

September 17, 2004

317734.DU.01

Anthony Rutter
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77 West Jackson Boulevard
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Subject: Groundwater Treatment Facility Shutdown Plan
Oconomowoc Electroplating Co. Superfund Site, Ashippun, Wisconsin
WA No. 236-RALR-05M8, Contract No. 68-W6-0025

Dear Mr. Rutter:

Enclosed please find three copies of the Groundwater Treatment Facility Shutdown Plan for the Oconomowoc Electroplating Co. Superfund Site in Ashippun, Wisconsin. This plan is being submitted in accordance with the schedule we discussed for this document.

If you have any questions, please feel free to call me at 414-847-0341.

Sincerely,

CH2M HILL

William Andrae
Site Manager

Enclosures

c: Stephen Nathan, PO/U.S. EPA, Region 5 (w/o enclosure)
Marshall McReynolds, CO/U.S. EPA, Region 5 (w/o enclosure) c/o Dave Alberts, CS
Ike Johnson, PM/CH2M HILL, Milwaukee
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GROUNDWATER TREATMENT FACILITY
SHUTDOWN PLAN

OCONOMOWOC ELECTROPLATING COMPANY
Ashippun, Wisconsin

Long-Term Remedial Action

WA No. 236-RALR-05M8 / Contract 68-W6-0025

September 16, 2004

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A Former Operator's Final Shutdown Status Report

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Introduction

A study conducted to evaluate the performance of the groundwater treatment facility at the Oconomowoc Electroplating Company (OEP) Site by the Wisconsin Department of Natural Resources concluded that, although pumping and treatment of groundwater has substantially lowered the concentration of contaminants, the presence of nonaqueous phase liquid (NAPL) in the soil has caused the remaining contaminant concentrations to level off. The study further concluded that NAPL renders further groundwater extraction and treatment ineffective. As a result, the groundwater extraction and treatment system will be shut down. The purpose of this plan is to provide long-term shutdown procedures.

Appendix A contains the former operator's final shutdown status report.

Shutdown Plan Subjects

The basic plan addresses the following:

- Health and safety
- Security
- Heating, ventilating, and air conditioning (HVAC)
- Building and equipment operation and maintenance
- Protection of equipment and piping during the winter
- Cleaning tanks, equipment, and pipes
- Utilities
- Housekeeping
- Grounds keeping
- General supplies
- Summary of tasks to be completed

Health and Safety

Health and Safety Instructions

This document does not include detailed health and safety procedures. Separate health and safety instructions are required to implement the procedures in the Cleaning Tanks, Equipment, and Pipes section below, including confined space entry procedures and appropriate personal protective equipment (PPE).

Oxygen and Carbon Monoxide Monitoring

Oxygen and carbon monoxide detection and ventilation are required for building entry as described below. The primary concern is that the natural gas unit heaters can potentially depress the oxygen concentrations. This could occur even if the unit heaters are not firing because the pilots alone can depress the oxygen concentrations. Carbon monoxide is also a concern because of the natural gas heating and lack of continuous ventilation in the building. The HVAC design does not normally provide outside air to the building because the exhaust fans and associated fresh air louvers, when in Automatic Mode, are only triggered to run when the room temperature exceeds the set point.

Building Entry Procedures

1. Use an oxygen and carbon monoxide detector when entering the building for the first time after it has not been occupied for a day or more. The detector shall be on before the door is opened and worn while the building security code is entered. Only one person shall enter the building until a safe atmosphere has been verified. Prop the door open to provide fresh air and an unobstructed escape route while entering the security door. Exit the building immediately if an alarm condition is triggered, even if the security code has not been successfully entered.
2. Observe oxygen and carbon monoxide readings carefully before entering any area or room.
3. Turn the exhaust fans to the Hand (i.e., On) Mode for 30 minutes, or longer, as desired or appropriate to provide fresh air. The Hand-Off-Auto switches for the largest exhaust fans in the Treatment Area are located on the wall just outside the Restroom. The former operator typically operated the exhaust fans in Hand Mode for 15 minutes but a longer ventilation period is recommended because of the longer periods of time between site visits during plant shutdown.
4. When working at the plant for several hours or more, it is recommended that the exhaust fans be turned to Hand Mode periodically for 15 minutes or longer as appropriate to maintain fresh air in the building.

Building Departure Procedures

1. Turn the exhaust fans to Automatic Mode before leaving the building. If the exhaust fans are left running in the winter there will likely be freeze damage to the water pipes, fixtures, and appurtenances; there will be very high natural gas bills; and there will be high electric bills. Leaving the exhaust fans running in the summer will also cause elevated electric bills.
2. Turn off the lights and any equipment that was turned on and should not remain on.
3. For any thermostat set points that were increased to provide a comfortable working environment, return the thermostats to the freeze protection-based set point.
4. See the Security section below regarding activating the security system.

