MANUAL OF STANDARD OPERATING PROCEDURES FOR GROUNDWATER REMEDIATION SYSTEM: CHERRY FARM SITE (NYSDEC SITE NO. 9-15-063) RIVER ROAD SITE (NYSDEC SITE NO. 9-15-031)

Tonawanda, New York

SUBMITTED TO:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION DIVISION OF HAZARDOUS WASTE REMEDIATION

SUBMITTED BY:

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LIST OF ABBREVIATIONS

CC	Carbon Contactor
GAC	Granular Activated Carbon
GPM	Gallons per Minute
MCC	Motor Control Center
OWS	Oil/Water Separator
POTW	Publicly Owned Treatment Works
psi	Pounds per Square Inch
RPM	Revolutions per Minute
RW-xx	Recovery Well, xx= Well Number
S-xx	Shallow Sump, xx= Sump Number
SOP	Standard Operating Procedure
VSD	Variable Speed Drive

INTRODUCTION

This manual contains the standard operating procedures (SOP) for the operation of the groundwater treatment system at the Cherry Farm/River Road Site. This manual should be updated as necessary, with all updates recorded in Table 1 of this section. Appendices are provided which contain a copy of the facility's pretreatment discharge permit, a copy of the Town of Tonawanda Sewer Use Ordinance, a copy of the treatment facility's as-built process and instrumentation diagram (PID), and material safety data sheets for bulk chemicals used in the treatment facility.

This manual contains the following thirteen SOPs:

1. SOP-1 SYSTEM START-UP FROM A SHUT-DOWN MODE
2. SOP-2 FLOW METER OPERATION, FLOW BALANCING, AND FLOW ADJUSTMENT
3. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
4. SOP-4 GRANULAR ACTIVATED CARBON SYSTEM OPERATION
5. SOP-5 EQUALIZATION TANK OPERATION
6. SOP-6 ACID AND CAUSTIC SYSTEM CALIBRATION AND CONTROL
7. SOP-7 COMPLIANCE SAMPLING FROM THE TREATMENT FACILITY EFFLUENT
8. SOP-8 SYSTEM SHUT-DOWN
9. SOP-9 ACCIDENTAL SPILL PREVENTION PLAN
10. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING
11. SOP-11 LOCKOUT / TAGOUT PROCEDURE
12. SOP-12 CONFINED SPACE ENTRY PROCEDURE
13. SOP-13 CONVEYANCE PIPELINE FLUSHING PROCEDURE

A history of revisions to the manual is provided in Table 1.

TABLE 1
UPDATES TO CHERRY FARM/RIVER ROAD
MANUAL OF STANDARD OPERATING PROCEDURES FOR GROUNDWATER REMEDIATION SYSTEM

Date	Affected Sections	Reason For Change
11/10/97	SOP-2	Incorporated ISCO flow meter into SOP-2.
1/21/98	SOP-7	Incorporated permanent discharge permit conditions and deleted temporary permit conditions.
4/1/98	SOP-11	Added SOP-11 based on H&S audit findings.
3/30/98	SOP-12	Added SOP-12 based on H&S audit findings.
3/30/98	SOP-3	Revised SOP to reflect use of Teflon hose from drum pump to acid tank.
4/1/98	SOP-10	Revised SOP to reflect changed permit conditions, and to reflect required maintenance intervals based on experience.
4/24/98	SOP-1	Revised controls description of power coming into recovery well vaults that have sumps associated with them.
July 1998	All Sections	Updated manual to reflect first year's O&M experience.
January 2000	All Sections	Updated manual to reflect continuing O&M experience
April 2004	SOP-10, SOP-3	Revised to reflect additional PPE requirements for handling chemicals
June 2006	All Sections	Revised to reflect the decommissioning of Recovery Wells RW-1 thru RW-3, and RW-6 thru RW-11.
June 2006	SOP-13	Additional SOP created for Annual Line Flushing
June 2017	SOP-1; SOP-2; SIO-3; SOP-4; SOP-6	Revise to reflect acidification tank pH target to 2.5 standard units.
June 2017	SOP-13	Revised to discuss pre-line flushing maintenance tasks.
June 2017	SOP-7	Updated SOP to reflect current discharge permit requirements

SOP-1
SYSTEM START-UP FROM A SHUT-DOWN MODE

1.1 PURPOSE

The purpose of this SOP is to describe how to start up the groundwater treatment system from a complete shut-down mode.

1.2 RELATED SECTIONS

1. SOP-2 FLOW METER OPERATION, FLOW BALANCING, AND FLOW ADJUSTMENT
2. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
3. SOP-4 GRANULAR ACTIVATED CARBON SYSTEM OPERATION
4. SOP-5 EQUALIZATION TANK OPERATION
5. SOP-6 ACID AND CAUSTIC SYSTEM CALIBRATION AND CONTROL
6. SOP-8 SYSTEM SHUT-DOWN
7. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING

1.3 STANDARD OPERATING PROCEDURE

To start up the process equipment, perform the following:

1. Check that acid supply is sufficient. Open the acid supply valves (Valves 33, 34, 35, 40, 41) at the base of the acid storage tank.
2. Check that caustic supply is sufficient. Open the caustic supply valves (Valves 42, 45).
3. Check all process valves for proper position.
   - The following valves are normally open: 1, 3, 4, 9, 10, 12, 16, 18, 19, 20, 21, 23, 26, 28, 46.
   - The following valves are normally closed: 2, 5, 6, 7, 8, 11, 13, 14, 15, 17, 22, 24, 25, 27, 29, 30, 31, 32, 36, 37, 38, 39, 43, 44, 47.
4. The following breakers on the MCC panel should be in the “on” position.
   - S-1
   - S-2
   - S-3
   - S-4
   - Clearwell Pump Panel (1 of 2)
   - Clearwell Pump Panel (2 of 2)
   - EQ Tank Mixer MX-2
5. Go to each sump (S-1, S-2, S-3, and S-4) and verify that the two butterfly valves on the two inlet pipes are in the full open position, and the on/off switch is in the “on” position.

- Do not proceed to the following steps until the acidification tank (T-1) and the equalization tank (T-2) are full of water.

6. The following circuit breakers in the lighting panel should be switched to the "on" position.

    - LP-8 Instrument Panel
    - LP-10 FE-126
    - LP-11 Acid Drum Pump
    - LP-12 FE-127
    - LP-13 Shunt Trip A
    - LP-14 FE-125
    - LP-15 Shunt Trip B
    - LP-16 Chemical feed pump CP-3
    - LP-17 Chemical feed pump CP-1
    - LP-18 Mixer MX-1
    - LP-19 Chemical feed pump CP-2
    - LP-20 Control Power for PST-1
    - LP-22 Building Sump Pump
    - LP-24 Building Sump Pump
    - LP-26 Composite Sampler

7. Calibrate the two pH controllers (AIC-121, AIC-131) using pH 4 and 7 buffers. See SOP-3 and SOP-5 for additional information.

8. Turn MX-1 and MX-2 on at the variable speed drive units located on the rear of the control panel by pressing the "forward" key, and then increasing the speed to the desired setting by using the up or down arrow keys. Set MX-1 at 1750 RPM. The VSD for MX-2 has been bypassed; therefore, it operates at the rated motor speed.

9. Verify flow meter rates at the control panel for sumps S-1, S-2, S-3, and S-4 by switching each sump off (at the MCC) one at a time, and verifying its contribution to the total flow. Alternatively, flow contribution can be observed by opening the top cover on Tank T-1 and inspecting the incoming flow. If any sump is not putting out correct flow, go to the sump, investigate, and take corrective action. (See SOP-2 for desired flow rates and flow adjustment procedures.)

10. Once the pH in the acidification tank (T-1) has stabilized at its operational set point (2.5), measure the pH in tank T-1 using a calibrated hand-held meter. Verify that the pH as recorded by the pH controller is within 0.1 pH units of the hand held pH meter reading. If not recalibrate AIC-121 in accordance with SOP-3.

11. Once the pH in the equalization tank (T-2) has stabilized at its operational set point (5.75 to 9.0), measure the pH in tank T-2 using a calibrated hand held meter. Verify that the pH as recorded by the pH controller is within 0.2 pH units of the hand held pH meter reading. If not recalibrate AIC-131 in accordance with SOP-5.

12. Check the operation of the oil skimmer to verify that water is not entering the skimmer pipe. Rotate the skimmer pipe to the vertically upward position so that no oil or water enters the skimmer. (Oil quantities at the site are small therefore skimming has been done manually at every site visit.)
13. Check the flowrate from the GAC pump station, PST-1. Throttle back valves 19 and 20 to get approximately 15 gpm from each pump.
14. Check the four pressure gauges on the pre- and post-filter, and on the GAC filters. Change the bag filter when the inlet pressure to any bag filter reaches 15 psig. Under no condition should the GAC operating pressure exceed 25 psig.

SOP-2
FLOW METER OPERATION, FLOW BALANCING, AND FLOW ADJUSTMENT

2.1 PURPOSE

The purpose of this section is to describe how to operate the flow meters, and how to perform flow balancing/flow adjustment of the sumps. There are three magnetic flow meters at the facility that monitor the influent flows. The 4 to 20 mA signals from each of the three magnetic flow meters are electrically combined and are indicated at a fourth flow meter indicator (FY-128) and totalizer. The flow monitoring instruments at the treatment plant are summarized below:

MAG 125	RW-10, RW-11 0 to 40 GPM at 4 to 20 mA output respectively Totalizes in gallons, multiplier = 1
MAG 126	RW-1, RW-2, RW-3, RW-4, RW-5, RW-6, RW-7 0 to 150 GPM at 4 to 20 mA output respectively Totalizes in gallons, multiplier = 10
MAG 127	RW-8, RW-9, S-1, S-2, S-3, S-4 0 to 60 GPM at 4 to 20 mA output respectively Totalizes in gallons, multiplier = 1
FY-128	Combines 4 to 20 mA signals from MAG-125, 126, 127 0 to 250 GPM at 4 to 20 mA output respectively Totalizes in gallons, multiplier = 10

In July 2005, most of the recovery wells were decommissioned. RW-4 and RW-5 remain in place, but all plumbing leading to the treatment plant has been disconnected. Because there is no flow coming into the plant from any of the recovery wells, MAG 125 and MAG 126 read as 0 gpm on the control panel, and MAG 127 only indicates incoming flow from S-1 thru S-4.In addition to these flow monitors, the combined plant flow is monitored before discharging to the sewer by a fourth flow meter. This meter utilizes a 90 degree V-Notch weir as the primary flow device, and an ultrasonic level sensor/calculator/integrator (ISCO 4210). The unit displays flow in gallons per minute and totalizes in gallons. This is the only flow monitoring device equipped with a chart recorder. The ISCO flow monitor is used to totalize total plant flow for purposes of reporting to the Town of Tonawanda.

2.2 RELATED SECTIONS

1. SOP-1 SYSTEM START-UP FROM A SHUT-DOWN MODE
2. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
3. SOP-5 EQUALIZATION TANK OPERATION

4. SOP-7 COMPLIANCE SAMPLING FROM THE TREATMENT FACILITY EFFLUENT
5. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING

2.3 STANDARD OPERATING PROCEDURE

The sumps are equipped with a constant speed pump, and a plug valve that can be regulated to control the flow.

The sumps pump into two common pipe headers as follows:

- S-4
- S-1, S-2, and S-3

All flows are discharged to the Town of Tonawanda POTW.

The sumps are connected to a french drain that will drain water that accumulates under the landfill cap. Each sump has two french drains entering it; one from the north and one from the south. Each french drain has a hand-operated butterfly valve to control the flow into the sump. The design flow for each sump is approximately 3 to 5 gpm (maximum) under wet weather conditions. During dry weather the sumps have minimal flow (1 gpm or less). Each sump is equipped with two float switches that, when in auto mode, turn the pump on at the high level, and turns the pump off at the low level. Each sump pump is a vertical submersible pump that is mounted on a slide rail, and seats into a pitless adapter.

There is no local flow meter for the sumps. To check the flow output of any particular sump, observe the MAG 127 flow meter display on the control panel at the treatment building, while turning each sump off, then on (using the MCC breaker), one at a time. In between turning the sump off, then on, allow the flow rate to equilibrate, and note the flow meter reading. Once the sump is turned back on, verify that the flow rate returns to the prior level. This process can be repeated for each sump, and the relative contribution of each sump can be determined. Alternatively, the amount of water being discharged into Tank T-1 can be observed by opening the top of Tank T-1. Be careful that other sumps are not cycling during this time, by observing the control panel on and off lights for S-1, S-2, S-3, and S-4, or by manually turning these sources off.

2.3.2.1 Adjusting Sump Flows

To adjust the pump output at a sump, perform the following:

1. Pump the sump dry by closing the two inlet butterfly valves and allowing the sump to be pumped down to the low level float; before attempting to adjust the flow. This allows the operator to see all the equipment in the sump, avoid tangling of the cables, and allows observation of the seal at the pitless adapter. However, it may take an hour or more for the sump to be pumped to the low level.
2. Turn the sump pump off by either turning off the on/off switch located inside the corresponding above-ground control panel, and/or by turning the hand/off/auto switch on the sump control panel to off.

3. Pull the pump out of the vault using the attached cable. The cable forms a continuous loop with one end connected to the pitless adapter handle, and the other end connected to the sump pump. The cable is run through the hinge on the sump access cover so that the cable does not fall into the sump. Position the cable so that the pump and the pitless adapter can be controlled separately, and pull evenly on both cables. During raising and lowering the pump, the operator must carefully watch the cables, and the power cord, to ensure that they do not become entangled around any of the equipment in the sump, such as: the pump, pressure gauge, pump rails, sample tap, globe valve, etc.
4. With the pump out of the vault, rest the pump on the ground, and adjust the position of the globe valve. The valve is graduated from 0 (full closed) to 10 (full open). Full open flow is approximately 15 gallons per minute, and 2 to 5 gallons per minute is achieved at settings from 2.5 to 4. Below the number 2 setting, the flow is erratic.
5. Reinstall the pump down the slide rails by carefully lowering the pump while controlling the two cables. Once the pump is at the bottom of the slide rail, gently lift up on the pump cable until you feel the pump firmly seat into the pitless adapter. While the pump is being set on the guide-rails and lowered into place, be careful not to bump the handle of the globe valve on anything, or the flow setting will be changed and the process will have to be repeated.

2.3.2.2 Troubleshooting Sump Flows

If the sump pump does not operate, perform the following:

1. It is possible that the sump is not running because the water level has not come up to the level of the high float. If this is the case, when the level rises, then the pump will turn on.
2. In the control room, check that the MCC breaker for the sump is in the "on" position.

If the sump output is too low, check that the globe valve on the discharge from the sump pump is not in the closed position, or open less than the No. 2 position. Typically the globe valve is kept at least half open.

SOP-3
ACIDIFICATION PRE-TREATMENT SYSTEM OPERATION

3.1 PURPOSE

The purpose of this section is to describe how to operate the acidification and oil removal portion of the pre-treatment system. The flow from S-1, S-2, S-3, and S-4 is treated for removal of emulsified oil by lowering the pH to 2.5 in the acidification tank (T-1) with sulfuric acid (93 percent), allowing the oil to separate, and passing the water through a coalescing pack oil/water separator (OWS-1). Water that is treated for oil removal is then processed through granular activated carbon as described in SOP-4.

Oil is skimmed from the separator and placed into a holding tank that is integral to the oil water separator. This holding tank can be used to decant water to the building floor sump. Oil overflows from the integral holding tank into the LNAPL Storage Tank (ST-2). Water can also be decanted from ST-2. When ST-2 is full the contents are taken off-site for disposal.

Please note: Due to the use of sulfuric acid, hydrogen sulfide has been noted within the treatment plant. Hydrogen sulfide concentrations collected by the NYSDOH on July 7, 1998, ranged from 0.023 to 0.12 ppm. While these concentrations are below NIOSH and OSHA worker exposure levels, care should be used when working near the acidification tank.

3.2 RELATED SECTIONS

1. SOP-1 SYSTEM START-UP FROM A SHUT-DOWN MODE
2. SOP-2 FLOW METER OPERATION, FLOW BALANCING, AND FLOW ADJUSTMENT
3. SOP-4 GRANULAR ACTIVATED CARBON SYSTEM OPERATION
4. SOP-5 EQUALIZATION TANK OPERATION
5. SOP-6 ACID AND CAUSTIC SYSTEM CALIBRATION AND CONTROL
6. SOP-7 COMPLIANCE SAMPLING FROM THE TREATMENT FACILITY EFFLUENT
7. SOP-8 SYSTEM SHUT-DOWN
8. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING

3.3 STANDARD OPERATING PROCEDURE

Influent flows to the acidification process are from S-1, S-2, S-3, and S-4. These flows all pass through MAG-127 and enter into the acidification tank (T-1). pH controller AIC 121 is used to control the pH to approximately 2.5 by adding 93 percent sulfuric acid. The tank is kept mixed by mixer MX-1. Water flows by gravity to OWS-1 where oil is separated from the flow. Once the acidification process is started up in accordance with SOP-1, it is operated on a continuing basis in accordance with this SOP.

1. On a regular basis, check the volume of acid remaining in acid tank ST-1, and record the acid volume on the daily log. **Ensure that drum pump is not running, prior to checking liquid level in the acid tank.** If it appears that an entire drum of acid (55

gallons) is not needed, do not pump acid from the drum to the tank at this time. This will eliminate the need to look into the acid tank during transfer of acid from the drum to the tank.

2. As necessary, add acid to ST-1 using the dedicated acid drum pump and full protective gear (face shield, safety glasses or splash goggles, apron with sleeves, acid resistant gloves, and safety boots). Before transferring acid, check the drum label to verify that the contents are 93 percent sulfuric acid. Pump the drum as empty as possible by tipping the drum. When finished transferring the drum contents, leave the drum pump in the drum to drain for 5 minutes before moving the drum pump to the next drum. When finished, allow the drum pump to drain for 5 minutes in the drum, and then put the drum pump in the specially labeled 5-gallon pail to collect any additional dripping for at least one-hour. At the end of the one-hour period, return the drum pump to the wall-mounted drum pump holder. Regularly check the drum pump holder and 5-gallon pail for accumulations of acid. Carefully pour any accumulated acid into tank T-1. Clean up all residues of acid remaining on the gloves, apron, or work surfaces (floor, stair platform or railing, etc.) by flushing with water for 5 minutes. Record the volume of acid added to ST-1 in the daily log, along with the new ST-1 tank reading.
3. Observe the following cautions while handling or transferring acid:
   - **DO NOT ALLOW THE DRUM PUMP TO RUN UNATTENDED.**
   - **ALWAYS WEAR FULL PROTECTIVE GEAR WHEN WORKING WITH SULFURIC ACID.**
   - **DO NOT TOUCH THE DRUM PUMP RISER TUBE, AS IT WILL CONTINUE TO HOLD ACID.**
   - **DO NOT FLUSH OR RINSE THE DRUM PUMP WITH WATER.**
   - **DO NOT PLACE THE DRUM PUMP IN WATER.**
   - **DO NOT USE THE DRUM PUMP TO PUMP ANY OTHER FLUID OTHER THAN 93 PERCENT SULFURIC ACID.**
4. Keep all full acid drums, drip pail, and drum pump within the acid secondary containment area. Keep the containment sump dry, and check the sump on a monthly basis for evidence of leaks or spills, by measuring the pH of any water in the sump. During the warmer months, perspiration from pipes and other components drip to the floor and accumulate in the acid containment sump. As a preventative measure, a portable berm should be placed along the outside of the containment grate so that any runoff is directed towards the floor drain near the loading door. As needed, remove any water in the sump by using a Shop Vac or hand pump. Dispose of the water into the floor sump, which is pumped to T-1.
   - DO NOT USE THE SHOP VAC TO CLEAN-UP CONCENTRATED SULFURIC ACID
   - THOROUGHLY RINSE THE SHOP VAC WITH WATER WHEN DONE.

