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| 2019 Annual Wastewater Report |
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**Gualala Community Services District**

2019

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2019 Annual Wastewater Report

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### Introduction

The Gualala Wastewater facility is maintained and operated by the Gualala Community Services District (GCSD). The wastewater plant receives its water from the town of Gualala, California and from north end of Sea Ranch, California. The collection system for the town of Gualala is a unique system known as a Septic Step System. This system utilizes septic tanks, which collects the domestic wastewater from the homes and businesses. The solids settle in the septic tank and the effluent water that remains on top is either pumped out or leaves the tank by gravity to four sewer lift stations. The main lift station is LS#4, which consists of five pumps (two low flow pumps and three high flow pumps) that pump the wastewater to the treatment facility. The domestic wastewater from the North end of Sea Ranch is collected in a traditional sewer collection system and flows to their North Treatment Plant (NTP). From there it is stored in an aerated lagoon and is then pumped to the Gualala Wastewater facility for further treatment.

The Gualala treatment facility utilizes the Extended Aeration process to treat its wastewater. After the wastewater is initially treated the wastewater goes through a tertiary treatment process in order to meet Title 22 requirements set forth by the State Water Resources Control Board (SWRCB). After this process the treated water is then stored in four storage ponds (three at the Gualala Wastewater facility and one located at NTP in Sea Ranch), combined there is a maximum capacity of 28.4 million gallons of water storage. This stored water is then sent to the Sea Ranch Golf Links for irrigation on the golf course.

GCSD is still in the process of renewing its WDR permit and is working in conjunction with The Sea Ranch Water Company and Sonoma County Water Agency. Once the permit is approved GCSD will become the Master Discharger for all agencies involved.

### Operations

### Influent Treatment

Normally there would be a pretreatment and a preliminary treatment process before the influent enters the wastewater plant, but because of GCSD utilizes a step collection system there is no need for either process. However, the influent goes through a preliminary treatment process at the North Treatment Plant in Sea Ranch by the use of a comminutor and a manual bar screen. This preliminary treatment is done in order to remove non-organic solids from the wastewater stream. These solids can include rags, grease, and other material that if allowed to continue downstream would cause damage to equipment necessary for other processes. The table on the following page shows the average BOD (Biochemical Oxygen Demand), TSS (Total Suspended Solids), and combined Influent flows. BOD is the amount of dissolved oxygen needed (i.e. demanded) by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period. It also shows the total flow GCSD receives from both facilities.

A summary of the average influent flows, TSS, and BOD for the past three years is listed in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2017** | **2018** | **2019** |
| **Influent Flow (Mean Monthly Avg.), MG** | **2.75** | **3.87** | **2.31** |
| **Influent TSS, (Monthly Avg.) mg/l** | **71\*** | **95** | **87** |
| **Influent BOD, (Monthly Avg.) mg/l** | **200\*** | **179** | **144** |
| **Total Annual Flow, MG (Million Gallons)** | **33.08** | **46.46** | **39.17** |

\* These averages were from July – December 2017.

In 2019 the plant operated at an average dry weather flow of .065 MGD (Million Gallons a Day), and during the wet weather the plant experienced flows of .0753 MGD from both Gualala and the North Treatment plant at Sea Ranch.

### Effluent Treatment

In an Extended Aeration process the influent from the collection system is mixed with Returned Activated Sludge (RAS) in an aeration basin. When RAS is mixed with the collection system flow it becomes Mixed Liquor or MLSS. The aeration basin is then mixed, and Dissolved oxygen is added to allow the microorganisms to multiply and feed. This process allows the microorganisms to breakdown the waste. In the next step of the process the wastewater enters a mixing chamber, where coagulate is added to the wastewater before it enters two secondary clarifiers. The coagulate attaches itself to the sludge and allows the sludge to settle more efficiently in the clarifiers. This sludge is either returned to the aeration basin or is wasted to a sludge holding basin.

After the wastewater enters the clarifiers the heavy sludge settles to the bottom while the lighter sludge floats to the surface and is skimmed off. The water that flows from the clarifier is considered treated wastewater, but GCSD treats its water further through a process known as Tertiary treatment, so it can meet Title 22 standards. Title 22 standards must be meet because the treated recycled water is used for irrigation on the Sea Ranch Golf Links.