Special Considerations for the Maintenance Area

The Maintenance Area door should not be closed because the room is heated with a natural gas heater. With the door closed, the natural gas heater would completely deplete the oxygen in the room (the heater does not have to fire – the pilot alone can deplete the oxygen). This would result in a potentially fatal risk to anyone entering the room. This would also prevent the unit heater from functioning, resulting in freeze damage to the piping and water heater. Therefore, it is very important that the door from the Treatment Area into the Maintenance Area remain open. Because of this concern, it is recommended that this door be taken off of its hinges and set aside.

Ventilation During Tank, Equipment, and Pipe Flushing

To maximize fresh air supply, it is recommended that the exhaust fans be set to the Hand Mode to run continuously during all flushing steps. See the warning above regarding the importance of returning the exhaust fans to Auto Mode before leaving.

Drinking Water

The former operator had the water from the water well tested. The results indicated that the water was not safe for consumption. As a result, the former operator shut off the valve to the drinking fountain. This valve should not be reopened. It is recommended that a sign be installed on the drinking fountain to indicate that it should not be used. No other source of drinking water is available at the site. Therefore, arrangements must be made for drinking water when performing tasks at the site. Bottled water from the grocery store is recommended for this purpose.

Security

There are alarm sensors on each door, each door's glass, and on the office window glass that are connected to the building security system automatic (auto) dialer. Smoke detectors in the Control Room and Electrical Equipment Room are also connected to the building security system auto dialer. The building security system requires a code to be entered within 20 seconds of opening the main door (this is the exterior door adjacent to the Control Room facing Oak Street). The security code entry point is immediately inside the main door. If the code is not entered within the time limit, the auto dialer, which is connected to the phone line, will dial the security system operator and the security system operator will call the Dodge County Sheriff. Building entry from any other door before the system is disarmed results in immediate auto dialing without the time delay. Simultaneously pressing the asterisk (*) and pound (#) keys on the security system code entry keypad will also dial the security system operator for dispatching the sheriff.

To arm the security system, the same security code must be entered when leaving. The previous operator recommended that the security code be changed upon site turnover to limit entry to currently authorized personnel. The task of changing the security code was completed on August 19, 2004.

In addition to contacting the sheriff, the security system operator calls others as instructed (see sequence list below). All programming changes and security operator calling instructions are implemented through the Toepfer Security Corporation.

1. Dodge County Sheriff: 920-386-3726
2. Bill Andrae/CH2M HILL Site Manager
 - a. 414-847-0341 (office)
 - b. 262-366-0968 (cell phone)
 - c. 262-781-1308 (home)
3. Keli Mckenna/CH2M HILL Assistant Site Manager
 - a. 414-847-0561 (office)
 - b. 414-704-0903 (cell phone)
 - c. 262-251-9528 (home)

There are also the following supervisory alarms:

- Electrical power loss
- Low battery (the security system has batteries in case of electrical power loss)
- Verification that there is connectivity to the alarm system via the phone line (this ensures that the phone line has not been damaged or cut so that calls from the auto dialer will be received)

The security system operator will call the CH2M HILL Site Manager (SM) and Assistant Site Manager (ASM), but not the sheriff, for supervisory alarms. As noted under the Protection of Equipment and Piping during the Winter section, it is recommended that the low-temperature alarm thermostats be connected to the security system as two additional supervisory alarms.

The locks on the gates will be replaced to restrict access to the facility to currently authorized personnel.

All exterior building doors are to be locked at all times except a door may remain unlocked when it is required for entry/exit while performing tasks that are within eye sight of the door. Keys to the site shall be controlled by the CH2M HILL SM and only loaned out to authorized personnel for authorized tasks. All keys shall be returned to the SM upon completion of the authorized task.

There are exterior lights on the building that automatically turn on and off based on a photo eye (i.e., light sensor). The exterior lights shall be inspected during the bimonthly site visits to determine if any bulbs require replacement.

HVAC

Ventilation

The ventilation system must be operated while people are present to provide a safe and pleasant breathing environment. Refer to the Health and Safety section herein for procedures.

Most areas and rooms are only ventilated with exhaust fans that turn on when a thermostat detects that a high temperature set point has been reached. Fresh air is drawn into the room through louvers in the wall while the exhaust fans are on. The Maintenance Area has a supply fan that is controlled by the same thermostat that controls the exhaust fan in that room.

