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Deputy Exec. Mgr. Operations  
**Guadalupe Basin - 2019 CRP**  
**Basin Steering Committee Meeting**  
March 19, 2019



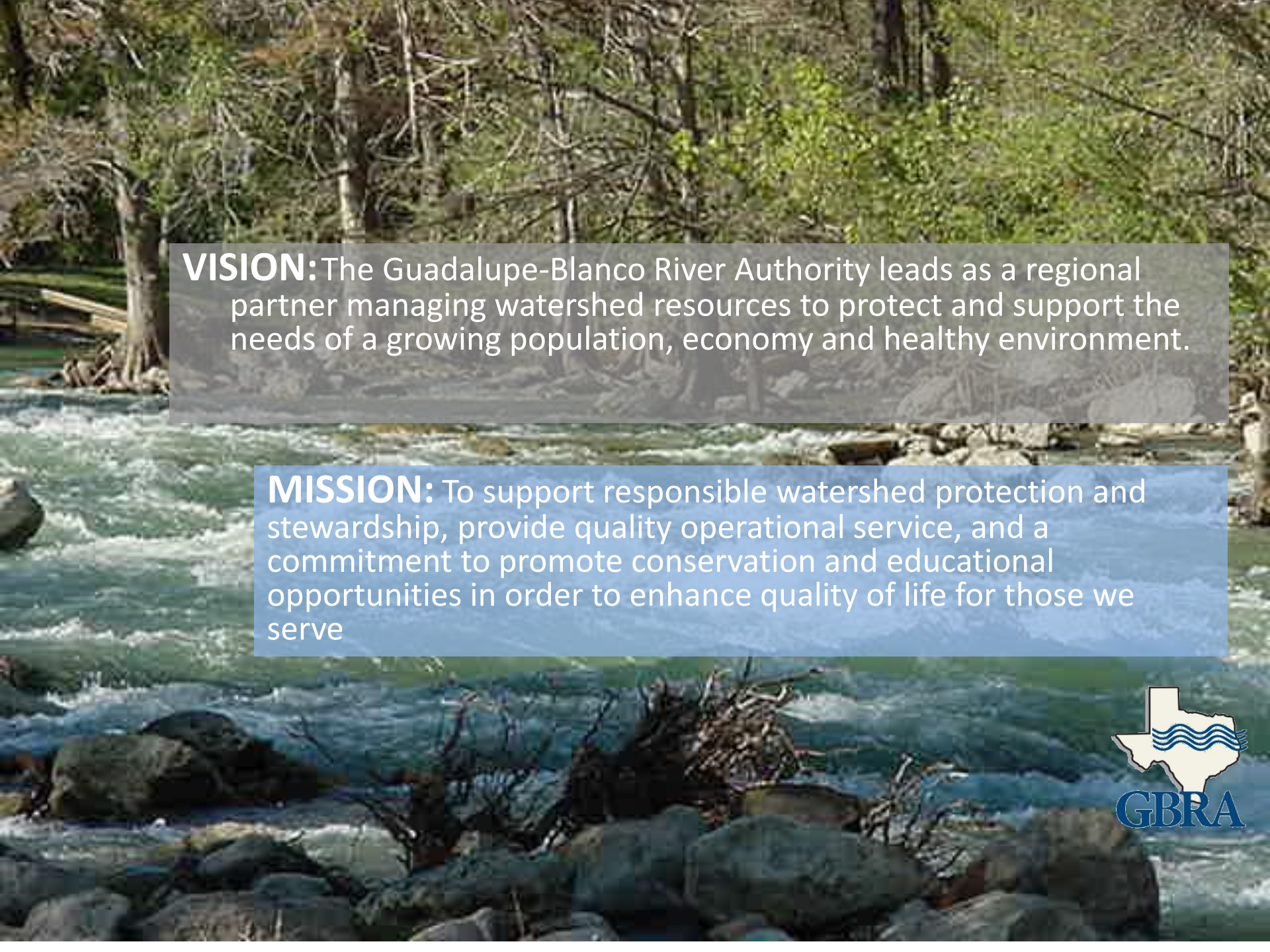
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# Why are We Afraid of Wastewater?



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**VISION:** The Guadalupe-Blanco River Authority leads as a regional partner managing watershed resources to protect and support the needs of a growing population, economy and healthy environment.

