

A scenic view of a lake at sunset or sunrise. The sky is a gradient of dark blue to orange, with the sun low on the horizon. The water is calm, reflecting the light. In the foreground, a wooden dock extends into the water. The shoreline is dark and silhouetted against the bright sky.

# Water Resources 2022 Annual Report

Water Resources Director: Randy Smith

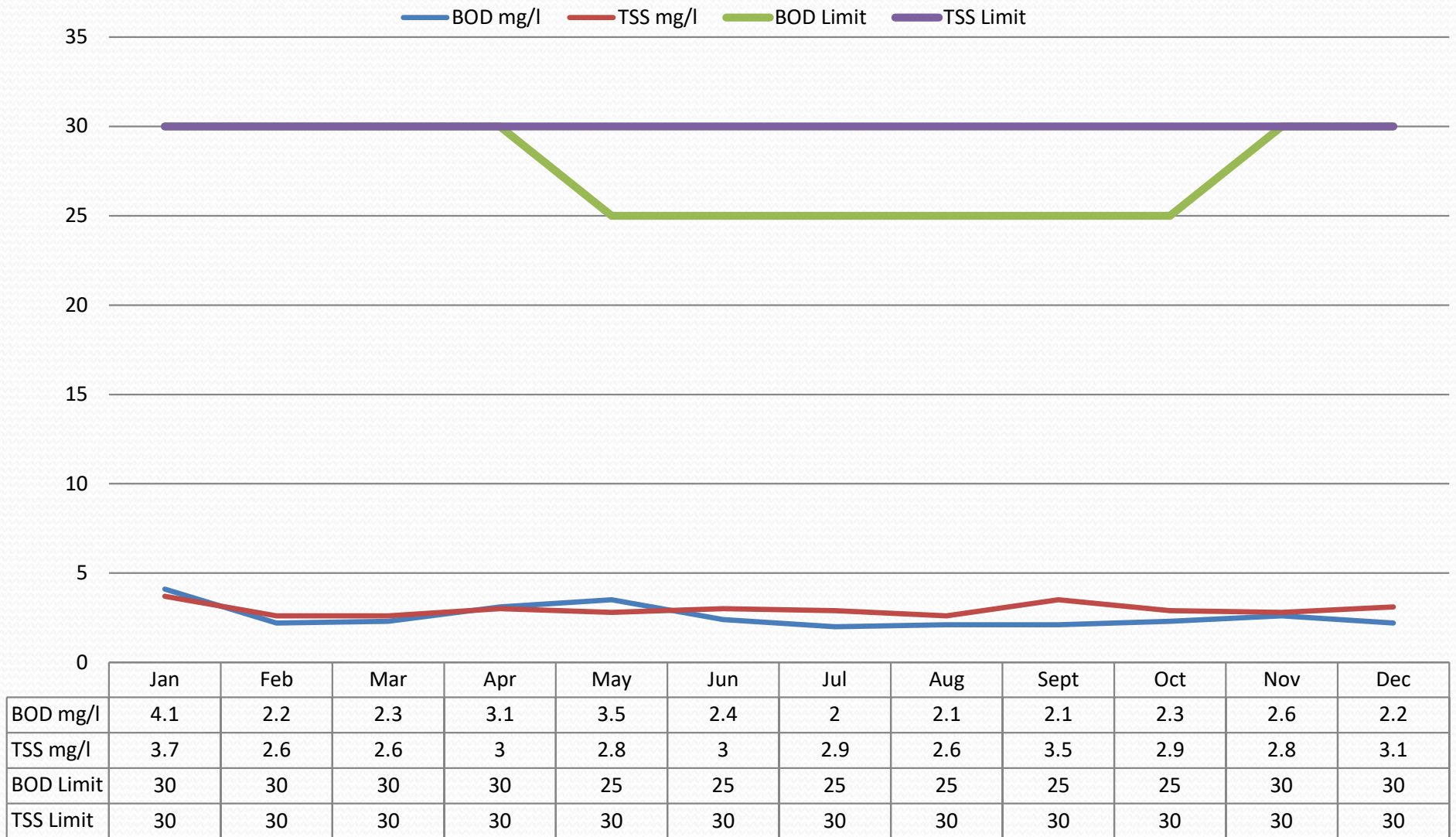


# Our Mission

**To promote and protect the environment, preserve natural resources, and ensure the health and safety of our customers.**

# Granite Falls Wastewater Treatment Plant

## Granite Falls Wastewater Treatment Plant (WWTP) Bio Oxygen Demand (BOD) & Total Suspended Solids (TSS) Results



BOD & TSS are two of the main indicators of facility efficiency.

