Monthly Report of the Operations & Maintenance Activities

Claremont Polychemical Operable Unit 5

Groundwater Treatment System

Old Bethpage, New York

December, 2021

NYSDEC Standby Engineering Contract
Work Assignment #D0076025-28

Prepared for
NYS Department of Environmental Conservation
625 Broadway
Albany, New York 12233

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

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ACRONYMS AND ABBREVIATIONS

AS	Air Stripper
ASF	Air Stripper feed
BP	Bethpage State
BSP	Bethpage State Park (Black Golf Course)
CPC	Claremont Polychemical
CSE	Confined Space Entry
DOSR	Daily Operations Summary Report
EE	Electrical Engineer
EFF	Effluent
EON	EON Products, Inc.
GPD	Gallons Per Day
GPM	Gallons Per Minute
GW	Groundwater
GWTS	Groundwater extraction, treatment, and reinjection system
HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C.
HHLA	High-High Level Alarm
HMI	Human Machine Interface
HVAC	Heating, Ventilation, and Air Conditioning
INF	Influent
LOTO	Lock-out, Tag-Out
MTBA	Tert-Butyl-Methyl ether
MW	Monitoring Well
NCDPW	Nassau County Department of Public Works
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OBL	Old Bethpage Landfill
OFP&C	NYS Office of Fire Prevention & Control
OU4	Operable Unit 4
OU5	Operable Unit 5
PD	Plant Discharge
PID	Photoionization Detector
PET	Peter Takach
PFF	Pressure Filter Feed
PLC	Programmable Logic Controller
PM	Preventive Maintenance
PW	Process Water
RW	Recovery Well, Process Well
SOP	Standard Operating Procedure
SMP	Site Management Plan
SSHP	Site Safety and Health Plan
SU	Standard pH Units
TA	TestAmerica Laboratory
TBA	Tert-butyl alcohol
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TOB	Town of Oyster Bay
TOC	Total Organic Carbon
TSS	Total Suspended Solids
VOCs	Volatile Organic Compounds

1 OPERATION AND MAINTENANCE ACTIVITIES

Henningson, Durham & Richardson Architecture and Engineering, P.C. (HDR) continued the daily operation and maintenance (O&M) of the Claremont Polychemical Superfund Site Groundwater Treatment System (GWTS) Operable Unit 5 (OU5) during the month of December. This report covers the operation and maintenance activities for the system during the period defined as beginning at approximately 0830 hours, December 1, 2021 through approximately 0830 hours, January 1, 2022. O&M conducted during this reporting period was guided by the site O&M Manual.

The GWTS – treatment plant, grounds, and well systems - were maintained for the 31 days in this reporting period during which the treatment system experienced 4295 minutes of complete downtime due to problems with the Air Stripper Feed pump controls.

Readings of the key plant process parameters are normally recorded each workday. These readings and the Human Machine Interface (HMI) flow trend lines are used to monitor the system's performance and condition. Selected readings are recorded in the daily database which is an electronic file maintained in the monthly operating documents folder. If the plant is not occupied, the system is monitored remotely.

The treatment process control and alarm systems are functional. The recovery well pumps, the process pumps, and the air stripper blower are operated in the automatic mode and are remotely controlled and monitored.

1.1 DAILY OPERATIONS SUMMARY REPORTS

The GWTS's daily operations and maintenance activities, project tasks, and observations during this period are briefly described in the Daily Operations Summary Report (DOSR). The DOSR is based in part on the treatment system's daily operating worksheets and logs which include:

- Daily Operating Log – flow readings and calculations (Form-01)
- Daily Site and Safety Inspection – plant condition checklist (Form-02)
- Daily Plant Activity Notes – plant manager's daily summary (Form-03)
- HDR Sign-In Sheet – HDR employee on-site hours (Form-15)
- Daily Process Data Sheet – point process readings (Form-30)
- Logbook CPC 5-8– plant operator's daily logbook
- Daily Database – daily process readings (12 December 21 Database.xlsx)
- NYSDEC Log-in Sheet – Entry/Exit Log with COVID-19 Acknowledgement

1.2 SUMMARY OF MAINTENANCE ACTIVITIES

The operation and maintenance of the treatment system, facility, and associated equipment is performed in accordance with the site O&M Manual. These tasks and inspections incorporate the equipment manufacturers' recommendations, operations experience, and good engineering and maintenance practices. A detailed accounting of the December activities is further provided in the plant operator's daily logbook.

Maintenance and project activities undertaken during the December period included:

- Routine and general maintenance tasks were conducted at the plant, on the grounds, and in the well fields.
- Water was drained from the OU4 sprinkler system through 3 points (12/8)
- A dropped PDB was retrieved and re-deployed in well OBS-1
- The path to Basin-1 was cleared
- The monthly process equipment function tests were conducted
- The monthly OU5 comprehensive site and safety inspections were completed
- The monthly fire alarm component inspection was completed
- The alarm system was installed for the OU4 sprinkler system. This included central monitoring.
- The monthly OU4 site and safety inspections were completed
- The monthly recovery well system inspection was completed
- The failed ASF pumps were reset as necessary, and the plant processes restarted as necessary
- The screen in the ASF discharge piping was removed and cleaned
- The monthly miscellaneous electrical devices condition survey was completed
- Tests and observations were made regarding the activity of the ASF pumps and control system. Pumps frequently tripped off and were manually reset. The wet well was cycled to observe the condition reaction of the float switches.

