



**Gray & Osborne, Inc.**  
CONSULTING ENGINEERS



## **Water and Wastewater Treatment Capacity Discussion**

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# Water and Wastewater Capacity



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- Capacity of the systems is directly related to residential and commercial development – not industrial related
- What is the water system capacity?
  - Water system components
  - Water system calculations
- What is the wastewater treatment facility capacity?
  - Treatment system components
  - Treatment system calculations

# Water System Capacity

- Regulated by Department of Health
- Drinking Water Permit
  - Current Status is Green 
- 2019 Water System Plan Update
  - Based on 2009 Water System Design Manual
  - Evaluated water system in detail

# Wastewater Process Components

- Source Supply (Wells)
- Water Rights
- Storage
- ~~■ Treatment~~
- Transmission
- Distribution
- Booster Pump Station



# Water System Analysis

- Average Day Demand ERU = 257 gpd/ERU
- Maximum Day Demand ERU = 720 gpd/ERU

Physical Capacity as ERUs	
Water System Component	Calculated Capacity ERU
Source(s)	3,073
Treatment	N/A
Equalizing Storage	5,145
Standby Storage	2,795
Distribution	N/A
Transmission	N/A
Water Rights, Qi	4,095
Water Rights, Qa	3,108
Booster Pump Station	250

# DOH Approved Connections



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- Per 2019 DOH Approval
  - 2,554 Connections Approved
- Water Facilities Inventory Report
  - 1,066 Existing Connections
- Available Connections
  - $2,554 - 1,066 = 1488$  ERUs(single family houses)

# WWTP Capacity



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- Regulated by Ecology
- State Waste Discharge Permit
  - Guidelines/Standards for capacity
- 2013 WWTP Engineering Report
  - Evaluated the process units in detail

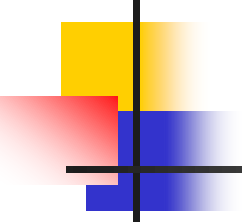
# Wastewater Process Components

- Liquid Process
  - Headworks Screen
  - Oxidation Ditch
  - Clarifiers
  - Effluent Pump Station
  - Rapid Infiltration Ponds
- Solids Handling
  - Aerobic Digester
  - Sludge Drying Beds



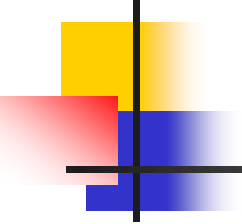


# WWTP Influent Data Analysis



<b>Influent Data</b>			
<b>Parameter</b>	<b>2005-2009</b>	<b>2015-2019</b>	<b>Permit Capacity</b>
Average Annual Flow (MGD)	0.190	0.113	-
Maximum Month Flow (MGD)	0.240	0.137	0.300
Maximum Day Flow (MGD)	0.310	0.308	0.420
Peak Hour Flow (MGD) <sup>(1)</sup>	0.414	0.414	-

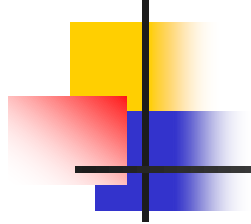
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Peak Hour Flow (MGD) <sup>(1)</sup>	0.414	0.414	-
Average Annual BOD <sub>5</sub> (lb/day)	286	170.0	-
Maximum Month BOD <sub>5</sub> (lb/day)	476	243.4	517
Average Annual TSS (lb/day)	250	147.0	-
Maximum Month TSS (lb/day)	485	346.9	465
Average Annual TKN (lb/day)	58	33.0	-
Maximum Month TKN (lb/day)	-	39.9	-

(1) Based on effluent pumps, not true peak hour events

# WWT Capacity Conclusions



<b>Process Unit Analysis (2013 Engineering Report)</b>		
<b>Parameter</b>	<b>Capacity Available</b>	<b>Treatment</b>
Headworks Screen	+200 ERUs	Peak Hour Flow
Oxidation Ditch	110 ERUs	Max Month Loading (BOD and TKN) Max Month Flow
Secondary Clarifier	----	Maximum Month Flow Max Month Loading (TSS)
Effluent Pump Station	+200 ERUs	Peak Hour Flow
Rapid Infiltration Ponds	+200 ERUs	Max Month Flow
Aerobic Digester	+200 ERUs	Max Month BOD, TSS, TKN
Sludge Drying Beds	42 ERUs	Max Month BOD, TSS, TKN

# Capacity Summary



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## ■ Wastewater Capacity

- *Approximately 110 ERUs available*
  - not an exact calculation – several limiting factors
- Concerns:
  - Aging Infrastructure
  - Capacity
  - Potential Project of \$4-5 million (estimated!)
- Recommendations:
  - Update Engineering Report in 2022 or 2023
  - OR with significant developer agreement
  - Approximate cost \$80,000

# Capacity Summary



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## ■ Water Capacity

- 1488 ERUs Available (single family homes)
- Concerns:
  - Aging Infrastructure
  - Source Wells
  - Reservoir
- Recommendations:
  - Monitor source wells for capacity
  - Continue path for reservoir
  - Update Water System Plan in 2027