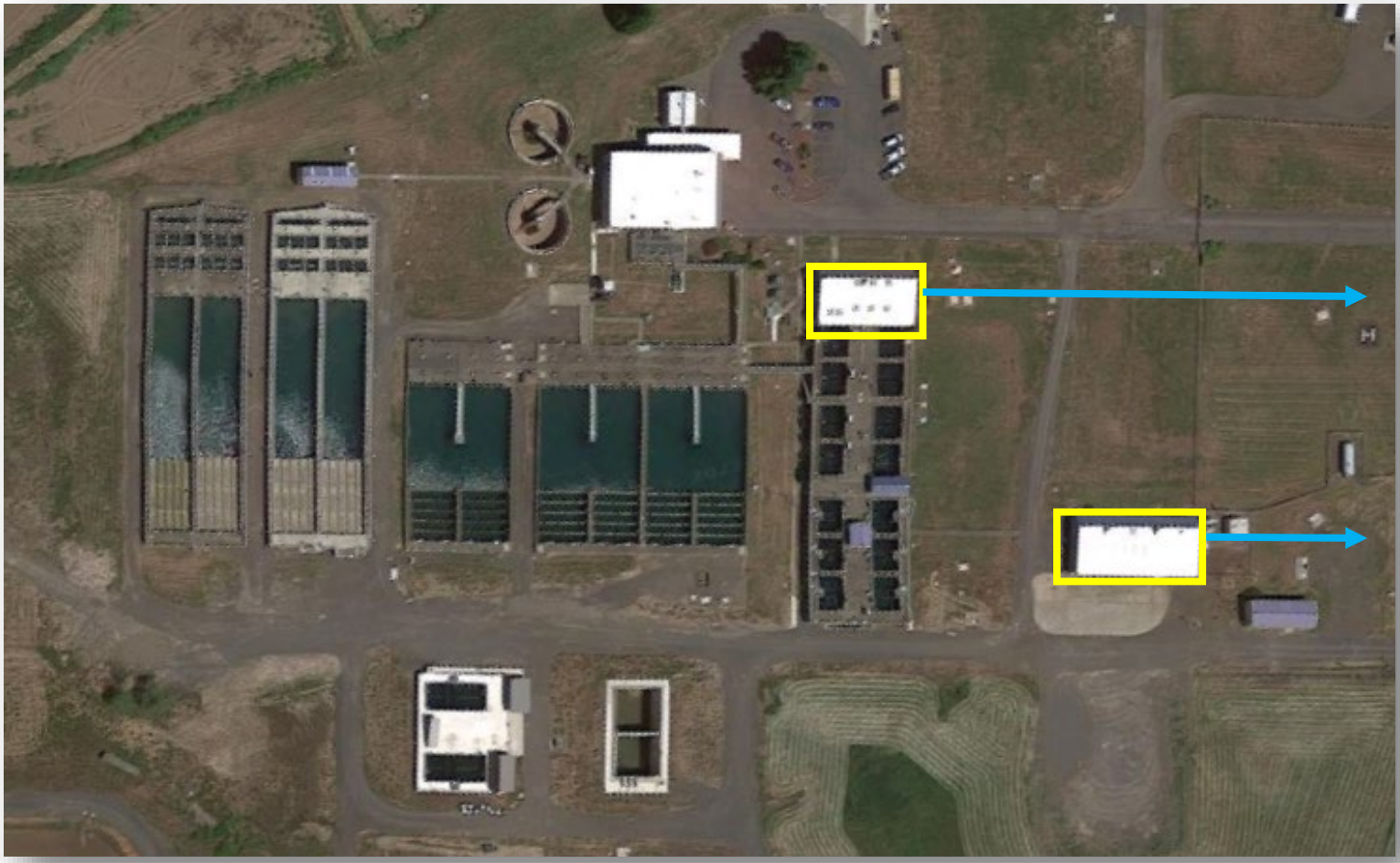
Finished Water Pump Stations



Finished Water Pump Station #1

- Finished Water Pumps 1-6:
  - ✓ 3 x 4,000 GPM
  - ✓ 2 x 7,000 GPM
  - ✓ 1 x 6,000 GPM
- Cl2 is added