5. The hose from the drum pump to the acid storage tank is constructed of Teflon that is resistant to concentrated sulfuric acid. Before using the drum pump, inspect the hose for signs of deterioration (swelling, discoloration, cracking), kinking, or leaks.
6. Empty acid drums should be resealed, and taken over to the floor sump where their exterior surfaces can be hosed off to remove any acid splatters or drips. The clean, sealed drums can be placed outdoors while awaiting pick-up by the chemical supply company.
   - DO NOT HOSE OR RINSE THE INTERIOR OF THE DRUM
   - DO NOT PUT DRUMS OUTDOORS THAT ARE NOT SEALED, AND HAVE NOT HAD THEIR EXTERIOR THOROUGHLY RINSED
7. Mixer MX-1 is operated in a forward direction at 1,750-RPM (maximum speed) using the variable speed drive located on the rear of the control cabinet. Speed is adjusted by using the up/down arrow keys on the VSD while the mixer is running. On a regular, basis the mixer operation should be checked by observing that it is running, and by opening up the tank cover to confirm that Tank T-1 is well mixed.
8. On a weekly basis, the flow contribution from S-1, S-2, S-3, and S-4 should be checked and confirmed. Check S-1, S-2, S-3, and S-4 to see that they are contributing approximately 3 to 5 gpm each. This can be done by manually turning each sump off one at a time at the MCC while observing the flow meter output, or by observing the flow entering Tank T-1. If a sump is not putting out the correct flow, and the sump is not dry, then adjust the sump flow in accordance with SOP-2.
9. On a weekly basis, the hand-held pH meter should be used to check the calibration of the pH controller, AIC 121. This is performed by calibrating the hand-held pH meter in accordance with its operating instructions. The pH in tank T-1 should be measured with the hand-held meter and compared to the pH controller reading. If the pH in tank T-1 as recorded by the pH controller is within 0.1 pH units of the hand held pH meter reading, then the controller calibration is acceptable. If the difference is 0.1 pH units or greater, then the pH controller should be recalibrated in accordance with SOP-6. Alternatively, AIC-121 can be placed in the pH 2 buffer and the same analysis performed.
10. As needed, decant water from the internal oil holding tank of the oil water separator. The water is decanted to the floor sump by opening Valve 11, and allowing it decant until water is no longer visibly clear. Do not allow oil to drain into the floor sump. When the decant is completed, run tap water into the floor sump for a sufficiently long time so that the sump pump turns on and empties the sump. This water is all directed to tank T-1. If there is excessive water in the oil holding tank, adjust the slotted skimmer in OWS-1 slightly upwards.
11. On a bi-weekly basis, skim oil from the OWS by rotating the slotted skimmer pipe down to the water surface, and manually skimming the oil from the surface into the skimmer. Be careful not to splash contents of the OWS. Use a “paddle-like” device to accomplish this. When done, return the skimmer slot to a vertical position.
12. As needed, order acid supplies, pH buffers, and arrange for oil disposal. As needed, decant water from the LNAPL storage tank ST-3 by using Valve 14 and a flexible hose to

decant water to the floor sump. When the decant is completed, run tap water into the floor sump for a sufficiently long time so that the sump pump turns on and empties the sump.

SOP-4
GRANULAR ACTIVATED CARBON SYSTEM OPERATION

4.1 PURPOSE

The purpose of this section is to describe the granular activated carbon (GAC) treatment system that is used to treat the water from sumps S-1, S-2, S-3, and S-4, following acidification and oil removal. This section includes a discussion of PST-1 which pumps the discharge from OWS-1 to the GAC filters, the activated carbon contactors (CC-1 and CC-2), and the pre- and post-filters that are used to remove particulates prior to, and after GAC treatment, respectively.

4.2 RELATED SECTIONS

1. SOP-1 SYSTEM START-UP FROM A SHUT-DOWN MODE
2. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
3. SOP-5 EQUALIZATION TANK OPERATION
4. SOP-7 COMPLIANCE SAMPLING FROM THE TREATMENT FACILITY EFFLUENT
5. SOP-8 SYSTEM SHUT-DOWN
6. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING

4.3 STANDARD OPERATING PROCEDURE

4.3.1 PST-1

PST-1 has two pumps, each of which is throttled back so that each pumps approximately 15 gpm. The pumps alternate operation so that pump life is equally balanced between the two pumps. PST-1 has four ultrasonic level switches installed to control the operation of the pumps. The lowest switch turns off all pumps, the first high switch turns on the lead pump (the lead pump alternates between each cycle), the second high switch turns on the lag pump (the lag pump also alternates between each cycle), and the high-high switch is the high alarm. The high-high switch triggers a horn alarm at the PST-1 control panel which is located in the control room, and turns off S-1, S-2, S-3, and S-4. When the high-high condition no longer exists, these same sumps are turned back on. Each of the two pumps are significantly throttled back so that each pump's output is approximately 15 gpm. The pumps are throttled with valves 19 and 20. Once the system is operational, the following procedures should be followed on an ongoing basis.

1. If necessary, adjust the throttling valve located adjacent to each pump (Valve 19 and 20) to maintain the flow at 15 gpm. Note that as head loss builds up in the pre-filter, the throttling valves will have to be opened up to overcome the increased head loss, to maintain the flow at 15 gpm. Do this for both pumps. Record the flow rates on the daily operation log.
2. On a daily basis, verify that the lead pump is alternating between each cycle.
3. On a weekly basis, verify the operation of the entire PST-1 pump station including:

- Verify operation of lead and lag pump by turning off the lead pump using the local switch mounted on the equalization tank, and observing that the lag pump comes on when the level reaches the second high switch. Do this for two pump cycles so that the lag function of both pumps are checked and confirmed to be operational.
- Verify the operation of the high level alarm and cutoff by turning off both pumps at the local hand switch, and observing that when the water reaches the high-high switch, that the alarm on the panel sounds, and that S-1, S-2, S-3, and S-4 are all shut off. (To confirm that these sumpsare turned off, observe that the "on" lights on the main control panel all switch to "off" when the alarm is tripped.)
- Verify that the high level alarm is tripped just **before** the water level reaches the high level overflow to the floor sump. This will ensure that whenever water is flowing through the high level overflow, that the alarm is tripped.

4.3.2 Pre-Filter and Post-Filter

Flow from PST-1 passes through a bag filter (pre-filter) to remove any particulate from the water prior to passing through CC-1. The pre-filter can utilize a number of different pore size filters. Currently, a 10-micron bag filter is being used. After the pre-filter, the flow passes through CC-1, and CC-2, and then through a second bag filter (post-filter) that will collect any carbon particles or carbon fines that are washed out of CC-2. The post-filter also uses a 10-micron bag filter.

The maximum recommended pressure differential across the pre- and post-filter is 15 psig. The pre-filter has a pressure gauge before (labeled pre-filter) and after (labeled CC-1). The difference between the inlet and outlet pressure is used to monitor the headloss buildup in the pre-filter. When the difference is 15 psig or greater, the pre-filter should be changed. The post-filter only has a pressure gauge before it (Labeled Post-filter). The outlet pressure on the post-filter can be assumed to be zero. Therefore the pressure gauge reading on the inlet can be assumed to represent the differential across the post-filter. The post filter should be changed when the pressure gauge preceding it exceeds 15 psig. Once this system is operational, the following routine procedures should be practiced:

1. On a daily basis, monitor and record the pressure gauge readings on the daily operating log. The gauges are labeled pre-filter and post-filter, based on the equipment that the gauge precedes.
2. If the difference between the pre-filter and CC-1 exceeds 15 psig then this filter needs to be changed. To change the pre-filter perform the following:
   - Turn off, S-1, S-2, S-3, and S-4 by turning off the corresponding breakers on the MCC.
   - Allow the oil/water separator to stop flowing into PST-1. If PST-1 turns on, allow it to pump itself down to the low level and then shut off automatically.

- Turn off the two PST-1 pumps by manually operating the two on/off switches located adjacent to PST-1.
- Put acid resistant gloves and safety glasses with side shields on. All water in PST-1, the pre-filter, CC-1 CC-2, and the post-filter, is at pH 2.5.
- Close the inlet and outlet valve from the pre-filter (Valves 21 and 23).
- Bleed the pressure off the pre-filter by opening the cock on the top of the pre-filter.
- Drain the pre-filter by opening the drain valve (Valve 31).
- Open up the pre-filter by unscrewing the top of the filter in a counterclockwise direction.
- Remove the bag retainer, and lift the bag out by the handle.
- Drain the dirty bag for a minimum of 24 hours by hanging it over the floor sump, and then put the bag filter into the process waste drum. Seal the process waste drum when done.
- Install a new bag filter into the pre-filter.
- Fill the pre-filter housing with tap water from the sink as full as possible.
- Place the bag retainer back into the pre-filter and put the top back on the pre-filter. The top is turned clockwise to seal. Be careful to not crossthread the top, and be careful that O-rings are not dislodged.
- Open the pre-filter outlet valve (Valve 23) and open the cock to dispel any air from the filter.
- Open the pre-filter inlet valve (Valve 21).
- Turn on the two PST-1 pumps by manually operating the two on/off switches located adjacent to PST-1.
- Turn on S-1, S-2, S-3, and S-4 by turning on the corresponding breakers on the MCC.
- Bleed air from the pre-filter by opening the cock on the top of the pre-filter until water comes out.
- Verify proper operation of the entire acidification system
- Take new readings on the 4 pressure gauges and record the new results on the daily operational log. There will be two sets of pressure gauge readings. Make a note that the pre-filter was changed in the comments column of the daily operational log.

3. If the post-filter pressure gauge reads greater than 15 psig, then this filter needs to be changed. To change the post-filter, perform the following:

   - Turn off S-1, S-2, S-3, and S-4 by turning off the corresponding breakers on the MCC.
   - Allow the oil/water separator to stop flowing into PST-1. If PST-1 turns on, allow it to pump itself down to the low level and then shut off automatically.
   - Turn off the two PST-1 pumps by manually operating the two on/off switches located adjacent to PST-1.

- Put acid resistant gloves and safety glasses with side shields on. All water in PST-1, the pre-filter, CC-1 CC-2, and the post-filter, is at pH 2.5.
- Close the inlet and outlet valve from the post-filter (Valves 26 and 28).
- Bleed the pressure off the post-filter by opening the cock on the top of the post-filter.
- Drain the post-filter by opening the drain valve (Valve 32).
- Open up the post-filter by unscrewing the top of the filter in a counterclockwise direction.
- Remove the bag retainer, and lift the bag out by the handle.
- Drain the dirty bag for a minimum of 24 hours by hanging it over the floor sump, and then put the bag filter into the process waste drum. Seal the process waste drum when done.
- Install a new 10-micron bag filter into the post-filter.
- Fill the post-filter housing with tap water from the hose as full as possible.
- Place the bag retainer back into the post-filter and put the top back on the post-filter. The top is turned clockwise to seal. Be careful to not crossthread the top, and be careful that O-rings are not dislodged.
- Open the post filter outlet valve (Valve 28) and open the cock to dispel any air from the post-filter.
- Open the post-filter inlet valve (Valve 26).
- Turn on the two PST-1 pumps by manually operating the two on/off switches located adjacent to PST-1.
- Turn on S-1, S-2, S-3, and S-4 by turning on the corresponding breakers on the MCC.
- Bleed air from the pre-filter by opening the cock on the top of the pre-filter until water comes out.
- Verify proper operation of the entire acidification system
- Take new readings on the 4 pressure gauges and record the new results on the daily operational log. There will be two sets of pressure gauge readings. Make a note that the post-filter was changed in the comments column of the daily operational log.

4. As needed order new bag filters to maintain stock at a one month minimum supply.

4.3.3 GAC Contactors (CC-1 and CC-2)

The carbon contactors are plumbed in series, and each carbon contactor contains approximately 2,000 pounds of activated carbon. CC-1 is equipped with a pressure gauge before (Labeled CC-1) and after (Labeled CC-2) the filter. CC-2 is also equipped with a pressure gauge before (Labeled CC-2) and after the filter (Labeled Post-filter). The difference between the inlet and outlet pressure is used to monitor the head loss buildup in the GAC filters. The maximum recommended operating pressure for the GAC filters is 25 psig. Therefore if either inlet pressure reaches 25 psig, the GAC filter will need to be changed regardless of the condition of the GAC. Do not attempt to operate the GAC filters without the pre- and post-filters in place and operational. Operation without the pre-filter will lead to shortened GAC life. Operation of the

GAC filters without the post-filter may result in loss of GAC that contains contaminants. This section describes operation of the system once it is started up.

1. On a daily basis, monitor and record the pressure gauge readings on the daily operating log. The gauges are labeled: CC-1 and CC-2; based on the equipment that the gauge precedes.
2. On a weekly basis, vent any accumulated air in the carbon filters by opening the air vent valves located at the top of each column. Any water that is released is discharged into tank T-1.
3. On a monthly basis, sample the effluent from CC-1 (the lead column) for PCB concentration by taking a sample from the sample port labeled Valve 24. Allow the water to flush the sample tap for approximately 30 seconds before collecting a sample.
4. Change-out of the GAC in the lead column is required when either 1) detectable levels of PCBs are measured in the effluent from the lead column, or 2) operating pressure in the column exceeds 25 psig. Note that only one GAC column (lead column) at a time will require change-out. The GAC in the lead column will be replaced, and this column will become the lag column, while the existing lag column will become the lead column. The piping for the GAC system was not designed to allow switching of the lead/lag role of the GAC columns. There are three options for reversing the lead/lag role of the carbon canisters. The first one is to physically switch the position of the two canisters. The second option is to re-pipe the carbon canisters, and pre- and post-filters; and the third option is to switch the carbon from CC-2 to CC-1 after the carbon in CC-1 is removed. For this procedure, it is assumed that item 1, to switch the physical position of the columns, will be implemented. To perform a GAC change-out, the following procedures should be followed.
    - Order and have available 2,000 pounds of activated carbon suitable for adsorption of PCBs and continuous operation at pH 2.5.
    - Turn off the entire treatment process following a routine shut-down as discussed in SOP-8. This entire procedure will likely require five days to implement, and restart the system.
    - Drain both carbon canisters by opening the bottom drain valve. Draining will require an overnight period.
    - Disassemble the piping that connects to each column, and remove enough piping, pipe supports, and possibly the pre- and post-filter (as necessary) so that the carbon canisters can be switched using a fork truck.
    - Have the carbon removed from the lead carbon canister by a contracted company using a vacuum. The carbon should be placed into 55 gallon drums for disposal.
    - Rent or otherwise procure the services of a fork-truck and operator that are capable of lifting and switching the canisters. Each canister and platform weighs 2,300 pounds (dry) and likely weighs 5,000 pounds when wet

(drained). Note that there is limited maneuvering room in the treatment building.

- Switch the two carbon canisters. Note that the entire skid should be moved, not just the FRP carbon column.
- Refill the lag carbon canister with the new granular activated carbon. Wear respiratory protection to prevent breathing of carbon dust. To refill the GAC canister will require the use of a fork truck to elevate the bags of GAC as they are dumped into the carbon canister.
- Reconnect the piping, pipe supports, pre- and post-filters, and GAC canisters.
- Follow the carbon supplier's instructions to place the carbon filters back into service. Allow at least two days for the carbon to degas prior to attempting to restart the GAC filters.

SOP-5
EQUALIZATION TANK OPERATION

5.1 PURPOSE

The purpose of this section is to describe the operation of the equalization tank (T-2). In the equalization tank, flow from the oil removal/GAC system (S-1, S-2, S-3. S-4) is treated with caustic to bring the pH from 2 to within. the sewer use ordinance limits of 5.5 to 9.5. The pH of the combined flow is monitored and controlled in the equalization tank by AIC 131. AIC-131 controls acid and caustic addition systems to maintain the pH to within preset limits of 5.75 to 9.0. Sulfuric acid (93 percent) is used to lower the pH and sodium hydroxide (50 percent) is used to raise the pH. Normally, only sodium hydroxide is required due to the low pH of the acidified water coming out of the GAC system.

5.2 RELATED SECTIONS

1. SOP-1 SYSTEM START-UP FROM A SHUT-DOWN MODE
2. SOP-2 FLOW METER OPERATION, FLOW BALANCING, AND FLOW ADJUSTMENT
3. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
4. SOP-4 GRANULAR ACTIVATED CARBON SYSTEM OPERATION
5. SOP-6 ACID AND CAUSTIC SYSTEM CALIBRATION AND CONTROL
6. SOP-7 COMPLIANCE SAMPLING FROM THE TREATMENT FACILITY EFFLUENT
7. SOP-8 SYSTEM SHUT-DOWN
8. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING

5.3 STANDARD OPERATING PROCEDURE

Once the equalization tank is running, the operational procedures listed below should be followed.

1. The acid tank ST-1 feeds the acid pump CP-2. As per SOP-3, check the volume of acid remaining in acid tank ST-1, and add acid as necessary.
2. On a daily basis, check the volume of caustic remaining in caustic tank ST-4, and record the volume on the daily log. A200-gallon storage tank, ST-4, is used to store 50 percent sodium hydroxide. Note that 50 percent sodium hydroxide will solidify at 54°F; therefore, during cold months, the building temperature should be maintained at 65°F.
3. As necessary, add caustic to ST-4 using the dedicated caustic drum pump and full protective gear (face shield, apron with sleeves, caustic resistant gloves, and safety boots). Before transferring caustic, check the drum label to verify that the contents are 50 percent sodium hydroxide. The caustic drum pump has a specially equipped plug to fit into the explosion proof receptacle located on the platform. Pump the drum as empty as possible by tipping the drum to get at the drum heel. When finished transferring the drum contents, leave the drum pump in the drum to drain for 5 minutes before moving the drum pump to the next drum. When finished, allow the drum pump to drain for 5

minutes in the drum, and then put the drum pump in the specially labeled 5 gallon pail that is used to store the drum pump. Regularly check the 5-gallon pail for accumulations of caustic. Carefully pour any accumulated caustic into tank T-2. Clean up all residues of caustic remaining on the gloves, apron, or work surfaces (floor, stair platform or railing, etc.) by flushing with water for 5 minutes. Record the volume of caustic added to ST-4 in the daily log, along with the new ST-4 tank reading.

4. Observe the following cautions while handling or transferring caustic:

   - **DO NOT ALLOW THE DRUM PUMP TO RUN UNATTENDED.**
   - **ALWAYS WEAR FULL PROTECTIVE GEAR WHEN WORKING WITH SODIUM HYDROXIDE.**
   - **DO NOT TOUCH THE DRUM PUMP RISER TUBE AS IT WILL CONTINUE TO HOLD CAUSTIC.**
   - **DO NOT FLUSH OR RINSE THE DRUM PUMP WITH WATER.**
   - **DO NOT EVER PLACE THE DRUM PUMP IN WATER.**
   - **DO NOT USE THE DRUM PUMP TO PUMP ANY OTHER FLUID OTHER THAN 50 PERCENT SODIUM HYDROXIDE.**

5. Keep all full caustic drums, drip pail, and drum pump within the caustic containment area. Keep the containment sump dry, and on a monthly basis, check the sump for evidence of leaks or spills by measuring the pH of any water in the sump. As needed, remove any water in the sump by using a Shop Vac or hand pump. Dispose of the water into the floor sump, which is pumped to Tank T-1.

