NPDES Compliance Inspection Report

Paradise WWTP

Paradise, WA

NPDES Tracking Number

WA0025569

Inspection Date: August 30, 2022

Prepared by:

CJ Langlois
U.S. Environmental Protection Agency, Region 10
Enforcement & Compliance Assurance Division
Water Enforcement & Field Branch
Field, Data & Drinking Water Enforcement Section

Inspector Signature/Date:

Langlois, Curmit Digitally signed by Langlois, Curmit
Date: 2022.12.20 14:46:23 -08'00'

Supervisor Signature/Date:

PETER CONTRERAS Digitally signed by PETER CONTRERAS
Date: 2022.12.21 10:29:18 -08'00'

Contents

[Unless otherwise noted, all details in this inspection report were obtained from conversations with Mr. Micah Henderson, a review of facility documents, and/or from observations made during the inspection.]

I. Facility Information

Facility Name:	Paradise WWTP
Facility Owner/Operator:	National Park Service
Physical Address:	1 Wastewater Rd. Mount Rainier National Park Paradise, WA 98361
Mailing Address:	55210 238th Ave E Ashford, WA 98304
Lat/Long:	46.7833530°, -121.7488572°
Facility Contacts:	Micah Henderson, Manager Paradise WWTP Office: (360) 569-2211 x7113 Cell: (360) 569-2211 Email: micah_henderson@nps.gov Stephanie Coffey National Park Service – Office of Public Health Cell phone: (202) 573-5721 Email: stephanie_coffey@nps.gov
Permit Number:	WA0025569
NAICS Code:	221320 (Sewage Treatment Facilities)
Receiving Water:	Nisqually River

II. Inspection Information

Inspection Date:	August 30, 2022
Inspector:	CJ Langlois EPA Region 10, ECAD/WEFB/FDDWES Phone: 206-553-2739
Arrival Time:	1:00 p.m.
Departure Time:	4:00 p.m.
Weather:	Mostly Sunny, 55° F
Purpose:	To evaluate compliance with the requirements of the Clean Water Act (CWA) and the Washington Department of Ecology National Pollutant Discharge Elimination System (NPDES) individual discharge permit (WA0025569)

III. Permit Information

The Paradise WWTP was authorized to discharge under the National Pollutant Discharge Elimination System permit #WA002556 on February 1, 2017. The permit expired on January 31, 2022, and has since been administratively extended.

IV. Enforcement Background

On March 26, 2019, the Paradise WWTP was issued a Notice of Violation (NOV) related to NPDES Permit # WA0025569. This NOV was issued because of 715 violations on their Discharge Monitoring Report (DMR). Since the permit became effective in February of 2017, the facility has had ongoing issues with Biochemical Oxygen Demand (BOD) effluent exceedances. Prior to the issuance of this permit, the plant was regulated under the Federal Facility Compliance Agreement (FFCA) and at that time, they were taking the effluent samples from after the filter and just prior to the chlorine contact chamber. As the permit became effective, the facility realized that their previous effluent sampling point was not the most representative location for the treated effluent. Once the sampling location was moved, the exceedances for the BOD began. The composite sampler needed to be placed inside of the plant due to the inaccessible nature outside the facility. The WWTP is located on a very steep mountainside and accessibility to the plant is further complicated by

the extreme snowfall on Mount Rainier. The sample point is plumbed in the dechlorination chamber just before the discharge pipe. An initial step to reduce BOD was to change the chlorination chemical from Sodium Bisulfate to Vita-D Chlor. This improved BOD but not enough to meet the permit requirements. The facility then troubleshooted the issue and determined that the high BOD levels were likely coming from the dechlorination tank that had experienced a discharge of partially treated sewage in 2011.

The park made efforts to clean the dechlorination tank as best as possible, but again, due to the access challenges presented by the location of the WWTP, cleaning can only be done via pumping water & air through the tank and cleaning the contact pipe prior to its intersection with the dechlorination tank. Full access to the tank would require significant construction.

In a response to the NOV, the NPS described actions they took to the violations noted by EPA. The written response from the NPS was dated April 30, 2019, and is included as **Attachment C.** The letter describes challenges and efforts made to clean the dechlorination tank, sampler, & tubing, including options for jet steaming and shock disinfection that would require consultation with the permitting authority.