1.3 MAINTENANCE LOGS

The following operating logbooks are currently in use and maintained at OU5:

- CL-18: OU-4 Log (at OU4)
- CL-43: General Field Support Log (truck)
- CL-47: Misc. Projects Field Notebook (PET)
- CPC 5-4: Project Support Logbook (site)
- CPC 5-8: Site Supervisor's Daily Logbook (PET)

Except for log CPC 5-7, the completed logbooks associated with the project have been scanned, all are in storage at OU5, and are available for review.

2 TECHNICAL SUPPORT ACTIVITIES

2.1 HDR Personnel

- HDR maintained the system throughout the period.
- Technical expertise and guidance were provided from the HDR Mahwah, Newark, and NYC offices.
- 12/2, Matt Papula was in for groundwater elevations. He returned 12/3 to oversee the GeoTech deliveries.
- 12/6 Matt Papula was in for the GW sampling task. He returned 12/7-9 for the RIFS sampling task.
- 12/7, John Ifkovits was in for the RIFS sampling task. He returned 12/8 and 9 to complete it.

- 12/7, Brian Montroy was in for the GW sampling task. He returned 12/8 to complete it.
- 12/15, Jennifer Rhee was in for NYSDEC-Ramboll meeting

2.2 NYSDEC Personnel, sub-contractors, and other visitors

- 12/13 met with Devin Starr (August Mack) and Richard MacDougall (Breslin Realty) at OU4 for a site and CPC grounds tour
- 12/15, Chris Martin and Andrew Leitzinger (Ramboll) were in for meetings and tours
- 12/15, Payson Long (NYSDEC) was in for meetings and tours
- 12/16, Matt (Ken-Mar) was in to inspect the fire extinguishers at OU4 and OU5
- 12/22, Tracey, Ken, and Jason (BK Fire) were at OU4 to install the sprinkler alarm and central monitoring system, perform the annual test on the hydrant, and the quarterly inspection of the sprinkler system.
- 12/29, McClosky Mechanical was in to service the OU5 HVAC system.

2.3 Deliveries

- 12/1, Pace Labs delivered the GW sample containers
- 12/2, UPS delivered part of the Geotech order and returned 12/3 and 12/7 with more supplies and instrumentation
- 12/15, UPS delivered the truck monitoring devices (to 796 Garden Drive)

3 HEALTH AND SAFETY

Work at the Claremont GWTS OU5 was conducted in accordance with the approved Site Safety and Health Plan (SSHP). Safety related activities during this period included:

- Daily site safety inspections were completed as part of the routine O&M activities
- Plant sanitization has ramped up again

4 PLANNED ACTIVITIES AND SCHEDULES

The evaluation of the plant operating system and equipment is ongoing by HDR. A list in the form of corrective actions or maintenance tasks has been generated as is a monthly system status report. These reports are updated as needed and reviewed at least monthly. Both are electronically filed. The corrective action list is included at the end of this report as **Table 1** – Claremont Corrective Action Summary.

Upcoming tasks include:

- Replacement of the float switches in the ASF vault, and further testing of the pump control system if necessary
- PD samples are to be collected the week of 1/17 and delivered to Pace Labs 1/20
- Electrical testing of the ASF pump motor starters will be scheduled for during the next monthly baseline testing task.

5 MONITORING WELL WATER ELEVATIONS

The monitoring well system's groundwater elevation data table was updated this month after the quarterly GW elevation recording task. This database is available for review. The next synoptic water level round will be scheduled for March 2022.

6 TREATMENT SYSTEM FLOWS

During the December 2021 period, the plant continued to operate in the auto control mode. The volume of treated water discharged by the treatment system to the selected recharge basin was calculated from the plant influent and effluent flow meter readings. These readings are taken at the HMI and recorded in the daily database. The treatment system experienced problems with the Air Stripper Feed pump controls which intermittently shut the treatment system down for 4295 minutes in December

Currently, the plant discharge is solely directed to Recharge Basin 1.

The total volume of treated water discharged from 0830 hours December 1 to 0830 hours January 1, was approximately 27,647,000 gallons. The data in **Table 2** is a summary of plant discharge flows.

A graphic representation of the system's daily plant discharge output is provided in **Figure 1** and the daily plant totalizer readings for December are provided in **Table 3**, both following the text of this report.

Under current conditions, the Programmable Logic Controller (PLC) and the control system are functioning as designed. Flows from the individual recovery wells are remotely read, transmitted, and totalized.

The flow summary for the individual components of the system can be found in **Table 4** at the end of this report.

7 CHEMICAL CONSUMPTION

The hydrochloric acid feed system is currently off-line, and the system is empty of acid. There are four drums of virgin acid on site. No acid was consumed in December 2021.

The sodium hydroxide storage system is currently not in use and the system is empty of caustic. There is no bulk sodium hydroxide on site and no caustic was consumed in December 2021.

The sodium hypochlorite storage system is currently not in use and the system is empty of bleach. No bulk sodium hypochlorite is stored on site. No sodium hypochlorite was consumed in December 2021.

8 WASTE DISPOSALS

The routine collection of waste materials continued. No waste was disposed of in December.

9 MONTHLY DISCHARGE MONITORING REPORT

The GWTS is operated under an equivalency permit from the NYSDEC. **Table 5** presents the Claremont OU5 O&M Sampling and Measurement requirements and their frequency. The analytical results for the December 2021 plant discharge samples indicate that all analyzed parameters were compliant with permit limits (**Table 6**).