# WWTP Average BOD & TSS

**Average Influent BOD**

**302**

**Average Effluent BOD**

**2.57**

Permit Limit: 25 / 30 mg/l

**Average Influent TSS**

**161**

**Average Effluent TSS**

**2.96**

Permit Limit: 30 mg/l

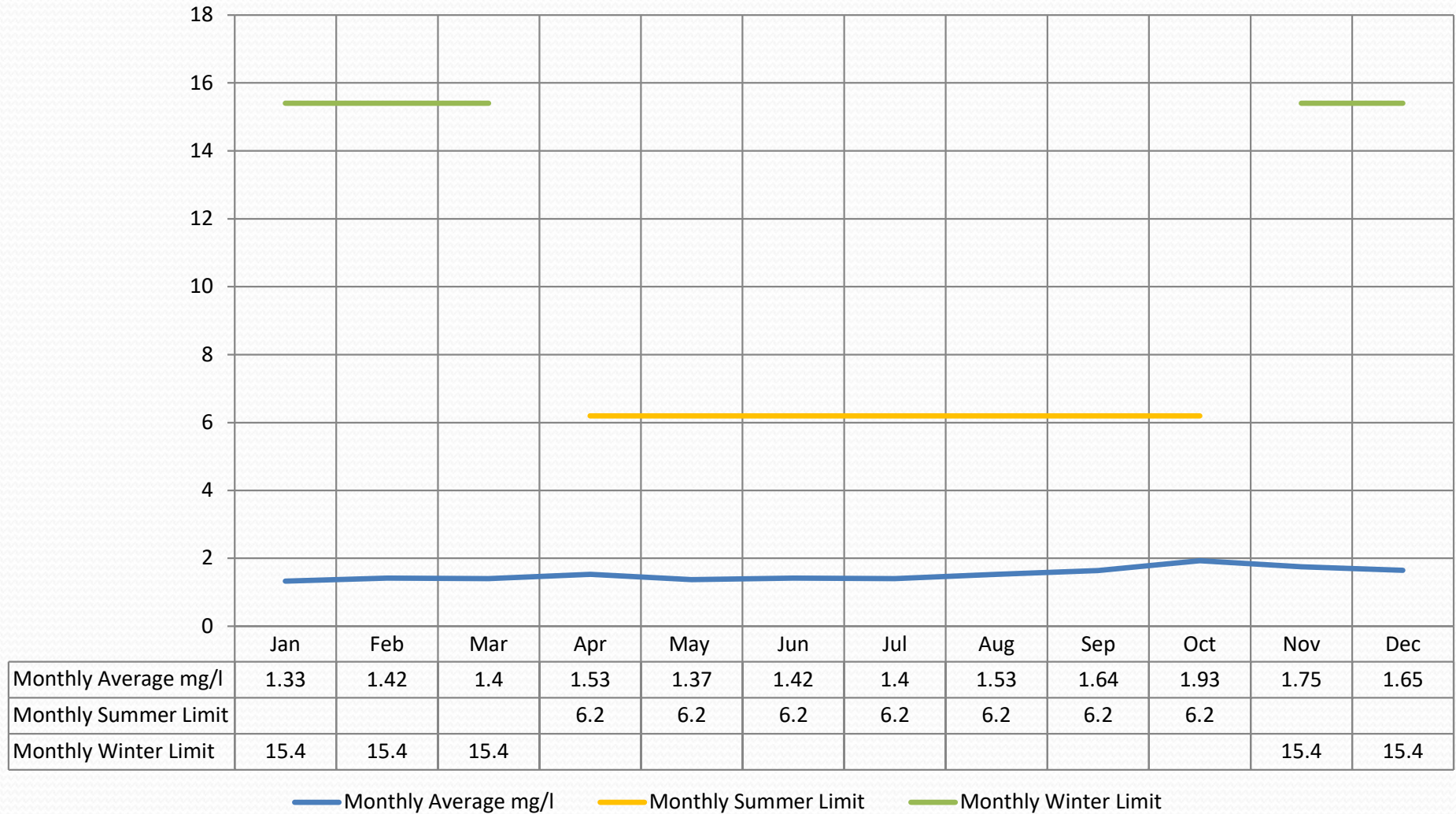
**Overall Treatment  
Plant Efficiency (Actual)**