The exhaust fans and ductwork are located on the mezzanine level above the Control Room, Electrical Equipment Room, Janitor's Closet, Restroom, Maintenance Area, and Sodium Hydroxide Room.

The exhaust fans are quite noisy when running but, based on discussions with the former operator, this is normal and has always been the case (i.e., this is apparently not indicative of a need for repair or maintenance).

Heating and Air Conditioning

The building heating system must be operated to protect equipment and piping from freezing and to provide an acceptable temperature to personnel. Heating of most areas and rooms is addressed under the Protection of Equipment and Piping during the Winter section. Thermostat set points can be increased above that required for freeze protection in order to provide a comfortable working environment by adjusting the thermostat set point on one or more of the unit heaters (wait to determine whether adjusting one or two is sufficient before adjusting others). All unit heater thermostats shall be returned to the freeze protection-based set point before leaving the building to minimize heating cost.

There is a separate electric heater and air conditioning unit in the Control Room. The controls and thermostat settings for this unit are self explanatory at the unit. In order to minimize electric utility bills, it is recommended that the air conditioner be turned off or the temperature set point that turns it on be turned to the highest setting before leaving the building. It is recommended that the heater be turned to its minimum setting in the winter.

Building and Equipment Operation and Maintenance

Light Bulbs

Refer to the Security section regarding checking and replacing exterior light bulbs. Incandescent bulbs are stored in the Electrical Equipment Room. Fluorescent bulbs are stored behind the Water Tank in the Maintenance Area. There is a 24 foot ladder stored in the building that can be used for installing bulbs. Because some bulbs may require a lift rental to safely install them, it may be appropriate to defer replacing those interior light bulbs that are difficult to replace and not required for adequate building lighting.

Plant Sump and Floor Trench

Potential sources of water into the sump include tank, equipment, and pipe flushing; washing the floor; a water pipe break; or water entering the building from rain or snow melt.

The sump pumps were left operable by the former operator and, unless turned off, these will automatically turn on and off based on the level in the sump. The sump pumps are configured to pump to the Equalization Tank.

Whenever water is discharged to the sump under controlled conditions (e.g., from flushing and washing), it is recommended that the sump pumps be turned off to prevent pumping this water to the Equalization Tank. Instead, provided there are no chemicals that would violate standards for sanitary sewer discharge, it is recommended that a portable sump pump and hose be used to discharge the sump water to the sanitary sewer via the Janitor's Closet sink as described herein.

Procedures for Using Compressed Air Equipment

To start the air compressor and air dryer:

1. Set the switch for the Air Compressor to the On position at the Motor Control Center in the Electric Equipment Room
2. Turn the two switches on the Air Compressor to On
3. Press the green button on the back left corner of the Air Dryer to turn it on
4. Connect an air hose to a valved air station at a location near the desired connection point to the piping
5. Open the air valve to the hose and hold or connect the other end of the air hose to a connection point on the water piping to be blown out

The air dryer should be on when using the Air Compressor to keep moisture out of the air lines. There are air valves for the connection of an air hose at multiple locations in the building, including behind the work bench in the Maintenance Area.

Automatic Sampler

The plant discharge automatic sampler is locked in the On position in the lighting panel in the Electrical Equipment Room. It is recommended that the clip which prevents this breaker switch from being turned off be removed.

Probe Removal, Cleaning, and Storage

The former operator noted that most of the pH probes at the plant had gone bad prior to shutdown and, because of the processes that were no longer used and the pending plant shutdown, they were not replaced. However, when the plant was shut down in July 2004, there were several functional pH probes. It is recommended that pH probe storage solution (or appropriate storage solution for other types of probes) be ordered and the following procedure be followed, unless the labor cost associated with executing the procedure exceeds the cost for a new probe.

- Clean scale from the probes using a mild acid (e.g., vinegar or citric acid cleaning solution) and/or soap as required. Rinse the probes thoroughly in water and rinse with distilled water after cleaning. Store the probes in the storage solution recommended by the manufacturer. Cover any exposed wires where the probes were disconnected with electrical tape to minimize the potential for corrosion.

The following is a list of functional probes and their status at the time of the shut down:

- There are two pH probes stored in water on the platform in the southwest corner of the Treatment Area. This platform is accessed by a built in ladder.
- There is a third probe left installed on the aforementioned platform.
- There is a conductivity probe and a pH probe left installed next to the National Pollutant Discharge Elimination System (NPDES) discharge sampler and magnetic flow meter.

The conductivity probe is 8 years old and therefore does not warrant much effort if it is difficult to remove and store, but the pH probe is only about 1 year old.

