START UP PROCEDURES

1. Clear all tools and personnel.

2. Notify: Console Operator
   Team Leader
   Maintenance

3. Neutral: Not applicable

4. Restore: Remove locks and chains
   Close drain valve
   Open discharge valve
   Close vent valve
   Refill sulfuric acid tank

AFFECTED AND AUTHORIZED EMPLOYEES

Affected: Console Operator

Authorized: Team Leader
Maintenance

CONTROL COPY

SULFURIC ACID TRANSFER PUMP
ZES PROCEDURE

WHEN TO USE:

Maintenance

EQUIPMENT LOCATION:

On top of Sulfuric Acid Tank #1 East side of Screen Building

OPERATOR CONTROLS:

On/Off on MCC 3 B

CONTROL COPY

ENERGY SOURCES

Electrical: 3 B 12; 460V, 3ϕ

Chemical: 93%, Sulfuric Acid

IDENTIFY ENERGY SOURCES	LOCKABLE? Y or N	TYPE OF LOCK OR ENERGY CONTROL DEVICE NEEDED
Sulfuric Acid Transfer pump disconnect 3 B 12	Y	Padlock and tag disconnect
Sulfuric Acid Transfer pump discharge valve	Y	Padlock and tag valve

SHUTDOWN PROCEDURES

1. Notify: WWTP Operator

2. ZES: Stop Sulfuric Acid transfer pump
   Shut off disconnect 3 B 12
   Lock disconnect 3 B 12
   Close isolation valve in discharge line of Sulfuric Acid Transfer pump.
   Open bleed valve to Sulfuric Acid Transfer pump
   Lock isolation valve shut and bleed valve open

3. Verify: Attempt to start Sulfuric Acid Transfer pump
   Attempt to close bleed valve
   Attempt to open isolation valve

CONTROL COPY

START UP PROCEDURES

1. Clear all tools and personnel.
2. Notify: WWTP Operator
3. Neutral: Not Applicable
4. Restore: Remove lock
   Close bleed valve for Sulfuric Acid Transfer pump
   Open isolation valve in discharge line for Sulfuric Acid Transfer pump.
   Turn on disconnect 3 B 12 if pump is to be used.

AFFECTED AND AUTHORIZED EMPLOYEES

Affected: WWTP Operator

Authorized: WWTP Operator

CONTROL COPY

SULFURIC ACID PUMP
ZES PROCEDURE

WHEN TO USE:

Maintenance

EQUIPMENT LOCATION:

Main Floor - North West Corner - Chemical Room

OPERATOR CONTROLS:

Sulfuric Acid Pump Hand/Off/Auto

CONTROL COPY

ENERGY SOURCES

Electrical: Pan 1G-11; 120V, 1ϕ

Chemical: 93% Sulfuric Acid

IDENTIFY ENERGY SOURCES	LOCKABLE? Y or N	TYPE OF LOCK OR ENERGY CONTROL DEVICE NEEDED
Sulfuric acid pump circuit breaker Pan 1G-11	Y	Padlock and tag circuit breaker Panel 1G
Sulfuric acid pump suction and discharge line block and bleed valves	Y	Padlock, chain and tag valves

SHUTDOWN PROCEDURES

1. Notify: Console Operator
   Team Leader
   Maintenance

2. ZES: Stop sulfuric acid pump
   Turn circuit breaker 1G-11 off in Panel 1G
   Lock shut Panel 1G
   Close isolation valves in suction line of sulfuric acid pump
   Close isolation valves in discharge line of sulfuric acid pump
   Open bleed valve to sulfuric acid pump
   Lock and chain all valves

3. Verify: Attempt to start sulfuric acid pump
   Attempt to open suction and discharge valves
   Attempt to close bleed valves

CONTROL COPY

START UP PROCEDURES

1. Clear all tools and personnel.

2. Notify: Console Operator
   Team Leader
   Maintenance

3. Neutral: Not applicable

4. Restore: Remove locks and chains
   Close bleed valves for sulfuric acid pump
   Open suction line valves for sulfuric acid pump
   Open discharge line valves for sulfuric acid pump
   Unlock Panel 1G
   Turn on circuit breaker 1G-11

AFFECTED AND AUTHORIZED EMPLOYEES

Affected: Console Operator

Authorized: Team Leader
Maintenance

CONTROL COPY

SULFURIC ACID SOLENOID
ZES PROCEDURE

WHEN TO USE:

Maintenance on sulfuric acid pump solenoid
Maintenance on sulfuric acid large valve solenoid
Maintenance on sulfuric acid small valve solenoid

EQUIPMENT LOCATION:

Main Floor - North West Corner - Chemical Room

OPERATOR CONTROLS:

Sulfuric acid pump Hand/Off/Auto

CONTROL COPY

ENERGY SOURCES

Electrical: Pan 1G-11; 120V, 1ϕ

Chemical: 93% Sulfuric acid

Pneumatic: 100 psig air

IDENTIFY ENERGY SOURCES	LOCKABLE? Y or N	TYPE OF LOCK OR ENERGY CONTROL DEVICE NEEDED
Sulfuric acid pump solenoid circuit breaker Pan 1G-11	Y	Padlock and tag circuit breaker Panel 1G
Sulfuric acid pump solenoid air supply valve	Y	Padlock, chain and tag valves