**98.5%**

**Rate Efficiency of  
Treatment Plan (Design)**

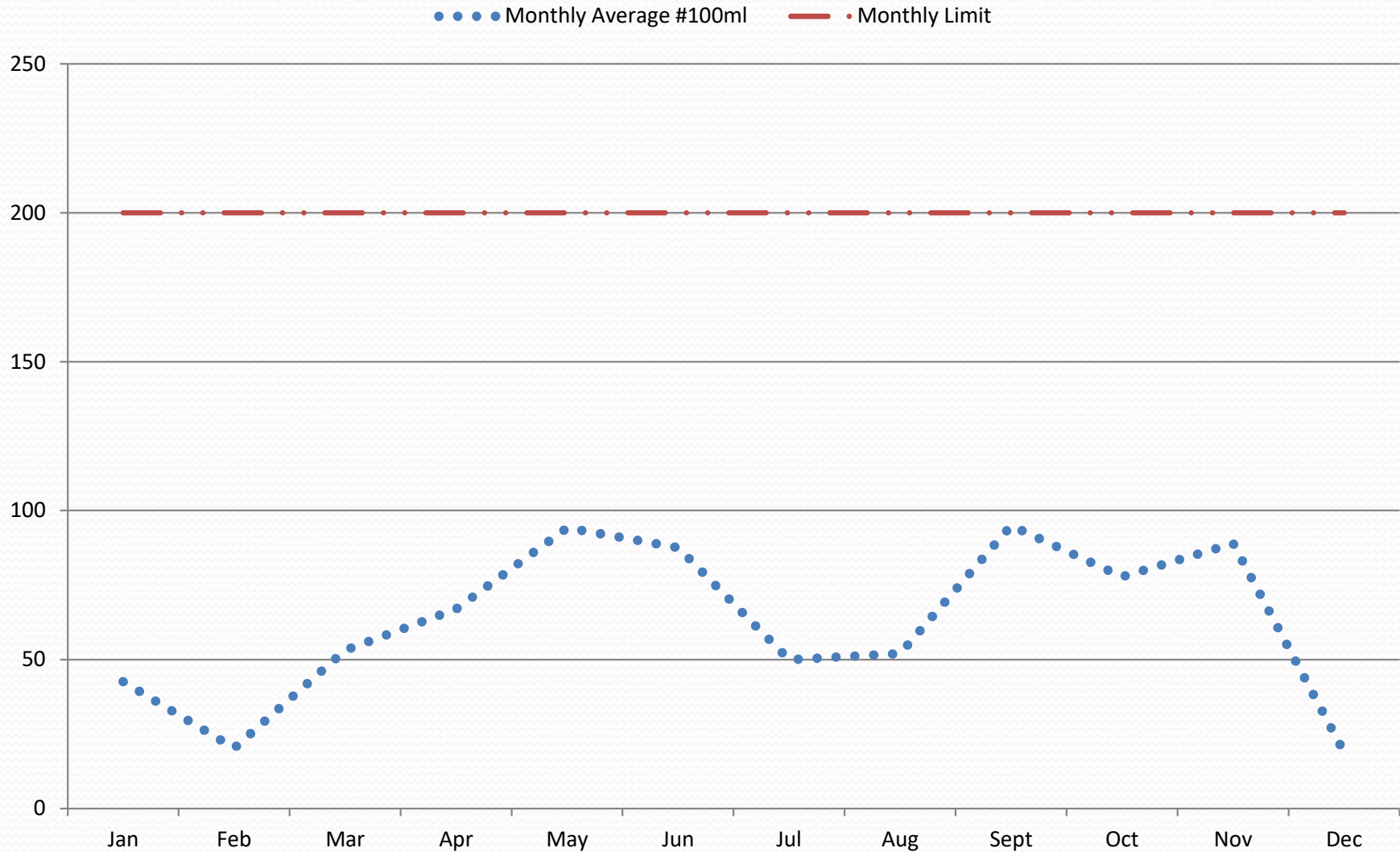
**87%**

## Granite Falls Wastewater Treatment Plant Ammonia Nitrogen Results



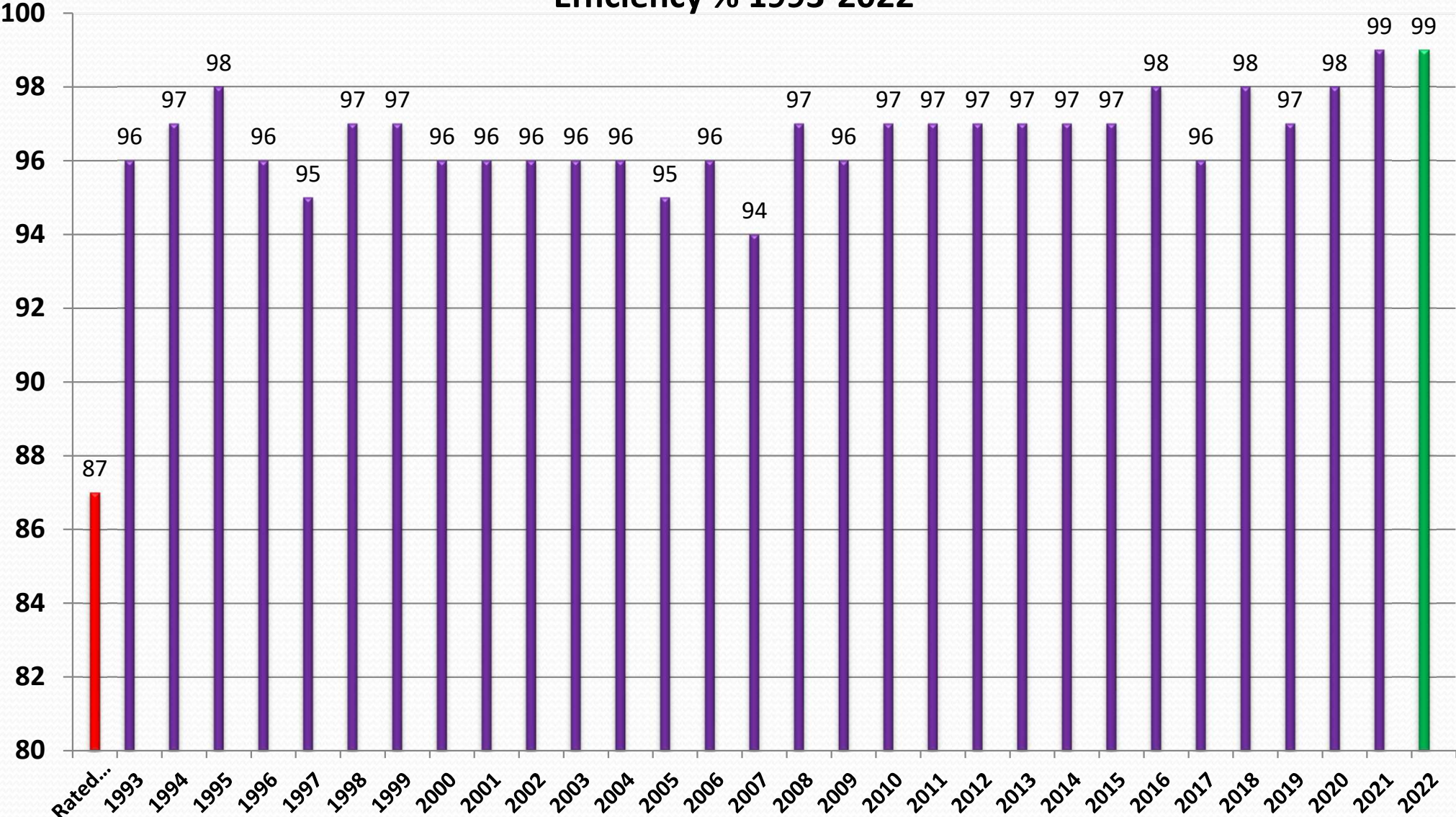
Ammonia Nitrogen is also an indicator of the efficiency of the wastewater treatment process. Our facility operates well below the permitted limits for this chemical compound.

## Granite Falls Wastewater Treatment Plant Fecal Coliform Results



Fecal Coliform are pathogenic organisms that must be removed from our discharge in order to meet state and federal standards. We have consistently discharged significantly less than our permitted limit.

