

Division 900's Goals and Objectives for 2018

Goal 1 – Improve Digester Gas Production

Objective

Conversion of Battery A Imhoff Tanks to circular primary tanks will increase West Side plant primary sludge volatile solids from approximately 40% to 60%.

Improve sludge feed to the digesters via new thickening facilities. These improvements will increase solids concentration to the digesters and increase digester detention times.

It is projected that following the completion of these two projects, SWRP's volatile destruction will increase substantially and digester gas production will increase.

Description

Imhoff Battery A at the West Side facility of the Stickney WRP, consisting of 36 Imhoff tanks, has been demolished and is being replaced with nine circular primary settling tanks.

New circular gravity concentration tanks and new pre-digestion centrifuges will enhance thickening to the digester complex. The North Side, Southwest preliminary, and waste activated sludges will be treated separately and new centrifuges will have twice the throughput.

Measurability

Digester gas production by year starting in 2016 (baseline) until 2019.

Effect on Biosolids Production

The conversion from Imhoff to Primary tanks will provide sludge with higher volatile solids to the digesters. The volatile solids content may increase from 40% to 60% and the volatile solids reduction would increase from 31% to a range of 40% to 50%.

The sludge concentration tanks and new centrifuges will thicken primary and waste activated sludges more efficiently with a resulting digester feed concentration of 5.5% as opposed to the present average of 4.0%.

Relevant EMS Outcomes

Better relations with interested parties, Environmental Performance, Quality Management Practices.

Action Plans

The installation of circular primary tanks will be accomplished under Contract 04-128-3P, "West Side Primary Settling Tanks – Battery A Imhoff Replacement." The Contract is estimated to be substantially complete in July 2018.

Contract 09-176-3P, "Sludge Thickening Facilities" was completed on June 16, 2016.

Tracking Progress

The M&O liaison provides a quarterly status of progress.

Responsible Person(s)

Section 931 Managing Engineer and Section 934 COE 2.

Funds/Resources

Funds are currently budgeted via Engineering Department contracts.

Target Date

Contract 04-128-3P: Estimated completion in July 2018.

Contract 09-176-3P: Completed on June 16, 2016.

Goal 2 – Improvement of Biological Phosphorous Capture

Objective

Convert two new gravity concentration tanks to primary sludge fermenters to improve the enhanced biological phosphorus removal (EBPR) process and increase phosphorus removal and recovery. In addition, convert existing gravity concentration tanks to a WASSTRIP process in order to increase the phosphorous removing capabilities of the Ostara Nutrient Recovery Facility (NRF).

Description

At present, EBPR can be unstable due to carbon limitations. The use of primary sludge fermenters will increase the available carbon for EBPR resulting in a more stable process allowing for the improved removal and recovery of phosphorus.

The Ostara NRF presently recovers phosphorus from the post-digestion centrifuge centrate, resulting in a theoretical yield of 3,000 tons/yr. The addition of the WASSTRIP process will increase recoverable phosphorus from the pre-digestion centrifuge centrate, resulting in approximately 9,000 tons/yr of recovered product.

Measurability

Phosphorous removal by year starting in 2016 (baseline) to 2019.

Effect on Biosolids Production

The installation of the fermenters will stabilize EBPR and increase the removal of phosphorus and allow a better recovery in the Ostara NRF.

The installation of the WASSTRIP process will reduce struvite formation in the digesters and post-centrifuge systems allowing a more reliable operation. It should also increase the dewaterability of the biosolids.

The additional recovery of phosphorus from the installation of fermenters and the addition of WASSTRIP will also improve the nitrogen to phosphorus ratio in our biosolids bringing it closer to agronomic needs.

Relevant EMS Outcomes

Better relations with interested parties, Regulatory compliance, Environmental Performance, recovery of a globally limited resource.

Action Plans

Contract 15-124-3P, "Conversion of Two New GCTs to Primary Sludge Fermenters" will convert the new Gravity Thickening Tanks 1 and 2 to primary sludge fermenters and install a pump station to pump the fermentate directly to the West Side primary effluent conduit feeding the Aeration Batteries. This will provide additional carbon to EBPR, stabilizing the process, and increase the reliable removal and recovery of phosphorus.

Contract 15-120-3P, "Conversion of Old GCTs to WASSTRIP Process" will convert Gravity Concentration Tanks 7 and 8 to primary sludge fermenters, 10 through 12 for WAS settling, and 13 through 16 to WASSTRIP reactors, which will provide a more concentrated stream of Ortho-P to the Ostara NRF.

Tracking Progress

The M&O liaison provides a quarterly status of progress.

Responsible Person(s)

Section 931 Managing Engineer and Section 934 COE 2.

Funds/Resources

Funds are currently budgeted via Engineering Department contracts.

Target Date

Contract 15-124-3P: Estimated completion in the winter of 2018.

Contract 15-120-3P: Estimated completion in December 2017 and integration into the Ostara NRF in spring of 2018.