Finished Water Pump Station #2

- Finished Water Pumps 7-9: 9,000 GPM each
- Cl2 is added

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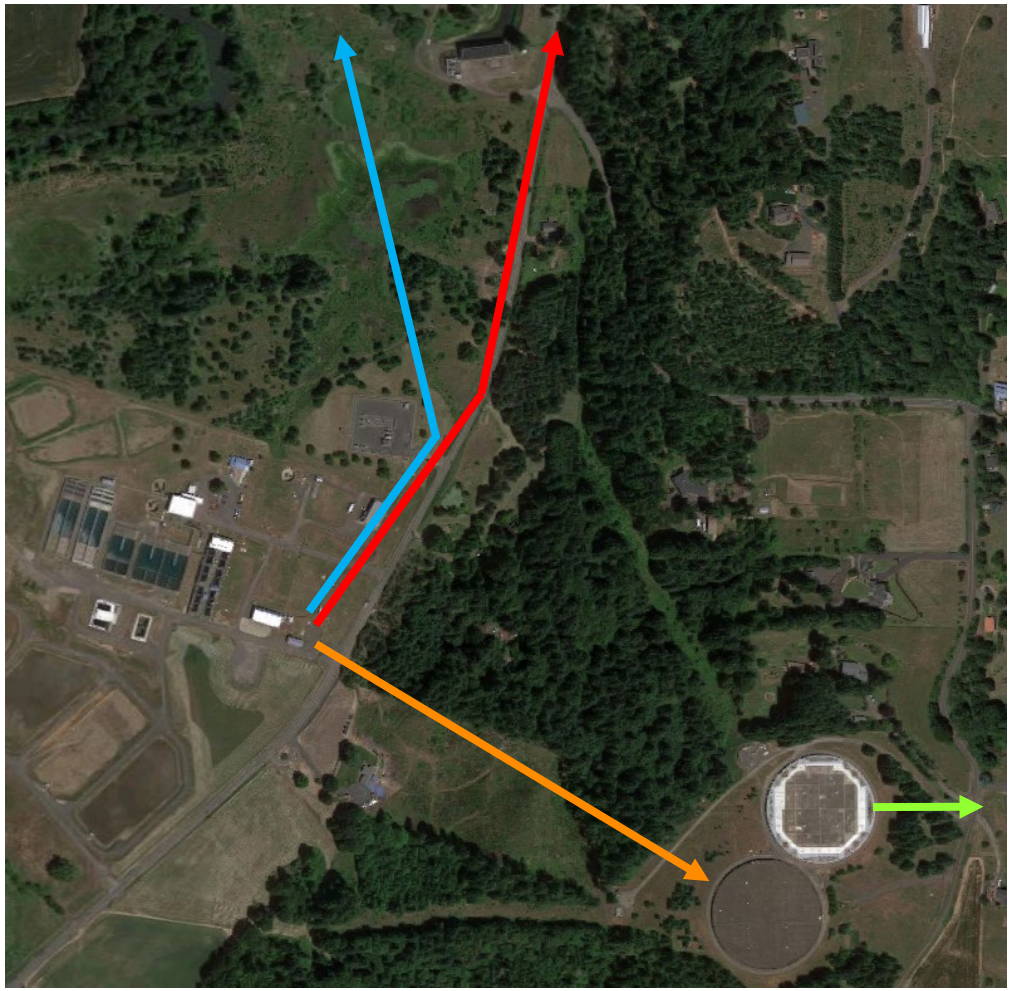
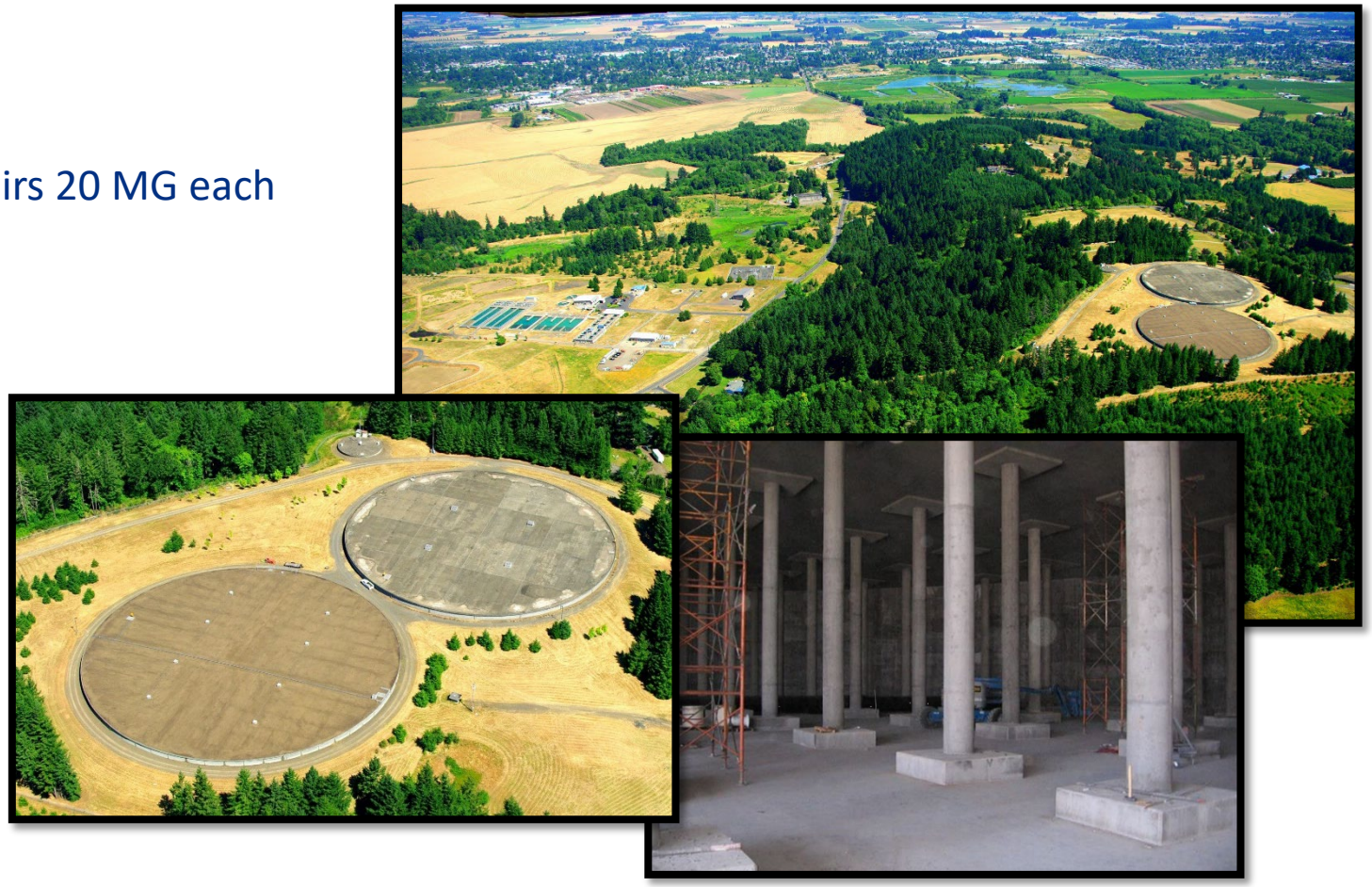
Water Pumped from WTP to:

- 24” Forest Grove-Dilley Transmission Line
- 72” North Transmission Line (NTL)
- 45” South Transmission Line (STL)



Fern Hill Reservoirs

- 2 Reservoirs 20 MG each



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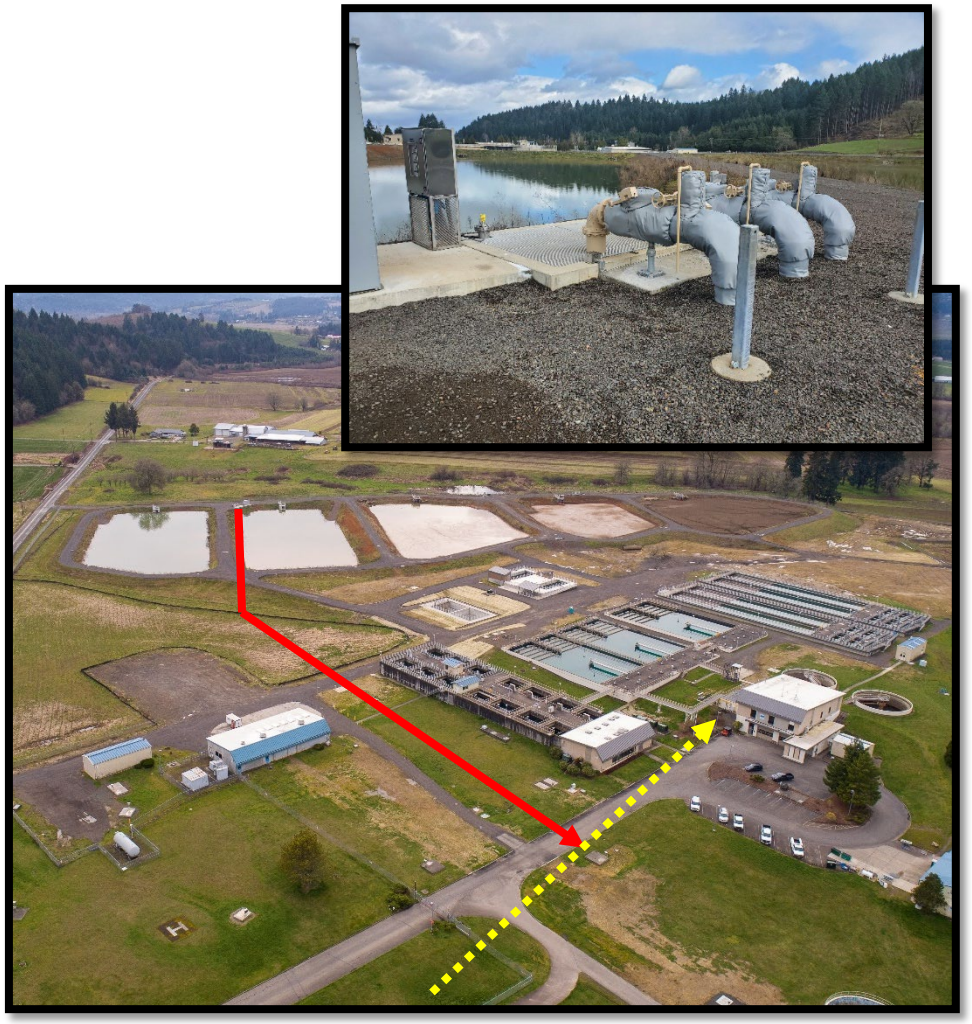
Recycled Water

- Sludge from basins is sent out to one of the 5 Sludge Drying Beds (SDBs) via Solids Diversion Pump Station.
- Backwash and Filter to Waste water also sent to SDBs via Surge Basins.
- Water sent back from Decant Pump Station to RW pipeline to reenter treatment process.
- Sludge gets hauled off after drying.