   - **DO NOT USE THE SHOP VAC TO CLEANUP CONCENTRATED SODIUM HYDROXIDE.**
   - **THOROUGHLY RINSE THE SHOP VAC WITH WATER WHEN DONE.**

6. Empty caustic drums should be resealed, and taken over to the floor sump where their exterior surfaces can be hosed off to remove any caustic splatters or drips. The clean, sealed drums can be placed outdoors while awaiting pick-up by the chemical supply company.

   - **DO NOT HOSE OR RINSE THE INTERIOR OF THE DRUM.**
   - **DO NOT STACK EMPTY DRUMS MORE THAN TWO (2) HIGH.**
   - **DO NOT PUT DRUMS OUTDOORS THAT ARE NOT SEALED, AND HAVE NOT HAD THEIR EXTERIOR THOROUGHLY RINSED.**
   - **ALWAYS TIE DRUMS OFF WHEN STORED OUTDOORS.**

7. Mixer MX-2 is operated at 1,750 RPM, in a forward direction. The variable speed drive, located at the rear of the control cabinet has been by-passed. On a daily basis, the mixer operation should be checked by observing that it is running, and by observing tank T-2 to confirm that the tank is well mixed.

8. On a weekly basis, the hand-held pH meter should be used to check the calibration of the pH controller, AIC 131. This is performed by calibrating the hand-held pH meter at pH 7 and pH 4 in accordance with its operating instructions. The pH in tank T-2 should be measured with the hand-held meter and compared to the pH controller reading. If the pH in tank T-2, as recorded by the pH controller, is within 0.2 pH units of the hand-held pH meter reading, then the controller calibration is acceptable. If the difference is 0.2 pH units or greater, then the pH controller should be recalibrated in accordance with SOP-6. Alternatively, immerse the probe in a pH-7 buffer solution and read the pH at the main control panel as a means to double-check the hand held meter. When doing this, turn off the shunts in the circuit breaker box (LP-13 and LP-15) so the system is not shut down. Also, turn off the corresponding chemical feed pump using LP-16. Turn the shunts and pump back on when the test is complete.
9. On a weekly basis, remove the pH probe from tank T-2 and clean the surfaces of the probe using a gentle stream of water directed at the probe surfaces, and the probe membrane (on the tip of the probe). Wipe the body of the probe with a paper towel, but only blot the probe membrane. Soak the probe for 5 minutes in a muriatic acid solution prepared in accordance with the probe manufacturer's recommendations. To avoid shutting down the process while the probe is soaking, turn off the shunts (LP-13 and LP-15) and the caustic feed pump (CP-3) at LP-16. Rinse the probe thoroughly with tap water and then distilled water before placing it back into service. Remember to turn on the shunts and CP-3. For additional information on the pH controller and pH probe, refer to SOP-6.

    - **DO NOT WIPE THE PROBE MEMBRANE.**

10. On an as needed basis, hose down the interior of the equalization tank to remove any accumulations at or above the waterline.
11. As needed, order caustic supplies.

SOP-6
ACID AND CAUSTIC SYSTEM CALIBRATION AND CONTROL

6.1 PURPOSE

The purpose of this section is to describe the operation of the caustic metering pumps and controllers. There are two separate controllers.

- AIC 121 controls the acid addition pump (CP-1) that adds 93 percent sulfuric acid to the acidification tank (T-1), and maintains a set pH of 2.5.
- AIC 131 controls the acid and caustic addition pumps (CP-2 and CP-3, respectively) that add 93 percent sulfuric acid and 50 percent sodium hydroxide, respectively, to the equalization tank (T-2) and maintains the pH between the range of 5.75 to 9.

6.2 RELATED SECTIONS

1. SOP-1 SYSTEM START-UP FROM A SHUT-DOWN MODE
2. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
3. SOP-5 EQUALIZATION TANK OPERATION
4. SOP-8 SYSTEM SHUT-DOWN
5. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING

6.3 STANDARD OPERATING PROCEDURE

In this section, routine operating procedures are presented that are to be used on a continuing basis for AIC-121, AIC-131, and chemical feed pumps CP-1, CP-2, and CP-3.

6.3.1 Acidification Tank Controller (AIC-121)

Note that this controller only adds sulfuric acid. Therefore any references to base addition are not used. The setpoints that are programmed into AIC-121 are listed below.

Parameter	Value
Access Code	314
Lower Set Point	1.5
Upper Set Point	2.5
High Alarm	3.0
Low Alarm	1.0
Max Delta pH	0.2
Max Pump On	6000
Max Acid strokes per minute (SPM)	100
Max Base SPM	100
Delta pH Max SPM	0.1
4 mA output	4.0

20 mA output	10.0

1. To calibrate AIC-121, perform a one-point calibration at pH 2 using a standard pH buffer solution. It is necessary to remove the pH probe from the tank by unbolting the flange at the top of the tank. The probe should then be dried, rinsed with distilled water, and the length of the probe dried so that process water does not contaminate the pH buffer. The probe needs to be supported from the platform railing while it is immersed in the pH buffer solution. Check the temperature of the buffer solution and enter it at the appropriate prompt. Immerse the probe in the pH 2 buffer, then enter the calibration mode on AIC-121. Note that AIC -121 is panel mounted on the main control panel. Follow the prompts on the pH controller. Double-check the pH in the pH 2 buffer. If the difference between the known pH 2 buffer and the control panel reading is greater than 0.07 pH units, the probe needs to be cleaned using a 5 percent HCl solution to remove inorganic buildup and/or isopropyl alcohol (rubbing alcohol) or detergent to remove organic film buildup. If the pH probe cannot be restored to within 0.07 pH units, the probe will need to be replaced.

6.3.2 Chemical Feed Pump CP-1

This pump delivers 93 percent sulfuric acid to tank T-1. The control knobs on the pump are set at 60 percent of stroke length and speed is set to external control meaning that CP-1's speed is under the control of AIC-121. With the set points listed in Section 6.3.1, the stroke rate for CP-1 will be as follows:

pH	CP-1 Stroke Speed Strokes per Minute
<= 2.50	0
>= 2.51	100

6.3.3 Equalization Tank Controller (AIC-131)

The following are the setpoints for important parameters that are programmed into AIC-131:

Parameter	Value
Access Code	314
Lower Set Point	7.00
Upper Set Point	9.0
High Alarm	9.5
Low Alarm	5.5
Max Delta pH	0.1
Max Pump On	1800
Max Acid strokes per minute (SPM)	100
Max Base SPM	100
Delta pH Max SPM	0.2
4 mA output	4.0
20 mA output	10.0

1. To calibrate AIC-131, perform a two point calibration at pH 4 and 7 using standard pH buffer solutions. It is necessary to raise the pH probe from the tank by loosening the two U-bolt connectors holding the probe in the tank. The probe should then be dried, rinsed with distilled water, and the length of the probe dried so that process water does not contaminate the pH buffer. Immerse the probe in a pH 7 buffer, then enter the calibration mode on AIC-131. Note that AIC-131 is mounted on the main control panel. Follow the prompts from the pH controller then rinse and dry the pH probe again before inserting it into the pH 4 buffer. Again, follow the prompts from the pH controller. When the calibration is complete, the controller will provide the percent error of the slope adjustment from theoretical. If the error is greater than 30 percent, the probe needs to be cleaned using a 5 percent HCl solution to remove inorganic buildup and/or isopropyl alcohol (rubbing alcohol) or detergent to remove organic film buildup. If the pH probe cannot be restored to within a 30 percent slope adjustment, the probe will need to be replaced. Note that due to iron and sulfides in the groundwater, the pH probe's response becomes slow. This will necessitate changing the probe approximately every two months.

2. Upon completion of the calibration, replace the probe in the tank and fasten the two U-bolts. Re-check the pH using a calibrated hand-held pH meter to insure that the pH display on the controller is within 0.2 pH units of the hand-held pH meter reading.

3. Note that the low and high alarm set points on the controller activate relays that trigger the main alarm panel. Either a high or low alarm shuts down all recovery wells and sumps by tripping Shunts A and B. To reset this alarm condition, operator attention is required. The alarm must be acknowledged at the alarm control panel. Diagnose and correct the problem that caused the alarm. Likely causes for low pH are: tank ST-4 is empty or a malfunctioning caustic feed pump CP-3 AIC-131 is then re-started by entering the access code (314) into AIC-131 and pressing run.

6.3.4 Chemical Feed Pump CP-2

This pump delivers 93 percent sulfuric acid to tank T-2. The control knobs on the pump are set at 100 percent of stroke length and speed is set to **external** control meaning that CP-2's speed is under the control of AIC-131. With the set points described in the previous section, the stroke rate for CP-1 will be as follows:

pH	CP-2 Stroke Speed Strokes per Minute
<= 9.00	0
>= 9.01	100

6.3.5 Chemical Feed Pump CP-3

This pump delivers 50 percent sodium hydroxide to tank T-2. The control knobs on the pump are set at **100 percent** of stroke length and speed is set to **external** control meaning that CP-3's speed is under the control of AIC-131. With the set points described in the previous section, the stroke rate for CP-1 will be as follows:

pH	CP-3 Stroke Speed Strokes per Minute
> = 5.75	0
<= 5.74	100

SOP-7
COMPLIANCE SAMPLING FROM THE TREATMENT FACILITY EFFLUENT

7.1 PURPOSE

The purpose of this section is to describe procedures for the collection of samples in accordance with the facility's "Industrial Sewer Connection Permit" (Appendix A). This SOP has been updated to reflect the discharge permit that was issued by the Town of Tonawanda effective January 1, 2017.

7.2 RELATED SECTIONS

1. SOP-2 FLOW METER OPERATION, FLOW BALANCING, AND FLOW ADJUSTMENT
2. SOP-4 FOR MONITIORING PCB'S BETWEEN CARBON COLUMNS
3. SOP-5 EQUALIZATION TANK OPERATION
4. SOP-8 SYSTEM SHUT-DOWN
5. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING

7.3 STANDARD OPERATING PROCEDURE

The discharge permit defines two monitoring locations: ML-1 and ML-2 as follows:

ML-1 is the outlet from the two carbon columns following oil/water separation but prior to entering the equalization tank. Samples from ML-1 are collected from Valve 25 by opening the valve and filling the sample bottles. Prior to collecting the sample, the sample tap is flushed for approximately 30 seconds by opening the valve and allowing the sample to flush the tap.

ML-2 is the discharge point of to the Town sewer. Samples from ML-2 are collected using the ISCO sampler. The sample strainer for the ISCO sampler is installed in the equalization tank just prior to overflowing the weir. Prior to collecting samples from ML-2 the ISCO pump is operated in reverse to purge the sample strainer, then in forward to flush the sample tube, and then in reverse to purge the sample tube. Then the pump is operated manually in forward while holding the sample bottle beneath the sampler discharge tube. Alternatively, grab samples are taken by dipping the sample container in the flow just before the weir.

In addition, the discharge permit includes provisions for monitoring of recovered oil. The purpose of this monitoring requirement is to determine the PCB content of the recovered oil, and to determine when oil is no longer being recovered. Because the volume of recovered oil is small, and does not require monthly disposal, a "fresh sample" of recovered oil is best collected from the "oil side" of the oil/water separator in the vicinity of the oil/water separator skimmer pipe. Normally there is a sheen to 1/8 inch thick layer of oil on the "oil side" of the oil/water separator. The sample of recovered oil will be collected by skimming a sample of oil from the surface of the oil/water separator by dipping a clean beaker into the separator, approximately

1/8th inch, so that as much free oil is collected in the sample bottle as possible. The oily water from the beaker is then transferred into a sample bottle. Record the estimated percentage of oil present in the sample on the chain of custody record. The reported laboratory PCB value will then be adjusted to reflect the concentrations in the oil phase only.

7.3.1 Permit Monitoring Requirements

A summary of required chemical analytical samples and analysis for the treatment plant is provided in Table 2.2 of Volume I. Samples are collected from the treatment plant on the following schedule:

- Monthly: PCB arochlors from sampling points ML-1, ML-2, and between carbon vessels. Oil and grease from ML-1. Total petroleum hydrocarbons and pH from ML-2.

- Semi-annually (June and December): In addition to PCBs, pH, and total petroleum hydrocarbons as described above, TSS, BOD, phosporus, arsenic, and cyanide from ML-2.

7.3.2 Monthly Sampling

Since a sample between the GAC contactors is not required for compliance, it is not discussed in detail in this section. Refer to SOP-10 for collecting samples between the GAC contactors. Procedures for compliance sampling are as follows:

1. Arrange with the contract laboratory to have pre-preserved sample bottles, chain-of-custody forms, sample coolers, and packaging materials delivered to the Parsons office.
2. Schedule a sample pick-up with the contract laboratory at least 24 hours prior to sampling. This will ensure that the lab has someone available the day the pick-up is needed.
3. Fill in the sample date, time, and sampler's initials on the bottle labels using a fine point indelible ink marker. Cover the label with clear plastic packaging tape that encircles around the bottle and overlaps at least 2 inches.
4. Collect the samples at ML-1, ML-2, and the recovered oil from the oil/water separator (if present).
5. Complete the chain-of-custody form.
6. Pack the samples in the laboratory provided coolers using laboratory provided packaging materials. Ice the samples by using gallon-size Ziplock bags filled with ice cubes (double bagged). The samples should be maintained at 4°C. Samples are to be picked up by laboratory personnel at the Parsons office on the same day the samples are collected.

7. If sample chain of custody does not have carbon copies, make a photo copy of the chain after the sample pick-up personnel relinquish it, but before the cooler leaves the premises.

7.3.3 Semi-Annual Sampling

A semi-annual (June and December) flow proportional composite sample is collected from ML-2 for BOD, TSS, total phosphorous, arsenic, and cyanide. This sampling event should be conducted in conjunction with a monthly sampling event to minimize sample shipping. Procedures are as follows:

1. Arrange with the contract laboratory to have pre-preserved sample bottles; chain-of-custody forms, sample coolers and, packaging materials, delivered to the Parsons office.
2. Schedule a sample pick-up with the contract laboratory at least 24 hours prior to sampling. This will ensure that the lab has someone available the day the pick-up is needed.
3. Program the automatic composite sampler to collect a flow proportional composite sample. The sampler should be programmed to collect a sample approximately every 20 minutes. This can be achieved by dividing the typical daily flow by 72 (there are 24 X 3 = 72 20-minute intervals in a 24-hour period) and programming the sampler to sample every time this increment of flow is obtained.
   - For example, if the typical daily flow is 100,000 gallons per day, then the sampler should be programmed to sample every 1400 gallons.
   - The ISCO sampler has two 9,450 milliliter sample bottles in it. The sampler should be programmed to multiplex the samples by putting a sample aliquot into each bottle every time it collects a sample. At the end of 24 hours, both 9,450 milliliters bottles will contain an equivalent composite sample. The sample aliquot volume is 125 milliliters (9,450 divided by 72, rounded down to a convenient number).
4. Once the sampler is started, observe the sampler to ensure that it is collecting the right volume of sample at the appropriate interval, into the appropriate bottle.
5. When 24 hours has passed, the sampler will stop automatically. Complete the sample bottle label by filling in the sample date, time, and sampler's initials on the bottle labels using a fine point indelible ink marker. Cover the label with clear plastic packaging tape that encircles the bottle and overlaps itself at least 2 inches. Pour the collected sample (from either of the two 9,450 milliliters bottles) into the sample bottles for shipment to the laboratory.
6. Complete the chain-of-custody form.
7. Pack the samples in the laboratory provided coolers using laboratory provided packaging materials. Ice the samples by using the laboratory provided ice packs (if kept frozen) or by using gallon size Ziplock bags filled with ice cubes (double bagged). The samples should be maintained at 4°C. Samples are to be picked up by laboratory personnel at the Parsons office on the same day the samples are collected.

8. If sample chain of custody does not have carbon copies, make a photocopy of the chain after sample pick-up relinquishes it but before the cooler leaves the premises.

7.4 SELF MONITORING REPORT PREPARATION

In accordance with the facility's discharge permit Part III - Reporting Requirements, a monthly self-monitoring report must be prepared and submitted to the Town of Tonawanda. The report must contain analytical results, total monthly flows, and other information for the previous month specifically listed in the discharge permit. The report is due by the 25th of the month, following sample results (i.e. 25th of February for the January results).. Note that the flows should be reported by the 9th of each month by email to:

Paul Morrow (Town of Tonawanda Water Resource Department; Pretreatment Division, Wastewater Treatment Facility) at pmorrow@tonawanda.ny.us.

SOP-8
SYSTEM SHUT-DOWN

8.1 PURPOSE

The purpose of this section is to describe the shut down of the wells, sumps, and groundwater treatment system from an operating condition. Two levels of shut-down are described.

Routine Shut-down applies to periods up to one week, when non-freezing conditions are expected (temperatures > 40°F).

Extended Shut-down applies to longer periods, or when freezing conditions may be encountered (temperatures < 40°F).

8.2 RELATED SECTIONS

1. SOP-1 SYSTEM START-UP FROM A SHUT-DOWN MODE
2. SOP-2 FLOW METER OPERATION, FLOW BALANCING, AND FLOW ADJUSTMENT
3. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
4. SOP-4 GRANULAR ACTIVATED CARBON SYSTEM OPERATION
5. SOP-5 EQUALIZATION TANK OPERATION
6. SOP-6 ACID AND CAUSTIC SYSTEM CALIBRATION AND CONTROL
7. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING

8.3 STANDARD OPERATING PROCEDURE

8.3.1 Routine Shut-down

During a routine shut-down, the following procedures should be enacted:

1. The following breakers on the MCC panel should be turned to the "off" position.
    - S-1
    - S-2
    - S-3
    - S-4
    - Clearwell Pump Panel (1 of 2)
    - Clearwell Pump Panel (2 of 2)
    - EQ. Tank Mixer MX-2
2. The following circuit breakers in the lighting panel should be turned to the "off" position.
    - LP-11 Acid Drum Pump
    - LP-13 Shunt Trip A
    - LP-15 Shunt Trip B
    - LP-16 Chemical feed pump CP-3

- LP-17 Chemical feed pump CP-1
- LP-18 Mixer MX-1
- LP-19 Chemical feed pump CP-2
- LP-20 Control Power for PST-1
- LP-22 Building Sump Pump
- LP-24 Building Sump Pump

3. Close the acid feed supply valves (Valves 33, 34, 35) at the base of the acid tank.
4. Close the caustic supply valve (Valves 42) on CP-3 inlet piping.

8.3.2 Extended Shutdown

During an extended shut-down the following procedures should be enacted:

1. The following breakers on the MCC panel should be turned to the "off" position.
   - S-1
   - S-2
   - S-4
   - S-3
   - Clearwell Pump Panel (1 of 2)
   - Clearwell Pump Panel (2 of 2)
2. The following circuit breakers in the lighting panel should be turned to the "off" position.
   - LP-10 FE-126
   - LP-11 Acid Drum Pump
   - LP-12 FE-127
   - LP-13 Shunt Trip A
   - LP-14 FE-125
   - LP-15 Shunt Trip B
   - LP-17 Chemical feed pump CP-1
   - LP-18 Mixer MX-1
   - LP-20 Control Power for PST-1
   - LP-26 Composite Sampler
3. Drain the acidification tank (T-1) to the floor sump. Note that throughout this procedure water will be drained to the floor sump. The floor sump will be pumped to the equalization tank (T-2) by connecting a hose to Valve 47. Run the hose into the first compartment of the equalization tank, so that the flow can be pH neutralized. It is essential that all flows be pH neutralized to within 5.5 to 9.5 prior to discharging, so that the sewer use ordinance is not violated.
4. Skim any remaining oil in the oil/water separator into the oil/water separator oil holding tank by rotating the slotted oil skimmer pipe. Drain the oil/water separator via the solids flush connection (Valve 29) to the floor sump. Pump the floor sump to the first compartment of the equalization tank (T-2) for pH neutralization.