SHUTDOWN PROCEDURES

1. Notify: Console Operator
   Team Leader
   Maintenance

2. ZES: Stop sulfuric acid pump
   Close sulfuric acid pump air supply valve
   Turn circuit breaker in 1G-11 in Panel 1G off
   Lock shut Panel 1G
   Lock and chain all valves

3. Verify: Attempt to start sulfuric acid pump
   Attempt to open sulfuric acid pump air supply valve

CONTROL COPY

START UP PROCEDURES

1. Clear all tools and personnel.

2. Notify: Console Operator
   Team Leader
   Maintenance

3. Neutral: Not applicable

4. Restore: Remove locks and chains
   Open sulfuric acid air supply valve
   Unlock Panel 1G
   Turn on circuit breaker 1G-11
   Restore sulfuric acid pump to operation

AFFECTED AND AUTHORIZED EMPLOYEES

Affected: Console Operator

Authorized: Team Leader
Maintenance

CONTROL COPY

SULFURIC ACID SYSTEM
ZES PROCEDURE

WHEN TO USE:

Maintenance on sulfuric acid manual valves, check valves, strainers and level transmitter

NOTE: Do not use this procedure to work on main discharge valve, drain valve or level transmitter isolation valve (refer to sulfuric acid tank ZES procedure for these valves)

EQUIPMENT LOCATION:

Main Floor - North West Corner - Chemical Room

OPERATOR CONTROLS:

Sulfuric acid pump hand/off/auto

CONTROL COPY

ENERGY SOURCES

Electrical: Pan 1G-11; 120V, 1ϕ

Chemical: 93% sulfuric acid

IDENTIFY ENERGY SOURCES	LOCKABLE? Y or N	TYPE OF LOCK OR ENERGY CONTROL DEVICE NEEDED
Sulfuric acid pump circuit breaker Pan 1G-11	Y	Padlock and tag circuit breaker Pan 1G
Sulfuric acid tank main discharge line and tank return line valves	Y	Padlock, chain and tag valves

SHUTDOWN PROCEDURES

1. Notify: Console Operator
   Team Leader
   Maintenance

2. ZES: Stop sulfuric acid pump
   Turn off circuit breaker 1G-11
   Lock panel 1G
   Close sulfuric acid tank main discharge valve
   Close sulfuric acid tank return line valve
   Open flanged connection on the above valves and install a blind flange
   Open bleed valves to drain lines
   Lock and chain all valves

   NOTE: Wash down floor during the above procedure

3. Verify: Attempt to start sulfuric acid pump
   Attempt to open sulfuric acid tank main discharge valve and return line valve

CONTROL COPY

START UP PROCEDURES

1. Clear all tools and personnel.

2. Notify: Console Operator
   Team Leader
   Maintenance

3. Neutral: Not applicable

4. Restore: Remove blind flanges and reconnect to valve
   Remove locks and chains
   Close bleed valves
   Open sulfuric acid tank return line valve
   Open sulfuric acid tank main discharge line valve
   Unlock Panel 1G
   Turn on circuit breaker 1G-11
   Restore sulfuric acid pump to operation

AFFECTED AND AUTHORIZED EMPLOYEES

Affected: Console Operator

Authorized: Team Leader
Maintenance

CONTROL COPY

Unloading Sulfuric Acid

From Tank Truck

Behavior Description:

This procedure describes the steps to unload a trailer tank of **Sulfuric Acid** into our chemical storage tank. The product should be **92-94% Sulfuric Acid** UN**#1830.** There are **15.3 lbs. /gal.** and our storage tank holds **4300 gallons**. You should be familiar with the hazard(s) associated with the chemical. Refer to the SDS located in the SDS Binder.

The truck is to be equipped with an air compressor, and four (4) lengths of two (2") inch hose. The fitting is a bolted flange fitting. No plastic fittings.

There are no valves in the chemical fill line that need to be opened/closed.

Confirm the gate in containment area is closed, and the valve going to the wet well is open. (**This is where the gate and valve should be all the time, except to open the gate to let accumulated rain water to drain faster.)**

PPE: Protective chemical suit, chemical goggles, face shield and chemical protective gloves.

