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***BULLS EYE SEPTAGE RECEIVING STATION***  
**OPERATIONS AND MAINTENANCE MANUAL**

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## **1 INTRODUCTION**

### **1.1 PURPOSE**

The purpose of this document is to provide a general understanding of the daily operation and maintenance of the Septage Receiving Facility (SRF). This document is intended to be an initial guideline for the operation and it is encouraged that this document be updated periodically as procedures are refined.

Further, the purpose of this document is to provide the operator with:

- Guidelines for plant operation and maintenance
- Troubleshooting.
- A safety and Emergency Response Plan

## **2 SYSTEM DESCRIPTION**

### **2.1 OVERVIEW OF OPERATION**

Septage haulers will utilize the facility to discharge septage that has been pumped within the defined vicinity. Haulers will arrive at the facility and pull onto a concrete slab in preparation for discharge. The truck will connect to the discharge hose and will begin the unload process. The septage will pass through a meter and then enter the screen tank. The screen tank will filter out solids that are more than 1" in size. The septage will then pass through a grit chamber and accumulate in a series of seven below ground tanks. The septage will then be pumped into above ground storage tanks in preparation for the dewatering process.

The dewatering process will occur when tanks 1-3 are sufficiently filled. Septage is drawn from the storage tanks via a progressive cavity pump. Polymer is injected into the stream as it is moved to the dewatering box. At the dewatering box, the mixture is introduced through a manifold. The polymer causes the solids to flocculate and separate from the liquid. The liquid passes through the screen lined dewatering box and discharges to a series of tanks to be pumped to the wastewater treatment plant. A pump in the discharge tanks is on a timer system that permits the water to be introduced into the WWTP at prescribed intervals and amounts. The solids that accumulate in the dewatering box are eventually hauled to a landfill.

### **3 OPERATING LIMITATIONS**

#### **3.1 CATEGORIES OF SEPTAGE ACCEPTED**

This facility is equipped to receive the following categories of septage:

- Domestic septage
- Domestic holding tank waste
- Food establishment septage

#### **3.2 SERVICE AREA**

The service area for the plant will be 25 miles with the exception of Otsego and Crawford Counties. Septage pumped from outside this radius will also be accepted provided there is capacity to process the septage based upon agreements with selected septage hauling companies.

#### **3.3 HOURS OF OPERATION**

April 1<sup>st</sup> through December 14<sup>th</sup>:

Plant will be open from 8am to 6pm, Monday through Friday, and 8am to 3pm on Saturdays.

Plant will also be available 24/7 provided hauler schedules in advance.

December 15<sup>th</sup> through March 31<sup>st</sup>:

Due to a substantially lower population in the area during this period, plant will not operate with scheduled hours.

Haulers shall contact the plant operator to schedule delivery.

#### **3.4 RECEIVING CAPACITY**

The plant has the capability of receiving and storing up to 40,000 gallons of septage during a peak day.

#### **3.5 DISCHARGE CAPACITY**

The plant has an agreement with the Mancelona Waste Water Treatment Plant to discharge up to 10,000 gallons of decant water per day.

#### **3.6 SEPTAGE HAULER REQUIREMENTS**

This facility will only receive septage from licensed haulers. Haulers shall provide copies of licenses upon request.

## **4 PLANT OPERATION**

### **4.1 DAILY INSPECTION**

The plant operator shall perform an inspection prior to receiving or processing septage. This includes but is not limited to:

- Inspect the grounds
- Look for evidence of unauthorized entry
- Disturbed tank lids
- Unusual odors
- Evidence of leaks
- Inspect meter tank for any moisture or accumulated water.
- Verify that valves are set at the position prescribed in the shut down procedure of this manual.

### **4.2 RECEIVING STATION**

#### **4.2.1 Start-up**

Prior to unloading the first load, the operator shall perform the following:

- Verify unload hose is in good condition.
- Verify that unload trench drain is clear of debris and not plugged.
- Sweep unload slab.
- Record meter readings on log sheet.
- Place receiving-line valve at screen tank in the off position.
- Verify that screen tank and bar screen is clean.
- Verify that grit chamber has adequate capacity for the days operation.
- Verify that sufficient capacity exists in the receiving tanks.
- Fill gas-powered pump with fuel. Test start pump to be sure that it is operational.
- Test alarms.