### Tertiary Treatment

After the wastewater leaves the clarifiers it flows to either a Sand Bridge Filter or a Nova Disc Filter. Title 22 requirements state that the clarity of the wastewater must be lower the 2.0 NTU’s (Nephelometric Turbidity Unit). The table on the next page shows that GCSD effluent turbidity levels are well below State requirements.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2017** | **2018** | **2019** |
| **Effluent Daily NTU Avg.** | **.35** | **.16** | **.35** |

As the wastewater leaves the filter it enters the Chlorine Contact Chamber (CCC). As the name implies Chlorine is added to the chamber in order to disinfect the wastewater. The purpose of the CCC is to neutralize viruses and kill any bacteria that may still be in the water. Our current contact time is 210 minutes. This contact time well exceeds the State requirement for disinfection. Our State requirements are to maintain a chlorine residual of at least 1.5 mg/l. The table below shows the monthly average for chlorine residual for the past three years.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2017** | **2018** | **2019** |
| **Effluent Chlorine Residual Daily Avg.** | **2.39** | **2.89** | **3.07** |

After the wastewater leaves the CCC it is disbursed into three storage ponds located at the GCSD wastewater facility or a storage pond located at the North Treatment Plant. It is then transferred to two holding ponds located at the Sea Ranch Golf Links where it is then pumped into the irrigation system to irrigate the golf course.

### Solids Handling

The sludge that settles to the bottom of the clarifier is either returned back to the aeration basin or is wasted to the sludge holding basin. When the sludge is wasted it becomes Waste Activated Sludge (WAS). WAS is the excess quantity measured in mg/l of microorganisms that must be removed in order to maintain a biological balance within the system. The WAS is stored during the winter months and is discharged to the sludge drying bed in the dry months. It was past practice to bury the sludge onsite once it was dry enough, but GCSD is no longer burying its sludge onsite and is currently dried and hauled to a landfill located in Fairfield, Ca.

### Maintenance

The WWTP personnel performs a variety of scheduled, preventative, predictive, and breakdown maintenance on variety of equipment. The main goal of our maintenance plan is to ensure our equipment meets plant process requirements. The maintenance plan minimizes call outs, reduces the need for overtime, and greatly reduces the potential for discharge violations due to mechanical failure.

With the process of issuing a new WDR permit GCSD became aware that we are not meeting current Title 22 standards and had to install and implement new processes and equipment. With these latest changes an updated maintenance plan will implemented. Some of the additional items that have been implemented are as follows:

1. Complete SCADA system upgrade (completed in May 2018).
2. Adding additional alarms required for current Title 22 standards (completed in the SCADA upgrade).
3. Adding redundancy to certain processes required by Title 22 standards (completed in the SCADA upgrade).
4. New VFD controls for the WAS/RAS pumps (completed in the SCADA upgrade).
5. Remove the surface aerator in the aeration basin and replace the aerator with an Aqua DDM mixer (completed in February 2018).
6. Replacing the influent and effluent flow meters, added a flow meter upstream of the Sand filter, and replaced the RAS/WAS flow meter (completed in February 2018).
7. Add flow paced dosage control for both the chlorine and coagulate (completed in the SCADA upgrade).
8. Adding flow control on SCADA for effluent discharge to the golf course (completed in the SCADA upgrade).
9. Updated the alarm notification program (completed in the SCADA upgrade).
10. Completed a complete rehab of Clarifier #1 (completed in October 2019).
11. Completed epoxy lining on Lift Stations #1, #2, and #3 (completed in May 2019).
12. Installation of an onsite chlorine generation (In Process).

### Chemicals

Chemicals are used for a variety of treatment processes. Because of the small size of GCSD and it’s WWTP, GCSD utilizes only three chemicals, which are as follows:

1. Sodium Hypochlorite (Liquid Chlorine) 12.5 % - This is used for disinfection purposes in the Chlorine Contact Chamber. Title 22 requires that treated wastewater have a residual on a 30-day average with a minimum 1.5 mg/l.
2. JC- 1679 (Coagulate) – Coagulate is used before the wastewater enters the clarifiers to assist in the settling capabilities of the sludge. Also, the coagulate helps the sand filter meet the NTU requirements of less than 2.0.
3. Sodium Bicarbonate – This is added periodically to the aeration basin for PH control.