5. Drain the PST-1 clearwell sump by hand pumping residual water out of the tank. Note a hand pump will have to be inserted into the vent fitting in order to access the tank interior. Water should be drained to the floor sump and then discharged to the first compartment of the equalization tank for pH neutralization.
6. Drain the pre-filter and post-filter (Open Valves 31, 32 and air bleed cocks) to the floor sump, open the filters and remove the bag filters. Allow the bag filters to drain over the floor sump for 24 hours. When dry, place the bag filters into the process waste drum. All water that is drained to the floor sump should be discharged to the first compartment of the equalization tank for pH neutralization.
7. Drain the GAC columns to the floor sump by opening up the bottom drains (Valves 24 and 25) and opening the air vents at the top of the column. Water should be drained to the floor sump and then discharged to the first compartment of the equalization tank for pH neutralization.
8. Transfer the contents of the oil water separator oil holding tank to the LNAPL storage tank ST-3. This is done by draining the oil holding tank in the oil/water separator into a 5 gallon pail via the water decant valve of the oil holding tank (Valve 11). The 5 gallon pail can then be dumped into the top bung of the LNAPL storage tank ST-3.
9. The following breakers on the MCC panel should be turned to the "off" position.
    - EQ. Tank Mixer MX-2
10. The following circuit breakers in the lighting panel should be turned to the "off" position.
    - LP-16 Chemical feed pump CP-3
    - LP-19 Chemical feed pump CP-2
11. Close the acid feed supply valves (Valves 33, 34, 35) at the base of the acid tank.
12. Close the caustic supply valve (Valves 42) on CP-3 inlet piping.
13. Drain the equalization tank to the floor sump by opening the bottom drain valve (Valve 17). Pump the floor sump to the equalization tank (T-2) by connecting a hose to Valve 47. Run the hose from valve 47 into the **final compartment** of the equalization tank, which discharges directly to the sewer.
14. Remove any accumulated sediment in the acidification tank, oil/water separator, and/or equalization tank.
15. Hose out the acidification tank, oil/water separator, equalization tank, pre-filter, and post-filter and drain all flush water to the floor sump. Pump the floor sump to the final compartment of the equalization tank.
16. The following circuit breakers in the lighting panel should be turned to the "off" position.
    - LP-8 Instrument Panel
    - LP-22 Building Sump Pump
    - LP-24 Building Sump Pump
17. Break unions where necessary to drain all process piping at the low points to the floor sump. Pump the floor sump to the final compartment of the equalization tank.

18. If the treatment system will no longer be used, the chemical feed systems should be drained and decontaminated. Excess chemicals should be returned to the chemical supplier or otherwise disposed of.
19. Empty the acid and caustic containment areas of all liquid, and clean out any accumulated sediment.
20. Empty the floor sump and clean out all sediment.
21. Unplug the ISCO sampler, clean out the inside, leave door propped open ½ inch to prevent moisture buildup.
22. Characterize and dispose of any remaining oil in the LNAPL storage tank ST-3, accumulated sediment, and/or process waste.

SOP-9
ACCIDENTAL SPILL PREVENTION PLAN

9.1 PURPOSE

The purpose of this section is to comply with the Town of Tonawanda's Industrial Sewer Connection Permit issued for this facility which requires an accidental spill prevention plan be developed to eliminate or minimize the accidental or slug discharge of pollutants into the sewer system. With regards to this facility, the accidental spill prevention plan will address the accidental discharge of sulfuric acid, sodium hydroxide, and untreated groundwater.

9.2 RELATED SECTIONS

1. SOP-10 ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING
2. SOP-5 EQUALIZATION TANK OPERATION
3. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
4. SOP-6 ACID AND CAUSTIC SYSTEM CALIBRATION AND CONTROL

9.3 STANDARD OPERATING PROCEDURE

9.3.1 Accidental Discharge of Untreated or Partially Treated Groundwater

This section describes the conditions that could result in the accidental discharge of untreated or partially treated groundwater. For each scenario, a discussion of spill prevention measures is presented.

Prior to proceeding it is helpful to discuss the treatment facility's fail-safe measures. The table that follows presents a list of the facility's treatment alarms. The table also indicates the alarm action that is taken. The following are the possible alarm reactions:

Alarm Annunciator: The alarm panel blinks continuously until acknowledged. The horn has been disconnected because the facility is not manned continuously**Shunt A:** Trips all recovery wells (RW-1 through RW-11) and collection sumps (S-1 through S-4) so that they are turned off. The tripped items need to be manually reset at the MCC.

Shunt B: Trips the clearwell pump station (PST-1) breakers so that it is turned off. The tripped items need to be manually reset at the MCC.

Autodialer: Phones the treatment plant operator on the operator's pager (phone number 716-522-7705) every 5 minutes and provides a phone number message of 9374.

Condition	Alarm Reaction	Alarm Reset
Low pH in Equalization Tank (T-2) (pH < 5.75)	Alarm Annunciator, Shunt A is Tripped, Autodialer	Alarm must be acknowledged and tripped equipment manually reset..
High pH in Equalization Tank T-2 (pH > 9.0)	Alarm Annunciator, Shunt A is Tripped, Autodialer	Alarm must be acknowledged and tripped equipment manually reset.
Low pH in Acidification Tank (T-3) (pH < 1.00)	Alarm Annunciator, Shunt A is Tripped, Autodialer	Alarm must be acknowledged and tripped equipment manually reset..
High pH in Acidification Tank T-3 (pH > 3.0)	Alarm Annunciator, Shunt A is Tripped, Autodialer	Alarm must be acknowledged and tripped equipment manually reset.
LEL Warning (See Note) (LEL > 10 percent)	Alarm Annunciator	Alarm must be acknowledged.
LEL Danger (See Note) (LEL > 15 percent)	Alarm Annunciator, Shunt A and B are Tripped, Autodialer	Alarm must be acknowledged and tripped equipment manually reset.
Low Building Temperature (Temperature < 50 ºF)	Alarm Annunciator, Shunt A is Tripped, Autodialer	Alarm must be acknowledged and tripped equipment manually reset.
HVAC Failure	Alarm Annunciator, Shunt A is Tripped, Autodialer	Alarm must be acknowledged and tripped equipment manually reset.
High-High in Building Floor Sump	Alarm Annunciator, Shunt A is Tripped, Autodialer	Alarm must be acknowledged and tripped equipment manually reset.
High-High in GAC Clearwell PST-1	Turns off, S-1, S-2, S-3, S-4 and annunciates (light and horn) at the PST-1 control panel.	When alarm condition no longer exists, the wells and sumps are turned back on and the annunciator is turned off. No acknowledgment is required.

NOTE: During the system start-up, significant baseline drift was encountered with the two LEL meters. As a result, to avoid unnecessary alarms, the LEL warning and danger setpoints have both been set to 100 percent until the problem is resolved.

In addition to these alarms, the treatment facility is equipped with separate secondary containments for storing acid and caustic supplies. The entire building also has secondary containment provided by a 6-inch high curb around the entire building perimeter.

9.3.1.1 Process Overflow or Leak

All floor drains in the treatment facility discharge to the building floor sump, which is automatically pumped back to the head of the acidification treatment process (Tank T-1). This flow is then treated by acidification, oil/water separation, and granular activated carbon. In the event the leak overwhelms the building sump, and/or the sump pump does not operate, a building sump high alarm will trip Shunts A and B which will turns off all recovery wells, sumps, and process equipment; and autodials an alarm condition. At this point all flow into the treatment facility will be turned off, and the process will sit idle until the operator responds to the alarm.

9.3.1.2 Discharge of Partially Treated Groundwater

It is possible that groundwater will pass through the treatment system untreated or partially treated. This could occur in the event the pH adjustment step of the acidification process fails, or the pH adjustment step of the equalization process fails. Any other failure would not cause untreated or partially treated water to be discharged.

9.3.1.2.1 Failure of the Acidification Process

Failure of the acidification process would occur under the following conditions:

1. Calibration error of the pH probe in Tank T-1 may lead to erroneous pH's and result in incomplete treatment. If for example the pH probe is reading 2.0 when the actual pH is 2.5, then incomplete emulsion breaking may be occurring. In this case the water is still receiving treatment from the activated carbon contactors, which should provide for complete PCB removal. This situation, however, will result in oil and grease loading onto the activated carbon, which will shorten the life of the GAC.

- Precautions against this type of error occurring are taken by cleaning and checking the calibration of the probe every time the treatment facility is inspected, which is at least two times per week.

2. Depletion of sulfuric acid supplies may result in failure to maintain the pH at 2.5. In the unlikely event the sulfuric acid tank is pumped empty, there would not be any acid available to add to the process. In this case, the AIC 121 pH controller would experience a pump overrun error and a high pH alarm. These are only local alarm conditions, and influent groundwater would continue to be pumped through the process. In this case the water is still receiving treatment from the activated carbon contactors which should provide for complete PCB removal.

- This type of error occurring is unlikely because the system is checked at least two times per week by the operator, and it is unlikely that the acid tank level would drop this low. Daily consumption is less than 20 gallons per day, and the acid tank is 250 gallons. Therefore, it is unlikely that the tank could ever become depleted.

The other components of the acidification treatment system are not subject to failure that would result in untreated or partially treated water being discharged. For example the oil/water separator is a gravity flow unit with no moving parts, therefore here is no potential for failure. Likewise the GAC beds are simple devices that are not subject to sudden or mechanical failure.

The pump station feeding the GAC system (PST-1) has duplex pumps. In the event the wet well experiences a high-high alarm, all of the influent pumps (S-1, S-2, S-3, S-4) are shut down until the alarm condition clears itself.

9.3.1.2.2 Failure of the pH Adjustment Step of the Equalization Process

Failure of the pH controller to maintain the pH in the equalization tank to within the preset limits would occur under the following conditions:

1. Calibration error of the pH probe in Tank T-2 may lead to erroneous pH's and result in incomplete treatment. If for example the pH probe is reading 6.0 when the actual pH is 5.0, then improper pH discharge may be occurring.
    - Precautions against this type of error occurring are taken by cleaning and checking the calibration of the probe weekly.
2. Depletion of sulfuric acid or sodium hydroxide supplies, may result in failure to maintain the pH within the preset limits. In the unlikely event the sulfuric acid or sodium hydroxide tank were pumped empty, there would not be any acid/caustic available to add to the process. In this case, the AIC 131 pH controller would experience a pump overrun error and a high/low pH alarm. The high/low pH alarm will result in Shunt A being tripped which will shut down all of the recovery wells and sumps.
    - This type of error occurring is unlikely because the system is checked at least two times per week by the operator, and it is unlikely that the acid or caustic tank would ever get so low. Daily acid (caustic) consumption is less than 20 (30) gallons per day, and the acid (caustic) tank is 300 (200) gallons, therefore it is unlikely that either of these tanks would become depleted.

The other components of the equalization portion of the treatment system are not subject to failure that would result in untreated water being discharged. For example, if the mixer in tank T-2 failed, incomplete mixing in the tank would occur, but this would not be catastrophic, as the incoming flows may be sufficient to keep the tank mixed.

9.3.2 Sulfuric Acid Spill

The facility uses (93 percent) sulfuric acid to adjust the pH in tank T-1 to a. This same acid reservoir is used (if necessary) to adjust the pH downward in the equalization tank (T-2). Tank T-1 is fed by chemical feed pump CP-1 from acid reservoir ST-1. Tank ST-1 is a 300 gallon tank. Tank T-2 is fed by chemical feed pump CP-2 also from acid reservoir ST-1. There are two possibilities for an acid spill within the treatment facility; one is a leak or failure within the acid containment area, and the second is a piping leak or failure outside the containment area, but inside the building. Both possibilities are discussed in the following sections.

9.3.2.1 Discharge Into the Acid Containment Area

The acid storage tank is located within a recessed concrete contained area. This same area is also used for the storage of full 55 gallon drums of sulfuric acid. Chemical feed pumps CP-1 and CP-2 are located within the containment. The capacity of the recessed contained area is

approximately 35 gallons. Any minor spill or leak from tank ST-1, a drum, chemical feed pump CP-1 or CP-2, or acid piping in this area will be contained within the containment area. Any leak in excess of the containment's capacity would overflow the containment but would be contained within the building. The building floor has a 4-inch wide by 6-inch high curb around the entire perimeter. The acid containment area, the building floor, and the building curb are constructed of concrete that is coated with an acid and caustic resistant coating.

All floor drains within the building drain to the floor sump, which is pumped to the head of the acidification treatment process (tank T-1). Therefore in the event there was a complete failure of the acid storage tank, chemical feed pump, drum, or piping, that was not contained within the acid containment area, it would overflow the containment until it entered the floor sump. If the floor sump filled up, it would turn on and pump the material to the acidification tank (T-1). The material would be treated, and then would be neutralized by caustic in the equalization tank (Tank T-2). In the event that the caustic metering system in Tank T-2 could not keep up with the acid, a low pH alarm would be signaled by AIC 131, and all influent flow would be shut down by Shunt A. The operator would be called by the auto-dialer signaling the alarm condition. In this case, the acid spilled on the floor and in the containment would remain until the operator arrived at the site.

9.3.2.2 Discharge Onto the Building Floor

Acid piping within the building is constructed of Schedule 80 CPVC. It is located within the building, and therefore has complete secondary containment provided by the curbed floor of the building. In the event there was a leak in the acid pipe supplying tank T-1 or T-2, any acid spilled on the floor of the building would be contained within the building. The same discussion presented in Section 9.3.2.1 would apply if the acid reached the floor sump.

9.3.3 Sodium Hydroxide Spill

The facility uses 50 percent sodium hydroxide to adjust the pH in tank T-2 to within 5.75 to 9.0. Tank T-2 is fed by chemical feed pump CP-3 from caustic reservoir ST-4. Tank ST-4 is a 200 gallon tank. There are two possibilities for a caustic spill within the treatment facility; one is a leak or failure within the caustic secondary containment, and the second is a piping leak or failure outside the caustic secondary containment but inside the building. Both these possibilities are discussed in the following paragraphs.

9.3.3.1 Discharge into the Caustic Containment Area

The caustic storage tank is located within a recessed concrete contained area. This same area is also used for the storage of full 55-gallon drums of sodium hydroxide. The containment is coated with a corrosion resistant coating. Chemical feed pump CP-3 is also located within the contained area. The capacity of the recessed contained area is approximately 35 gallons. Any minor spill or leak will be contained within the containment area. Any leak in excess of the containment's capacity would be contained within the building.

Therefore in the event there was a catastrophic failure of the caustic storage tank that was not contained within the caustic containment area, it would overflow the containment until it

entered the floor sump. If the floor sump filled up, it would turn on and pump the material to the acidification tank (T-1). The material would be treated through the acidification process, and then would pass to the equalization tank for final pH adjustment. As with the discussion presented in Section 9.3.2, discharges to the Town sewer are protected from pH excursions by AIC-131 which has both high and low alarms that trip Shunt A, which will shut down all influent groundwater from the recovery wells and sumps. The operator would be called by the auto-dialer signaling the alarm condition. In this case the caustic spilled on the floor would remain until the operator arrived at the site.

9.3.3.2 Discharge onto the Building Floor

Caustic piping within the building is constructed of Schedule 80 PVC. It is located within the building, and therefore has complete secondary containment provided by the curbed floor of the building. In the event there was a leak in the caustic pipe supplying tank T-2, any caustic spilled on the floor of the building would be contained within the building.

9.3.4 Spill Prevention

To prevent a spill, the following precautions are taken:

1. All treatment plant operators are 40-hour OSHA certified, with up-to-date annual 8-hour Refresher Training/Certification. Some or all of the operators also have training in the following areas: first aid, CPR, hazard communication, and confined space entry.
2. Written standard operating procedures exist for filling the acid and caustic tank and for proper storage of empty and full drums of acid and caustic (SOP-3 and SOP-5).
3. Full containment is provided for acid and caustic storage tanks, pumps, piping, and drums.
4. Only empty, sealed, rinsed drums are stored outdoors, during the warmer months where temperatures are typically above 55^{o}F, while awaiting pick-up by the chemical delivery company.

9.3.5 Spill Control and Clean-Up

To control and clean-up a spill, the following procedure and equipment should apply:

1. The treatment operator is capable of responding to and cleaning up spills that are less than approximately 5 to 10 gallons. In this case, containment and cleanup will be used. Spill cleanup residues such as pads and adsorbent will be properly disposed of. Spill areas will be thoroughly flushed with water, and that water discharged to the acidification tank (T-1) for subsequent treatment in the process.
2. For responding to small spills (5 to 10 gallons maximum), an acid/caustic spill kit is kept at the facility. Spill clean-up supplies consist of: 3 - 3” by 4” adsorbent socks, 12 - 18 inch square adsorbent pads, 4 - large disposal bags, and a 10 gallon wet/dry shop vacuum. Personal protective equipment consists of: safety glasses, full face shield, apron with arms, acid resistant gloves, and knee-high boots. The facility is

equipped with an eyewash and safety shower. A pH meter is also kept at the facility to check for cleanup efficiency, although litmus paper may be more efficient for this purpose.

3. Spills larger than 5 to 10 gallons or that are beyond the capabilities of the treatment plant operator, should be dealt with by a privately contracted clean-up contractor.
4. In the event the spill escapes the building, then external spill notification must be performed. The project manager is responsible for performing external spill notification. If any spill escapes the building via the connection to the Town sewer system without being properly treated or neutralized, then the notification procedure spelled out in the facility's discharge permit (Part III - Reporting Requirements Items 2 and 4) shall be performed.
    - Any discharge that leaves the building through other means (overflow of building containment curbing) should be reported to the NYSDEC if the amount exceeds 100 pounds (6.4 gallons of 93 percent sulfuric acid or 8.1 gallons of 50 percent sodium hydroxide). In this case, the NYSDEC notification number is 1-800-457-7362 or 518-457-7362.
5. Following a spill, complete the attached form (Table 9.1) and file the completed form with this SOP.
6. Re-order spill supplies to replace those consumed.

SOP-10
ROUTINE OPERATION, MAINTENANCE, AND RECORDKEEPING

10.1 PURPOSE

The purpose of this section is to describe the routine scheduled tasks that are to be performed at the Cherry Farm treatment plant. Record keeping procedures are also described. A daily operation log, a recovery well log, and a preventative maintenance log will be used to document treatment plant operations. In addition, an Operator's Notebook is maintained at the site to record all other events, actions, and occurrences.