Sludge Removal

Surge Basins

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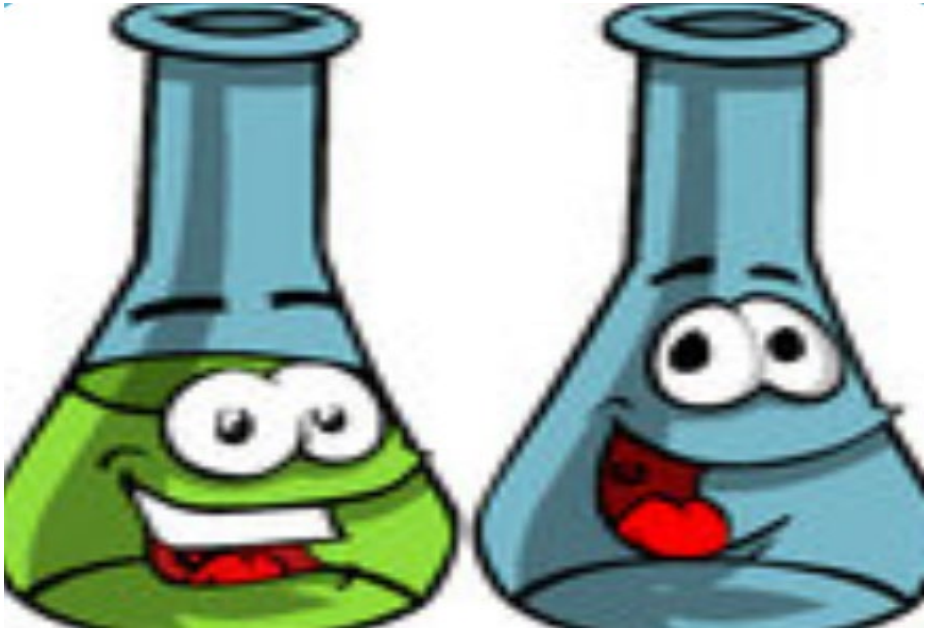
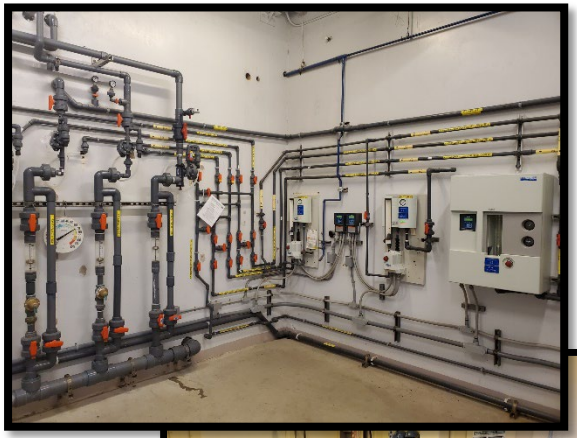
Chemicals used in the Treatment Process



Chlorine

- Chlorine (Cl2) is added for two reasons:
  -To disinfect the water
  -Maintain water safety all the way to the tap

- Chlorine delivered once a week in the summer, and every two weeks in the winter (three 1 ton cylinders per load).



Aluminum Sulfate

- Aluminum Sulfate (Alum) is used as coagulant to form flocculent
- Alum delivered about once a week (2 truck loads per order).

Sodium Hydroxide

- Sodium Hydroxide (Caustic Soda/NaOH) is added to raise the pH in order to prevent corrosion. Also used to raise pH in Rapid Mix during storm events.

- Sodium Hydroxide is delivered about once a week in the summer, and every two weeks in the winter.

Filter Aid Polymer

- Filter Aid Polymer (Poly) added to assist filters (FAP/Filter Aid Polymer)
- Filter Aid Polymer delivered about every six months (18 bags per order).