#### **4.2.2 Unload Operation**

- Hauler arrives at facility to be unloaded and stops on unload slab with the cap of the tank located up-grade of the trench drain.
- Hauler chocks wheels to prevent accidental movement of truck.
- Operator shall set unload meter to zero.
- Operator shall be sure that screen tank valve is in the closed position.
- Hauler shall place bucket under the tank cap of the truck and then remove cap.
- Attach discharge hose to truck.
- Open slice valve on truck and check for any leaks from connections.
- Operator shall open screen tank valve slowly. Screen tank cover shall be adjusted to minimize splashing. Operator shall use discretion and adjust incoming flow as necessary to avoid overspilling tank. Septage level in the screen tank should not exceed  $\frac{3}{4}$  of the total tank depth.
- During discharge, operator shall stay in proximity to screen tank valve. If for any reason the operator needs to move from this position, the valve shall be closed.

- When truck is empty, the hauler shall close the slice valve on the truck, disconnect the hose from the truck and place it on the cradle. Hose shall be stored with the end in a vertical orientation to allow hose to completely drain. Hauler shall replace tank cap onto truck.
- Septage collected in the bucket shall be dumped into the screen tank.
- Operator shall read meter and record unload volume. Do not reset meter at this time.
- Operator and hauler to complete transaction.
- Screen tank shall be allowed to completely drain. Operator shall hose the bar screen and screen tank until all “passable” materials exit the tank. The material that does not pass the screen shall be consolidated at the upstream side of the tank and allowed to “dewater”. This material shall then be shoveled into the dumpster.
- Unload slab shall be swept and rinsed as necessary.
- Visually evaluate the septage levels in the receiving tanks. Transfer septage to storage tanks if tanks are within 3000 gallons of total capacity.

#### **4.2.3 Transferring Septage to Storage Tanks**

When the receiving tanks near capacity, it is necessary to transfer the septage from the receiving tanks to the storage tanks. If possible, this process should be completed immediately prior to performing the dewatering process as the transfer process will provide agitation.

- Check liquid level in the storage tanks to verify adequate volume is available to receive the septage about to be pumped.
- Open lid of middle receiving tank. Place suction hose of pump into tank. Hose end shall be set at bottom of tank.
- Connect output hose of pump to cam lock fitting of the storage tank manifold.
- Check valve positions:
  - Output valve located on the pump should be closed
  - South manifold valve should be closed.
  - North manifold valve shall be opened.
  - Tank valves attached to manifold should be opened
- Check for any leaks. If leak is noticed, immediately close all valves.
- Start pump.
- When pump starts, open pump output valve.
- Check levels in the tanks to be sure that septage is filling the storage tanks. *If no changes are occurring, immediately shut the pump output valve and then shut off the pump.*
- Operator shall stay in attendance of pump during this operation and shall check for any leaks, unusual odors and listen for tank alarms. Operator shall be ready at all times to shut the pump down and close the pump output valve.
- The transfer operation may proceed for any period of time provided the high level alarm for the storage tank is not reached.
- When completed with the transfer, shut off the pump and immediately close the pump output valve.
- Close the north manifold valve.
- Check for any leaks from manifold or attached tanks.

- The pump discharge hose may remain connected to the manifold except during winter operation. If hose is disconnected from manifold, care should be taken to properly drain the hose into the receiving tanks.
- Remove the suction hose from the receiving tank and replace the lid.
- Re-fuel the pump.

#### **4.2.4 Shut-down**

At the end of every day, the operator shall perform routine checks of the facility.

- Clean unload slab and trench drain.
- Verify that meter tank is dry.
- Clean screen tank. Place lid over tank.
- Check grit chamber levels. Schedule for cleaning as necessary.
- Be sure all tank lids are in place and secured.
- Place “all” valves in the closed position.
- Inspect storage tank manifold for leaks.
- Be sure that all hoses are drained.
- Walk site to look for any spills or odors. Remedy as necessary.
- Verify dumpster levels and make sure lid is secure and odors are minimized. Schedule dumpster pick up if necessary.
- Turn on security lights.
- Lock building and security gates.

#### **4.2.5 Troubleshooting**

#### **4.2.6 Odor Control**

Odors are a common problem with septage. Odors are the strongest when septage is moving and is exposed without covers. The receiving tanks and the storage tanks are equipped with charcoal filters. These filters greatly reduce the strength of the odors escaping the tanks while they are being filled. The filters will periodically need to be replaced.