# Granite Falls Wastewater Treatment Plant Efficiency % 1993-2022

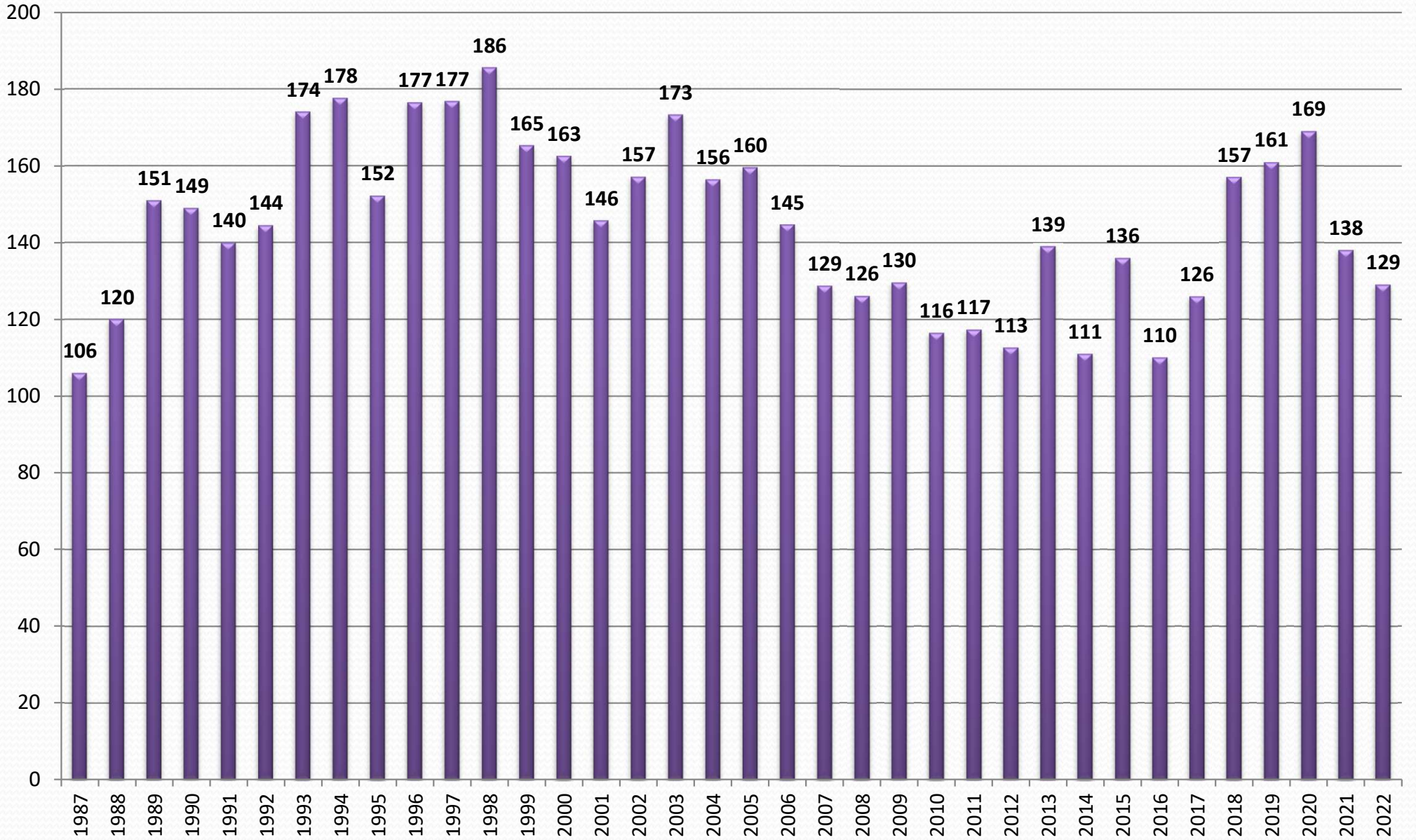


**DESIGN RATED EFFICIENCY: 87%**

**ACTUAL 2022 EFFICIENCY: 99%**

# TOTAL YEARLY FLOW 1987 - 2022

\*TOTAL FLOW IN MILLION GALLONS



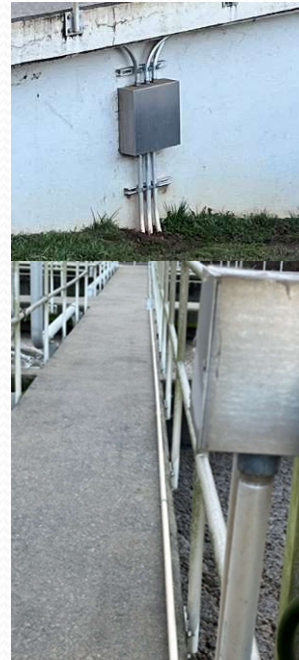


The Granite Falls Wastewater Treatment Plant treated 129,036,000 gallons, or an average of 352,917 gallons per day, of wastewater while meeting all effluent limitations in our permit. The Treatment Plant operated at 39.2% of its permitted capacity of 900,000 gallons per day and achieved a 99% combined efficiency removal rate.