10.2 RELATED SECTIONS

1. SOP-1 SYSTEM START-UP FROM A SHUT-DOWN MODE
2. SOP-2 FLOW METER OPERATION, FLOW BALANCING, AND FLOW ADJUSTMENT
3. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
4. SOP-4 GRANULAR ACTIVATED CARBON SYSTEM OPERATION
5. SOP-5 EQUALIZATION TANK OPERATION
6. SOP-6 ACID AND CAUSTIC SYSTEM CALIBRATION AND CONTROL
7. SOP-7 COMPLIANCE SAMPLING FROM THE TREATMENT FACILITY EFFLUENT
8. SOP-8 SYSTEM SHUT-DOWN
9. SOP-9 ACCIDENTAL SPILL PREVENTION PLAN

10.3 STANDARD OPERATING PROCEDURE

10.3.1 Sign In/Out and Daily Log

A copy of the sign in/out log is attached to this SOP as Table 10.1. It should be completed by ALL personnel each day onsite (Parsons and non-Parsons). A copy of the daily log is attached to this SOP as Table 10.2. It should also be completed each day that Parsons is on site. In the event that an action is taken that will manually change an entry, then a second set of readings should be taken following the action. Several examples where two sets of readings should be taken are:

1. Before and after transferring acid to ST-1.
2. Before and after transferring caustic to ST-4, or switching a caustic drum.
3. Before and after changing a bag filter.
4. Before and after calibrating a pH controller.
5. Before and after transferring LNAPL out of ST-3.

A copy of the daily log will be sent to the Town with the monthly SMR. Flow meter readings recorded on the daily log will be the basis for sewer use surcharges levied by the Town of Tonawanda. Upon completion of a month, the original daily log should be placed in the project file and retained for an indefinite period. The sign in/out log will be used for monthly

health and safety reporting, and will be placed in the project file once reporting for the month is complete.

10.3.2 Operator's Notebook

In addition to the daily log, the operator is responsible for maintaining a permanent record of all activities that occur at the treatment facility. Each day should be dated, and a time entered for each entry. The following occurrences should be described along with a description of any corrective action that was taken, or a discussion of the outcome from the occurrence:

1. Alarms noted (LEL, floor sump, high or low pH in T-2, building low temperature, HVAC failure); and actions taken
2. Scheduled maintenance items (See Section 10.3.3)
3. Spills or leaks
4. Process upsets
5. Treatment plant shutdowns
6. Recovery well problems (level switches, VSD, pumps, in-line flowmeter,)
7. Groundwater sump problems (overload, floats, pump, etc.)
8. AIC -121 pump overruns or alarms
9. Mixer problems with MX-1, MX-2
10. Chemical feed problems with CP-1, CP-2, CP-3
11. Control panel problems (LEL, flowmeters, bulb replacement, etc.)
12. Filling or emptying of any of the chemical or LNAPL storage tanks
13. Supplies ordered
14. Cleanout of any containments
15. Other maintenance or repairs performed
16. Unusual weather problems
17. Heat trace activation/deactivation

10.3.3 Maintenance Schedule

The following items should be performed at the indicated frequencies. All items should be recorded in the Operator's Notebook. For non-routine maintenance problems, complete the troubleshooting log (Table 10.3).

10.3.3.1 Daily

1. Read and record all information on the daily log. For parameters that are adjusted provide two sets of readings and describe the adjustment in the comments column.
2. Record all maintenance that needs to be performed and all maintenance completed in the maintenance log.
3. Check acid supply and transfer acid as necessary into ST-1. Record acid volume transferred and new tank level on the daily log.
4. Check caustic supply and transfer caustic as necessary into ST-4. Record caustic volume transferred and new tank level on the daily log.
5. Check acid storage tank, pumps, and piping for visible evidence of leaks
6. Check caustic storage tank, pump, and piping for visible evidence of leaks

7. Check process for proper operation (Tank T-1, OWS-1, Tank T-2, PST-1, CC-1, CC-2, pre-and post-filter), and verify no leaks of process water
8. Bleed air from CC-1 and CC-2 by opening air release valves for approximately 30 seconds.
9. Hose down T-2, and PST-1 to remove any staining or dirt buildup at or above the waterline.
10. Clean pH probes in tank T-2.
11. Check control panel and pH controllers AIC-121 and AIC-131 for alarms or pump overrun errors.
12. Check PST-1 for proper operation as evidenced by flowrate of each pump, and cycling of lead and lag pumps.
13. Observe recovery well cycling on control panel.
14. Record all incidents and occurrences in treatment plant operator's note book.
15. Keep floor broom clean.
16. Keep eyewash and safety shower free of any obstructions.
17. Inspect building exterior and building perimeter fence for security breeches and evidence of vandalism.
18. During the cooler months (when ambient temperatures are below 55 ^{o}F), be sure to place the drum heater around the base of a caustic drum (keeping the caustic warm enough to allow it to be easily pumped into ST-4 when next needed). Loosen one of the bungs on the top of the drum to relieve any possible pressure build-up from heating.
19. Turn off all hoses at the hose bibs before leaving for the day.
20. Turn off all interior lights before leaving for the day.
21. Be sure all access gates to the plant and the landfill are securely locked before leaving.

10.3.3.2 Weekly

1. Check the calibration of both pH meters (AIC-121, AIC 131) and recalibrate as necessary.
2. Check operation of PST-1: one pump; two pumps; high alarm; and S-1, S-2, S-3, and S-4 cutoff.
3. Clean the walls of T-2 below the waterline using a long handled brush.
4. Test all control panel lights and replace any burned out bulbs (including alarm panel).
5. Flush water through eye wash and emergency shower for 1 minute each.
6. Exercise and confirm the operation of the floor sump pump by filling the sump with potable water until pump kicks on.
7. Verify HVAC system is operating properly by checking building temperature and observing system components (boiler, boiler pump, exhaust fans, louvered inlets, air exchanger)
8. Dispose of any accumulated trash off-site.

10.3.3.3 Bi-Weekly

1. Hose down floor and squeegee water to the drain. This is also done on an "as needed" basis depending on activities at the plant.
2. Skim oil from OWS-1 into the LNAPL reservoir of OWS-1.
3. Inspect sumps S-1, S-2, S-3, and S-4 and verify sump pumps are operational.

10.3.3.4 Monthly

1. Collect monthly compliance samples (see Section 7.3.2.1 for procedures).
2. Collect monthly between GAC column samples. See sections 10.3.4 for procedures.
3. Loosen sump butterfly valves on inlet drains in S-1, S-2, S-3, S-4.
4. Test process alarms (Tank T-2 high pH, Tank T-2 low pH, floor sump high-high alarm) and verify proper operation of alarm panel, Shunt A, and auto dialer. Acknowledge the alarm and reset the tripped items between testing each alarm and when done.
    - To test Tank T-2 high pH alarm, after calibrating the pH, immerse the probe in pH 10 buffer. The alarm should illuminate the alarm panel, trip shunt A, and autodial the pager.
    - To test Tank T-2 low pH alarm, after calibrating the pH, immerse the probe in pH 4 buffer. The alarm should illuminate the alarm panel, trip shunt A, and autodial the pager.
    - To test the floor sump high-high alarm, turn off the floor sump by switching the on/off switch located adjacent to the pump to "off" while running water into the floor sump. The alarm should illuminate the alarm panel, trip shunt A, and autodial the pager.
5. Test environmental alarms (LEL, building low temperature, HVAC failure) and verify proper operation of Shunts A and B. Acknowledge the alarm and reset the tripped items between testing each alarm and when done.
    - To test the LEL alarm, follow the instructions for the LEL meter (page 3-5 and 3-6 of manufacturer's O&M manual) to change the warning and alarm set points to levels that will generate an alarm. The warning should illuminate the panel. The alarm should trip shunts A and B, illuminate the alarm panel, and autodial the pager. To reset the LEL meter, there is a separate reset on the control panel.
    - To test the building low temperature alarm, turn the alarm setpoint controller (mounted on top of the control cabinet) upward until the building temperature is reached. The alarm should illuminate the alarm panel, trip shunt A, and autodial the pager.
6. Check calibration of ISCO flow meter whenever all flow (S-1 through S-4) and flow over the 90 degree V-notch weir in the equalization tank ceases. Check that the flow meter reads a level of 0.00 inches. If the flow meter does not read 0.00 inches, then adjust the flow meter level to read 0.00 inches (approximately once per month, or whenever plant is shut down for any reason).
7. Grease HVAC main blower shaft (both ends).
8. Change HVAC filters (4 each G-6 Filters measuring 16" X 25" X 2").
9. Complete self-monitoring report for submittal to Town of Tonawanda (Project Manager).

10. Order 1 monthly sample kit from the laboratory, and 1 monthly between-column sample kit.

10.3.3.5 Semi-Annually

1. Turn on heat tracing in S-1, S-2, S-3, S-4, and water meter hot-box on November 1 of each year
2. Turn off heat tracing in S-1, S-2, S-3, S-4, and water meter hot-box on April 30 of each year.
3. Collect the semi-annual compliance samples per discharge permit issued by the Town of Tonawanda (see SOP-7).

10.3.3.6 Annually

1. Recalibrate the LEL meter.
2. Have factory authorized ISCO representative document calibration of ISCO flow meter.
3. Recalibrate the digital display for the three flow meters and the totalizer.
4. Drain and clean accumulated sediment from tank T-1, OWS-1, and tank T-2.
5. Contract for snow removal.
6. Collect the annual compliance samples per discharge permit issued by the Town of Tonawanda.
7. Have the back flow prevention valve tested by March 31st of each year.

10.3.3.7 As-Needed

1. Change the GAC pre- and post-filters when the pressure differential is 15 psig or greater.
2. Adjust flows in sumps.
3. Check and clean the acid and caustic containment sumps. Neutralize all water by discharging it to tank T-1.
4. Order chemical supplies (acid, caustic, pH buffers, distilled water)
5. Order HVAC filters, 10-micron filter bags, acid transfer pump hose, pH probes, garbage bags, spill supplies, paper towels, hand soap, disposable gloves, acid-resistant gloves, and control panel light bulbs (2 varieties).
6. Decant water from OWS-1 oil holding tank and LNAPL storage tank ST-3.
7. Have LNAPL characterized and hauled off-site.
8. Have process waste characterized and hauled off-site.
9. Switch HVAC to winter mode when ambient temperature drops below 65^{o}F.

10.3.4 Operational Sampling

A monthly grab sample is collected from between the GAC columns for PCB's in order to determine when the carbon columns need to be changed. This procedure should be coordinated with monthly, and/or annual and semi-annual compliance sampling (see SOP-7). The procedures are as follows:

1. Arrange with the contract laboratory to have pre-preserved sample bottles; chain-of-custody forms, sample coolers, and, packaging materials delivered to the Parsons office.

2. Schedule a sample pick-up with the contract laboratory at least 24 hours prior to sampling. This will ensure that the lab has someone available the day the pick-up is needed.
3. Fill in the sample date, time, and sampler's initials on the bottle labels using a fine point indelible ink marker. Cover the label with clear plastic packaging tape that encircles the bottle and overlaps itself at least 2 inches.
4. Collect the sample at valve #24 located after the outlet of the first carbon column, and before the inlet of the second carbon column. Note that the GAC between is performed in the same manner as the ML-1, as described in 7.3.2.1.
5. Complete the chain-of-custody form.
6. Pack the samples in the laboratory provided coolers using laboratory provided packaging materials. Ice the samples by using gallon-size Ziplock bags filled with ice cubes (double bagged). The samples should be maintained at 4^{o}C. Samples are to be picked up by laboratory personnel at the Parsons office on the same day the samples are collected.
7. If sample chain of custody does not have carbon copies, make a photo copy of the chain after sample pick-up relinquishes it but before the cooler leaves the premises.

SOP-11
LOCKOUT / TAGOUT PROCEDURE

11.1 PURPOSE

The purpose of this section is to describe the procedures for the proper lockout and tagout of equipment prior to performing work on the equipment. This procedure was developed in accordance with 29 CFR 1910.147.

This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on equipment. It shall be used to ensure that the equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the equipment or release of stored energy could cause injury.

When the energy isolating devices are not lockable, tagout may be used, provided the employer complies with the provisions of the standard which require additional training and more rigorous periodic inspections. When tagout is used and the energy isolating devices are lockable, the employer must provide full employee protection and additional training and more rigorous periodic inspections are required.

11.1.1 Compliance With This Program

All personnel responsible for operation and maintenance of the treatment plant are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a piece of equipment which is locked out to perform servicing or maintenance shall not attempt to start, energize or use that equipment.

11.2 RELATED SECTIONS

1. SOP-1 SYSTEM START-UP FROM A SHUT-DOWN MODE
2. SOP-2 FLOW METER OPERATION, FLOW BALANCING, AND FLOW ADJUSTMENT
3. SOP-3 ACIDIFICATION PRETREATMENT SYSTEM OPERATION
4. SOP-4 GRANULAR ACTIVATED CARBON SYSTEM OPERATION
5. SOP-5 EQUALIZATION TANK OPERATION
6. SOP-6 ACID AND CAUSTIC SYSTEM CALIBRATION AND CONTROL
7. SOP-8 SYSTEM SHUT-DOWN
8. SOP-12 CONFINED SPACE ENTRY PROCEDURE

11.3 STANDARD OPERATING PROCEDURE

Eight (8) lockout/tagout procedures are attached to this SOP. They are:

1. SOP-11-02 Sumps S-1 through S-4
2. SOP-11-03 Acidification Tank T-1
3. SOP-11-04 Oil Water Separator OWS-1

4. SOP-11-05 Clearwell Pump Station PST-1
5. SOP-11-06 Equalization Tank T-2
6. SOP-11-07 Chemical Feed Pumps CP-1, CP-2, CP-3
7. SOP-11-08 Drum Pumps
8. SOP-11-09 Floor Sump Pumps

11.3.1 Standard Lockout Procedure

The general procedure to be followed is described below. Each of the attached procedures contain this information.

1. Notify all affected employees that servicing or maintenance is required on a piece of equipment and that the equipment must be shut down and locked out to perform the servicing or maintenance.

2. The authorized employee shall refer to the attached procedure to identify the type and magnitude of the energy that the equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.

3. If the equipment is operating, shut it down by the normal stopping procedure (depress stop button, open switch, close valve, etc.). These shut downs are indicated in the specific procedures.

4. De-activate the energy isolating device(s) so that the equipment is isolated from the energy source(s).

5. Lock out the energy isolating device(s) with assigned individual lock(s).

6. Stored or residual energy (such as that in capacitors, springs, elevated equipment members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc). must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

7. Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate. In the event that the equipment is able to be operated, immediately notify the project manager, do not proceed with the remainder of the lockout/tagout, and stop all work on this process.

8. Caution: Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.

9. The equipment is now locked out.

11.3.2 Restoring Equipment to Service

When the servicing or maintenance is completed and the equipment is ready to return to normal operating condition, the following steps shall be taken.

1. Check the equipment and the immediate area around the equipment to ensure that nonessential items have been removed and that the equipment components are operationally intact.

2. Check the work area to ensure that all employees have been safely positioned or removed from the area.

3. Verify that the controls are in neutral.

4. Remove the lockout devices and reenergize the equipment.

    - NOTE: The removal of some forms of blocking may require reenergization of the equipment before safe removal.

5. Notify affected employees that the servicing or maintenance is completed and the equipment is ready for use.

6. Refer to specific procedures contained in SOP-1 and other SOPs for detailed startup instructions.

SOP-11-01
LOCKOUT / TAGOUT FOR:
SUMPS S-1 THROUGH S-4

FOR: SUMPS S-1 THROUGH S-4

Date Issued/Revised: October 13, 1999, revised May 2006

AREA: Landfill

IDENTIFICATION

A. **General Description**: EPG Companies, Inc. SurePump TSP2-2 (Sump S-4) and TSP2-4 (Sumps S-1. S-2, S-3) , 480V, 3 phase, and controls (110 V).

B. **Manufacturer:** EPG Companies, Inc.

OPERATOR CONTROLS

A. On/Off/Auto switch in corresponding above ground control box near sump.

B. On/Off Switch on sump control panel in control room.

ENERGY SOURCE/LOCATION/MAGNITUDE

A. Local electrical disconnect is located approximately 200 feet away in the corresponding recovery well and consists of an on/off switch. This switch kills the outgoing 480V power to the sump pump. It does not kill the 120V control power.

B. On the sump control panel, which is located approximately 200 feet away in the corresponding recovery well is an on/off/auto switch. This kills power (480V) to the sump pump.

C. The control power to the sump pump (120V) is killed by turning off the appropriate breaker in the mini power center located in the corresponding above- ground control box. Note that this control power can also be turned off by killing the main power at the MCC for the sump.

D. The sump MCC disconnect is located (100 to 2000 feet away) in the electrical room adjacent to the treatment building. Each sump is labeled. This disconnect de-energizes the 480V power to the submersible sump pump.

SHUTDOWN PROCEDURES

A. Notify all affected employees before shutdown procedure begins.

ENERGY ISOLATION PROCEDURES (LOCK AND TAG)

A. In the electrical room, throw the MCC electrical disconnect switch for the appropriate sump to the off (down) position. Install a locking device and tag on the MCC switch.

B. In the corresponding control panel, turn off the main disconnect. This switch should also be locked and tagged. Note that this step is redundant with Step A, because it de-energizes the same circuit.

C. In the corresponding recovery well vault turn off the control power by turning off the breaker in the mini power center. The breaker should be locked with a locking device and padlock, and should be marked with a tag.

D. Isolate the sump discharge pipe from the header pipe by closing the ball valve located in the vault. Bleed residual pressure in the pipeline by opening the sample tap located in the sump, until water stops flowing out.

ATTEMPT TO RESTART THE EQUIPMENT (TRY)

A. Attempt to restart the sump at the sump control panel by switching the hand/off/auto switch to hand. The operator must walk to the sump to verify that the submersible pump is not operating.

START UP PROCEDURES:

A. Notify all affected employees before startup.

B. Check valve position on sump piping for proper position.

C. Remove personnel and tools from work area.

D. In the sump, remove tag and lock, if installed, and turn on the main disconnect.

E. In the electrical room, remove tags and locks from the electrical disconnect switches.

F. Throw the electric disconnect switches to the on (up) position. and restart the sumps in accordance with procedures specified in SOP-1 and SOP-2.

G. Return to the sump and verify proper operation of the sump.

AFFECTED AND AUTHORIZED EMPLOYEES

A. Affected Employees: Treatment Plant Operator and Project Manager.

B. Authorized Employees: Treatment Plant Operators and Project Manager.

NOTIFY ALL AFFECTED EMPLOYEES BEFORE SHUTDOWN OR STARTUP OF THIS EQUIPMENT.

COMPLY WITH CONFINED SPACE ENTRY PROCEDURES

Approvals / Title	**Date**
Project Manager	
Health & Safety Rep.	
Operator	

SOP-11-02
LOCKOUT / TAGOUT FOR:
ACIDIFICATION TANK T-1

FOR: ACIDIFICATION TANK T-1

Date Issued/Revised: October 13, 1999, Revised May 2006

AREA: Groundwater Treatment Building

EQUIPMENT IDENTIFICATION

A. **General Description**: Tank T-1, with Appurtenances: Mixer MX-1 (Model DD - Alsop Engineering 120V), and Chemical Feed Pump CP-1 (LMI E-731- Liquid Metronics 120V). Incoming flow is from Sumps S-1, S-2, S-3, and S-4. In addition plant flows from all other sources (i.e. the floor sump pumps) may be bypassed to the acidification tank by manually operating appropriate valves.

OPERATOR CONTROLS

None at the Tank. The following controls are located where indicated:

A. **Mixer MX-1** VSD on the back of the control panel in the electrical room. The VSD has a start/stop switch and a speed adjustment switch on it.

B. **Chemical Feed Pump CP-1** Controlled by pH controller AIC-121 mounted on the front of the control panel in the electrical room.