The screen tank is most likely the main cause for odors. It is important to keep the screen tank and bar screen clean and to not let septage accumulate for any period of time. It is also important to keep as much of the tank as possible covered during the unload process. This will minimize the amount of exposed septage and will greatly reduce the amount of septage that splashes within and outside of the tank. If the odors continue to be a problem, additional air filtering may become necessary.

All spills including any residue that accumulates on the unload pad will be a source of odor. Keep the trench drain clean by rinsing with water.

#### **4.2.7 Winter Conditions**

During winter, extreme care should be taken to prevent freeze ups of lines. Transferring of septage from the receiving tanks to the storage tanks should only be done in conjunction with the dewatering process. Operator shall identify all components that are subject to freezing and prepare a corresponding operation procedure to address them.

#### **4.2.8 Manifest**

Operator shall maintain manifests in accordance with state regulations. The operator shall maintain copies of receipts and provide to the state as necessary. The operator shall become fully aware of any regulations and reporting.

### **4.3 DEWATERING PROCESS**

#### **4.3.1 Start-up**

- Place dewatering box into position on the concrete pad and verify that the interior is free of solids or other foreign matter. Tarp should be in place and secure to prevent splashing and minimize odors.
- Be sure that an adequate amount of septage is in the storage tanks.
- Open lid on discharge tank. Verify available capacity by measuring depth of water in the tanks and calculating available capacity.
  - Storage tanks (tanks 1-3) = 160 gals per inch
  - Discharge tanks (7 tanks) = 301 gals per inch
- Place discharge lines of dewatering box into discharge tank.
- Place valves in the following positions:
  - North manifold valve: Closed
  - South manifold valve: Closed
  - Storage tank valves: Open
  - Dewatering box drain valves: Closed
- Connect suction line of dewatering pump to the south end of the storage tank manifold.
- Connect discharge line of dewatering pump to the dewatering box header at the top of the box.
- Verify adequate amount of polymer is available for the anticipated batch.
- Verify that all equipment is energized.
- Review manufacturers operation manual for start up instructions for polymer system and pump.
- Verify fresh water supply is available.

#### **4.3.2 Operation**

- Determine the amount of water that will be batched.
- Open the south manifold valve.
- Energize the polymer injection system and dewatering pump in accordance with the manufactures operation manual.
- Match speed of pump with rate of polymer injection. Keep a log of settings.
- Collect necessary jar samples of the discharge water from the dewatering box header. Make adjustments as necessary to achieve desired flocculation.
- When level in the dewatering box reaches 25% of its total capacity, open one of the dewatering box drain valves.
- When level in the dewatering box reaches 50% of its total capacity, open the remaining 3 dewatering box drain valves.
- Continually monitor storage tank levels to make sure pump does not run dry.
- Continually monitor dewatering box levels to make sure box does not exceed 75% of its total capacity.

- Continually monitor discharge from dewatering box. Look for leaks.
- Continually monitor discharge tanks to make sure adequate volume is available.

#### **4.3.3 Shut-down**

- When batch amount has been reached, de-energize pump and polymer injection system.
- Close south manifold valve.
- Disconnect and drain hoses from the pump.
- Allow water to pass through the dewatering box.
- Close dewatering box drain valves.
- Disconnect dewatering box discharge hoses and drain to discharge tanks.
- Close lid to dewatering tanks.
- Clean any spills.

#### **4.3.4 Biosolids disposal**

Following the dewatering process, the dewatering box shall be emptied and cleaned. The remaining product is considered a biosolid and should be disposed of in accordance to state laws. Follow the manufacturer's guidelines for cleaning the dewatering box.

#### **4.3.5 Odor Control**

To minimize odors, keep as much of the dewatering box covered. Keep the lid of the dewatering tanks opened minimally.

#### **4.3.6 Winter Conditions**

Operator shall identify all components that are subject to freezing and prepare a corresponding operation procedure to address them. discharge of decant water

## **5 MAINTENANCE**

### **5.1 RECEIVING STATION**

#### **5.1.1 Unload area**

- The unload area shall be cleaned periodically.
- The trench drain covers shall be removed and hosed down.
- Gravel approaches shall be graded to eliminate any rutting.

#### **5.1.2 Meter tank**

- The meter tank should be vacuumed on occasion to remove any debris and moisture.
- Meters should be maintained in accordance with manufacturers requirements.

#### **5.1.3 Screen tank**

- Remove cover.
- Wash inside of screen tank.
- Remove bar screen.
- Use a shovel to remove any sediments in the tank bottom.
- Rinse tank with hose.
- Remove any debris that is lodged in the bar screen.
- Inspect seal around 12" outlet pipe and repair as necessary.
- Make any necessary repairs.
- Replace bar screen and cover.
- Inspect the charcoal filter and replace as necessary.