# Wastewater Treatment Plant Improvements



Replaced Return Pump



Ran new electrical line for Vaughan chopper pumps in oxidation ditch



Updated Return Flow Chart to Digital Display



Replaced backflow assembly



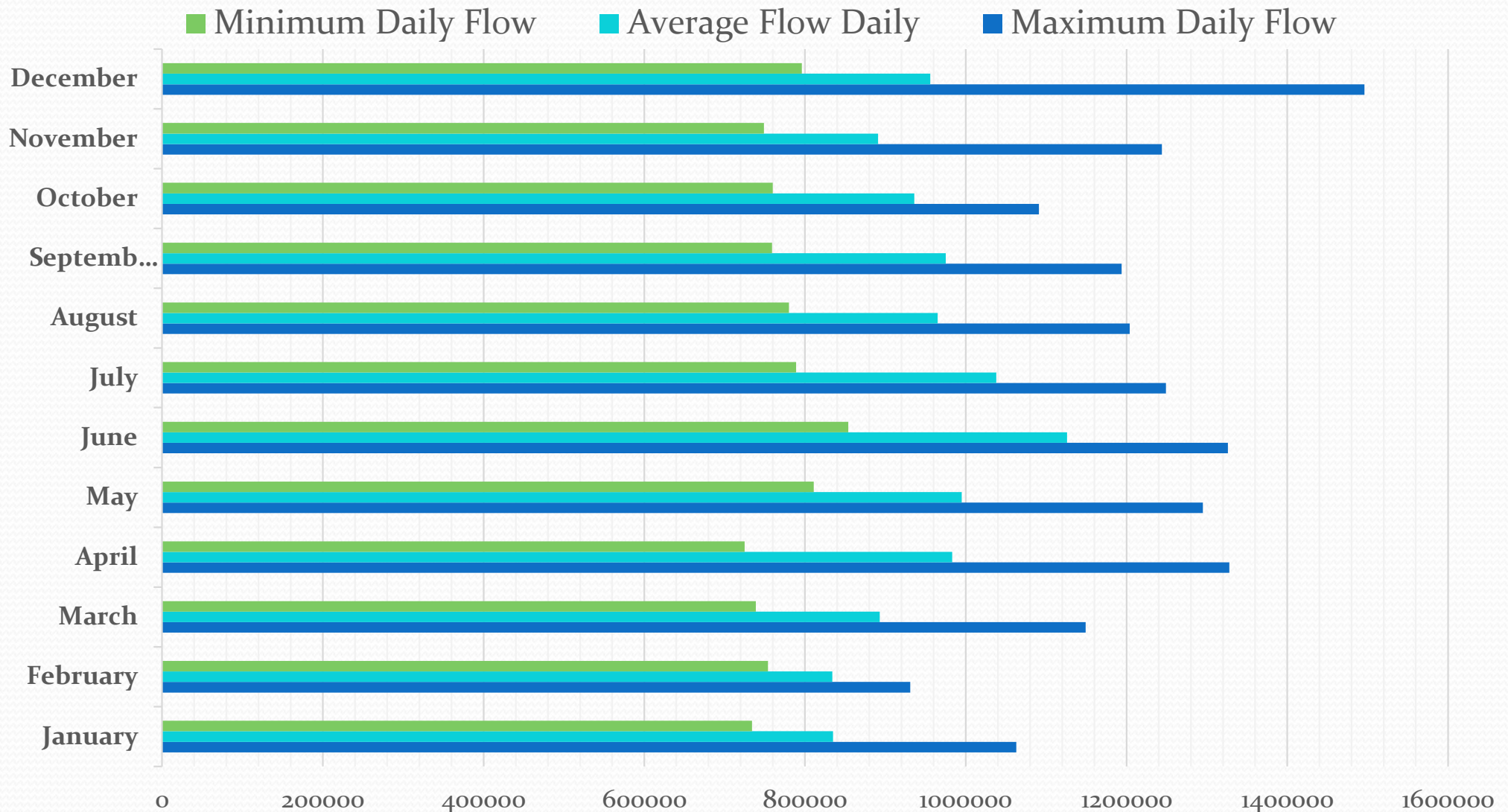
Plant staff completed lab proficiency certification for field analysis during 2022. There were no compliance issues during 2022.