C. **Incoming Flow Sources** No operator controls, other than MCC.

ENERGY SOURCE/LOCATION/MAGNITUDE

A. **Mixer MX-1** Main electrical disconnect is located 50 feet away in the electrical room in the lighting panel, and consists of circuit breaker LP-18 (120V).

B. **Chemical Feed Pump CP-1** Main electrical disconnect is located 50 feet away in the electrical room in the lighting panel and consists of circuit breaker LP-17 (120V).

C. **Incoming Flow Sources** Main electrical disconnects are located 50 feet away in the electrical room in both the MCC and the lighting panel. The following circuit breakers for the wells and sumps are located in the MCC (480V) and are labeled accordingly:

- S-1
- S-2
- S-3
- S-4

The following circuit breakers for other flow sources are located in the lighting panel (120V):

- LP-22 Building Sump Pump

- LP-24 Building Sump Pump

SHUTDOWN PROCEDURES

A. Notify all affected employees before shutdown procedure begins.

ENERGY ISOLATION PROCEDURES (LOCK AND TAG)

A. **Mixer MX-1** Throw the main electrical disconnect in the electrical room in the lighting panel (circuit breaker LP-18) to off. Lock the lighting panel circuit breaker off, and tag the locking device.

B. **Chemical Feed Pump CP-1** Throw the main electrical disconnect in the electrical room in the lighting panel (circuit breaker LP-17) to off. Lock the lighting panel circuit breaker off, and tag the locking device.

C. **Incoming Flow Sources** All incoming flow sources to tank T-1 should either be de-energized or valves positioned so that flow will not enter Tank T-1. Normally the only flows that will enter Tank T-1 are Sumps S-1, S-2, S-3, S-4, and the floor sumps. Main electrical disconnects for sumps S-1 through S-4 should be turned to off at the MCC panel. Each circuit breaker should be locked and tagged. These include:

- S-1
- S-2
- S-3
- S-4

The floor sump will also normally discharge to Tank T-1. This is de-energized by turning circuit breakers LP-22 and LP-24 in the lighting panel to off. Lock the lighting panel circuit breakers off, and tag the locking devices.

ATTEMPT TO RESTART THE EQUIPMENT (TRY)

A. Manually turn on CP-1 at the pH controller.

B. Turn on MX-1 at the VSD.

START UP PROCEDURES

A. Notify all affected employees before startup.

B. Adjust valve positions as needed.

C. Remove personnel and tools from work area around equipment.

D. In the electrical room, remove tags and locks from the electrical disconnect switches.

E. Throw the electric disconnect switches to the on (up) position and restart the process in accordance with procedures specified in SOP-1 and SOP-3.

NOTIFY ALL AFFECTED EMPLOYEES BEFORE SHUTDOWN OR STARTUP OF THIS EQUIPMENT.

COMPLY WITH CONFINED SPACE ENTRY PROCEDURES

Approvals / Title	**Date**
Project Manager	
Health & Safety Rep.	
Operator	

SOP-11-03
LOCKOUT / TAGOUT FOR:
OIL/WATER SEPARATOR OWS-1

FOR: OIL/WATER SEPARATOR OWS-1

Date Issued/Revised: October 13, 1999, revised May 2006

AREA: Groundwater Treatment Building

EQUIPMENT IDENTIFICATION

A. **General Description**: Oil/Water Separator Tank OWS-1 has incoming flow from Sumps S-1, S-2, S-3, S-4, and the floor sump. All flow sources to Tank T-1 must be de-energized to insure no flow to OWS-1.

OPERATOR CONTROLS

None at OWS-1. The following controls are located where indicated:

A. **Incoming Flow Sources** No operator controls, other than MCC.

ENERGY SOURCE/LOCATION/MAGNITUDE

A. **Incoming Flow Sources** Main electrical disconnects are located 50 feet away in the electrical room in both the MCC and the lighting panel. The following circuit breakers for the sumps are located in the MCC and are labeled accordingly (480V):

- S-1
- S-2
- S-3
- S-4

The following circuit breakers for other flow sources are located in the lighting panel (120V):

- LP-22 Building Sump Pump
- LP-24 Building Sump Pump

SHUTDOWN PROCEDURES

A. Notify all affected employees before shutdown procedure begins.

ENERGY ISOLATION PROCEDURES (LOCK AND TAG)

A. **Incoming Flow Sources** All incoming flow sources to OWS-1 should either be de-energized or valves positioned so that flow will not enter OWS-1. Normally the only flows that will enter OWS-1 is from Tank T-1 and includes sources: Sumps S-1, S-2, S-3, S-4 and the floor sump. Main electrical disconnects for sumps S-1 through S-4 should be turned to off at the MCC panel, and locked and tagged These include:

- S-1

- S-2
- S-3
- S-4

The floor sump will also normally discharge to Tank T-1. This is de-energized by turning circuit breakers LP-22 and LP-24 in the lighting panel to off. Lock the lighting panel circuit breakers off, and tag the locking devices.

ATTEMPT TO RESTART THE EQUIPMENT AS FOLLOWS (TRY):

A. Not applicable.

START UP PROCEDURES:

A. Notify all affected employees before startup.

B. Adjust valve positions as needed.

C. Remove personnel and tools from work area around equipment.

D. In the electrical room, remove tags and locks from the electrical disconnect switches.

E. Throw the electric disconnect switches to the on (up) position and restart the process equipment in accordance with SOP-1 and SOP-3.

AFFECTED AND AUTHORIZED EMPLOYEES

A. Affected Employees: Treatment Plant Operators and Project Manager

B. Authorized Employees: Treatment Plant Operators and Project Manager

NOTIFY ALL AFFECTED EMPLOYEES BEFORE SHUTDOWN OR STARTUP OF THIS EQUIPMENT.

COMPLY WITH CONFINED SPACE ENTRY PROCEDURES

Approvals / Title	**Date**
Project Manager	
Health & Safety Rep.	
Operator	

SOP-11-04
LOCKOUT / TAGOUT FOR:
CLEARWELL PUMP STATION PST-1

FOR: CLEARWELL PUMP STATION PST-1

Date Issued/Revised: October 13, 1999, revised in May 2006

AREA: Groundwater Treatment Building

EQUIPMENT IDENTIFICATION

A. **General Description**: The clearwell pump station consists of two pumps (Pump 1 and Pump 2). Incoming flow is from OWS-1 and consists of the following flow sources: Sumps S-1, S-2, S-3, and S-4, and the floor sump pump.. All flow sources to Tank T-1 must be de-energized to insure no flow to the clearwell pump station.

B. **Manufacturer:** The clearwell pump station is custom engineered and built by Ayer Sales Systems Division. The pumps are Webster Pumps P16P8-1396V with 5HP explosion proof motors (480V, 3 phase).

OPERATOR CONTROLS

A. On/Off switch at each pump (Pump 1 and Pump 2).

B. Clearwell control panel in electrical room with on/off/auto selector switch for each pump.

C. **Incoming Flow Sources** No operator controls, other than MCC.

ENERGY SOURCE/LOCATION/MAGNITUDE

A. Main electrical disconnects for PST-1 are located in the electrical room MCC panel (480V). There are two disconnects labeled “Clearwell Pump Panel”.

B. **Incoming Flow Sources** Main electrical disconnects are located 50 feet away in the electrical room in both the MCC and the lighting panel. The following circuit breakers for the sumps are located in the MCC and are appropriately labeled (480V):

- S-1
- S-2
- S-3
- S-4

The following circuit breakers for other flow sources are located in the lighting panel (120V):

- LP-22 Building Sump Pump
- LP-24 Building Sump Pump

SHUTDOWN PROCEDURES

A. Notify all affected employees before shutdown procedure begins.

ENERGY ISOLATION PROCEDURES (LOCK AND TAG)

A. **Incoming Flow Sources** Before deenergizing the pump station, the incoming flow sources should be stopped and the preceding process equipment (Tank T-1 and OWS-1) should be allowed to finish gravity draining into the clearwell.

   All incoming flow sources to PST-1 should either be de-energized or valves positioned so that flow will not enter PST-1. Normally the only flows that will enter PST-1 are from Tank T-1 and OWS-1 and include Sumps S-1, S-2, S-3, S-4, and the floor sump. Main electrical disconnects for sumps S-1 through S-4 should be turned to off at the MCC panel. Lock and tag the following circuit breakers:

   - S-1
   - S-2
   - S-3
   - S-4

   The floor sump will also normally discharge to Tank T-1. This is de-energized by turning circuit breakers LP-22 and LP-24 in the lighting panel to off. Lock the lighting panel circuit breakers off, and tag the locking devices.

   Finally, as a final fail-safe measure, the flow exiting the oil/water separator can be stopped by closing and locking Valve 16. However, this valve should not be closed until all flow sources are de-energized and the oil/water separator finishes gravity draining. Once gravity draining of OWS-1 is complete, de-energize the clearwell as described in the following steps.

B. Throw the main electrical disconnects for the clearwell, which are located in the MCC panel (2 SWITCHES) to off. Lock the circuit breakers out and install a tag on each circuit breaker.

C. Turn the local on/off switches to off for pumps 1 and 2, and lock and tag the switches. Note that this step is redundant with Step B because it de-energizes the same circuit.

ATTEMPT TO RESTART THE EQUIPMENT AS FOLLOWS (TRY):

A. Try to turn on Pumps 1 and 2 at the local switches and at the control panel by turning the on/off/auto switch to on.

START UP PROCEDURES:

A. Notify all affected employees before startup.

B. Adjust valve positions as needed (reopen valve 16 if it was closed earlier).

C. Remove personnel and tools from work area around equipment.

D. In the electrical room, remove tags and locks from the electrical disconnect switches.

E. Throw the electric disconnect switches to the on (up) position and restart the equipment in accordance with SOP-1 and SOP-4.

AFFECTED AND AUTHORIZED EMPLOYEES

A. Affected Employees: Treatment Plant Operators and Project Manager

B. Authorized Employees: Treatment Plant Operators and Project Manager

NOTIFY ALL AFFECTED EMPLOYEES BEFORE SHUTDOWN OR STARTUP OF THIS EQUIPMENT.

Approvals / Title	**Date**
Project Manager	
Health & Safety Rep.	
Operator	

SOP-11-05
LOCKOUT / TAGOUT FOR:
EQUALIZATION TANK T-2

FOR: EQUALIZATION TANK T-2

Date Issued/Revised: October 13, 1999, revised May 2006

AREA: Groundwater Treatment Building

EQUIPMENT IDENTIFICATION

A. **General Description**: Tank T-2, with Appurtenances: Mixer MX-2 (Alsop Engineering - Model GD-C), and Chemical Feed Pumps CP-2 and CP-3 (Liquid Metronics - Model LMI E731). Incoming flow is from the acidified OWS/GAC treated flows from Sumps S-1, S-2, S-3, S-4, and the floor sump pump.

OPERATOR CONTROLS

None at the Tank. The following controls are located where indicated:

A. **Mixer MX-2** VSD on the back of the control panel has been bypassed since the start/stop switch and the speed adjustment switch are not working. Main disconnect is at MCC only.

B. **Chemical Feed Pumps CP-2 (acid), CP-3 (caustic)** Controlled by pH controller AIC-131 which is front-mounted on the control panel in the electrical room.

C. **Incoming Flow Sources** No operator controls, other than MCC.

ENERGY SOURCE/LOCATION/MAGNITUDE

A. **Mixer MX-2** Main electrical disconnect is located 50 feet away in the electrical room in the MCC panel and is labeled EQ. Tank Mixer MX-2 (480V).

B. **Chemical Feed Pump CP-2 (acid)** Main electrical disconnect is located 50 feet away in the electrical room in the lighting panel and consists of circuit breaker LP-19 (120V).

C. **Chemical Feed Pump CP-3 (caustic)** Main electrical disconnect is located 50 feet away in the electrical room in the lighting panel and consists of circuit breaker LP-16 (120V).

D. **Incoming Flow Sources** Main electrical disconnects are located 50 feet away in the electrical room in both the MCC and the lighting panel. Lock and tag the following circuit breakers for wells and sumps in the MCC (480V):

- S-1
- S-2
- S-3
- S-4

The following circuit breakers for other flow sources are located in the lighting panel:

- LP-22 Building Sump Pump
- LP-24 Building Sump Pump

SHUTDOWN PROCEDURES

A. Notify all affected employees before shutdown procedure begins.

ENERGY ISOLATION PROCEDURES (LOCK AND TAG)

A. **Mixer MX-2** Throw the main electrical disconnect in the electrical room in the MCC panel to off. Lock and tag the circuit breaker when done.

B. **Chemical Feed Pump CP-2 (acid)** Throw the main electrical disconnect in the electrical room in the lighting panel (circuit breaker LP-19) to off. Lock the lighting panel circuit breaker off, and tag the locking device.

C. **Chemical Feed Pump CP-3 (caustic)** Throw the main electrical disconnect in the electrical room in the lighting panel (circuit breaker LP-16) to off. Lock the lighting panel circuit breaker off, and tag the locking device.

D. **Incoming Flow Sources** All incoming flow sources to the treatment building should be de-energized. Main electrical disconnects for sumps S-1 through S-4 should be turned off at the MCC panel, and tagged and locked. These include:

- S-1
- S-2
- S-3
- S-4

The floor sump will also normally discharge to Tank T-1. This is de-energized by turning circuit breakers LP-22 and LP-24 in the lighting panel to off. Lock the lighting panel circuit breakers off, and tag the locking devices.

ATTEMPT TO RESTART THE EQUIPMENT AS FOLLOWS (TRY):

A. Manually turning on CP-2, CP-3 at the pH controller AIC-131.

B. Turning on MX-2 at the VSD.

START-UP PROCEDURES:

A. Notify all affected employees before startup.

B. Adjust valve positions as needed.

C. Remove tools from work area around equipment, and have personnel leave the area.

D. In the electrical room, remove tags and locks from the electrical disconnect switches.

E. Throw the electrical disconnect switches to the on (up) position, and restart the equipment in accordance with SOP-1 and SOP-5.

NOTIFY ALL AFFECTED EMPLOYEES BEFORE SHUTDOWN OR STARTUP OF THIS EQUIPMENT

COMPLY WITH CONFINED SPACE ENTRY PROCEDURES

Approvals / Title	Date
Project Manager	
Health & Safety Rep.	
Operator	

SOP-11-06
LOCKOUT / TAGOUT FOR:
CHEMICAL FEED PUMPS CP-1, CP-2, CP-3

FOR: CHEMICAL FEED PUMPS CP-1, CP-2, CP-3

Date Issued/Revised: October 13, 1999, revised May 2006

AREA: Groundwater Treatment Building

EQUIPMENT IDENTIFICATION

A. **General Description**: LMI - E-731

B. **Manufacturer**: Liquid Metronics Milton Roy

OPERATOR CONTROLS

A. pH Controllers AIC-121 (CP-1) and AIC-131 (CP-2 and CP-3), which are front-mounted on the control panel in the electrical room.

ENERGY SOURCE/LOCATION/MAGNITUDE

A. Main electrical disconnect is located 50 feet away, in the electrical room lighting panel. Circuit breakers are as follows (120V):

- CP-1 Controlled by LP-17
- CP-2 Controlled by LP-19
- CP-3 Controlled by LP-16

SHUT-DOWN PROCEDURES

A. Notify all affected employees before shutdown procedure begins.

B. Close quarter turn valve in supply line as follows:

- CP-1 Supply Valve 34
- CP-2 Supply Valve 35
- CP-3 Supply Valve 42

ENERGY ISOLATION PROCEDURES (LOCK AND TAG)

A. Throw the main electrical disconnect switch in the lighting panel to the off position. Lock the lighting panel circuit breaker off, and tag the locking device.

ATTEMPT TO RE-START THE EQUIPMENT (TRY)

A. Attempt to re-start the pump by turning it on manually at the pH controller.

START-UP PROCEDURES:

A. Notify all affected employees before startup.

B. Open valves as necessary.

C. Remove tools from work area around equipment, and have personnel leave the area.

D. In the electrical room, remove tags and locks from the electrical disconnect switches.

E. Throw the electrical disconnect switches to the on position, and re-start the equipment in accordance with SOP-1, and SOP-2 (CP-1) or SOP-5 (CP-2, CP-3).

AFFECTED AND AUTHORIZED EMPLOYEES

A. Affected Employees: Treatment Plant Operators and Project Manager

B. Authorized Employees: Treatment Plant Operators and Project Manager

NOTIFY ALL AFFECTED EMPLOYEES BEFORE SHUTDOWN OR STARTUP OF THIS EQUIPMENT.

Approvals / Title	**Date**
Project Manager	
Health & Safety Rep.	
Operator	

SOP-11-07
LOCKOUT / TAGOUT FOR:
ACID AND CAUSTIC DRUM PUMPS

FOR: ACID AND CAUSTIC DRUM PUMPS

Date Issued/Revised: October 13, 1999 revised May 2006

AREA: Groundwater Treatment Building

EQUIPMENT IDENTIFICATION

A. **General Description**: Finish Thompson Model M3X 115V 50/60Hz 1.7A

B. **Manufacturer**: Finish Thompson

(Acid and caustic drum pumps are identical, therefore, procedure is combined, differences are noted).

OPERATOR CONTROLS

A. On/off switch on the drum pump handle.

ENERGY SOURCE/LOCATION/MAGNITUDE

A. **Acid Pump** Main electrical disconnect is located 50 feet away, in the electrical room lighting panel, circuit LP-11 (120V).

B. **Caustic Pump** Pump is equipped with a plug; to de-energize, simply unplug (120V).

SHUTDOWN PROCEDURES

A. Notify all affected employees before shut-down procedure begins.

B. Remove drum pump from drum.

ENERGY ISOLATION PROCEDURES (LOCK AND TAG)

A. **Acid Pump** Throw the main electrical disconnect switch in the lighting panel to the off position. Lock the lighting panel circuit breaker off, and tag the locking device.

B. **Caustic Pump** Unplug the pump and tag the plug.

ATTEMPT TO RESTART THE EQUIPMENT (TRY)

A. Attempt to re-start the pump by turning it on using the on/off switch on the drum pump.

START UP PROCEDURES:

A. Notify all affected employees before start-up.

B. Remove tools from work area around equipment, and have personnel leave the area.

C. **Acid Pump** In the electrical room, remove tags and locks from the electrical disconnect switch. Throw the electric disconnect switch to the on position. Follow procedures in SOP-2 for proper pump operation.

D. **Caustic Pump** Plug the pump in, and follow procedures in SOP-5 for proper pump operation.

AFFECTED AND AUTHORIZED EMPLOYEES

A. Affected Employees: Treatment Plant Operators and Project Manager

B. Authorized Employees: Treatment Plant Operators and Project Manager

NOTIFY ALL AFFECTED EMPLOYEES BEFORE SHUTDOWN OR STARTUP OF THIS EQUIPMENT.

Approvals / Title	**Date**
Project Manager	
Health & Safety Rep.	
Operator	

SOP-11-08
LOCKOUT / TAGOUT FOR:
FLOOR SUMP PUMP

FOR: FLOOR SUMP PUMP

Date Issued/Revised: October 13, 1999, revised May 2006

AREA: Groundwater Treatment Building

EQUIPMENT IDENTIFICATION

A. **General Description**: Serfilco EKL ¾-3SC-C.75 220-240V, 50/60Hz, single phase

B. **Manufacturer**: Serfilco

OPERATOR CONTROLS

A. On/off/ switch at the sump pump.

ENERGY SOURCE/LOCATION/MAGNITUDE

A. Main electrical disconnect is located 50 feet away, in the electrical room lighting panel, circuit LP-22 and LP-24 (120V X 2 = 240V).