#### **5.1.4 Grit chamber**

- Remove the lid from the grit chamber
- Using a pump truck, vacuum the accumulated solids from the tank.
- Rinse inside of tank with water to dislodge all material.
- Inspect tank and make any necessary repairs.
- Replace the lid.
- Materials removed from grit chamber shall be disposed of in accordance with State regulations.

#### **5.1.5 Receiving tanks**

- Transfer as the material in the receiving tanks to the storage tanks following the procedure in section 4.2.3. Leave enough liquid in the tank to facilitate pumping by a pump truck.
- Remove the lids of all tanks.
- Using a pump truck, vacuum the remaining material from the bottom of all tanks.
- Material in pump truck may be re-introduced into the system following the unload procedure provided the material is mixed with sufficient quantities of liquid in order to satisfactorily flow through the system.
- Replace lids of tanks.

### **5.1.6 Storage tanks**

- Over time, solids may accumulate at the bottom of the tank. Agitation along the tank bottom will free up most of the material.
- Completely drain tanks to be serviced.
- Connect the trash pump to the north end of the manifold according to the transfer method listed in section 4.2.3.
- Connect a hose to the south end of the manifold and place the free end into one of the receiving tanks.
- Open the north manifold valve and close the south manifold valve.
- Agitation of the tank bottom will be done one tank at a time. Therefore, shut off all tank valves except for the one that is being agitated. This will allow all of the pump discharge to enter one tank thereby increasing the effectiveness of the agitation process.
- Start pump and allow the tank to fill to a depth of 2 feet.
- Shut the pump off and close the pump valve.
- Immediately open the south manifold valve to drain the agitated liquid from the tank.
- Repeat as necessary for each tank.
- When complete, place all valves in the closed position.
- Replace any tank lids.

## **5.2 DEWATERING SYSTEM**

### **5.2.1 Pump & Polymer injection equipment**

- Follow pump manufacturers recommendations for maintenance.

### **5.2.2 Dewatering box**

- Follow dewatering box manufacturers recommendations for maintenance.

### **5.2.3 Discharge tanks**

- Lower the water level in the tanks.
- Remove lids of all tanks.
- Using pump truck, vacuum all liquid from the tanks.
- Remove the discharge pump and filter system.
- Vacuum liquid from pump sump area.
- Inspect interface between pump sump and tank bottom. Make repairs as necessary.
- Inspect tanks.
- Replace discharge pump and filter.
- Replace lids.

### **5.2.4 Discharge pump**

- Follow manufacturers recommendations for maintaining the pump and filter assembly.

## **6 REPORTING**

The owner/operators shall become knowledgeable of all federal, state and local regulations for the receiving and processing of septage. This includes licensing, reporting, inspections and enforcement.

### **6.1 QUARTERLY LEAK MONITORING**

Quarterly leak monitoring is required by the MDNRE. Operator shall maintain a log of this monitoring and shall submit to the state as prescribed. The quarterly leak monitoring shall consist of a statement that indicates the operator has visually evaluated all of the piping and tanks and report on any leaks that were discovered along with the remedy.

## **7 EMERGENCY RESPONSE PROCEDURE**

### **7.1 CONTACTS**

- Todd Savage – 231-313-5612
- Whit Blakeslee – 231-633-2141
- Emergency – 911
- Health Department – 231-533-8670
- Mich. Dept. of Natural Resources & Environment –
- Mancelona Waste Water Treatment Plant –

### **7.2 LEAKS**

Upon discovery of a leak, cease any operation immediately unless it is part of the remedy. Contact the owners as they are most likely equipped with septic trucks that can suck up the leaking material.

## **8 SAFETY**

### **8.1 SECURITY**

#### **8.1.1 When the facility is open:**

- Only authorized people should be within the fenced perimeter of the facility.
- Minimize injury potential by keeping lids on tanks and hoses grouped together where possible.

#### **8.1.2 When the facility is unattended:**

- The perimeter gates should be closed and locked.
- Exterior lights should be turned on.

### **8.2 TANKS**

- Lids of underground tanks should be properly secured at all times to prevent accidental entry.
- Never enter a tank without proper confined space equipment.

### **8.3 ODORS**

- In heavy concentrations, odors from Septage can be harmful. All precautions should be taken to minimize odor exposure. Operator shall inspect vent piping and charcoal filters periodically.