The plant's water discharge permit is in the process of being renewed by the NYSDEC.

10 PENDING ISSUES AND CONSIDERATIONS

The AS feed pumps frequently have been tripping their circuit breakers and the control relays are starting to chatter

The CPC site has a new tenant. International Warehousing is leasing the property to park their trailers.

The OU4 plant HVAC system was shut down when the blower drive flywheel shaft failed. The system is currently off-line, and the facility has no heat. The sprinkler system was drained through 3 test ports.
Several HVAC contractors have been in to look at the project (restore the unit or install heaters).

The discrepancies/inaccuracies in the plant flow meter readings may be due to the inappropriate configuration of the local piping. Future calibration or adjustment of pulse reading may be required.

A damaged tree adjacent to the path to the MW-6 well cluster continues to obstruct the path. The situation will continue to be monitored.

The well path to the BP-3 cluster following rain events still poses issues for vehicle transport. Work and upkeep will continue as necessary along the path.

The OU4 plant is offline and its disposition including that of the injection well system, and vapor carbon beds is pending.

The status of key aspects of OU4 are as follows:

- The plant heat is currently off, and the system is out of service
- The fire alarm panels are off-line.
- The fire sprinkler system is currently off-line. The water has been drained from the system. An alarm system has been installed with central monitoring.
- The facility is secure, and its physical monitoring continues.
- The facility and grounds are not maintained except for the facility entrance and plant egress points.
- There is a new tenant on the Claremont Polychemical site.

11 PLANT DOCUMENTS

Procedures and standard forms are written, reviewed, and revised as needed. As-built drawings are generated and updated as necessary. There was no such activity in December.

12 MONITORING RESULTS

The Claremont Polychemical GWTS is monitored through the analysis of off-site laboratory analytical data and on-site field data.

12.1 Off-site Analytical Data Results

Monthly PD samples are taken for organic analysis in compliance with the NYSDEC discharge permit. Quarterly groundwater (GW) samples are taken for organic analysis, and quarterly process water (PW) samples are taken for organic, inorganic, and generic analysis. The December sampling activities included:

- GW samples were collected 12/6 at 19 wells. These were processed and the pH levels were recorded. On 12/7, GW samples were collected at 23 wells, these were processed, and the pH levels recorded. On 12/8, GW samples were collected at 5 wells, these were processed, and the pH levels recorded. All samples were delivered to Pace labs on 12/9
- Groundwater samples were collected at 2 RIFS wells on 12/7. These were processed and delivered to Pace Labs.
- Groundwater samples were collected at 2 RIFS wells on 12/8. These were processed and delivered to Pace Labs
- Groundwater samples were collected at 2 RIFS wells on 12/9. These were processed and delivered to Pace Labs
- Plant discharge samples were collected 12/16, processed and delivered to Pace Labs
- The PW sample data was processed and submitted
- The plant discharge was resampled as not enough BNA sample was originally collected. The samples were processed and delivered to Pace Labs

12.2 Field Data

Plant Discharge pH and Temperature

The treatment plant effluent is monitored for pH and temperature on a weekly basis to obtain a monthly average in compliance with the NYSDEC discharge permit requirements. These readings are taken from the plant effluent at a controlled point with a calibrated portable meter. The plant discharge readings for December 2021can be found in **Table 7** following the text of this report. The December 2021 average reading was 7.01 su.

The NYSDEC discharge permit requires the plant discharge to have an average monthly pH between 6.5 and 8.5 standard units (su). The results for this month meet this requirement. Data showing the plant discharge's monthly average pH trend over several months is provided in **Table 8** following the text of this report.

AS Tower Air Monitoring

Using a calibrated PID meter, the vapor discharge from the air stripper tower was monitored weekly for VOCs. The measurements were taken from the tower's effluent air stream through Port B when the treatment system is online. The December 2021 readings from the AS tower are provided in **Table 9**.

There were no emissions from the Air Stripping System observed this month. No emissions have been detected since HDR began operation of the plant in October of 2016.

Other routine data collected in December included:

- The electric and water meter readings at OU5 were recorded weekly.
- The plant vaults and selected areas were monitored for VOCs weekly.
- The plant sound levels were recorded bi-weekly.
- The electric and gas meter readings for OU4 were recorded.
- The recharge basins were inspected, and the water levels noted.

- The differential pressure readings across the AS Tower were recorded bi-weekly.
- The power supply voltage to the recovery wells was recorded.
- Groundwater depth to water readings were recorded for the 66 accessible monitoring wells in the system
- The quarterly plant air quality monitoring task was completed

13 PROCESS ANALYSIS and SYSTEM STATUS

The treatment system is currently operated 24/7 in the automatic mode. It is remotely monitored as necessary.

13.1 Extraction (RW) Processes

- The monthly system inspection was completed.
- The incoming voltage to the well controls was measured.
- The vault space heating units are active
- The recovery well pump system is remotely controlled and monitored, it operates in the Auto mode. The pumps at RW-3, RW-4, and RW-5 are online and fully functional.
- Pump flow readouts are transmitted to the plant and the totalizers for pumps RW-3, RW-4, and RW-5 are fully functional.
- The A/V valve at station 16+57 remains isolated from the transmission line.
- The A/V valve at station 17+10 remains isolated from the transmission line.
- RW-1 and RW-2 are offline and periodically run for preventative maintenance purposes. Their flow meters are not transmitting through the PLC. When repairs were made at RW1 in November 2021, stones were removed from the flow meter housing. There was a thick coating of iron salt deposits on the housing and impeller.