SHUTDOWN PROCEDURES

A. Notify all affected employees before shut-down procedure begins.

ENERGY ISOLATION PROCEDURES (LOCK AND TAG)

A. Throw the main electrical disconnect switches in the lighting panel to the off position. Lock the lighting panel circuit breakers off, and tag the locking devices.

B. Throw the on/off switch at the pump to off. Lock and tag the switch. Note that this step is redundant with Step A because it deenergizes the same circuit.

ATTEMPT TO RE-START THE EQUIPMENT (TRY)

A. Attempt to start the pump by raising the high level (turn-on) switch in the sump. The control panel should indicate pump running, but the pump should not be on.

START-UP PROCEDURES:

A. Notify all affected employees before startup.

B. Remove tools from work area around equipment, and have personnel leave the area.

C. In the electrical room, remove tags and locks from the electrical disconnect switches. Throw the electrical disconnect switches to the on position.

D. At the equipment, remove tags and locks from the electrical disconnect switches. Throw the electrical disconnect switches to the on position.

AFFECTED AND AUTHORIZED EMPLOYEES

A. Affected Employees: Treatment Plant Operators and Project Manager

B. Authorized Employees: Treatment Plant Operators and Project Manager

NOTIFY ALL AFFECTED EMPLOYEES BEFORE SHUTDOWN OR STARTUP OF THIS EQUIPMENT.

Approvals / Title	**Date**
Project Manager	
Health & Safety Rep.	
Operator	

SOP-12
CONFINED SPACE ENTRY PROCEDURE

12.1 PURPOSE

. The purpose of this SOP is to provide the treatment plant operator with the knowledge, training and procedures necessary to safely perform confined space entries.

Parsons employees must enter permit-required confined spaces in accordance with this SOP, which addresses the following items:

- Measures necessary to prevent unauthorized entry into confined spaces;
- Methods for identifying and evaluating the hazards of the confined space prior to entry;
- Procedures and practices necessary for safe entry;
- Safety equipment necessary to conduct operations;
- Methods to evaluate space conditions during entry operations;
- Designated persons who have active roles in confined space operations (e.g., entrants, attendants, and entry supervisor) and their duties; and
- Methods to apprise contractors of precautions or procedures to implement when hired to conduct operations in a permit space.

12.2 RELATED SECTIONS

1. SOP-11 Lockout / Tagout Procedure

12.3 STANDARD OPERATING PROCEDURE

12.3.1 Definition of Confined Space

A confined space is defined as any enclosed or semi-enclosed space that has restricted means for entry or exit and is not intended for continuous occupancy. Typical confined spaces are manholes, metering stations, valve or siphon chambers, digesters, silos, empty tanks, pits, or any other area in the system that has direct contact with wastewater, sludge, sludge gas, or conduits carrying these substances.

12.3.2 Classification of Confined Spaces

Confined spaces are classified based upon existing or potential hazards. The two classifications of confined spaces are non-permit confined space and permit-required confined space.

A non-permit confined space does not contain atmospheric hazards or have the potential to contain any hazard capable of causing death or serious physical harm. Examples of non-permit confined spaces include vented vaults or motor control cabinets. These spaces have either natural or permanent mechanical ventilation to prevent the accumulation of a hazardous atmosphere, and they do not present engulfment or other serious hazards. Since non-permit spaces are free of atmospheric or safety hazards, they do not require special entry protocols. However, entry into these areas must comply with applicable OSHA requirements (i.e., illumination, ladders, etc.).

A permit-required confined space has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere
- Contains a material that has the potential for engulfing a person
- Has an internal configuration such that a person could be trapped by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section
- Contains any other recognized serious safety or health hazard

The Project Health and Safety Representative shall evaluate the work place to determine if any spaces are permit-required confined spaces. A table of confined spaces at the Cherry farm/River Road Site is presented below. Procedures described in Sections 12.3.3 through 12.3.10 apply only to permit-required confined spaces.

If there are changes in the use or configuration of a non-permit confined space that could increase the hazards to the entrants, the Health and Safety Representative shall re-evaluate the space and reclassify it as a permit-required confined space if necessary.

Area or Space	Type of Confined Space
Recovery Well Vaults RW-4 and RW-5	Non-permit required confined space. Allow vault to naturally ventilate for 1 minute with both access doors open prior to entry.
Sumps S-1 through S-4	Permit required confined space. Comply with Sections 12.3.3 through 12.3.9.
Tank T-1	Permit required confined space. Comply with Sections 12.3.3 through 12.3.9.
Tank OWS-1	Permit required confined space. Comply with Sections 12.3.3 through 12.3.9.
Tank T-2	Permit required confined space. Comply with Sections 12.3.3 through 12.3.9.
Acid Storage Tank ST-1	Permit required confined space. Comply with Sections 12.3.3 through 12.3.9.
Caustic Storage Tank ST-4	Permit required confined space. Comply with Sections 12.3.3 through 12.3.9.

12.3.3 Warning Signs

A plant that contains permit-required confined spaces must post warning signs at the entrance of these spaces. Signs, must as a minimum, contain the following language:

12.3.4 Entry Permit

Entry into any area designated as a permit-required confined space will require a permit. The permit is an authorization and approval that specifies the location and type of work to be performed and certifies that all existing hazards have been evaluated and that all necessary steps have been taken to ensure worker safety. ONLY PERSONNEL **TRAINED AND CERTIFIED** FOR CONFINED SPACE ENTRY ARE ALLOWED TO PERFORM ANY NECESSARY WORK WITHIN THE CONFINED SPACE. The entry permit must address the following items:

- Permit space to be entered;
- Purpose of the entry;
- Date and the authorized duration of the entry permit;
- Names of the persons who will enter the confined space (entrants);
- Names of the persons who will be attendants;
- Name of the entry supervisor;
- Hazards of the confined space to be entered;
- Measures used to isolate the permit space and to eliminate or control the hazards before entry into the confined space;
- Acceptable entry conditions;
- Results of initial and periodic tests accompanied by the names or initial of the tester;
- Rescue and emergency services and the means used for summoning the services;
- Communication procedures used by entrants and attendants to maintain contact during the entry;
- Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment; and

- Other information necessary to ensure employee safety, given the circumstances of the particular confined space.

Once the entry has been completed, the entry supervisor will cancel the permit. Canceled permits must be maintained for at least 1 year. An example of a confined space entry permit is included at the end of this section.

12.3.5 Equipment For Permit-Required Entry

The following is a list of equipment used to conduct permit-required confined space operations:

- Ventilation equipment needed to obtain acceptable airborne concentrations;
- Atmospheric testing equipment to identify oxygen deficiency, combustible gases, and suspected toxic gases (e.g., hydrogen sulfide);
- Communication equipment for entrants and attendant;
- Personal protective equipment (e.g., respirators and hard hats) when feasible engineering controls or work practices do not adequately protect employees;
- Lighting equipment to enable employees to work safely and exit quickly in the event of an emergency;
- Pedestrian or vehicle barriers (e.g., traffic cones, barricades, warning signs, and traffic flags) to protect entrants from external hazards;
- Ladder, tripod, and body harness for safe entry and egress; and
- Any other equipment necessary for the entry into and rescue from the confined space.

The above equipment will be provided by Parsons or the client, and will be maintained in proper working condition.

12.3.6 Atmospheric Testing of Permit-Required Confined Spaces

All permit-required confined spaces must be considered dangerous before entry, until proven safe. Air monitoring shall be performed before removing the cover, if practicable. Some covers have openings through which a probe may be inserted. If not, the lid must be removed using appropriate tools, and the atmosphere tested before entry.

Atmospheric testing will be performed by the entry supervisor or attendant for oxygen deficiency and explosive and toxic gases. Multi-gas meters are available that test for oxygen deficiency, explosive gases, and certain toxic gases (hydrogen sulfide and carbon monoxide).

It is important to understand that some gases or vapors are heavier than air and will settle to the bottom of the space whereas, some gases are lighter than air and will be found around the top of the confined space, as shown in Figure 12.1. All areas of a space must be tested (top, middle, bottom). Entry will be allowed only when the following atmospheric conditions are met:

- Oxygen concentration in the confined space is greater than 19.5 percent and less than 23.5 percent by volume.
- Presence of flammable gases or vapors is less than 10 percent of the lower flammable limit.

- Potential toxic gases or vapors are present at concentrations below OSHA permissible exposure and/or ACGIH TLVs (e.g., <10 ppm for hydrogen sulfide, <25 ppm Carbon Monoxide).

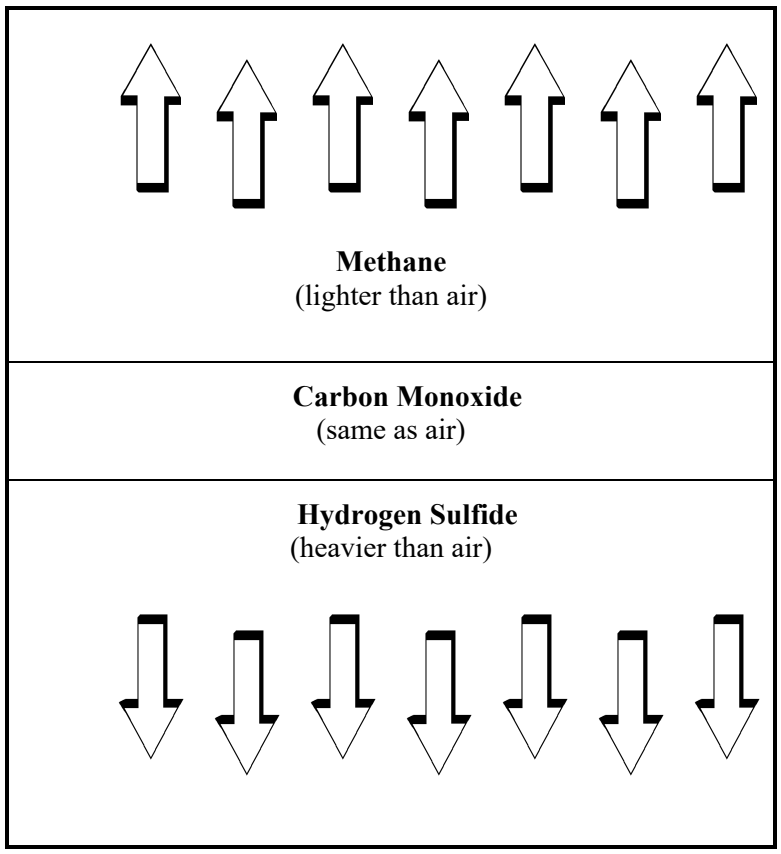


Figure 12.1 Atmospheric Testing: From outside, Top to Bottom

If atmospheric readings do not comply with acceptable entry parameters, then ventilation of the space is required. A blower for positive displacement of the atmosphere is often used. Allow sufficient time for the blower to displace five times the volume of the space. Next, re-test the space to verify that acceptable concentrations have been met before entry. The blower shall remain in operation throughout occupancy of the space.

When using gasoline or diesel-powered blowers, ensure that the exhaust gas from the engine is not drawn into the space by the blower. If a hazardous atmosphere persists in spite of ventilation, it will be necessary for the employee to use proper respiratory protection equipment. A positive-pressure self-contained breathing apparatus or positive-pressure airline respirator with a 5-minute escape tank are often used for permit-required confined space operations.

Personnel working in a permit-required confined space must be equipped with a continuous atmospheric monitoring device. This is true even if the atmosphere was found to be safe initially, because conditions can change. Equipment used for continuous monitoring of the atmosphere shall be explosion-proof and equipped with an audible alarm that will alert employees when a hazardous condition develops.

An employee's well-being depends on the proper functioning of safety equipment. Careful, regular maintenance of the monitoring equipment is essential. All monitoring instruments must be calibrated prior to use and maintained according to manufacturer's specifications. The Health and Safety Representative shall keep records of instrument calibration and maintenance.

12.3.7 Isolating The Permit Space

Before entering a permit-required confined space, isolate the space from all other systems to ensure that injury does not occur. Blanks must be used to physically isolate all pipelines connected to the confined space. Shut-off valves or pipelines to the space must be locked in the closed position and tagged for identification. In continuous systems, where complete isolation is not possible (e.g., sewer lines), specific written safety procedures should be developed and implemented.

Electrical isolation of the confined space is necessary to prevent accidental activation of moving parts that would be hazardous to the worker. Circuit breakers or disconnects should be locked out and tagged in the off position with a key-type padlock. The only key is to remain with the person who locked the breaker. If more than one person is inside the space, each person must place his or her own lock on the circuit breaker.

Mechanical isolation of moving parts can be achieved by disconnecting linkages or removing drive belts or chains. Equipment with moving mechanical parts must also be blocked in such a manner that there can be no accidental rotation. Lockout and tagout procedures must conform to OSHA standards (see 29 CFR part 1910.147) which are addressed in SOP-11.

12.3.8 Responsibilities and Duties of Personnel Conducting Permit-Required Confined Space Operations

As stated in Section 12.3.4, the permit-required confined space entry program should designate personnel who have active roles in the program. Every permit-required confined space operation requires an authorized entrant(s), an attendant, an entry supervisor, and a rescue team or service. Any subcontractors performing confined space entry will be required to have proper certification and training.

Any person entering a permit-required confined space must know the potential hazards of the space, including the signs or symptoms of exposure. Entrants must be familiar with the proper use of safety equipment and should be in constant communication with the outside attendant. When an entrant recognizes the signs or symptoms of exposure in another entrant or himself, or detects a prohibited condition, the entrant must inform the attendant of the problem and initiate evacuation.

The attendant remains outside the permit space during the entire operation and is responsible for maintaining an accurate count of entrants in the confined space. The attendant should communicate with entrants as necessary to monitor status. The attendant must also know potential hazards during entry, including signs, symptoms, and behavioral effects of exposure to hazardous substances. The attendant monitors activities inside and outside the space to determine if it is safe for the entrants to remain. The attendant is required to order an immediate evacuation of the space when one of the following conditions occur:

- A prohibited condition is detected in the space.
- The attendant detects the symptoms of exposure in an entrant.
- The attendant detects a situation outside the space that could endanger the entrants.

In the event of an emergency requiring the rescue of an entrant, the attendant is only permitted to perform a non-entry rescue (i.e., extracting personnel by use of retrieval system) or to summon a rescue team.

The entry supervisor (usually the Site Health and Safety Representative) is the individual responsible for the development of the permit, and has overall accountability for the safety of the operation. The entry supervisor checks permit entries, verifying that all tests specified have been conducted and that all procedures and equipment are in place prior to entry. Additionally, the entry supervisor ensures that a rescue team or service is available and readily accessible.

The nature of work in permit-required confined spaces makes emergencies a continual possibility, no matter how infrequently they actually occur. Emergencies occur quickly and unexpectedly and require immediate response. In an emergency, rescue personnel would either enter a permit space to remove entrants or would remain outside and pull out entrants by use of retrieval lines. The plant may either establish an in-house rescue team or make arrangements for off-site services (i.e., fire department). If off-site emergency rescue services are to be used, the response time to the space must be within 8 minutes.

12.3.9 Training For Permit-Required Confined Space Work

Anyone entering a permit-required confined space must recognize and understand the potential hazards to health and safety associated with the operation. Personnel involved in permit space activities must be thoroughly familiar with the plant's permit-required confined space program and must receive training. The objectives of the confined space training program are to:

- Make workers aware of the potential hazards they may encounter.
- Provide the knowledge and skills necessary to perform the work with minimal risk to worker health and safety.
- Make workers aware of the purpose and limitations of safety equipment.
- Ensure that workers can safely avoid or escape from emergencies.

The level of training provided by the Health and Safety Representative should be consistent with the worker's job function and responsibilities. The training program must involve both classroom instruction and hands-on practice. Hands-on instruction should consist of entry and rescue drills. Employees must demonstrate proficiency in the knowledge and skills necessary for safe entry and response (proficiency may be demonstrated through oral or written examination or evaluation of field simulations). The Health and Safety Representative will issue certificates documenting the successful completion of training.

Training is required before the employee is assigned to a permit-required confined space operation and when the employee's assigned duties change (e.g., when assignment changes from entrant to rescue team member). .

Reviewed and Approved by:

Parsons Health and Safety Officer:_____

Date: _____

SOP-13
CONVEYANCE PIPELINE FLUSHING PROCEDURE

13.1 PURPOSE

The following procedure is for flushing the sumps conveyance pipeline. Flushing should be conducted as necessary. If total plant influent groundwater flow falls below 5 gallons per minute (gpm) for a period of one month or more, influent flow rate shall be increased via system checks including muriatic acid flush of sumps, sump pump inspection/cleaning, and muriatic acid addition to the conveyance piping. If these procedures do not result in restoration of the treatment plant flow rate of at least 5 gpm, conveyance pipeline flushing shall commence. This maintenance procedure cleans scaling and other debris from the conveyance pipelines between the sumps and the groundwater treatment plant.

13.2 RELATED SECTIONS

1. SOP-10 Routine Operation, Maintenance, and Recordkeeping

13.3 EQUIPMENT AND MATERIALS

- **Preferred Pump -** Godwin HL4M 4"x4" (or equivalent) pump, capable of 195 psi at approx 200gpm.
- **Hoses -** 20 feet of 4-inch diameter hard-wall suction hose, 20 to 40 feet of 4-inch diameter high pressure discharge hose (can be rented with the pump), and 20 to 50 feet of 2-inch diameter high pressure hard-wall conveyance hose that connects to the sump pump valve assembly.
- **Vehicle** – 4 x 4 open-bed pickup truck with a hitch assembly to move the flushing pump between sumps, and to transport clean water from the treatment plant to each sump.
- **Water Storage –** Two 300-gallon water tanks (one for receiving flushed water at the treatment plant, and the second for transporting clean water to each sump).
- **Communication** - Two way radios and or cell phone capability.
- **Other** - Plastic sheeting to be used around the sump enclosures; Lockout/Tagout kit or materials; sorbent pads and rags; cones, barricades and or caution tape; appropriate PPE.

13.4 STANDARD OPERATING PROCEDURS

1. Notify NYSDEC with two weeks advance notice that the line flushing is scheduled.

2. Reserve an appropriate high-volume pump from a pump or mechanical contractor supplier (see attached specification for an example pump – use this or equivalent). Obtain all hoses, fittings barricades, etc. that will be needed during the flushing event.

3. Turn off power to Sumps 1 thru 4 in the control room at the treatment plant building. Follow all standard Lockout/Tagout procedures.

4. Turn off the power to each of the four sumps individually at each of the control panel enclosures. These enclosures are located near each of the four sumps. Follow all standard Lockout/Tagout procedures.

5. After the pumps have been de-energized, lay out plastic sheeting surrounding the sump enclosure. This prevents any LNAPL or impacted groundwater from the sump from contacting the ground surface. Secure the area around the sump with the appropriate cones or barricades. Open the sump access door and lock into the open position.

6. Using the lifting cable attached to the pump, pull the associated piping and pump up the guide rails and out of the sump enclosure. This may be done by hand with two people or with the tripod stored at the treatment plant.

7. Remove the pump impeller assembly from the pump motor and soak impeller assembly in muriatic acid for 2 to 3 hours until the impeller assembly spins freely. If impeller assembly does not spin freely after soaking, the impellers should be replaced)

8. After disconnecting the pump from the tee valve assembly, connect the 2-inch diameter hard-wall conveyance hose to the tee valve. Slide the tee valve and hose assembly down the pump guide rails and onto the pitless adaptor. This will be under the water in the sump. Connect the black conveyance hose to the flushing pump. Alternately, a rigid steel pipe assembly could be used to connect to the pitless adapter, with the conveyance hose remaining above grade.