## **9 OPERATING PLAN INFORMATION**

### **9.1 NAME**

Bulls Eye Receiving L.L.C.

### **9.2 FACILITY LOCATION AND MAILING ADDRESS**

M-88, Mancelona, MI 49659 (see attached location map)

### **9.3 FACILITY CONTACT**

Todd Savage & Whit Blakeslee

### **9.4 TELEPHONE NUMBER**

231-331-7533 (Monday – Saturday)

### **9.5 HOURS OF OPERATION**

April 1<sup>st</sup> through December 14<sup>th</sup>:

Plant will be open from 8am to 6pm, Monday through Friday, and 8am to 3pm on Saturdays.  
Plant will also be available 24/7 provided hauler schedules in advance.

December 15<sup>th</sup> through March 31<sup>st</sup>:

Due to a substantially lower population in the area during this period, plant will not operate with scheduled hours.

Haulers shall contact the plant operator to schedule delivery.

### **9.6 CATEGORIES OF SEPTAGE ACCEPTED**

Domestic septage, domestic holding tank and food establishment septage (FES).

### **9.7 FEE STRUCTURE**

Domestic septage - \$0.12/gallon

Food establishment septage - \$0.12/gallon

Holding tank waste - \$0.12/gallon

### **9.8 SERVICE AREA**

The service area for the plant will be 25 miles with the exception of Otsego and Crawford Counties. Septage pumped from outside this radius will also be accepted provided there is capacity to process the septage based upon agreements with selected septage hauling companies.

### **9.9 GENERAL RECEIVING PROCEDURES**

The septage hauler must provide the following: a copy of their septage hauler's license, a copy of their insurance, the volume to be discharged, the origin of the septage, and a sample from the truck. A signed statement will be required stating the load only contains domestic septage or FES. All septage accepted from a FES will be a blend of at least a 3:1 ratio.

### **9.10 RECEIVING FACILITY CAPACITY**

The plant has the capability of receiving and storing up to 40,000 gallons of septage during a peak day. The receiving facility (MAWSA Wastewater Treatment Facility) has agreed to initially receive a maximum of 10,000 gallons per day.

Organic Capacity- The process is expected to produce a liquid waste that complies with the expected discharge limitations from the MAWSA Wastewater Treatment Facility and the solids will be disposed of in a licensed land fill. The MAWSA Wastewater Treatment Facility groundwater discharge Permit NO. GW1610056 states that the effluent flow cannot exceed 49,000 gpd, Total Inorganic Nitrogen cannot exceed 5 mg/l, the pH minimum is 5.5, the pH maximum is 10.0, Chloride cannot exceed 250 mg/l, Sodium cannot exceed 150 mg/l and Total Phosphorus cannot exceed 2 mg/l.

### **9.11 PROCESS DESCRIPTION**

Septage haulers will utilize the facility to discharge septage that has been pumped within the defined vicinity. Haulers will arrive at the facility and pull onto a concrete slab in preparation for discharge. The truck will connect to the discharge hose and will begin the unload process. The septage will pass through a meter and then enter the screen tank. The screen tank will filter out solids that are more than 1" in size. The septage will then pass through a grit chamber and accumulate in a series of seven below ground tanks. The septage will then be pumped into above ground storage tanks in preparation for the dewatering process.

The dewatering process will occur when tanks 1-3 are sufficiently filled. Septage is drawn from the storage tanks via a progressive cavity pump. Polymer is injected into the stream as it is moved to the dewatering box. At the dewatering box, the mixture is introduced through a manifold. The polymer causes the solids to flocculate and separate from the liquid. The liquid passes through the screen lined dewatering box and discharges to a series of tanks to be pumped to the wastewater treatment plant. A pump in the discharge tanks is on a timer system that permits the water to be introduced into the WWTP at prescribed intervals and amounts.

Solids retained in the Mobil Dewatering Box are transferred to an offsite 197,000 gallon open storage tank located in the 1100 block of Johnson Road south of Mancelona. Biosolids retained in the offsite storage facility are Lime Stabilized to meet the pathogen reduction requirement according to part 24 rules. Licensed land application contractors remove the stabilized biosolids from the storage tank and apply to agricultural ground in the area.

## **10 REFERENCES**

### **10.1 OEM SPECIFICATIONS AND MANUALS**

## 10.2 APPROVAL DOCUMENTS

## **10.3 AS-BUILT PLANS**