# Granite Falls Water Treatment Plant

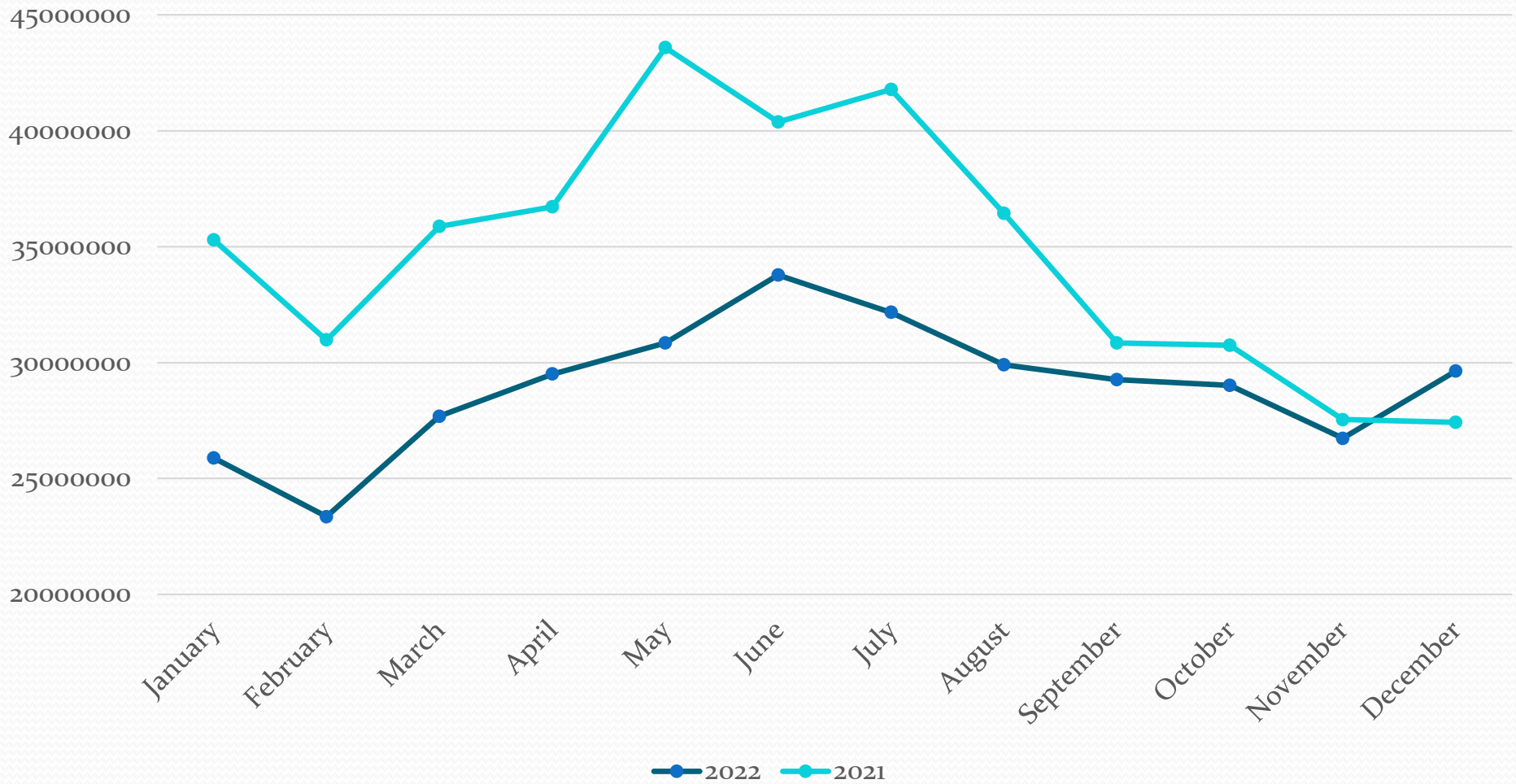


The Granite Falls Water Treatment Plant treated 347,732,000 gallons, or an average of 952,690 per day, of water while exceeding all drinking water quality standards. The Treatment Plant operated at 38.1% of its permitted capacity of 2,500,000 gallons per day.

# Monthly Water Treatment Plant Flow



# Flow Comparison



There was a 16.73% decrease in water treated during 2022.

# Water Treatment Plant Chemicals Used

Chemical	Amount Used
Activated Carbon	0 lbs.
Aluminum Sulfate	15,905 gals
Fluoride	18,194 lbs.
Lime Slurry	19,411 gals
Polymer	576 lbs.
Sodium Hypochlorite (Bleach)	6,436 gals
Sodium Permanganate	0 gals

# Water Treatment Plant Improvements



*Old clearwell  
prior to being  
resurfaced*

Resurfaced  
old  
clearwell

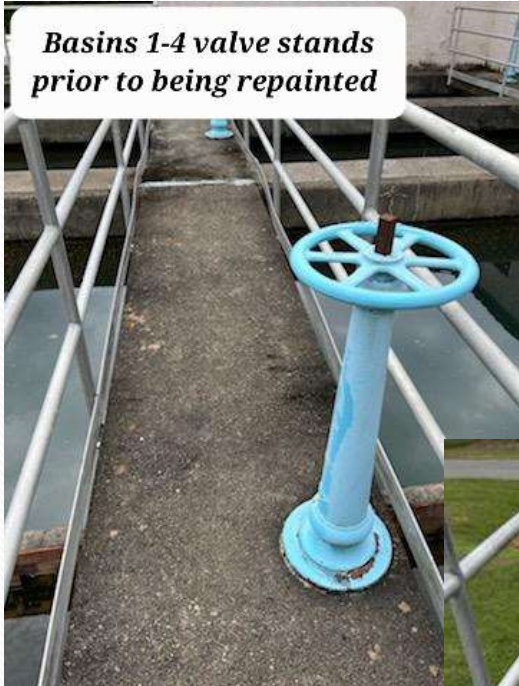


*Old clearwell  
after being  
resurfaced*

- Replaced waste valve actuators on filters 3 and 4
- Upgraded security camera system
- Repaired trac-vac on basin 6
- Installed fiber optic cable from main building to finished water pump house
- Rebuilt surge valve in finished water pump house
- Installed new Rosemont for filter 2 loss of head