13.2 Air Stripping (AS) Process

- The three pumps are fully functional but have been tripping at a high frequency. The pumps are operated in the Auto mode controlled by the wet well level switches. The float switch LED indicators are showing interference in the control scheme.
- The pre-flowmeter inline screen was removed and cleaned.
- Motors and seals were lubricated as necessary. Seal drains were cleared.
- The AS tower main drain valve's manual actuator is not functional (fail open).
- The tower media appears clean as the pressure differential between the top and bottom ports remains relatively constant. The lower section of media has been visually inspected.
- The discharge valves for ASF P1 and P2 appear to be frozen in the open position.

13.3 Plant Discharge (PD) Process

- The plant discharge flow is currently directed to Recharge Basin 1.

- The valve influent to Recharge Basin 33 remains closed.
- Pump 1 has been taken out of service due to excessive noise and vibration. A full evaluation is required. Pumps 2 and 3 are fully functional
- The motors and seals were lubricated as necessary.
- The discharge valve for PFF P3 has failed open.

13.4 Other

- The plant's first bank of lights is wired to the emergency-light recharging system. The circuit is kept on 24/7. The lamps appear burnt out. The second bank of lights provides sufficient lighting for general tasks.
- The potential for leaks in the water supply line running through the plant will continue to be monitored.
- The fire alarm system is fully functional. Central monitoring is functional.
- The HMI uninterruptable power supply-battery back-up unit was replaced.

14 GROUNDS

14.1 Plant Perimeter

- General outdoor clean-up tasks are on-going.
- The Town of Oyster Bay (TOB) continues to maintain the grounds along the plant perimeter including landscaping.
- The fencing is clear and secure

14.2 Well Field

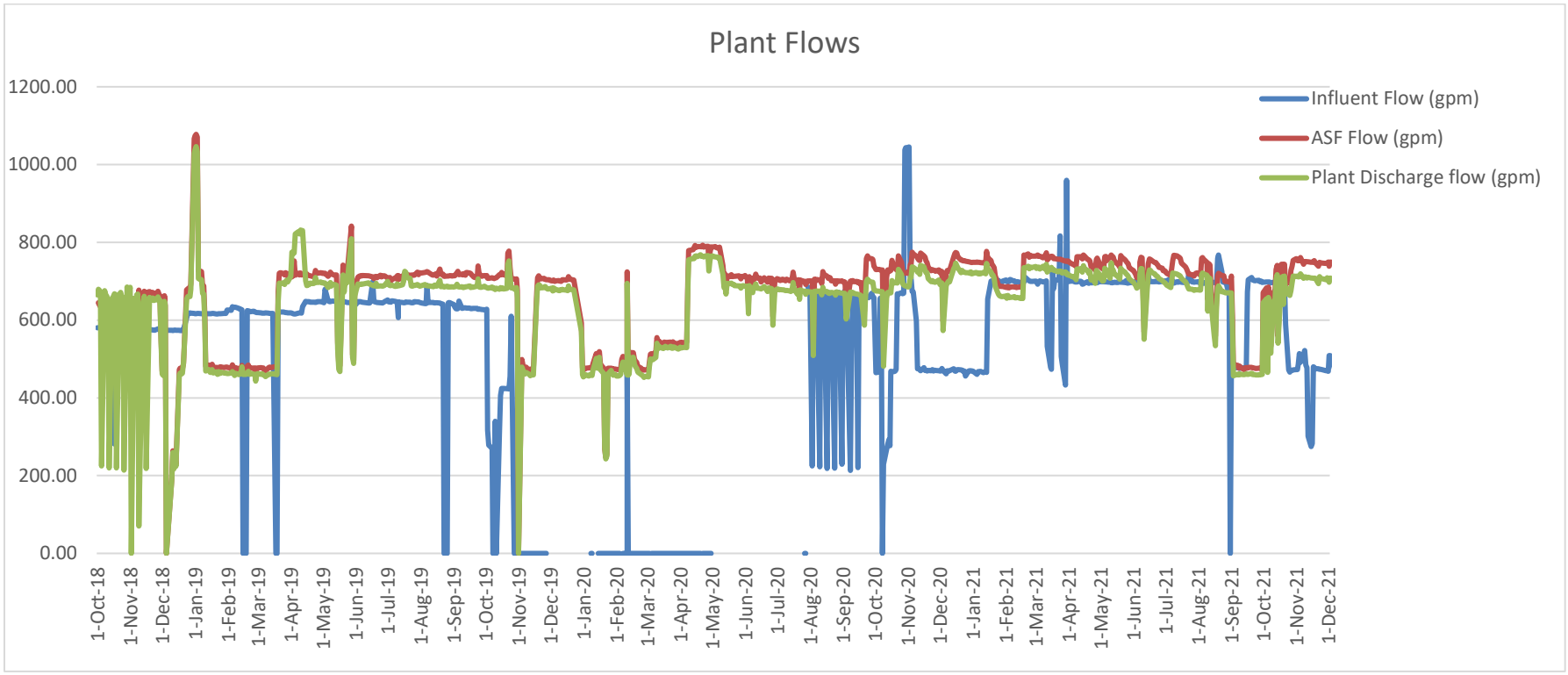
- Well, well field, and recharge basin inspections continue.
- The well access paths are maintained.