Violations related to Total Suspended Solids were described in the NPS response as related to grease build up associated with concessions at Paradise Inn and the Visitor Center. Observations and efforts to remedy the exceedances were described as occurring in July 2017, July/August 2018, and 2019, including a plan to implement a Standard Operating Procedure for kitchen operations believed to be the source of TSS exceedances.

Mr. Henderson stated that an "SOP was developed through US Public Health Services and the vendor that runs concessions up at Paradise. Maintenance has always been done on the chlorine pump at the plant. We have switched from a pulse pump to a peristaltic pump, and they are closely monitored and maintained".

Additional troubleshooting and SOPs are described for fecal coliform exceedances identifying chlorine pump failure and a plan for increased maintenance.

V. Inspection Chronology

This was an announced inspection. On August 11, 2022, I called Micah Henderson and setup the inspection for August 30, 2022.

On August 30, 2022, I arrived at the facility around 1 p.m. Due to there being no cellphone coverage on the mountain, there was some miscommunication and the inspection did not start until 2:50 p.m. I presented my credentials to Mr. Henderson and Stephanie Coffey who works for the National Park Service – Office of Public Health. I was accompanied by Mr. Henderson and Stephanie Coffey throughout the

entire inspection and was not denied access to any area of the facility. Mr. Henderson answered all my questions.

I began the inspection with a brief opening conference with Mr. Henderson and Stephanie Coffey and I explained the scope of the inspection. We first sat down in the office on site, and I conducted a file review. Mr. Henderson then led us on a tour of the facility and explained the various processes of their operation. We ended with a brief closing conference outside to discuss observations and next steps.

VI. Opening Conference

The Paradise WWTP is situated on the South facing slope of Mount Rainier. The National Park Service (NPS) owns, operates, and maintains the Paradise WWTP located in Mount Rainier National Park. The WWTP treats raw sewage from Paradise Inn, the visitor center, ski dorm, and public restrooms. The WWTP also treats some stormwater along with high-temp dishwashers, and grease traps. Paradise Inn only operates from May through September due to the severe winters up on Mount Rainier. The WWTP serves a population of approximately 5,000 people per day in the summer months and closer to 1,000 during the winter months. There is a standby generator in case of a power loss.

Minimally treated sewage was discharged in 2011 due to an operator failing to control sludge build-up. Roughly 200,000 gallons were released into the drainage ditch upstream of the Nisqually River. The operator lost his job because of this and received a felony conviction for violating the Clean Water Act (CWA).

The WWTP's outfall is quite far from the Nisqually River. It's estimated that 1000 vertical feet and 500 horizontal feet separate the WWTP from Dead Horse Creek, which flows to the Nisqually River. Mr. Henderson mentioned that the park conducted an engineering assessment several years ago and the conclusion of that assessment was that the path of the surface flow does not exist from the WWTP to the Nisqually River.

Mr. Henderson mentioned that there is a plan to replace the entire plant in the next 5 years due to the larger influx of people using the facilities on the mountain and due to tighter environmental restrictions.

Flow is measured by a partial flume and daily flow during the Summer is estimated between 70,000 and 100,000 gallons. This averages out to about 20,000 gallons per day over the entire year. Discharging occurs everyday and is not a continuous flow discharge.

VII. Laboratory Inspection

The laboratory utilized is the Water Management Laboratories in Tacoma, WA. This lab is approximately a 3-hour drive from the WWTP. At the time of the inspection, all of the pH buffers were expired on the site. Mr. Henderson has since sent me an email with a picture of non-expired buffer solutions.

VIII. Site Review

Mr. Henderson led me on a tour of the facility. An aerial image appears in **Attachment A** and a photograph log appears in **Attachment B**.

We first started out at the headworks and I inspected the flow meter and flume (**Photo 1**). The facility's influent sampling point is right before the grinder at the headworks. Their effluent and influent samples are collected at approximately the same time. I proceeded to inspect the composite sampler (**Photo 2**), the grinder, and the equalization tank (EQ), and aeration basin. From the aeration basin (**Photo 3**), the effluent flows into the secondary clarifiers and then the surge tank.