**MISSION:** To support responsible watershed protection and stewardship, provide quality operational service, and a commitment to promote conservation and educational opportunities in order to enhance quality of life for those we serve





# Wastewater Treatment



- GBRA operates 14 wastewater treatment plants that convert municipal waste into clean water
  - GBRA Rural Utilities Division - 3
  - Lockhart - 2
  - Buda Area -3
  - Bulverde Area – 5 (more coming)
  - Crestview in Calhoun County
- Each plant produces a high quality effluent, which is returned to rivers and streams for re-use
- Regular testing ensures that all influent, effluent and sludge meet state and federal requirements
- Each plant is inspected annually by TCEQ

# New Generation of Individuals in the Water Industry

- Baby Boomers retiring
- Good field for employment
- Protect the environment
- Continual learning
- Continuous advancement of technology
- Leaders – Help others be successful, be a good follower first



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# FEARS

F FALSE

E EVIDENCE

A APPEARING

R REAL



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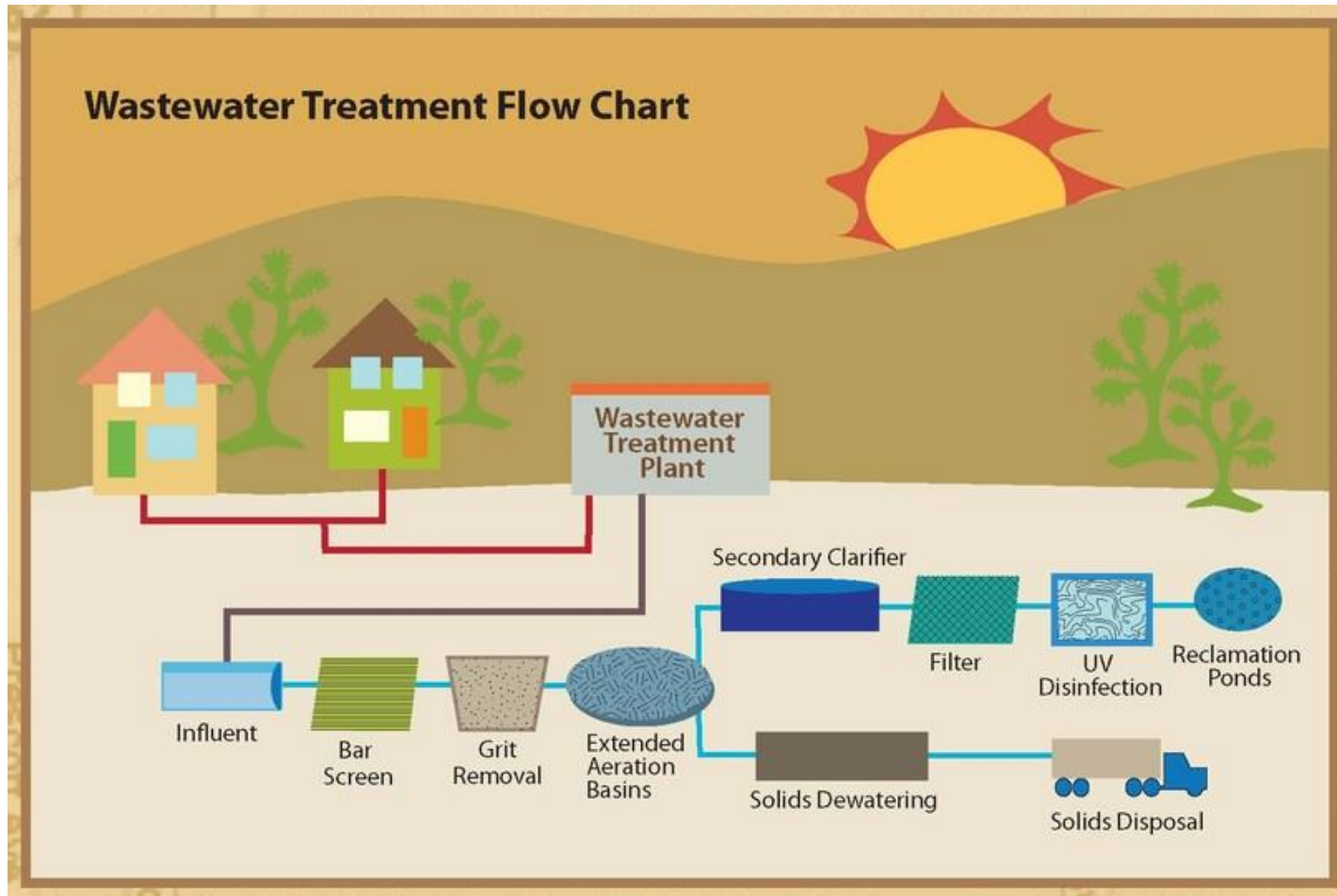