14.3 Other

- The Claremont Polychemical GWTF OU4 is secure.
- The property at and around the OU4 site continue to be inspected. While the grounds are not maintained, the treatment plant's entrance and egress points are kept clear and functional.

FIGURES

Figure 1 – Plant Discharge Daily Flow



TABLES

Table 1- Claremont Corrective Actions Summary

Conditions of note and corrective actions planned 12/30/21

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The RW Discharge Manifold integrity is suspect	The condition of the various devices on the RW discharge manifold are suspect. The Air Vent valve in the vault on the N-side of the 6th fairway is leaking from the influent nipple. The shut-off valve was closed and the device isolated The air-vent valve in the vault to the east of the 6th green is leaking. The shut-off valve was closed and the device isolated. The manifold employs isolation, venting, and drain valves as well as other devices. Along the path of the manifold are vaults which house some of these devices. These vaults need to be accessed, pumped out, and the devices tested. **This month (November 2021) two isolation valves were closed between RW1 and RW2. These valves continue to hold.**	Plant staff and outside contractors	Possible shutdown	May require a CSE
AS Tower main drain valve is not controlled	The valve does not respond to manipulation of its actuator ***This valve should be replaced*.** ***No further action is planned at this time***	Operator	System will need to be shut down to change out the valve	None

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
OU4 fire alarm system is not functioning Central monitoring of the fire alarm system or fire suppression system does not exist	The Nassau County Fire Code indicates that the sprinkler system must have central monitoring for flow and valve tampering. The fire alarm system needs to be replaced and centrally monitored. Several contractors have been at the site to propose options for the system ***BK Fire was in install an alarm and central monitoring system for the Fire sprinkler system. The system is on-line, but the system has been drained of water***	Plant operator, EE and outside vender	None at this time	Fire code violations. High altitude tasks
Several leaks were observed in the plant overhead water supply line.	Adjacent to the north door a clam-shell type clamp was applied. The second leak observed above the AS Blower is not readily accessible. It is not problematic ***Repair work may require evaluation and outside resources. Currently the situation is controlled.***	Outside plumbing contractor?	None	Sanitary water may be shut off during repairs

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The float controls for the PFF pump system have intermittently shorted out causing the system to not properly control the pumping operation	• The wiring of the pump control system is connected below grade. The junction box in the wet well is thought to be filled with water creating a problem with the float switches to control relay wiring. • The box cannot be opened without damage to it and the conduit. This appears to have been a longstanding problem, as when switches have been replaced in the past, they were spliced outside the box. • The float switches have been replaced and spliced above the sump but there remains a problem with the L2 circuit. • The output from the W-2 relay was moved to the output for the W-1 relay. This has stopped the short cycling. ***The control wiring should be changed and moved above grade. Currently the second splices to the floats are above ground outside the vault***	Plant operator and HDR resources	Plant shut down is required	Possible Confined Space Entry work
PFF P1 has failed	The pump when activated immediately makes a lot of noise, and the pump drop pipe shakes. Smoke/ fumes emanated at the Motor-shaft connection. The motor appears to be good. The pump was removed from service, 2/24/20 ***It is recommended that the motor be disconnected, lifted, and the mechanical connection be checked.***	Outside contractors	None anticipated	To be determined

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
As the ASF pumps cycle off/on, the check valves have started to slam closed. When reactivating, the motor starter contact is rather violent. Both actions tend to rattle the piping and fixtures	There is no available literature regarding the check valves, so the exact description of their functioning parts is to be determined. A softer start/stop control may fix this issue. ***This will need further investigation. Soft-start equipment and variable frequency controls were discussed***	Plant operator and EE support	If replacement or repairs are necessary, a plant shutdown will be required as the units can- not be isolated	To be determined
The flowmeters for system flow, ASF flow and plant discharge are out of sync with the flow meters on the recovery wells.	While the ASF flow meter is the most out of line, it is plumbed correctly. The influent system flow meter and the plant discharge flow meters are piped incorrectly. The same style of relay is used to count pulses, but the meters have not been calibrated **The system needs further investigation to determine if any changes are warranted**	Electrical engineering	To be determined	none
EF-4 does is not operatable.	Fan is controlled by mezzanine thermostat, but it does not appear to be operating. May need electrical testing. **The system was checked, it appears that the fan is not functioning. The fan should be replaced**	EE support	Only in an emergency	Only in an emergency
Wiring nests in main control console	**The wiring in the main control console needs to be cleaned up and labeled, to facilitate problem troubleshooting and process improvements**	EE support	A shut down may be necessary	Electrical work
Pressure Filter Feed pump controls	With P1 out of service, the sequencing of pumps allows for the PFF vault to reach HHL conditions in certain circumstances. **Reprogram the sequencing to eliminate the position of P1**	EE support	To be determined	To be determined

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The ASF pumps have been tripping with greater frequency	The pump motor starters are to be checked and the overloads to be adjusted as necessary **During the next baseline testing, this will be addressed**	EE Support	none	none
HMI UPS failure	The uninterruptable power supply protecting various components in the treatment system controls has failed. The power to the effected devices has been rerouted from other sources. **The unit has been replaced, and the system online**	Plant operator	There may be a momentary shut down as components are reconnected	None anticipated
The ASF pump control system is making a lot of noise and short cycling the pumps	The ASF pump control float switches need to be checked **The switches may need to be replaced. This may also fix the ASF pump problem noted above**	EE support	May require a plant shut down	Possible CSE

Other Plant Conditions of Note (no action required at this time)

- The methane detection system is offline. To function, it will need a technical inspection and technical maintenance. However, methane does not currently appear to be a hazard
- It has been determined that intrinsically safe components are no longer required in the plant
- As there has been no need for acid washing the AS Tower media, the hydrochloric acid feed and storage system has not been operated. The tanks have not been filled and the tank level monitoring system has not been operated.