- There is a pH probe (PHIC 400) left installed next to the carbon filters. This probe activated the sulfuric acid pumps; but, according to the operator, did not need to be highly accurate. This probe is the oldest of the functional pH probes.

Oiling and Greasing Equipment

Apply a thin film of grease or oil to all exposed bare metal equipment that is subject to rusting. No treatment is required for metals that are not subject to rusting such as stainless steel, aluminum, bronze, and brass. This approach will be used in lieu of painting.

All required equipment maintenance, including oiling and greasing, was performed through July 2004 by the former operator according to a schedule. Therefore, oiling and greasing will not be required for some time. It is recommended that grease be added and oil topped off based on annual observation of equipment requiring lubrication. It is also recommended that the oil and grease manufacturers' information be reviewed or the manufacturers be contacted to determine if there is a "shelf life" for the oil and grease in the equipment; if there is a shelf life, it is recommended that the oil and grease be completely changed before the shelf life is exceeded.

Filter Press

The former operator recommended removing the fabric (i.e., membranes) inside the plastic holders (i.e., plates) for cleaning and storage. It is his opinion that they will not be useable if left on the plates. The former operator estimates it would take one person roughly a week to clean and store all of them. The procedure is presented below. However, because of the time required and the uncertainty of when the filter press will be used again, it is not recommended that this work be performed unless a use for the Filter Press is identified.

1. Operate the plant air compressor (refer to the Protection of Equipment and Piping during the Winter section) to provide compressed air to the press.
2. Start with Step 4 of the operating instructions printed on the press.
3. Run a rope through the plate hangar to provide a "grab point" for the hoist hook and remove one plate at a time (once an operator is proficient, the former operator stated that up to three plates can be lifted at a time).
4. Use the overhead monorail hoist and trolley to lift out the plates from the press and to set them down where they can be worked on.
5. Once removed from the press, remove the fabric by prying around the perimeter with a large screw driver.

Protection of Equipment and Piping during the Winter

Exterior and Interior Heat Tracing Control

There is a Freeze Protection Panel in the Electrical Equipment Room that controls the heat trace tape on process piping. Instructions for this panel are found in the panel and with the plant's Operation and Maintenance manuals.

Exterior Equipment and Piping

The five extraction well pumps have been turned off and the water in the pipes has been blown out with compressed air from the building into each extraction well. The heat trace switch has been turned off at each pump because the empty pipes are not subject to freeze damage. The groundwater level is roughly 15 feet or more down; therefore, by emptying the pipes, the five extraction well pumps have been adequately protected from freeze damage.

The water-well pump just east of the parking lot off of Oak Street was left in service. The breaker and heat trace switch were both left on to protect this pipe from freezing.

The Equalization Tank can receive water from the building sump pumps. This tank is insulated but, according to the former operator, it is not heat traced under the insulation. Water in the tank may freeze, but the tank should not be subject to freeze damage as long as the tank is less than 90 percent full (to allow for the expansion of water as it freezes). The tank level should be recorded during site visits and the tank should be pumped out well before it reaches 90 percent full to protect it from freeze damage. The pipes between the tank and the building are heat traced and insulated and therefore not subject to damage as long as the heat tracing remains functional. Verification that the heat tracing to all of these pipes is on is recommended. The former operator left the valves open in the pipes from the equalization tank. Therefore, as configured at the time of shutdown, if water in the Equalization Tank reaches 7 percent full, it will flow onto the floor in the Treatment Area and into the sump. To prevent pumping in an endless loop, it is recommended that these valves be closed.

Interior Equipment and Piping

All Rooms and Areas

See the Health and Safety section regarding monitoring for oxygen and carbon monoxide, running the exhaust fans for a period of time upon entering the building, and the dangerous consequences of shutting the door between the Treatment Area and the Maintenance Area.

If the exhaust fans are left running in the winter there will likely be freeze damage to the water pipes, fixtures, and appurtenances; there will be very high natural gas bills; and there will be high electric bills. Leaving the exhaust fans running in the summer will also cause elevated electric bills.

Leave valves at all low points on process piping open to ensure pipes are always empty.

Electric Base Board Heaters

There is an electric base board heater in the Restroom and Janitor's Closet. At the start of the heating season the following steps are recommended:

1. Verify the base board heaters are turned on.
2. Verify they are functioning (i.e., that they are turning on when temperature drops below their set point)
3. If adjustable, adjust the set point temperature to the same temperatures recommended herein for the thermostats controlling the natural gas unit heaters.

There is also an electric hot water heater in the Janitor's Closet. It is recommended that it be adjusted to its minimum temperature setting to minimize electric cost.

