

DOCUMENT MANAGEMENT SYSTEM

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Doc# NSCS-M-P-7094-01
 Title: Gravity Thickening
 Issue Dt: 12/06/2000
 Revision Dt: 07/23/2018 Review Interval: 12
 Cat: Quality Doc Type: SOP
 Auth:
 Desc: Gravity Thickening
 Loc: Midwest - Utilities-Midwest - Plant Maintenance-Midwest-Gary Works

Purpose: Sludge is distributed to the two (2) gravity thickeners from the splitter box. In the gravity thickeners, the sludges are concentrated by gravity settling. The clear supernatant on top of the settled sludge flows out of the top of the gravity thickeners through V-notch weirs. It returns to the Final Treatment Plant equalization basins for treatment. The settled sludge is pumped from the bottom of the gravity thickeners to the filter presses.

STEPS**PROCEDURES**

Sludge Sounding

At the beginning of each turn, determine the sludge level in each gravity thickener using the following procedure:

1. Lower the sludge sounder into the tank until the buzzer stops making noise.
2. Using the top of the catwalk toe plate as a reference point, read the sludge sounder cable to the nearest three (3) inches.
3. Record the result on Form 7094-02.

Splitter Box and Sludge Level

Normal operation has all of the incoming sludge flow to the SDW entering the splitter box and being directed into one of the two gravity thickeners. The other gravity thickener is valved off.

Torque Load

Normal torque load is less than 50%. If it is greater than 50%, notify the operator at Final Treatment at once. Receive all incoming sludge flow in the operational gravity thickener unless its sludge load is greater than 9 feet. The sludge rake will "AUTO" stop at torque loads higher than 85%, thereby avoiding mechanical damage.

Sampling & Testing

Once per turn, secure a sample of the incoming sludge.
 Perform a pH test on each sample. See S.O.P. NSCS-M-P-7094-06.

pH Control Process Overview

Control of the gravity thickener's pH improves SDW plant operation but lime addition and pH control are not required for plant operation. The major operational impact the lime has on the sludge is that it improves the ability for USS to pass the TCLP test at the landfill. If the lime feed equipment is out of service, the SDW plant can still be operated temporarily.

pH Control Ranges

The pH should be controlled within the range as noted on Form 7094-02.

To make up or add lime to the gravity thickeners, see NSCS-M-P-7094-02.

Corrective Actions

If the pH is **below** the minimum:

1. Increase lime feed to the gravity thickeners by mixing up a second lime slurry tank per shift until the pH aim range is reached. Run lime thru the sump.

If the pH is **higher** than the maximum:

1. Do not feed lime slurry to the gravity thickener that is accepting flow from the Final Treatment Plant until the gravity thickener pH is back within the min/max range.

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2. The SDW Operator should perform multiple pH tests each shift so the lime slurry can be fed as soon as the pH is within proper ranges.

If the **pH meter is not working**, contact Instrument Repair for a replacement meter.

If the lime feed equipment is not working, notify the Maintenance Group or Instrument Repair so maintenance can be initiated. The SDW plant can be operated temporarily even if the lime feed equipment is out of service.