Appendix A: Process Flow and Preliminary Basis of Design

The Facility will include the following five major processes:

- Liquid/Thickened Sludge Receiving and Storage System
- Dewatering System
- Dewatered Cake Receiving and Storage System
- Cake Mixing System
- Drying System

Sources of Solids

The facility will receive both thickened sludge and dewatered cake. The thickened sludge will be generated from New Bedford. The dewatered cake will be generated from Brockton and Fall River. Refer to **Table 1**.

Table 1: Solid Generation

Type	Source	Total Solids (%)	Solids Load (DTPD)	Mass (DTPY)	Comments
Thickened Sludge	New Bedford	7	19.5	7,132	Annual Average (2017)
Dewatered Cake	Brockton	28.5	11.9	4,328	Average (2015-2017)
Dewatered Cake	Fall River	20	13.7	5,000	Annual Average (2016)
TOTAL		-	**45.1**	**16,460**	

Table 2: Peaking Factor Assumptions

Condition	Peaking Factor (PF)
Annual Average: Max Week	1.8
Annual Average: Max Month	1.5

Refer to **Figure 1** for a preliminary process flow diagram and mass balance.

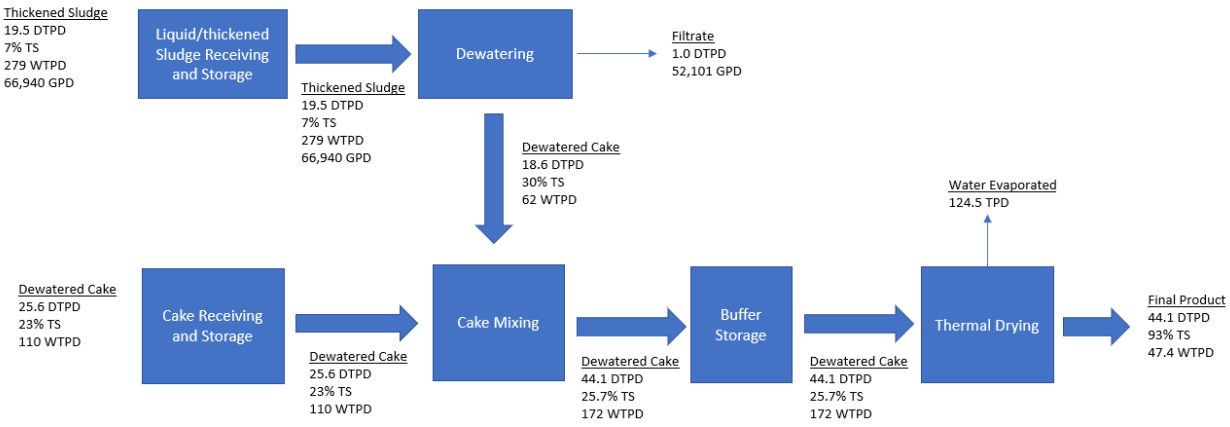

Figure 1: Preliminary Process Flow Diagram and Mass Balance

The following describes sizing assumptions regarding the various processes used to develop information included in this memorandum:

- **Liquid/Thickened Sludge Receiving and Storage System:** The system will be designed to receive approximately 20 DTPD, at an assumed total solids percent (TS%) of 7%. This is the equivalent of approximately 67,000 gallons per day (GPD). The system will include the following:
  - Three days of storage capacity via buried concrete tanks
  - Tank mixing system
  - Rotary lobe pumps to transfer sludge to the dewatering system
  - Odorous air take-offs from tank headspace

- **Dewatering System:** Dewatering system will produce cake with a minimum TS% of 30% (based on input received from TCR). The dewatering system will be required to have a minimum solid capture rate of 95%. The filtrate/centrate produced from the dewatering system will be conveyed to the municipal sewer. A polymer system will be provided and include polymer blending systems and polymer storage. Overall, the system will include the following:
  - 2 dewatering units (duty/standby)
  - 2 polymer storage tanks and recirculation pumps
  - 2 polymer make-up units
  - Odorous air take-offs from dewatering equipment headspace near the discharge chute
  - Constructed in a building with odor control provided

- **Dewatered Cake Receiving and Storage System:** The system will receive approximately 25 DTPD and have a storage capacity of approximately 3 days. The system will include the following components:

- 2 receiving silo/hoppers
- Conveyance equipment
- Odorous air take-offs from hopper headspace
- Constructed in a building with odor control provided

- **Cake Mixing System:** The cake mixing system will receive cake from the dewatering system as well as the dewatered cake from the Dewatered Cake Receiving and Storage Facility and have a design capacity of up to 50 DTPD. The cake mixing system will provide mixing of the various cake sources and provide buffer storage to the drying unit.

- **Drying System:** A thermal dryer system will be provided with a capacity of 50 DTPD, with an influent cake TS% ranging from 25% to 30%. The final product will have a TS% greater than 90%. The drying facility will include the following:
  - Belt dryers
  - Constructed in building with odor control provided
  - Upstream buffer storage of 8 hours provided
  - Final product storage silos to provide 7 days of storage