As previously noted, there are pieces of equipment that are out of service and require repairs. Currently there are no plans for addressing these conditions as the operation of this equipment is not necessary or needed for the operation of the treatment system.

Equipment	Fault	Status
Plant electric heater UH-1	Needs transformer	Heater is not needed
Plant electric heater UH-2	Needs relay timer and wiring repairs	Heater is not needed
Recovery well pump pressure switch assembly	Units are unwieldy and subject to vibration, corrosion, and leaks.	Each unit requires assessment and disposition
NaOH sump pump	Pump is not operating	No water or chemicals stored in vault.

		Portable submersible pump in sump should suffice.
Plant lights are wired to the emergency light charging system	Un-segregated light cannot be shut off. Several of the lamps may have burnt out	The bank of lights appears to have failed/burnt out. The second bank of lights are sufficient.
Plant exhaust fans are part of methane system	Fans cannot be manually operated	Once the methane monitoring system is online, the fans can be operated.
Plant discharge drain	Leak in Victaulic fitting	Drain line on plant discharge intermittently leaks. Parts are in-house. Not pressing
ASF pump isolation valve	Valve P1 has failed open	Not needed at this time
PFF pump isolation valve	Valve P3 has vailed open	Not needed at this time
RW-1 flow meter	The meter is not operating	Pump is offline. Rocks were pulled from the housing and much iron sediment was encrusting the impeller and housing
RW-2 flow meter	The meter is not transmitting	Pump is offline
Air stripper flow meter	Non-functional and removed	
AH-1 condenser	Air conditioner is non-functional	Two window AC units in place
Plant outdoor lights	9/12 lights not functioning	Not a security issue.

Table 2 – Plant Discharge Average Flow & Volume

Period	Average Flow (gpm)	Average Daily volume (gal)	Total Period Flow (gal)	Min off	Min on
Q4 2016	517	745,000	68,540,000	7,309	125,171
Q1 2017	520	748,244	67,342,000	655	128,945
Q2 2017	576	829,130	76,280,000	6,165	126,315
Q3 2017	634	913,576	84,049,000	1,110	131,370
Q4 2017	256	368,762	33,926,110	69,165	63,315
Q1 2018	53	75,989	6,839,000	118,180	11,420
Q2 2018	179	258,284	23,762,103	102,929	29,551
Q3 2018	504	725,280	66,725,717	57,416	75,064
Q4 2018	726	1,045,065	96,145,984	23,734	108,746
Q1 2019	527	758,467	68,262,000	735	128,865
Q2 2019	662	953,877	87,756,724	405	132,075
Q3 2019	685	985,802	90,693,740	108	132,372
Q4 2019	655	943,871	82,116,780	5039	129,326
Q1 2020	480	682,527	62,110,000	1824	129,326
Q2 2020	698	996,998	88,732,846	3838	127,185
Q3 2020	669	955,928	87,945,333	1099	131,401
Q4 2020	695	1,001,365	92,125,539	52	132,497
Q1 2021	708	1,019,733	91,776,000	0	129,603
Q2 2021	709	1,021,317	92,939,850	0	131,040
July 2021	697	1,003,628	31,112,465	0	44,636
Aug 2021	672	967,055	29,978,703	0	44642
Sept 2021	471	677,758	20,332,729	0	43197
Oct ‘21	637	888,098	27,531,047	1390	43193
Nov ‘21	709	1,007,733	30,232,000	575	42628
Dec ‘21	685	891,839	27,647,000	4295	40364

Table 3– Plant Daily Totalizer Readings

December 2021 flows	Plant Influent		Plant Discharge		RW Discharge	
Date	Volume	Avg. Flow	Volume	Avg. Flow	Volume	Avg. Flow
1-Dec-21	1005000	698	1004000	697	1025000	712
2-Dec-21	1007000	699	999000	694	1027000	713
3-Dec-21	3082000	713	3072000	711	3147000	728
6-Dec-21	1013000	703	1007000	699	1032000	717
7-Dec-21	1022000	710	1022000	710	1046000	726
8-Dec-21	1043000	724	1036000	719	1064000	739
9-Dec-21	1020000	708	1017000	706	1042000	724
10-Dec-21	3066000	710	3063000	709	3136000	726
13-Dec-21	1010000	701	1009000	701	1033000	717
14-Dec-21	1003000	697	1011000	702	1026000	713
15-Dec-21	1027000	713	1027000	713	1053000	731
16-Dec-21	1010000	701	1014000	704	1034000	718
17-Dec-21	3051000	706	3058000	708	3131601	725
20-Dec-21	1020000	708	1022000	710	1045000	726
21-Dec-21	990000	688	994000	690	1022000	710
22-Dec-21	931000	647	909000	631	958000	665
23-Dec-21	756000	525	782000	543	769000	534
24-Dec-21	975000	677	969000	673	1015000	705
27-Dec-21	699000	485	701000	487	709000	492
28-Dec-21	241000	167	240000	167	293000	203
29-Dec-21	936000	650	931000	647	901000	626
30-Dec-21	889000	617	880000	611	901000	626
31-Dec-21	881000	612	880000	611	891000	619
Dec. Total Plant **Influent** (Gal)				27,677,000		
Dec. Total Plant **Effluent** (Gal)				27,647,000		
Dec. Total **RW Discharge** (Gal)				28,300,601		