Natural Gas Unit Heaters

Each unit heater has its own switch in the vicinity of the unit heater. In the past, the former operator turned these off in the spring and on (for automatic firing based on thermostat control) before the first freezing temperatures. The unit heaters can also be switched on or off from Lighting Panel PP-100 just outside the Electrical Equipment Room. Natural gas valves have always been left open during the summer. Therefore, opening and closing of natural gas valves is not required. The following procedure is required for unit heaters:

Before the First Freezing Temperature in the Fall

1. Turn on each unit heater's switch (each switch is in the vicinity of the unit heater it controls).
2. Verify the unit heater's circuit breaker is switched to On in the lighting panel.
3. Verify each unit heater turns on and off based on thermostat controls.

After the Last Freezing Temperature in the Spring

1. Turn off each unit heater's switch (each switch is in the vicinity of the unit heater it controls).

Freeze Protection Alternatives

With the building unattended and all process pipes, tanks, and equipment drained, the only purpose of heating is to protect water piping, water fixtures, and associated appurtenances from freezing. Items subject to freeze damage are water pipes, fixtures, and appurtenances in the Maintenance Area, Janitor's Closet, Restroom, the eye wash and shower, and hose valves (including one heated-water pipe and hose valve adjacent to the sodium hydroxide area).

Alternative 1

The simplest alternative is to maintain the existing natural gas and electric building heating. However, the two alternatives presented below are recommended for future consideration if the utility bills are significant enough to warrant comparison to alternatives. With the facility in operation, the annual average natural gas bill was \$450 to \$510 per month. However, a simple step can be taken which is expected to significantly reduce natural gas usage. According to the construction drawings, the thermostats that turn on the unit heaters

were set to 60°F in most areas and 65°F in the sodium hydroxide storage area. After the sodium hydroxide system is flushed out, it is recommended that the thermostats be reset to 45°F to minimize utility cost. This will provide better information regarding the costs for freeze protection using this alternative for comparison to other alternatives.

There are also two low-temperature alarm thermostats, EST-965 and EST-969, set to 58°F and 45°F. The alarms are relayed to the plant distributed control system. However, with the process control computer off, these alarms will not currently register. Therefore, it is recommended that these alarms be tied into the security system auto dialer to alert the SM and ASM if a low alarm occurs.

It is recommended that the two low-temperature alarm thermostats be reset to 40°F the first year. If experience demonstrates that these alarms are not tripped in the first winter, then it is recommended that all thermostats be set another 5°F lower the following winter to further reduce utility bills (i.e., 40°F for the thermostats controlling the unit heaters and 35°F for the alarm thermostats).

Alternative 2

The water-well pump could be turned off either permanently or each fall before freezing temperatures are reached. The water in all water pipes, water tank, water heater, and tempered-water cabinet could be drained and then blown out using compressed air. The power to the water heater should be disconnected before draining the water heater. The piping to be blown out would include the piping from the building to the water-well pump. This would likely require disconnecting the piping at the well head because there is a check valve in the piping that would prevent blowing water out of the piping back into the well. For this alternative, it would be appropriate to hire a pipe fitter to install strategically located branch fittings (e.g., tees or wyes) with valves to provide connections for plant air to blow out the lines, and to provide drains for low spots and for draining the pipes as they are blown out. This would not only facilitate emptying the water pipes, fixtures, and appurtenances the first time but would facilitate doing this each fall without the need for a pipe fitter's assistance in the future.

Alternative 3

There are only a few water pipes outside of the Maintenance Area, Janitor's Closet, and Restroom. Therefore, it may be possible to drain and blow out just the pipes beyond these areas (e.g., in the Treatment Area) while still maintaining water-well use in these rooms. This would allow the heating to either be completely turned off in the Treatment Area or turned down to say 33°F. Although there are some threaded fittings on the water piping that could be disconnected, much of the piping is copper with sweat fittings. As with Alternative 2, it would be appropriate to hire a pipe fitter to install strategically-located branch fittings (e.g., tees or wyes) with valves to provide connections for plant air to blow out the pipes, and to provide drains for low spots and for draining the pipes as they are blown out. Piping is hidden above ceiling panels in the Janitor's Closet that requires investigation to determine if there are isolation valves and connection points that are currently available. The Restroom door and Janitor's Closet door could be closed and heated with the electric baseboard heaters in those rooms. If Alternative 3 is selected, then it is recommended that the natural gas heater in the Maintenance Area be removed and replaced with an electric unit heater so that the door may be closed to minimize heating cost.