### Staffing and Training

GCSD employs 4 individuals, which consists of the District Manager/ Chief Plant Operator, two Grade 2 Operators, and an Administrative Assistant. GCSD has an extensive training program that allows its employees to expand their abilities and knowledge, which results in better service not only to GCSD but to the public as well. Throughout the year GCSD staff is encouraged to attend various training seminars that cover the following topics:

1. Accident, Reporting, and Incident procedures
2. Confined Space
3. Fall Protection
4. Sexual Harassment
5. Chemical and Fire Safety
6. Septic Tank Inspections
7. Test preparation for the State Wastewater License

### Laboratory Analysis

Because of the location of GCSD and its WWTP all reportable lab analysis is sent to Brelje and Race Laboratories located in Santa Rosa. GCSD has to meet certain criteria on order to meet the State requirements. The table on the following page shows what GCSD currently has to test for and the parameters we cannot exceed:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Constituent** | **30-day Avg.** | **7-day Avg.** | **Monthly Median** | **Daily Maximum** |
| **BOD** | 10 mg/l | 15 mg/l | N/A | 20 mg/l |
| **TSS** | 10 mg/l | 15 mg/l | N/A | 20 mg/l |
| **Total Coliform** | N/A | N/A | 2.2 MPN/100 ml | 23 MPN/100 ml |
| **Turbidity** | 2.0 NTU \* | N/A | N/A | 5 NTU |
| **Chlorine Residual** | 1.5 mg/l \* | N/A | N/A | N/A |

\*Daily Average and is monitored onsite.

With the process of the new WDR permit and the Title 22 requirements some of the sampling parameters will change, and because of this change GCSD is awaiting ELAP inspection so we can become an accredited laboratory. If GCSD is able to become accredited most of our required samples will be done onsite.

### Sanitary Sewer Overflows (SSO)

There were no sewer overflows in 2019

### Certification of Report

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including fine and imprisonment for withholding information regarding permit violations.

If you have any questions or need additional information please feel free to contact me via email at [ctroyan@gualalacsd.org](mailto:ctroyan@gualalacsd.org) or [gcsdplant@gmail.com](mailto:gcsdplant@gmail.com). If you would like to call instead of communicating by email my office number is (707) 785-2331.

Sincerely,



Chris Troyan

General Manager/CPO – WW Grade V #28295

Gualala Community Services District

### Appendix A Meter Calibration Reports

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### Appendix B Performance Data and Charts

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2019** | **Jan** | **Feb** | **Mar** | **April** | **May** | **June** | **July** | **Aug** | **Sept** | **Oct** | **Nov** | **Dec** |
| **Inf.-MG** | 1.056 | 1.435 | 1.110 | .799 | 1.106 | .977 | 1.097 | 1.019 | .643 | .651 | .807 | .788 |
| **Eff.-MG** | .464 | 3.300 | 2.948 | 1.684 | 1.832 | 5.835 | 6.576 | 7.133 | 5.296 | 2.260 | 1.837 | 0.000 |
| **CSA6-MG** | 2.039 | 2.241 | 2.620 | 2.524 | 1.508 | 1.426 | .728 | 1.326 | .7505 | .696 | .971 | 1.495 |
| **Coliform-mg/l** | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | 6.6 \*\* | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| **BOD-mg/l** | 7.25 | <5.0 | <5.0 | 7.07 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| **TSS-mg/l** | <1.0 | <1.0 | <1.0 | 1.07 | 1.87 | <1.0 | 3.1 | 1.87 | <1.0 | 1.70 | <1.0 | <1.0 |
| **Chlorine-mg/l** | 3.09 | 3.31 | 3.14 | 2.82 | 2.89 | 2.62 | 2.83 | 2.85 | 3.08 | 3.65 | 3.66 | 3.07 |
| **Turbidity-NTU** | .12 | .25 | .21 | .29 | .56 | .32 | .18 | .47 | .49 | .64 | .47 | .0352 |
| **Rain-inches** | 10.88 | 19.80 | 10.23 | 3.44 | 6.77 | 0.0 | 0.0 | 0.0 | .47 | 0.0 | 4.66 | 5.79 |
| **Leachate- Gal** | 22966 | 25023 | 35026 | 12530 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9605 |
| **Ammonia**  **Eff.-mg/l** | .50 | <0.20 | <0.20 | .0.20 | 0.40 | 29 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 | <0.20 |
| **TON**  **Eff.-mg/l** | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 | 10 | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 |
| **TKN**  **Eff.-mg/l** | 0.75 | <0.40 | <0.40 | <0.40 | 0.75 | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 |
| **Nitrite**  **Eff.-mg/l** | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 | <0.40 | 2.80 | N/A | <0.40 | <0.40 | <0.40 | 4.90 |
| **Nitrate**  **Eff.-mg/l** | 44 | 30 | 19 | 30 | 53 | 38 | 45 | 39 | 48 | 53 | 53 | 56 |
| **Perc Pond-MG** | 0 | 0 | 4.5406 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

\*\*Bad sample was collected on July 31, 2018. Operator took sample without wearing gloves, which caused a high reading.