		Safe	Unsafe
1.	All drivers should report to the boiler room with their paper work before unloading. Check the tank level before you unload. Write the level on the green Truck Unloading Form.	_____	_____
2.	Check the weight ticket for the actual lbs. of product being delivered. Divide the net total amount of lbs. delivered by 15.3 lbs., in order to get the total gallons the tanker will deliver. Confirm the total of the product in the storage tank and the product in the tanker will equal less than the 4,300 gallon tank.	_____	_____
3.	Check the Certificate of Compliance to insure the product is the correct product. Check the Certificate of Compliance to insure the product is the correct product. On the top of the C.O.A., write the date, time and the total of gallons in the tank before the delivery. Make sure you sign the C.O.A. before you send it to the Quality Tech to file in the office cabinet.	_____	_____

		Safe	Unsafe
4.	Fill out the Truck Unloading Form. Each delivery has a new P.O. #. Have the driver print his name on the line by "Driver Name:" and get the Driver's Signature on the center of the form. Sign the driver's paperwork he needs in order for him to pump off his product.	_____	_____
5.	Get the key out of the key cupboard in the boiler room for the chemical to be unloaded. Call associate who has been trained to unload trucks to the boiler house to help unload chemical. Boiler operator will monitor camera screen during the off load. Associate will take over for steps 6-11 of the process.	_____	_____
6.	Instruct the driver where to park his truck to unload the chemical. Show the driver where the eye wash station and water hose are located.	_____	_____
7.	Insure that the driver chocks wheels on tanker so it will not roll.	_____	_____
8.	Insure the gate to the containment area is closed, and the valve to the wet well is open.	_____	_____
9.	Unlock the flange on the sulfuric fill line.	_____	_____
10.	**Shut off the acid pump**.	_____	_____
11.	Get out hose and pail for driver, turn on the water to hose.	_____	_____
12.	Supervise hook-up of tanker to fill line.	_____	_____
13.	Watch the unloading of tanker to insure there are no leaks at the hose couplings at the start of the pumping of the sulfuric. The driver must stay with the truck while the chemical is unloading. If the associate needs to leave the area they must notify the boiler operator.	_____	_____
14.	After the tank truck has been completely unloaded the driver blows the line clear and closes the valve. Insure the driver closes the valve and, secures the lock cap on the fill line. Pours out any liquid in the pail into the sink running the water for 2 minutes, rinses the pail with water and returns the pail inside by the door.	_____	_____
15.	**Turn the acid pump back on,**	_____	_____ _____

	Safe	Unsafe
16. The driver will return to the boiler room when he has completed the delivery. The boiler operator will check the tank level on the screen and complete the Unloading Form with the driver and the associate who unloaded the truck to make sure everything is in a safe state. Sign the driver's papers and he can leave. Pick up hose and return it to holder, shut off water. Insure the lock is on the fill pipe. Put the key back in the key cupboard.	_____	_____

Total Safe: _____ Observations: 16 Safe: _____ %

By: _____ Date: _____

Changes made to this document were:

Rev 0	July 26, 2001	New
Rev 1	June 13, 2004	Sign-off Sheet added to last page.
Rev 2	February 23, 2018	Safety steps to include associate supervision.

This issued document has been approved by the following people:

APPROVALS	**PRINT NAME**	**SIGNATURE AND DATE**
Written By:	James Lesieur	
Quality Tech:	Gary James	
Maintenance Manager:	Mark Thibodeau	

BARNHARDT

MANUFACTURING COMPANY

Behavioral Job Analysis

Document # Maint.-Gen-143

Temporary

Date Last Reviewed:	11/7/2019
Document Name:	Unloading Sulfuric Totes
Author/Revised By:	James Lesieur
Created/Revised Date:	11/6/2019
Effective Date:	11/8/2019
Supersedes:	New

Reviewed By:	James Lesieur
Location:	Griswoldville
Department:	Maintenance
Quality/Safety Approval:	James Lesieur
Logistics Approval:	Juanita Bousquet
Process Approval:	[illegible]

Materials, Tools & Safety Equipment
Water Hose Air Line

Safety Requirements
Safety Glasses, Safety Shoes, Hard Hat, Hearing Protection, Chemical Suit, Face Shield, Chemical Boots and Chemical Gloves.

Purpose:
To safely transfer Sulfuric Acid from tote to Sulfuric Day tank.

Scope:
This document will cover all aspects to safely transfer Sulfuric Acid to day tank.

Responsibility:
It is the responsibility of the employee unloading the tote to follow all safety protocols and procedures.

Step-by-Step Instructions:

1. Retrieve proper PPE and put on. Lay out water hose to Sulfuric Pump Area. Lay out Air hose.
2. Set up Sulfuric pump by connecting air and setting PSI to 30 PSI.
3. Transport tote to Sulfuric Day tank area.
4. Remove cap from tote.
5. Remove plug from Sulfuric pump chemical rated hose.
6. Connect pump to tote using chemical rated hose and turn on valve on tote.
7. Inspect for leaks before you turn on Sulfuric pump.
8. Call Console operator to watch Day tank as it is being filled up.
9. When day tank is at Maximum level shut off Sulfuric pump.
10. Close valve on tote.
11. Remove chemical rated hose from tote and reinsert plug.
12. Reinsert cap on tote.
13. Wash area down of any spillage, check for leaks on tote, Sulfuric pump, chemical rated hose and Day Tank.
14. Remove empty tote to safe location for vendor pickup.

Definitions:

Quality Records:

Revisions Made:
Example of how to word/record changes: ***Revisions were made to #4 under section heading 'Starting and Operating Coiler Head'. Information on yard and gram weight was changed.*** ***New***