# Aerial View –Buda WWTP



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# Flow Diagram



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# Wastewater Process

- Convert Raw Wastewater Biomass into Bug Biomass (Raw to Bugs) – Tommy Hill, P.E.
- Bug Biomass (activated sludge) taken out of the process via sludge belt press
- Convert Raw Wastewater Ammonia to Nitrate (Biological Process)



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# Bar Screen to Screen Out Solids



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# Aeration Basin – Activated Sludge



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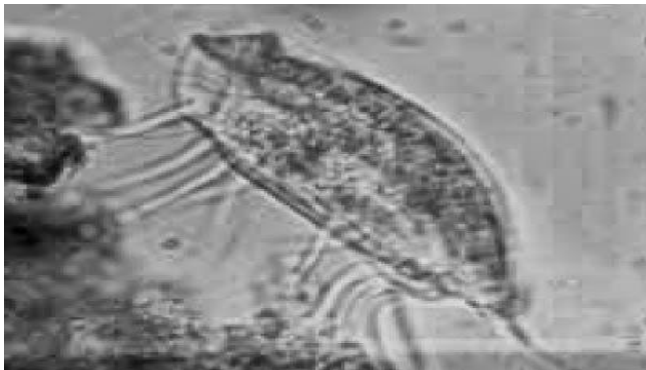
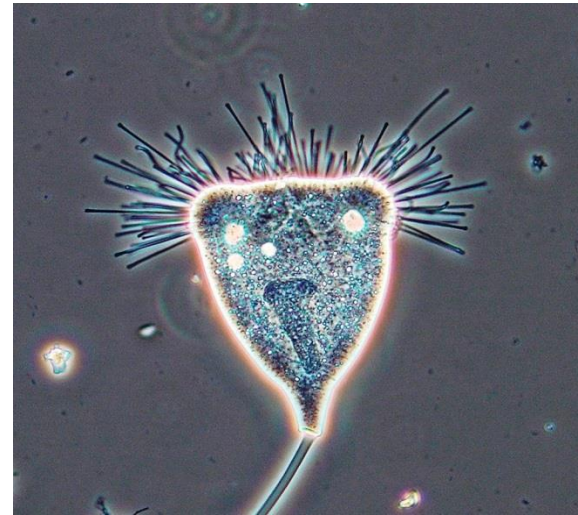
# Key to the Process is the Air Blowers



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# Organisms in the Activated Sludge