Table 4– Pump System Flow Readings

September	On-Time Minutes (actual)	Avg. Flow (gpm)	Avg. Flow (gpd)	Total Flow (gal)
RW-1	3			645
RW-2	4			956
RW-3	39,141	229	289,516	8,975,000
RW-4	37,767	289	352,032	10,913,000
RW-5	37,407	225	271,323	8,411,000
RW Totals	38,854	710	912,923	28,300,601
Plant Influent	40,364	686	892,806	27,677,000
Plant Effluent	40,364	685	891,839	27,647,000

The treatment process was online 31 days in December with 4295 minutes of downtime. Flows are taken from the HMI meter readings.

Table 5– Claremont OU5 O&M Sampling/Measurement Program and Frequency

Measurement / Analyte	Sampling Location			
	System Influent	Plant Discharge	Recovery Wells	Monitoring Wells
Flow	Daily	Daily	Daily	NA
pH	Quarterly	Weekly	Quarterly	Quarterly
VOCs (+Tert-Butyl-Methyl ether (MTBA) & Tert-butyl alcohol (TBA))	Quarterly	Monthly	Quarterly	Quarterly
SVOC Base Neutral & Acid Extractables (BNA)	Quarterly	Monthly	NS	NS
Total Kjeldahl Nitrogen (TKN)	NS	Quarterly	NS	NS
Total Suspended Solids (TSS)	Quarterly	NS	Quarterly	NS
Total Organic Carbon (TOC)	Quarterly	NS	NS	NS
Total Dissolved Solids (TDS)	NS	Quarterly	NS	NS
Cyanide	NS	Quarterly	NS	NS
Hexavalent Chromium	NS	Quarterly	NS	NS
Mercury	NS	Quarterly	NS	NS
Metals (AES/MS)	Quarterly	Quarterly	Quarterly	NS
Anions	NS	Quarterly	NS	NS

Notes: NA – Not applicable; NS – Not sampled.

Table 6– Recent Plant Discharge Analytical Results

The plant discharge was last sampled 12/16. The results for the December samples are below:

Parameters	Discharge Limitations (SPDES)	Units	Results
pH (range)	*6.5 – 8.5*	*SU*	*6.94*
1,1,1-Trichloroethane	5	ug/l	U
1,1-Dichloroethane	5	ug/l	U
1,1-Dichloroethylene	5	ug/l	U
1,2- Dichloroethane	0.6	ug/l	U
Benzene	0.7	ug/l	U
Chlorobenzene	5	ug/l	U
Chloroform	7	ug/l	U
CIS 1,2-Dichloroethylene	5	ug/l	U
Ethylbenzene	5	ug/l	U
Methylene Chloride	5	ug/l	U
Tert-butyl alcohol (TBA)	Not indicated	ug/l	U
Tert-Butyl-Methyl ether (MTBA)	5	ug/l	U
Tetrachloroethylene (PCE)	5	ug/l	U
Toluene	5	ug/l	U
Trans 1,2-Dichloroethylene	5	ug/l	U
Trichloroethylene (TCE)	5	ug/l	U
Bis(2-ethylhexyl) phthalate	5	ug/l	U
Di-n-butyl phthalate	50	ug/l	U
Nitro Benzene	0.4	ug/l	U
Antimony, Total recoverable	3	ug/l	NS
Arsenic, Total recoverable	50	ug/l	NS
Barium, Total recoverable	2000	ug/l	NS
Chromium, Hexavalent	100	ug/l	NS
Lead, Total recoverable	50	ug/l	NS
Iron, Total recoverable	600	ug/l	NS
Manganese, Total recoverable	600	ug/l	NS
Mercury	Not indicated	ug/l	NS
Zinc	Not indicated	mg/l	NS
Nitrogen, Total (as N)	10	mg/l	NS
Selenium, Total recoverable	40	ug/l	NS
Solids, Total Dissolved	1000	mg/l	NS
Chloride Ion	NL	mg/l	NS
Cyanide	Not indicated	ug/l	NS
Fluoride Ion	NL	mg/l	NS
Sulfate Ion	NL	mg/l	NS
1, 4-Dioxane	NL	ug/l	NS

J – Estimated value **U** – Analyzed but not detected NL – Monitor only **NM**– Not sampled
Discharge limitations updates as per the water discharge permit.
Note: Parameters shaded in gray are sampled quarterly with results being provided March, June, October, and December

Table 7– Effluent pH and Temperature Readings

Date	pH (su)	Temp ˚F
12/9	6.88	55
12/13	7.15	56
12/20	6.92	54
12/28	7.10	56
December Average	**7.01 su**	**55^{O}F**

Table 8 – Plant Discharge Monthly Average pH

Month	pH(su)
June ‘19	6.5
July ‘19	6.6
Aug ‘19	6.56
Sept ‘19	7.45
Oct ‘19	6.86
Nov ‘19	6.88
Dec ‘19	6.84
Jan ‘20	6.63
Feb ‘20	6.75
Mar’20	6.74
Apr ‘20	6.65
May ‘20	6.8
June ‘20	6.8
July ‘20	6.9
Aug ‘20	6.8
Sept. ‘20	6.8
Oct. ‘20	6.95
Nov. ‘20	6.8
Dec ‘20	6.64
Jan ‘21	6.8
Feb ‘21	6.75
Mar ‘21	6.76
Apr ‘21	7.28
May ‘21	7.53
June ‘21	7.44
July ‘21	7.41
Aug ‘21	7.42
Sept ‘21	7.13
Oct ‘21	7.10
Nov ‘21	7.09
Dec’21	7.01