Cleaning Tanks, Equipment, and Pipes

Tanks, equipment, and pipes should be cleaned to:

- Remove any remaining concentrated chemicals used in the treatment process
- Prevent chemicals from congealing in the tanks, equipment, and pipes.
- Remove solids that could plug the tank nozzles, equipment, or pipes.
- Avoid more difficult and costly cleaning at a future date

Testing and additional cleaning may be required if the tanks, equipment, and pipes are to be used at a different site or disposed of. However, testing and more extensive cleaning than noted herein is not recommended at this time because there is a remote possibility the treatment process could be restarted and additional cleaning may not be required for reuse or disposal.

The former operator used up chemicals during the last days of operation, removed and disposed of media (e.g., the sand in the sand filter and the activated carbon in the carbon vessels) in the treatment processes, drained process tanks, opened valves to drain all process pipes, and opened the breakers on all pumps (except the water-well pump which was left in service at the time of shutdown in July 2004), and opened the circuits on all heat tracing except the water-well pump and the Equalization Tank piping.

Polymer System

Polymer was depleted in the last days of operation and the polymer feed equipment and piping were adequately flushed with water, cleaned, and drained. No further action is required of the polymer system.

Sodium Hydroxide System

Sodium hydroxide was depleted in the last days of operation and the pipes were gravity drained but not flushed or blown out. The tank is empty to the bottom drain valve but there may be residual below the valve.

Other than the high pH, sodium hydroxide is a harmless chemical. When combined with an acid the products are water and salt ions. Sodium hydroxide can be diluted to neutral pH with sufficient water.

The following steps are recommended to flush out residual sodium hydroxide in the tank, pipes, and pumps:

1. Remove the man way cover from the sodium hydroxide tank to assess the quantity and condition of residual.
2. If there is residual that can be pumped, insert a hose to the bottom of the tank and pump out as much of the residual caustic as possible using one of the caustic pumps. Pump the caustic into an appropriate disposal container.
3. If there are any residual solids, remove the solids and transfer the material into an appropriate disposal container. This may be done either through a confined space entry or by cutting the tank off slightly above the bottom of the tank.

4. Dispose of any containers containing residual caustic following applicable regulations.
5. Once the significant residual caustic in the tank is removed, the tank is ready for flushing. If the tank has been cut apart to avoid a confined space entry, then additional washing of the tank pieces is only required if it is necessary for transport and disposal.
6. Verify discharge to the sanitary sewer is allowable, provided the pH is within prescribed limits.
7. Flush the tank, pumps, and piping with hot water, directing spent flushing water into the main treatment area sump (temporary hose can be connected to the piping at appropriate points to direct the spent flushing water into the sump).
8. After cleaning everything, drain all pipes by opening valves or fittings at all low points.
9. Blow out remaining water in the pipes using compressed plant air.
10. Measure the pH of the composite spent flushing water in the sump. Some manual mixing may be required.
11. If the pH is above the acceptable range, dilute it until it is within range. Some manual mixing may be required.
12. Once within the permissible pH range for discharge to the sanitary sewer, use a hose and a portable sump pump to pump from the sump into the lab sink in the Janitor's Closet.

Sodium Hypochlorite System

Sodium hypochlorite was depleted and the pipes were gravity drained but not flushed or blown out. It is believed that there is less than 1 inch of residual hypochlorite at the bottom of the hypochlorite tank. Sodium hypochlorite is a concentrated version of house hold bleach.

The following steps are recommended to flush out residual sodium hypochlorite in the tank, pipes, and pumps:

1. Remove the man way cover from the sodium hypochlorite tank to assess the quantity and condition of residual.
2. Follow the procedures presented for the sodium hydroxide with the following exceptions:
 - a. Determine the allowable residual chlorine concentration for discharge to the sanitary sewer.
 - b. Measure chlorine residual in the spent flushing water using a Hach test kit.
 - c. Consume residual chlorine in the spent flushing water discharged into the sump using sodium bisulfite or sodium thiosulfate until the chlorine residual is well below the allowable limit. Some manual mixing may be required.

Sodium Bisulfite System

Sodium bisulfite was depleted. It is recommended that the sodium bisulfite pumps be inspected and cleaned as necessary. The pumps and pipes should be flushed in conjunction with the sodium hypochlorite flushing and the spent flushing water allowed to mix. This will help to neutralize residual chemical present in the flushing water from these two systems.

Sulfuric Acid System

Sulfuric acid was depleted. It is recommended that the sulfuric acid pumps be inspected and cleaned as necessary. No flushing of lines is required unless for the purpose of lowering the pH of caustic wash water collected in the sump. If there are any sections of piping suspected of having measurable amounts of sulfuric acid, then it is recommended that the sulfuric acid be collected (this may require disconnecting pipe fittings) into an appropriate glass container and disposed of properly (or used to neutralize the pH of caustic wash water).