9. Two-way communications is necessary for this process to be completed safely. Do not start pumping until clearance is obtained from the observer at the treatment building. Before flushing water can be pumped to the acidification tank, the acidification tank must be drained into the 300-gallon tank. Place the 300-gallon tank on the floor of the treatment plant near a floor drain, and fill it with water from the acidification tank. Start the flushing process. Flush the pipeline at up to **160 psi** and or **50 gpm** until the water runs clear in the acidification tank. Once the acidification tank is full with the flushing water from the sumps, drain the water from the 300-gallon tank into the floor drain for treatment, and repeat the draining of the acidification tank process. Place filter bags on the outlet of the tank prior to draining.

10. Transport clean water to the first sump, using a 300-gallon tank. Flush the sump conveyance pipeline, using the high head centrifugal pump. Start at Sump No. 4 (closest to treatment plant) and continue downstream to Sump No. 1 (furthest from plant). If necessary, switch order in which sumps are flushed, or re-flush a section as needed. In

each section of pipeline, the discharge pressure at the pump should not exceed **160 psi** (the working pressure of the pipeline). The pump discharge should be fitted with a pressure gauge and pressure relief valve, to prevent exceeding the working pressure limit. Flush each section of pipeline until water runs clear at the discharge point in the treatment plant.

11. Pressure in the pipeline should be maintained as high as possible with out exceeding 160 psi. Along with monitoring the pressure, the flow should be monitored at the Isco flow monitor, located in the control room of the treatment plant. Note that the flow meter for the sumps will max out at 50 gpm.

12. After the flushing has been completed at each sump location, re-assemble the clean impeller assemblies to the motors, and then re-install into the sumps. Turn the power back on at the control boxes and in the control room, then check for normal system operation. (Note sumps flow rates should be checked one at a time to insure that a tight connection has been made at the pit-less adaptor under the sump water).

13. Upon completion of the flushing event. Remove all plastic, pads, rags, barricades and materials used at each sump location and dispose of the refuse properly.

14. Return the treatment system to normal operation.

APPENDIX A

INDUSTRIAL SEWER CONNECTION PERMIT AND SEWER USE ORDINANCE

Permit No. 613

TOWN OF TONAWANDA

INDUSTRIAL SEWER CONNECTION PERMIT

Company Name: Cherry Farm/River Road PRP Group

Division Name (if Applicable)

Mailing Address: 495 Aero Drive, Suite 3
Street or P.O. Box
Cheektowaga, New York, 14225
City, State and Zip Code

Facility Address: Cherry Farms 4100 River Road
Street or P.O. Box
Tonawanda, New York, 14150
City, State and Zip Code

The above Industrial User is authorized to discharge industrial wastewater to the Town of Tonawanda sewer system in compliance with the Town's Sewer Use Ordinance Number 2-2000, any applicable provisions of Federal or State law or regulation, and in accordance with discharge point(s), effluent limitations, monitoring requirements, and other conditions set forth herein.

This permit is granted in accordance with the application filed on December 15, 2016 in the office of the Pretreatment Administrator, and in conformity with plans, specifications, and other data submitted to the Town in support of the above application.

Effective Date: January 1, 2017

Expiration Date: December 31, 2019

Permit No. 613

Date: 12/20/16 Signed: Paul Morrow

Paul Morrow
Town of Tonawanda
Office of the Compliance Coordinator

Permit No. 613

Modified Date: _____

PART 1 - WASTEWATER DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

A. LOCALLY DERIVED LIMITATIONS

The industrial user shall comply with the following locally derived effluent limitations effective as of ***January*** **1, 2017**

MONITORING LOCATION: **Inlet Sump (prior to any treatment)**

PARAMETERS	SAMPLE FREQUENCY	SAMPLE TYPE	PURPOSE
Oil and Grease	**Monthly**	**Grab**	**Monitoring**
PCB's (All Arochlors)	**Monthly**	**Grab**	**Monitoring**

MONITORING LOCATION #2: **Discharge Point to the Town Sewer**

MONITORING SPECIFICATIONS

A. *Monitoring for compliance with these locally derived limitations* ***at Monitoring Point 2 Discharge Point to Town Sewer*** *shall be performed as follows:*

Sample Type: Grab

PARAMETERS	SAMPLE FREQUENCY	Limit	PURPOSE
TPH* (1664 SGT)	**Monthly**	**100 mg/l**	**Compliance**
PCB's (All Arochlors)	**Monthly**	**0.065 ug/l**	**Compliance**
pH	**Monthly**	**5.0-9.5**	**Compliance**
BOD	**Semi-annual**	**250 mg/l**	**Surcharge**
TSS	"	**250 mg/l**	"
Total Phosphorous	"	**6.0 mg/l**	"
Total Arsenic	"	**0.5 mg/l**	**Compliance** [1]
Total Cyanide	"	**1.1 mg/l**	**Compliance** [1]

*** = Total Petroleum Hydrocarbons.**

Additional Analysis:

PARAMETERS	SAMPLE FREQUENCY	SAMPLE TYPE	PURPOSE
PCB's (Recovered Oil)	**Upon Disposal**	**Grab**	**Monitoring**

All Self -Monitoring reports shall be submitted to this office no later than the twenty-fifth (25) day of the month following when the sample was taken.
Flows must be mailed, faxed, or called to this office no later than the 10th of the month.

PART II - SPECIAL CONDITIONS/COMPLIANCE SCHEDULE

1. *The Industrial User shall develop, within 6 months of the effective date of this permit, an accidental spill prevention plan to eliminate or minimize the accidental or slug discharge of pollutants into the sewer system, which could have an effect on the Town's treatment plant, sludge, or cause the Town to violate its SPDES permit.*

PART III - REPORTING REQUIREMENTS

1. *All Industries requiring submittal of self-monitoring reports (SMR's) must submit all laboratory results on all discharged samples. If a lab analysis was performed using an EPA approved test method, then those results must be included in the SMR.*
   Persons signing SMR's must be a responsible company official, ie; owner, corporate manager, or supervise more than two hundred fifty (250) employees. Any of the above may appoint a company representative to sign SMR's but written notice must be supplied to this office authorizing said employee to sign.

The following statement will be required on all SMR's and baseline monitoring reports (BMR):

" 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 gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed 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 that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violation."

2. *The Industrial User shall notify the Town immediately upon any accidental or slug discharge to the sanitary sewer system. Formal written notification discussing circumstances and remedies shall be submitted to the Town within 5 days of the occurrence.*

3. *The Industrial User shall notify the Town 30 days prior to the introduction of new wastewater or pollutants or any substantial change in the volume or characteristics of the wastewater being introduced into the POTW from the User's industrial processes.*

4. *Any upset experienced by the Industrial User of its treatment that places it in a temporary state of non-compliance with wastewater discharge limitations contained in this permit or other limitations specified in the Town's Ordinance shall be reported to the Town within 24 hours of first awareness of the commencement of the upset. Immediate resampling for the non-compliance pollutant shall begin. A detailed report shall be filed within 5 days.*

5. *The Industrial User is required to submit to the Town reports on the results of its sampling of the pollutants specified in Part I of this Permit. This report shall also contain monthly flows.*

6. *Analytical procedures must be performed in accordance with 40 CFR Part 136. Additional pollutants not contained in Part 136 must be performed using validated analytical methods approved by EPA (40 CFR 403.12 [g] [4]).*

7. *All reports shall be submitted to the following address:*

Paul Morrow, Pretreatment Coordinator
Wastewater Treatment Facility
779 Two Mile Creek Road
Tonawanda, New York 14150

PART IV - STANDARD CONDITIONS

1. *The Industrial User shall comply with all the general prohibitive discharge standards in Article IV of the Local Law 2-2000.*

   a. *BOD 250 mg/l, TSS 250 mg/l, P 6 mg/l are not to be construed as discharge limits of the above pollutants but as a baseline for generating abnormal sewer charges.*

2. RIGHT OF ENTRY

The Industrial User shall, after reasonable notification by the Town, allow the Town or its representatives, exhibiting proper credentials and identification, to enter upon the premises of the User, at all reasonable hours, for the purposes of inspection, sampling, or records inspection. Reasonable hours in the context of inspection and sampling includes any time the Industrial User is operating any process which results in a process wastewater discharge to the Town's sewerage system.

3. RECORDS RETENTION

The Industrial User shall retain and preserve for no less than three (3) years, any records, books, documents, memoranda, reports, correspondence and all summaries thereof, relating to monitoring, sampling and chemical analysis made by or in behalf of the User in connection with its discharge.

a) *All records that pertain to matters that are the subject of special orders or any other enforcement or litigation activities brought by the Town shall be retained and preserved by the Industrial User until all enforcement activities have concluded and all periods of limitation with respect to any and all appeals have expired.*

4. **CONFIDENTIAL INFORMATION**

Except for data determined to be confidential under Article VII, Section 4 of the Town's Ordinance, all reports required by this permit shall be available for public inspection at the office of the Pretreatment Coordinator, Wastewater Treatment Facility, 779 Two Mile Creek Road, Tonawanda, New York 14150.

5. **RECORDING OF RESULTS**

For each measurement or sample taken pursuant to the requirements of this permit, the user shall record the following information:

a) The exact place, date and time of sampling;
b) The dates the analyses were performed;
c) The person(s) who performed the analyses;
d) The analytical techniques or methods used, and
e) The results of all required analyses.
f) Where sanitary sewer discharge is measured by a mechanical or electronic device, accuracy of device shall be certified correct every year by the manufacturer. Certification shall begin September 2017.

6. **DILUTION**

No Industrial User shall increase the use of potable or process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in this permit

7. **PROPER DISPOSAL OF PRETREATMENT SLUDGES AND SPENT CHEMICALS**

The disposal of sludges and spent chemicals generated shall be done in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

8. **TOXIC SUBSTANCES**

All waters shall be maintained free of toxic substances in concentrations that are toxic to or produce detrimental physiological responses in human, plant, animal, or aquatic life.

9. SIGNATORY REQUIREMENTS

All reports required by this permit shall be signed by a principal executive officer of the User, or his designee.

10. REVOCATION OF PERMIT

The permit issued to the Industrial User by the Town may be revoked when after inspection, monitoring or analysis it is determined that the discharge of wastewater to the sanitary sewer is in violation of Federal, State, or local laws, ordinances, or regulations. Additionally, falsification or intentional misrepresentation of data or statements pertaining to the permit application or any other required reporting form, shall be cause for permit revocation.

11. LIMITATIONS ON PERMIT TRANSFER

Transfer of permit. Industrial waste permits are issued to a specific user for a specific operation. In the event of any change in ownership of the industrial facility, the permittee shall notify the new owner of the existence of the permit by letter, a copy of which shall be forwarded to the Pretreatment Administrator 30 days prior to change of ownership. A new industrial waste permit must be issued to the new owner.

12. FALSIFYING INFORMATION OR TAMPERING WITH MONITORING EQUIPMENT

Knowingly making any false statement on any report or other document required by this permit or knowingly rendered any monitoring device or method inaccurate, may result in punishment under the criminal law of the Town, as well as being subjected to civil penalties and relief.

13. MODIFICATION OR REVISION OF THE PERMIT

a) The terms and conditions of this permit may be subject to modification by the Town at any time as limitations or requirements as identified the Town's Ordinance, are modified or other just cause exists.

b) This permit may also be modified to incorporate special conditions resulting from the issuance of a special order.

c) The terms and conditions may be modified as a result of EPA promulgating a new federal pretreatment standard.

d) Any permit modifications which result in new conditions in the permit shall include a reasonable time schedule for compliance if necessary.

14. DUTY TO REAPPLY

The Town shall notify a User one hundred and eighty (180) days prior to the expiration of the User's Permit. Within ninety (90) days of the notification, the User shall reapply for re-issuance of the permit on a form provided by the Town.

15. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

16. LIMITATIONS

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any invasion of personal rights, nor any infringement of Federal, State or Local regulations.

17. A. VIOLATIONS

(1) Any violation of sections 165-3 through 165-19 of this Part 1 of Local Law 2-2000 is hereby declared a violation except as otherwise provided by law.

(2) Any person who violates the provisions of sections 165-3 through 165-19 of the Part 1, upon conviction thereof in a court of competent jurisdiction, may be punished by a fine of not more than two hundred fifty dollars ($250.), and each day on which there is a failure to comply shall be and is hereby declared to be a distinct and separate offense and punishable as such.

(3) The Town of Tonawanda may also maintain an action of proceeding in the name of the Town of Tonawanda in a court of competent jurisdiction to collect a civil penalty of not over two hundred dollars ($200.) for each violation of sections 165-3 through 165-19 of this Part 1.

(4) The Town of Tonawanda may also maintain an action or proceeding in the name of the Town of Tonawanda in a court of competent jurisdiction for injunctive relief for any violation Articles III, IV or V of this Part 1.

B. MISDEMEANORS

(1) Any violation of sections 165-20 through 165-30 of this Part 1 is hereby declared a misdemeanor except as otherwise provided by law.

(2) Any person who violates the provisions of sections 165-20 through 165-30 of this Part 1, upon conviction thereof in a court of competent jurisdiction, may be punished by a fine of not more than five hundred dollars ($500.), and each day on which there is a failure to comply shall be and is hereby deemed to be a distinct and separate offense and punishable as such.

(3) The Town of Tonawanda may also maintain an action or proceeding in the name of the Town of Tonawanda in a court of competent jurisdiction to collect a civil penalty of not over one thousand dollars ($1,000.) for each violation of section 165-20 through 165-30 of this Part 1.

(4) The Town of Tonawanda may also maintain an action or proceeding in the name of the Town of Tonawanda in a court of competent jurisdiction for injunctive relief for any violation of Article VI of this Part 1.

18. ENFORCEMENT OF THE SEWER USE LAW AND PERMITS

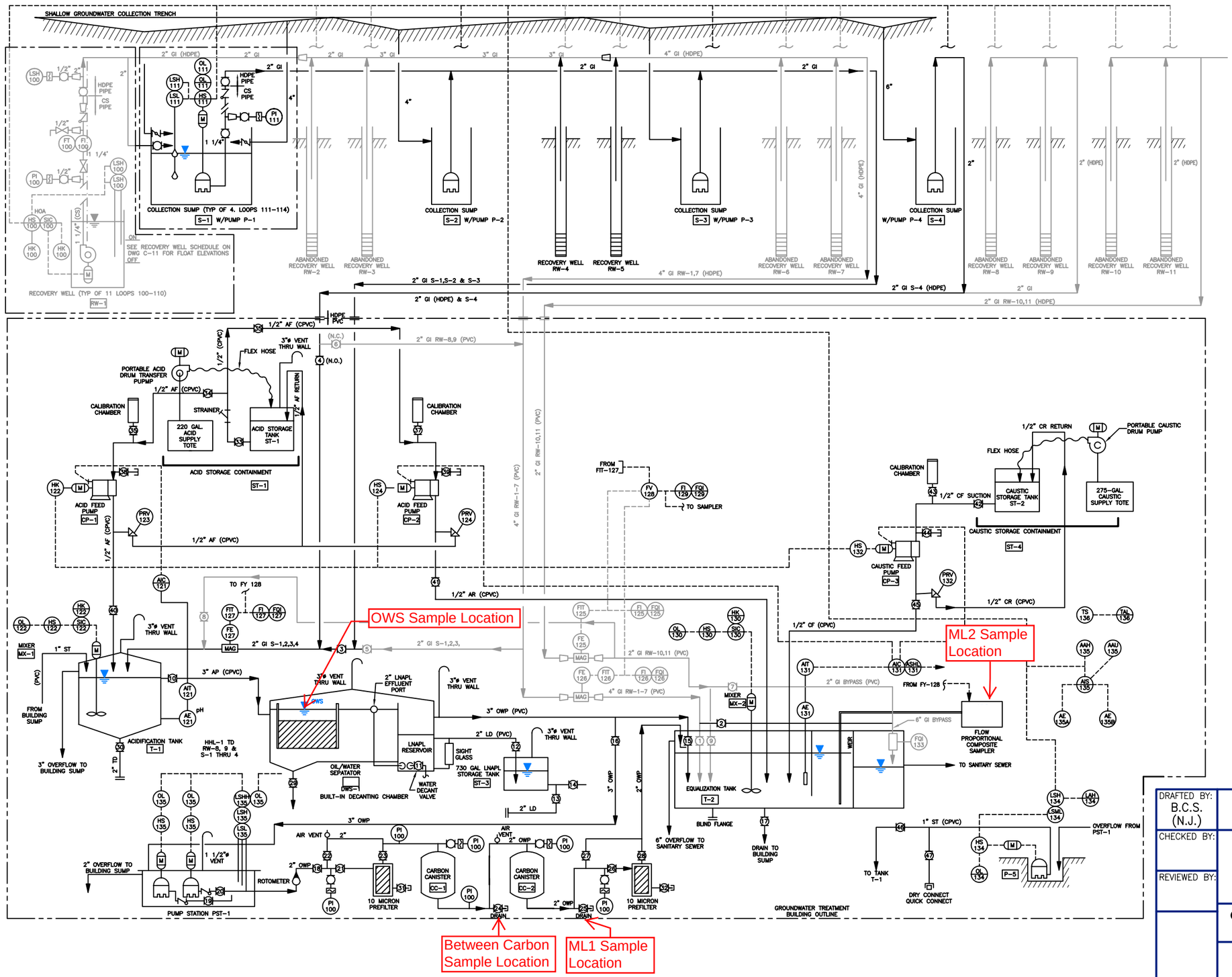
The Town has developed and received USEPA approval of its Enforcement Response Plan which details the standard responses to be taken by the Town when it encounters various violations of the Sewer Use Law or the terms of this permit. Copies of this document are available at the office of the Pretreatment Administrator.

Footnotes from page 2

Footnote 1- The Town of Tonawanda Wastewater Treatment Plant SPDES permit states that the Pretreatment Program will, " Require through Permits each SIU to collect one 24 hour flow proportioned sample composite (where feasible) effluent sample every six months and analyze each of those samples for all priority pollutants that can reasonably be expected to be detectable in that discharge at levels greater than level found in domestic sewage." Upon historical data review and review of your Industrial Waste Questionnaire analysis marked with this footnote were added to your permit to comply with our SPDES permit.

APPENDIX B

PROCESS AND INSTRUMENTATION DIAGRAM



NOTES:

1. SHADE IS INACTIVE COMPONENTS OF GROUNDWATER EXTRACTION & GROUNDWATER TREATMENT SYSTEMS.

2. BOLD IS ACTIVE COMPONENTS OF GROUNDWATER EXTRACTION & GROUNDWATER TREATMENT SYSTEMS.

DRAFTED BY: B.C.S. (N.J.)	PROCESS & INSTRUMENTATION DIAGRAM
CHECKED BY:	CHERRY FARM (RIVER ROAD SITE) 4100 RIVER ROAD TONAWANDA, NEW YORK
REVIEWED BY:	Groundwater & Environmental Services, Inc. 158 SONWIL DRIVE, CHEEKTOWAGA, NEW YORK 14225
NOT TO SCALE	DATE 2-24-10 / FIGURE

M:\Graphics\0900-Buffalo\Misc\Cherry Farms\Tonawanda\Engineering\Cherry Farms (Tonawanda) PID.dwg, BSilwestri