Once the effluent is controlled and buffered, it flows to the flocculation tank, the settling tank, and then the filtration tank. The flow then makes it way to the backwash storage tank, through the chlorine contact pipes (**Photo 4**), the dechlorination tank, and then it leaves the WWTP and the treated wastewater outfalls onto a steep mountain side. The effluent samples are collected after the dechlorination tank before it leaves the building.

IX. File Review

I reviewed the following records:

- Quality Assurance Plan (QAP) - April 2, 2019
- Discharge Monitoring Reports (DMR's) for June, July, and August 2022.
- Monitory Records - 2022
- Operation and Maintenance Plan (O&M Plan) – Revised on May 2020

X. Areas of Concern

A. Effluent Limit Violations

Part I.B.1 of the permit states that "The permittee must limit and monitor discharges from Outfall 001 as specified in Table 1, below. All figures represent maximum effluent limitations unless otherwise indicated. The permittee must comply with the effluent limitations in Table 1 at all times unless otherwise indicated, regardless of the frequency of monitoring or reporting required by other provisions of this permit."

Table 1: Outfall 001 Effluent Limitations & Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Report	---	Report	Effluent	Continuous	Recording
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	10	15	---	Influent[1] & Effluent[2]	1/week	24-hour composite
	lb/day	7.51	11.3	---			Calculation[3]
	% removal	Report Minimum	---	---			Calculation[4]
Total Suspended Solids (TSS)	mg/L	10	15	---	Influent[1] & Effluent[2]	1/week	24-hour composite
	lb/day	7.51	11.3	---			Calculation[3]
	% removal	Report Minimum	---	---			Calculation[4]
pH[5]	s.u.	6.5 - 8.5 (Report Minimum & Maximum)			Effluent	1/day	Grab
Fecal Coliform Bacteria[6]	#/100 ml	50	---	100	Effluent	1/week	Grab

Table 1: Outfall 001 Effluent Limitations & Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Sample Location	Sample Frequency	Sample Type
Total Residual Chlorine[7]	ug/L	9.1	---	19.0	Effluent – before[1] & after dechlorination	1/week	Grab
	lb/day	0.007		0.014			
Total Ammonia as N	mg/L	1.8	---	3.5	Effluent	1/week	Grab
	lb/day	1.4	---	2.6			Calculation[3]
Temperature	°C	Report	---	Report	Effluent	1/day	Grab

--- No Limit or Reporting Required

1. The Limitations only apply to the final effluent.
2. Influent and effluent samples must be taken over approximately the same time period.
3. Loading is calculated by multiplying the concentration in mg/L by the flow in mgd and a conversion factor of 8.34. The flow used is the daily flow for the day the sample was taken.
4. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month.
5. No human-caused variation within the above range of 0.2 units or more.
6. Geometric monthly mean, and, in addition, no more than 10 percent of the samples obtained for calculating the geometric mean density shall exceed 100 colonies/100 ml.
7. The limits for chlorine are not quantifiable using EPA-approved analytical methods. The minimum level (ML) for chlorine is 50 µg/L. The EPA will use 50 µg/L as the compliance evaluation level for this parameter. The permittee will be compliance with the total residual chlorine limitations if the average monthly and maximum daily concentrations are less than 50 µg/L and the average monthly and maximum daily mass loadings are less than 0.04 lbs/day. For purposes of calculating the monthly averages, see Permit Part I.B.7., below.

The permittee must report within 24 hours any violation of a maximum daily limit for the following pollutants (see Permit Part III.G.):

Fecal Coliform Total Residual Chlorine Ammonia.

Violations of all other effluent limitations are to be reported at the time that the Discharge Monitoring Report (DMR) is submitted (See Permit Parts III.B. and III.H.).

Between November of 2017 and May of 2022, there were a total of 56 effluent violations. Most of these limit exceedances were due to excessive "total suspended solids (TSS)" and "BOD 5 – day". Other effluent limit exceedances include "ammonia nitrogen – total", "fecal coliform", and "pH".

Since the April 2019 response letter, there have been the following exceedances:

- 7 exceedances for BOD
- 1 exceedance for pH
- 11 exceedances for TSS
- 5 exceedances for ammonia
- And 1 exceedance for fecal coliform

B. Proper Operation and Maintenance

Part IV.E. states that "The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of the permit."

It is my concern that the prior discharge of minimally treated sewage in 2011 is largely contributing to the exceedances in BOD. According to the permit, proper maintenance of systems of treatment and control is required.