# Water Treatment Plant Improvements

*Basins 1-4 valve stands prior to being repainted*



Repainted valve stands on basins 1-4



*Basins 1-4 valve stands after being repainted*



*New backwash valve and actuator on filter 4*

Replaced backwash valve and actuator on filter 4

# Water Treatment Plant Improvements

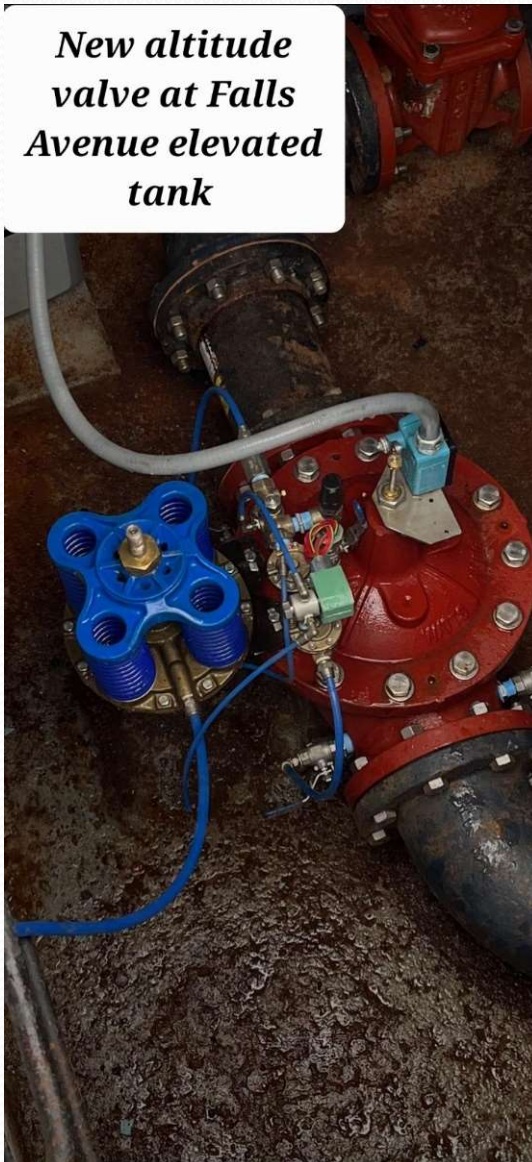


*Falls Avenue tank overflow before installation of flapper valve*

Installed flapper valve on Falls Avenue elevated tank overflow



*Falls Avenue tank overflow after installation of flapper valve*



*New altitude valve at Falls Avenue elevated tank*

Replaced altitude valves at both Pinewood and Falls Avenue elevated tanks

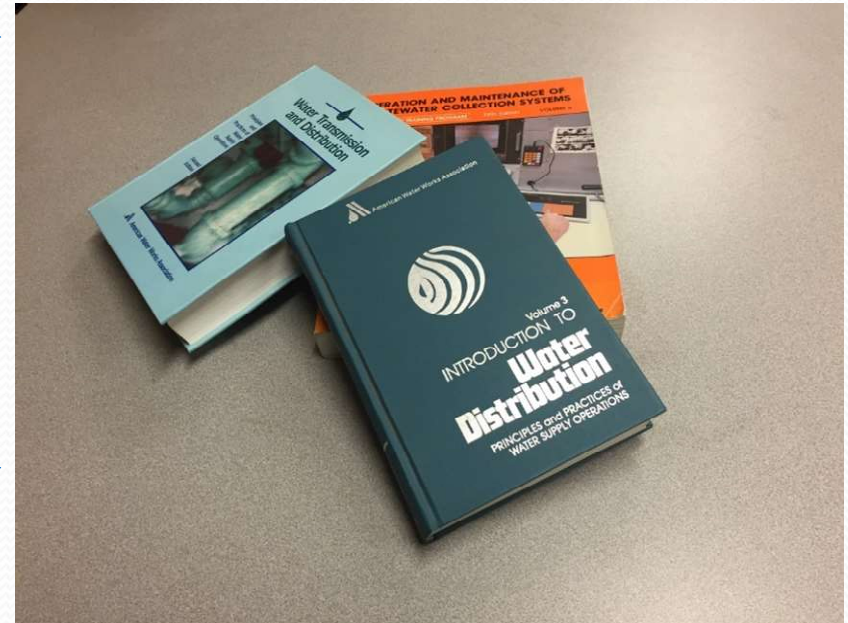
## Training, Qualifications, and Awards

All Water Resources staff obtained their mandatory six hours of continuing education to maintain their certifications.

All staff members attended required safety training.

Sixth Consecutive Year Gold Safety Award from NC Department of Labor for Public Utilities

Ronald (Ronnie) B. Herman retired effective May 1, 2022. Ronald (Davie) Jones transferred from the Public Works Department to take the position left vacant by Ronnie's retirement. Davie had six months of training, during which time he received his Grade "C" Surface Water Certification.



# In Conclusion

Our Water Resources employees are operating both facilities at efficient levels. Drinking water and wastewater qualities continue to meet and/or exceed state and federal standards. We will continue to provide high quality water to our customers and return high quality water to the environment by the most efficient means available.