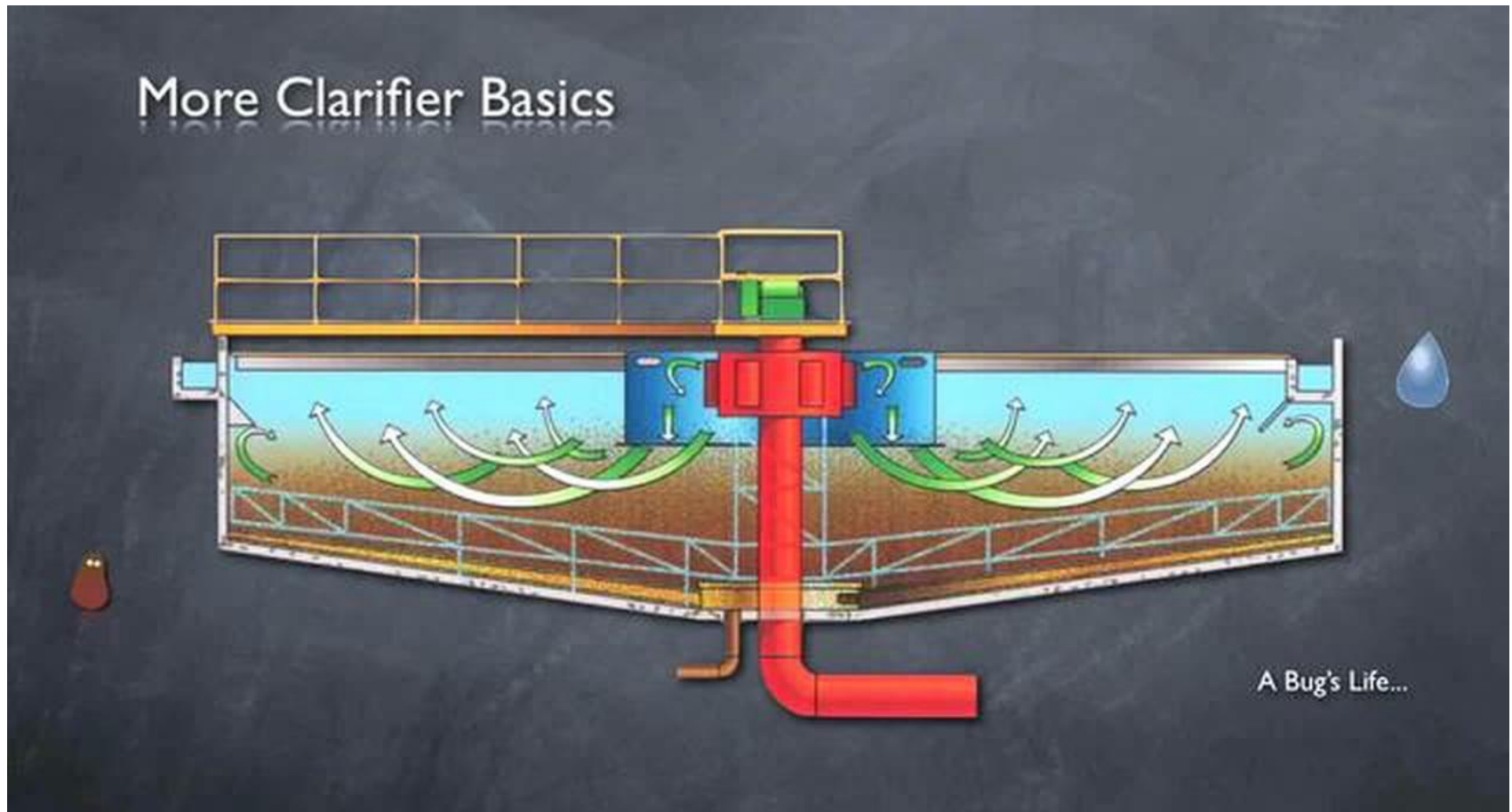


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# Clarification

## Sludge Settles – Clear Water On Top



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# Clarifier/30 Minute Settle Test



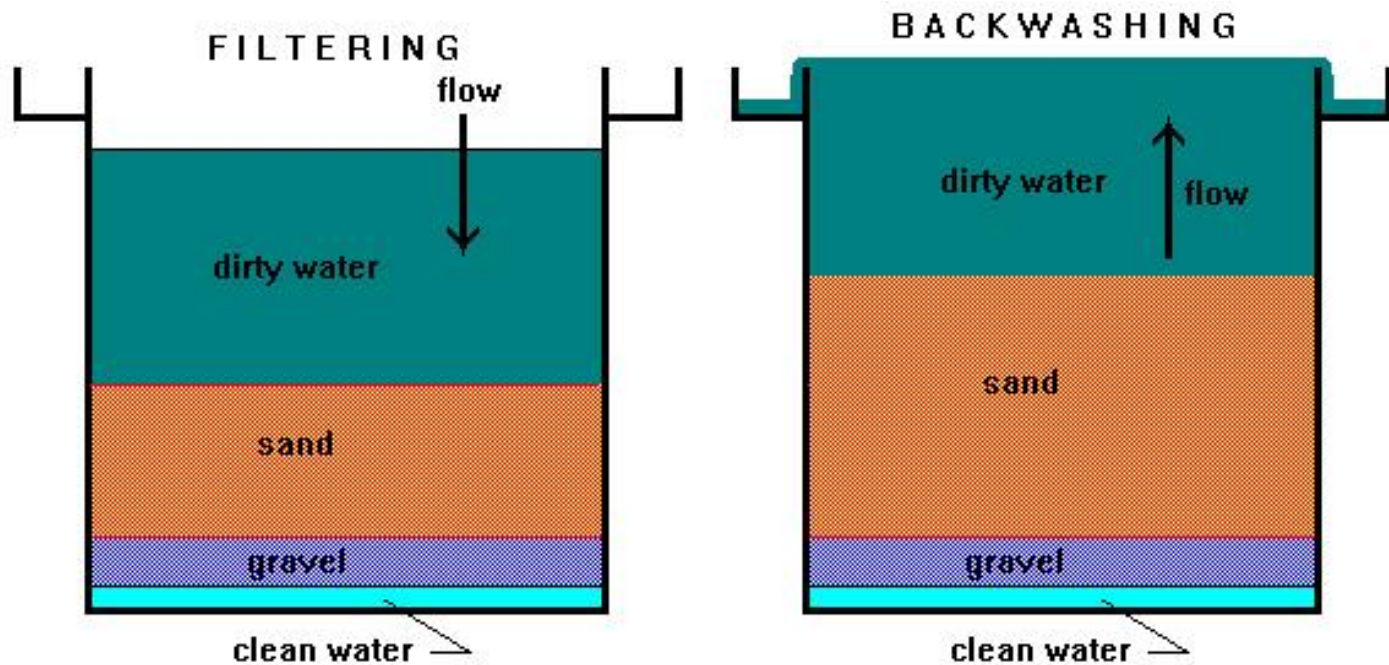
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# Chlorination/Dechlorination