XI. Closing Conference

I held a closing conference with Mr. Henderson following the inspection outside. I stated that they are required to have up-to-date pH buffers and gave a brief overview of the post-inspection process. I thanked him for his time and assistance.

Attachment A – Aerial Image & Facility Diagram

Figure 1 - Google Maps aerial image

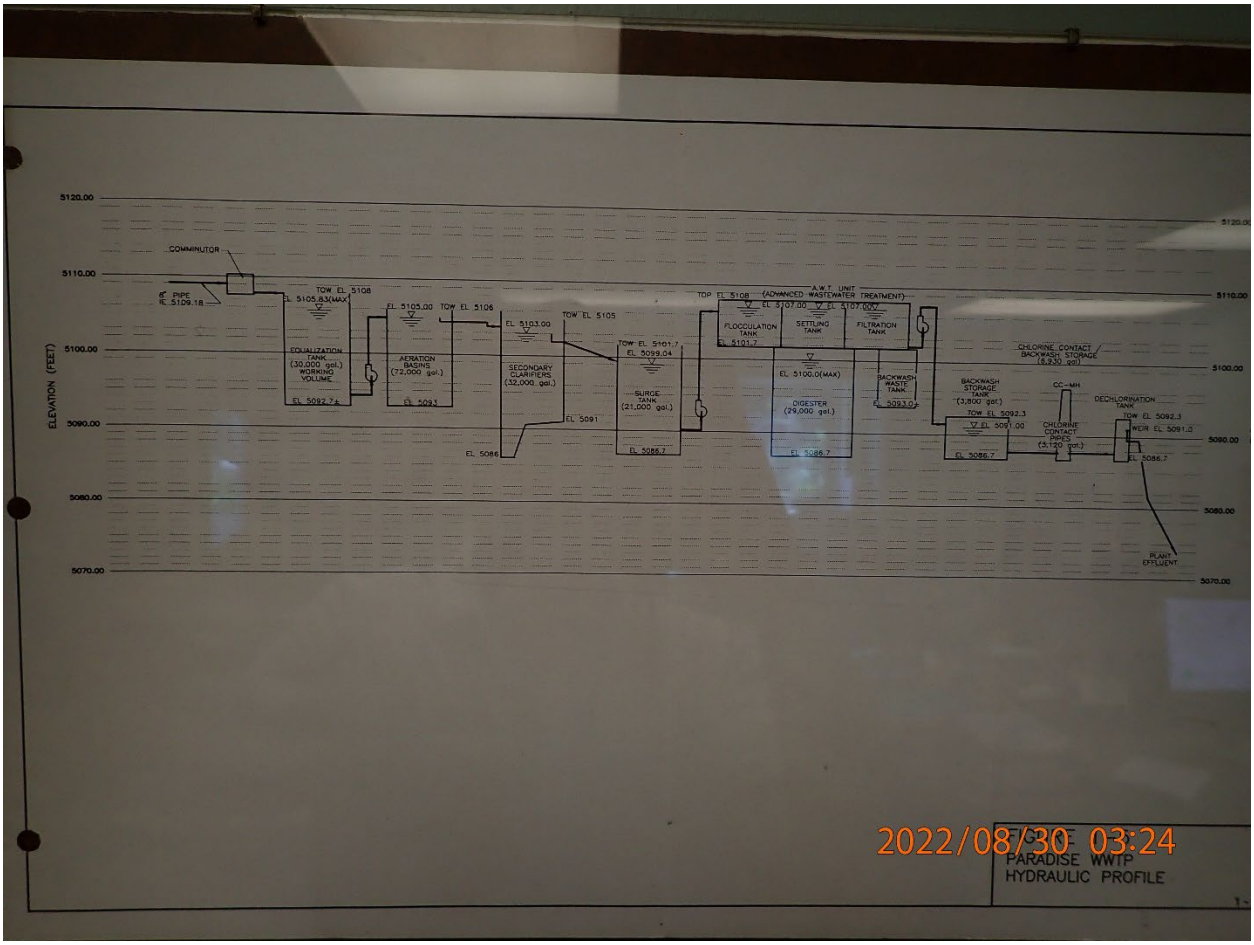

Figure 2 - Photograph taken of facility layout

Attachment B – Photograph Log

(Photographs were taken by CJ Langlois on August 30, 2022, with a Panasonic DMC-FH25.)