Plant discharge monthly average pH readings

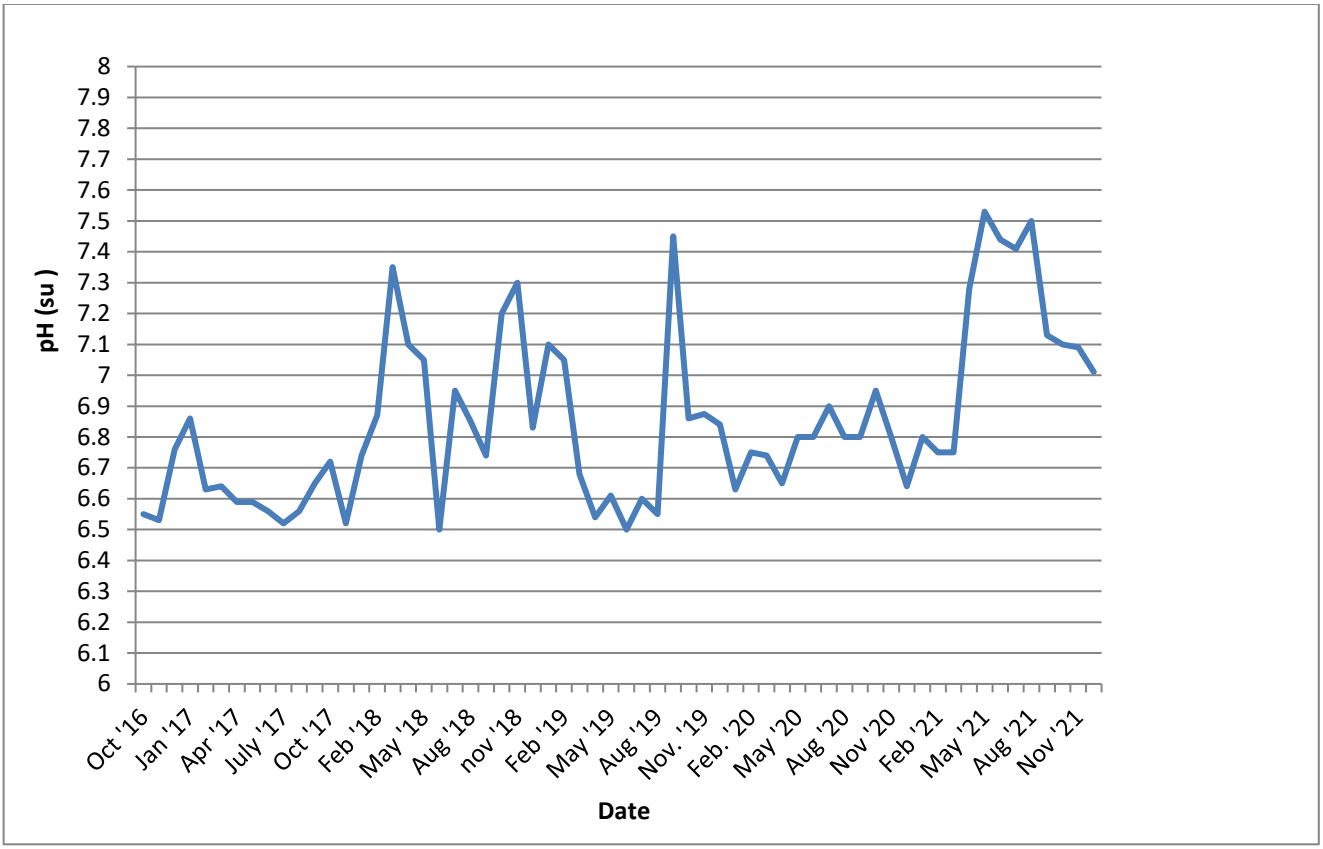


Table 9– AS Tower Air Monitoring Readings

Recorded Date	Port B
12/9	0
12/14	0
12/21	0
12/28	0

Attachments

Attachment 1

Air Stripper Feed System Failures

The Air Stripper Feed pumps have experienced more frequent tripping of their circuit breakers in this latest period. Recently this has been accompanied with more noise from the pump control relays and flashing of the HMI LED pump control indicator lights.

The tripped off pumps would lead to high level alarm conditions in the wet well, which shuts off the recovery well pumps (as designed). As the remaining functional ASF pumps pumped down the wet well, the recovery well pumps would automatically reactivate. This cycling would continue until all the ASF pumps tripped off and the system stayed in a HHL alarm condition. The pumps would be reset as often as feasible.

In discussions with HDR's electrical engineering group, the flashing LEDs on the HMI panel would indicate that the control system did not know what the water levels was and gave out conflicting pumping commands. This would lead to the pumps cycling off and on causing their overloads to trip. EE's recommendation was to replace the float switches and then the relays as necessary.

Until the pump control float switches could be replaced, one of the ASF pumps was put in the Hand mode to ensure the system could keep pumping even if one or two pumps failed. The recovery well cycling continued but at a lower frequency and for shorter durations