- Chlorine to disinfect
- Sodium Bisulfate to De-Chlorinate before discharging to stream



# Sand Filters After Clarification



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# Effluent



Collect effluent samples weekly



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# Raw Wastewater and Effluent Comparison





# Stream Discharge



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# Plum Creek Watershed Monitoring

- Routine monitoring at 8 sites monthly
- Targeted wet/dry weather monitoring at 37 sites quarterly
- 7 Wastewater treatment facilities monthly
- Bacterial Source Tracking sampling project
- Biological monitoring on Plum Creek



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# Fish/Habitat/Benthic Organisms





# Biomonitoring of Effluent



# Benefits of Treated Wastewater

- Base flows of rivers during dry periods
- Base flows for downstream water rights
- Flows for irrigation from the river
- Base flows to sustain aquatic life
- Some communities drink treated wastewater (Direct Potable Reuse)



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**INTERIM 1 EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

Outfall Number 001

1. During the period beginning upon the date of issuance and lasting through two years and 365 days, the permittee is authorized to discharge subject to the following effluent limitations:

The annual average flow of effluent shall not exceed 1.50 million gallons per day (MGD), nor shall the average discharge during any two-hour period (2-hour peak) exceed 4,167 gallons per minute (gpm).

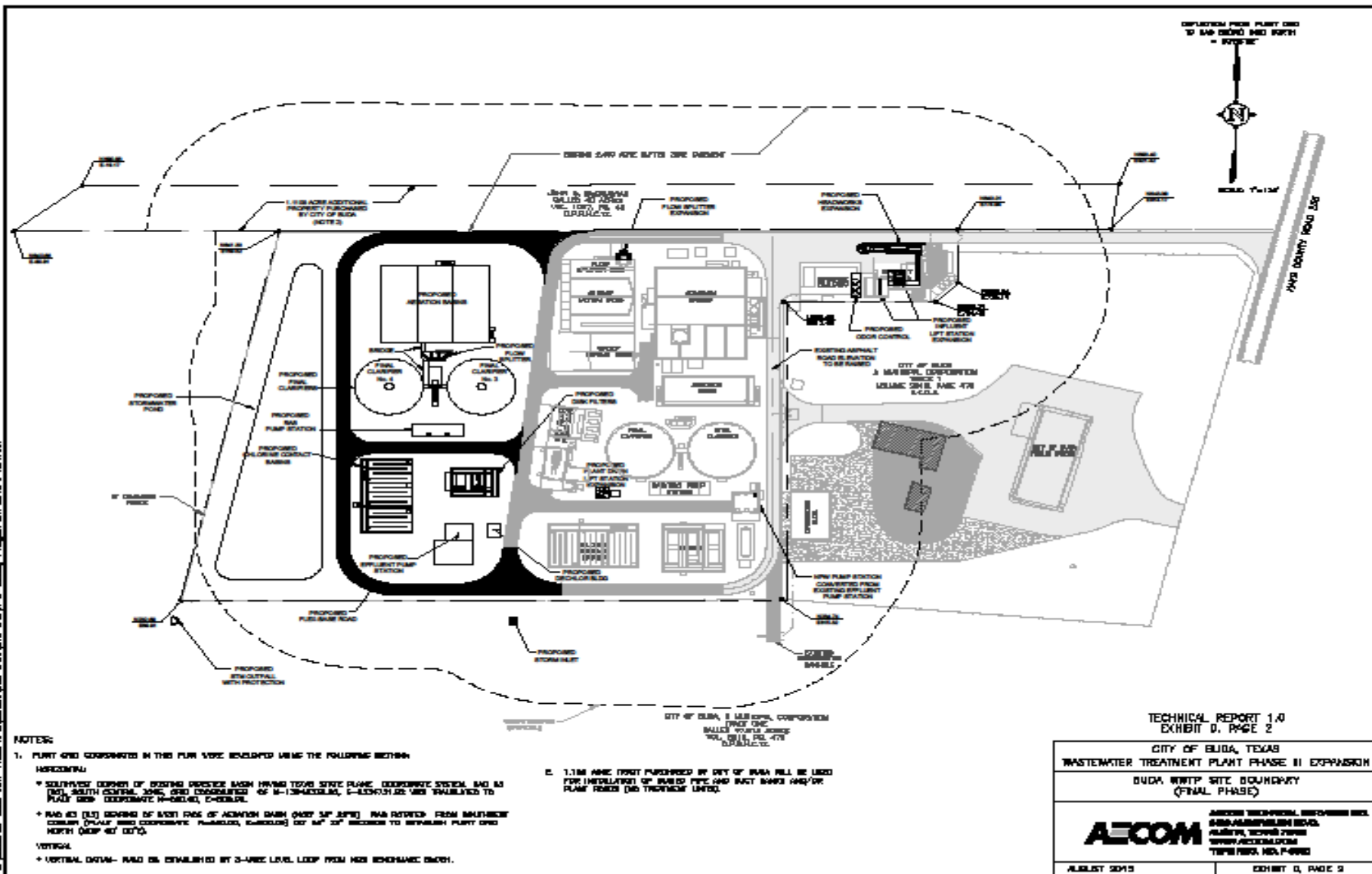
Effluent Characteristic	Discharge Limitations				Min. Self-Monitoring Requirements	
	Daily Avg mg/l (lbs/day)	7-day Avg mg/l	Daily Max mg/l	Single Grab mg/l	Report Daily Avg. & Daily Max. Measurement Frequency	Sample Type
Flow, MGD	Report	N/A	Report	N/A	Continuous	Totalizing Meter
Carbonaceous Biochemical Oxygen Demand (5-day)	5 (63)	10	20	30	Two/week	Composite