Powdered Activated Carbon

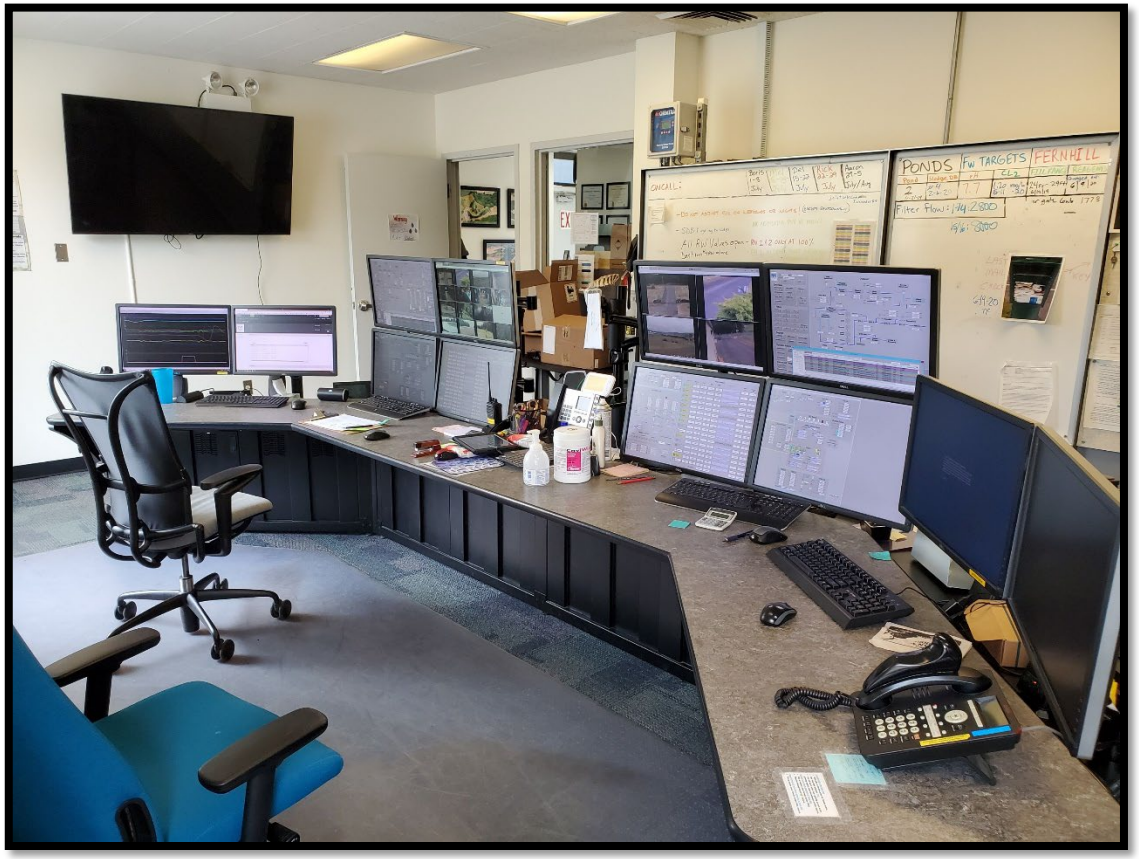
- Powder Activated Carbon (PAC) is used for Taste and Odors and algal toxins if required.
- Powder Activated Carbon “super sacks” delivered via flat bed and stored mostly off-site.

Backup Power Facility

- Backup Generators Online
- 2 x 2.5 MW Generators
- Runs WTP at 37.5 MGD
- PGE DSG (Dispatchable Standby Generation) Program
- 15,000-gallon diesel fuel tank
- Enough fuel for 48 hours at full capacity

Operations

- 8 Operators (levels 1-4)
- 12 Hour shifts
- 7 days on 7 days off
- Day and Night shift



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Laboratory

1976

- 20 MGD
- 4 Filters
- 2 Sedimentation Basins (A-B)
- 1 FW Pump Station
- And lots of Filbert trees!

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2023

- 85 MGD
- 16 Filters
- 7 Sedimentation Basins (A-G)
- 2 FW Pump Stations
- No more Filbert trees!