Photo 1 - Flow meter and flume

Photo 2 - Composite sampler

Photo 3 - Aeration basin

Photo 4 - Chlorine contact chamber

Attachment C

C-2

Scanned 11/06/19

United States Department of the Interior

NATIONAL PARK SERVICE
Mount Rainier National Park
55210 238th Avenue East
Ashford, WA 98304

IN REPLY REFER TO:
1.A.

RECEIVED
MAY - 6 2019
EPA - REGION 10
Office of Compliance and Enforcement

April 30, 2019

Mr. Raymond Andrews
Compliance Officer
Water and Wetlands Enforcement Unit
U.S. Environmental Protection Agency
1200 Sixth Avenue, Suite 155
OCE-201
Seattle, Washington 98101

Re: Response to Findings Stated in Notice of Violation Dated March 26, 2019

Dear Mr. Andrews,

We have reviewed the Notice of Violation (NOV) Dated March 26, 2019, related to NPDES Permit Number WA-002556-9. These violations were discovered, after reviewing our administrative files and in response to the July 7, 2018, inspection of our Facility conducted by the Environmental Protection Agency (EPA). We have prepared the following responses to the findings highlighted in that document.

Review of Administrative Files

1. Explanation and measures that have been taken and are being taken to address Discharge Monitoring Report (DMR) with 715 violations.

    a. Violations in reference to Biochemical Oxygen Demand (BOD) over permitted limit: The BOD has been an ongoing issue since the permit became effective in February 2017. Prior to the issuance of this permit when the plant was running under the Federal Facility Compliance Agreement (FFCA), the operators got the effluent sample from after the filter and just prior to the chlorine contact chamber.

As the permit became effective and sampling equipment was purchased, it became clear that the current location for sampling final effluent was not the most representative location for treated effluent and we needed to install the sampling equipment to the sample point in the dechlorination tank. Once the sampling location was moved, the exceedances for BOD began. Since the actual discharge of the plant is piped approximately 1,110 feet from the plant and not accessible 6 months out of the year when snowfall is heavy, the composite sampler needed to be placed inside the plant at the sample point plumbed in to the de-chlorination chamber just before the discharge pipe. This is the most representative location accessible year-round for the plant

effluent. The first samples taken were well over the permit BOD limit and we immediately began to evaluate methods for addressing BOD.
An initial step to reduce BOD was to change the chlorination chemical from Sodium Bisulfate to Vita-D Chlor for dechlorination of the effluent. This improved BOD, but not sufficiently to meet permit requirements. We then verified that the issue was in the dechlorination tank by taking a BOD sample before the dechlorination process and the lab results were less than 3mg/l. We concluded that BOD may be impacted if the tank still contained sludge from the 2011 discharge of partially treated sewage referenced in the inspector's report.

The park has made efforts to clean the dechlorination tank, but due to access challenges presented by its location (full access would require significant construction into both the chlorine contact chamber and the dechlorination tank) this has remained a challenge. Methods of cleaning to date include: pumping and cleaning the chlorine contact pipe prior to its intersection with the dechlorination tank, and also pumping air into tank then draining back out through sample point. Park staff also clean the tubing to the sampler weekly to keep bacteria from growing within. Additionally, staff raised the composite sampler higher and closer to the sample point in order to keep the sample line dry to prevent growth in that section of tubing. Finally, park staff have selected a contractor to assess and recommend additional cleaning options. We anticipate that these options will include:

i. Jet steaming water through the discharge point 24" main to the dechlorination tank. The park staff has been unable to do this with existing equipment. This can only be done during the summer months.
ii. Shock disinfecting the dechlorination tank and utilize a sandbag filled with Vita-D-chlor, Vitamin D at the discharge point to try and remove any leftover sludge in the dechlorination tank. This can only be done during the summer months, and will be in consultation with the permit authority.

b. Violations in reference to Total Suspended Solids (TSS) over permitted limit: The sample location for TSS was the same as BOD (prior to the effective date of February 2017) before chlorination and then subsequently was moved to the dechlorination tank. We believe the TSS issue is due to the concessionaire not keeping up with pumping the grease trap located at the Paradise Inn.