Plant Sump and Floor Trench

As of July 29, 2004, there were approximately 18 inches of water in the 4 feet square sump plus approximately 4 inches of water in the floor trench. This is residual water from general wash down in the building. There is likely some sediment in the trench and sump as well. The water from tank cleanings noted above can be mixed with this water and discharged to the sanitary sewer. No special procedures are required for this water.

Equalization Tank

The Equalization Tank is just outside the south wall of the building. The former operator utilized an outside contractor to pump and vacuum out remaining water and solids in the Equalization Tank. The vacuuming was done through the top man way. The tank is essentially empty (a 3 percent tank level reading was observed from the level measurement instrumentation a couple of days before the site was turned over to the U.S. Environmental Protection Agency). The building sump pumps discharge to this tank and, if left in Automatic Mode, water collected in the sump will be pumped to the Equalization Tank. If controlled discharges to the sump are pumped into the sanitary sewer using a portable sump pump, then there should not be any routine discharge of water from the sump into the Equalization Tank. The cleaning provided in the Equalization Tank was sufficient and no additional cleaning is recommended at this time.

Air Stripper

The Air Stripper was cleaned a couple of months before shutdown and, therefore, should not require any additional cleaning.

Carbon Vessels

The carbon from the carbon vessels was removed before shutdown and, therefore, these vessels should not require any additional cleaning.

Other Process Tanks and Vessels in the Building

All of the remaining tanks and vessels used in the treatment process have been emptied to the maximum extent possible. Some residual solids have sloughed off the interior tank walls as the tank interiors dried. It is recommended that loose residual solids be swept into a dust pan and disposed of properly. Other than removal of sloughed off solids, no additional flushing or cleaning is recommended for these tanks and vessels at this time.

Utilities

Service agreements have been established with the following utility providers.

Electricity and Natural Gas

Company: We Energies

Account Number: 8271-577-898

Contact person: Not Applicable

Telephone: 800-714-7777

Fax: Not Available

Continued electric service is necessary for building lighting and security. The average electric bill was \$1,100 per month during normal operation. In the first month of facility shutdown (August 2004), the electric bill was \$104.

It is recommended that the remaining primary electrical consumption points while the plant is shut down be investigated to determine if any can be turned off, disconnected, or adjusted to reduce the monthly utility bill.

Sanitary Sewage

Agency: Ashippun Sanitary District, West 2602 Lincoln Road, Ashippun, WI 53003

Account Number: Not Available

Contact person: Doug Nilson

Telephone: Billing: 262-560-2013, Service: 920-474-7601

Fax: 920-474-7601

Phone Service

Company: Verizon

Account Number: 16 2435 2799351611 08 (plant phone number is 920-474-3070)

Contact person: Not Applicable

Telephone: Billing: 800-483-5700, Repair: 800-483-2000

Fax: Not Applicable

Note that there are two phone lines; however, only one is active and is connected to the security auto dialer.

Security Equipment Including Auto Dialer

Company: Toepfer Security

Account Number: 84001271

Contact person: Tom

Telephone: 262-786-3600

Fax: 262-786-4720

Trash Disposal

No service agreement was established for trash disposal because of the infrequent trash generation expected during shutdown. All trash generated, including during sampling events, shall be properly disposed of offsite.

Housekeeping

The interior and exterior of the facility shall be kept clean and neat. Trash and debris shall be removed from the site and disposed of properly. Equipment, materials, supplies, and personal belongings not relevant to the site shall not be stored at the site. The interior shall be maintained in a swept, dusted, and washed condition. Modes of entry for bugs and pests shall be sealed off. Physical hazards (e.g., tripping hazards or spills on floors) shall be removed or cleaned up.

Grounds Keeping

Grass and weed cutting shall be provided around the building, to all monitoring wells and piezometers, and in a 3-foot radius around all wells and piezometers. The grass shall be cut at a minimum of once every 2 weeks during the growing season and more frequently as required to keep the grass at a manageable height during peak growing season.

Tree branches, seedlings, saplings, and shrubbery growing too close to the building, fences, parking lot, wells, and piezometers shall be removed each year.

It is recommended that no snow removal service be provided because of the limited need for access. Persons visiting the site shall park off site and carry a hand shovel as necessary to complete their tasks.

General Supplies

It is recommended that materials and services required for satisfactory maintenance and use of the facility are procured as needed. Such items include, but are not limited to:

- Gallon jugs of potable water and paper cups for drinking water
- Oils and greases when needed for lubrication
- Tools as needed
- PPE
- Cleaning supplies
- Chemicals
- Personal hygiene supplies (e.g., hand soap, toilet paper, paper towels, etc.)