Total Suspended Solids	12 (150)	20	40	60	Two/week	Composite
Ammonia Nitrogen	2 (25)	5	10	15	Two/week	Composite
Total Phosphorus	0.8 (10)	2	4	6	Two/week	Composite
E. coli, colony forming units or most probable number per 100 ml.	126	N/A	399	N/A	One/week	Grab

2. The effluent shall contain a chlorine residual of at least 1.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored daily by grab sample at each chlorine contact chamber. The permittee shall dechlorinate the chlorinated effluent to less than 0.1 mg/l chlorine residual and shall monitor chlorine residual daily by grab sample after the dechlorination process. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
3. The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.
4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
5. Effluent monitoring samples shall be taken at the following location(s): Following the final treatment unit.
6. The effluent shall contain a minimum dissolved oxygen of 4.0 mg/l and shall be monitored twice per week by grab sample.
7. The annual average flow and maximum 2-hour peak flow shall be reported monthly.









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# What Are Your Fears?

- Ghosts
- Make you sick
- Someone Else's stuff
- Pharmaceuticals
- Heavy Metals
- Organics



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# FEAR

2 Meanings:

Forget Everything and Run

Face Everything And Rise

The Choice is Yours!



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# Take Home Points

- Find out more about wastewater
- Go talk to GBRA folks (tour water quality/lab operations, education, water/wastewater operations, engineering)
- Look into the water quality/laboratory/water-wastewater industry for employment
- ID your fears and develop a plan to conquer your fears (fears no longer control me)



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# Do not be Afraid of Wastewater!

## QUESTIONS?

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