In July of 2017, we noticed grease building up in the aeration tanks. As a result the TSS leaving the plant started going up. We asked the concessionaire to pump the grease trap. Once completed, the TSS started going down back below permit limits. We asked the concessionaire from that point on to pump the grease trap every two weeks to keep the grease out of the plant. In the summer of 2018, before the Inn opened the dish washer was re-plumbed to keep it from directly flowing into the grease trap. It was plumbed incorrectly which made the problem worse. The plant was over-loaded with grease and in July and August of 2018 the plant TSS went over the permit limit. The dish washer was plumbed back to its original configuration and we pumped as much grease as we could out of the plant.
By September 2018, effluent TSS was back below permit limits and the concessionaire went back to pumping every two weeks. The Inn was shut down at the beginning of October for the winter, but in November 2018 grease started showing up and we were having TSS issues again. We expect it is coming from the visitor center.

The concessioner will install a grease trap in the summer season of 2019. The park is providing the concessionaire with a Standard Operating Plan in order to improve kitchen operations and aid in reducing the amount of grease introduced into the sewer system. Additionally, we provided them with the information on where to purchase an in line grease trap to be installed at the visitor center in order to prevent grease from being introduced into the sewer.

   c. Violations in reference to Fecal Coliform over permitted limit: The fecal coliform exceedance has occurred twice during this review period, and both times were due to chlorine injection pump failure. The suction line for the chlorine injection pump became plugged overnight. Both instances, the injection line was cleaned next day when the problem was discovered. The SOP for the plant is being updated to include checking the lines for calcium build up each time the crock is refilled.

2. Explanation and response to failure to submit monitoring data and incomplete reports.
   a. Due to issues at the time with the DMR system and lack of experience with the system, we were told that the first month could be submitted with a hard copy. The report that was not submitted in the DMR has now been entered and submitted. We are adding the missing data to the five incomplete DMR submissions and are training our staff on how to submit fully compliant reports going forward to avoid reoccurrence of this problem.

June 2018 Inspection

1. Explanation and response to sampling for total chlorine before and after dechlorination.
   a. During inspection, there was discussion about how to properly report the chlorine residual before dechlorination. Since the inspector clarified this misunderstanding, we have been entering the chlorine residual before dechlorination in the proper DMR fields.
2. Explanation and response to proper reporting of chlorine residual.
   a. After becoming aware of this concern, we will edit previous DMR reports to make those corrections and ensure we continue to enter data correctly going forward.
3. Explanation and response to Quality Assurance Plan (QAP) issues.
   a. The holding time for fecal coliform in the QAP of 22 hours was a typo that was overlooked. It has been corrected and updated in the electronic copy and hard copy at the plant.
   b. The electronic copy was sent to the inspector was inadvertently incomplete. There is now a complete copy at the plant and a complete electronic PDF copy available as needed.
4. Explanation and response to composite sampler repair.
   a. A refrigeration contractor has been to the plant to work on the refrigeration side of the composite sampler. On 4/18/19 the sampler was recharged and is now working again.
5. DMR reporting refresher training will be conducted yearly. The plant SOP will be updated to show proper DMR entry instructions.

In recognition of ongoing challenges with the plants at Paradise and Longmire, the park has recently completed a comprehensive condition assessment of the Paradise Wastewater Plant and received a final report in May of 2018. This condition assessment is attached. In addition, the National Park Service contracted in early 2019 with Facility Engineering Associates, P.C. to develop Project Scoping Assessments for rehabilitation of the Paradise and Longmire Wastewater Treatment Plants, their related collection systems and emergency backup power systems to remedy deferred maintenance and to ensure compliance with State Regulations. We have recently received the preliminary scoping reports and will soon be evaluating project alternatives and seeking federal funding for a major rehabilitation of these aging plants.

In addition to the actions above, Mount Rainier National Park has been in regular contact with environmental engineering support from our Pacific West Regional support office, and a site visit is scheduled for June of 2019 to provide further evaluation and recommendations on approach for the current permit exceedances on TSS and BOD. Please contact Mount Rainier Deputy Superintendent Tracy Swartout at 360-569-6502 if you have any questions regarding this response or to schedule a meeting to discuss next steps.

Sincerely,

TSwartout Tracy Swartout, Deputy Superintendent

For:
Palmer L. Jenkins
Superintendent