Summary of Tasks to be Completed

TABLE 1
Summary of Tasks to be Completed

Task Number	Description	Recommended Schedule
1.	Develop (or, for tasks that are subcontracted, require the subcontractor to develop) health and safety instructions for implementing Shutdown Report recommendations	Before tasks requiring health and safety instructions are undertaken.
2.	Remove door to Maintenance Area from Treatment Area	Before heating season
3.	Install drinking fountain warning sign	Next site visit
4.	Replace locks on exterior gates	End of September 2004
5.	Inspect exterior lights	During all bimonthly visits
6.	Turn off air conditioner in Control Room or set thermostat set point to highest setting	Next site visit
7.	Set thermostat set point on Control Room electric heater to minimum setting	Next site visit
8.	Remove clip and turn off breaker for the automatic sampler	Next site visit
9.	Order storage solutions for probes and implement recommended probe storage steps	End of December 2004
10.	Oil and grease exposed bare metal	End of December 2004
11.	Oil and grease equipment	Inspect annually and oil and grease if needed
12.	Empty Equalization Tank	Observe during all bimonthly visits, drain well before 90 percent full
13.	Verify the heat tracing is on for all pipes to and from the Equalization Tank	Next site visit
14.	Close the valves from the Equalization Tank that will discharge to the Treatment Area floor when the tank reaches 7 percent full	Next site visit
15.	Perform electric base board heater steps	Verify at the start of the heating season every year
16.	Adjust hot water heater temperature set point	Next site visit
17.	Perform unit heater activation steps	At the start of the heating season every year
18.	Perform unit heater deactivation steps	At the end of the heating season every year
19.	Reset all unit heater thermostats and alarm thermostats	As soon as the sodium hydroxide system is adequately flushed out and alarms are tied into the security system
20.	Tie low temperature alarms into the security system	By end of November 2004

TABLE 1
Summary of Tasks to be Completed

Task Number	Description	Recommended Schedule
21.	Reset all unit heater thermostats and alarm thermostats lower than first year	At start of 2005–2006 heating season—if no alarm problems in 2004–2005 heating season
22.	Drain and flush sodium hydroxide system	Remove man way next site visit and establish schedule after assessing
23.	Drain and flush sodium hypochlorite system	Remove man way next site visit and establish schedule after assessing
24.	Inspect/clean, drain/flush sodium bisulfite system	Inspect next site visit and establish schedule—potentially coordinate with sodium hypochlorite cleaning for oxidation reduction benefits
25.	Inspect and clean sulfuric acid system	Inspect next site visit and establish schedule—potentially coordinate with sodium hydroxide cleaning for neutralization benefits
26.	Remove sloughed-off solids from other process tanks and vessels	By April 2005
27.	Housekeeping	Inspect every site visit and perform as needed
28.	Grounds keeping	During annual growing season

Appendix A

Former Operator's Final Shutdown Status Report

SHUT DOWN

As of July 23, 2004:

Extraction Wells-piping was blown out
All breakers opened
Heat Trace deactivated

Equalization Tank-pumped down to <3%
piping drained to floor trench
All breakers opened

All In-Plant piping was drained to floor trench

Metals Package-all tanks pumped to Sludge Tank, rinsed & pumped twice (<1" on bottom)

ORP Probes-Great Lakes#2021RO (both were bad-disposed of)
pH Probes-Great Lakes #6021PO (2 were bad & disposed of--2 are sealed in bottles)
All breakers opened

Tertiary Filter-drained & sand disposed of
rinsed & drained
air deactivated & up-lift system removed (placed under Metals Package)
Tertiary Filter Holding Tank-drained to <5%
All breakers opened

Air Stripper-drained to <3%
All breakers opened

Bag Filters-drained & rinsed
used filter bags disposed of-none in them

Carbon Filters-Spent Carbon removed & tanks rinsed out
All Carbon is disposed of
All breakers opened

Effluent Holding Tank-drained to <1%
All breakers opened

All Chemical Feed Pumps and piping are gravity drained
All breakers opened

Sodium Hypochlorite Tank-drained to <1”

Sodium Hydroxide Tank-no liquid will drain from it (<4%)

Polymer System-drained & rinsed

Sodium Bisulfite System-drained & rinsed

Sulfuric Acid System-drained & rinsed

Filter Press-emptied & sludge disposed of

Sludge Holding Tank-drained & rinsed out

Filtrate Holding Tank-drained & rinsed out (<2”)