Attachment 14
Bulk Material Tank Systems
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D.2 Tank Systems

This Section provides information for the RCRA Wastewater Tank storage systems and the Mixing Bin Tanks:

The RCRA Wastewater Tank System consists of: Tank #1, #2, #3 and #4.

Specific waste types and codes that could be managed in these above ground tank systems include but are not limited to potential remedial or corrective measures, potential spill response activities, F039 leachate or other liquids listed in USEI's Part A. The location of these tanks is shown on the Facility Site Plan (Figure D-1).

These tanks were designed, constructed, and operated to meet the requirements of 40 CFR Part 264, Subpart J. The facility does not manage wastes subject to the requirements of 40 CFR Part 264, Subpart CC in these tanks. As such, these tanks were not designed or constructed to meet the standards of 40 CFR §§264.200 and 264.1084 for management of tanks requiring Level 1 controls.

The four (4) Mixing Bin Tanks are located in the Containment Building. Two (2) are located in the Stabilization portion and two (2) are located in the Debris portion of the Containment Building. The four (4) units are constructed and maintained to comply with the requirements of 40 CFR Part 264, Subpart J. Details regarding the Containment Building and the Mix Bin Tanks are also found in Section D.9.

Specific waste codes that could be managed in these tank systems are highly varied and include liquid and solid wastes as listed in USEI's Part A. The location of the Stabilization Portion Mixing Bin Tanks is shown on Drawing #793P-C05 and the location of the Debris Portion Mix Bin Tanks is shown on Drawing #D2020-R02.

These tanks are designed, constructed, and operated to meet the requirements of 40 CFR Part 264, Subpart J. The facility does not manage wastes subject to the requirements of 40 CFR Part 264, Subpart CC in these tanks.

Certifications of USEI's tank treatment systems that were performed by an independent, qualified registered engineer are provided in Appendix D.2.2

D.2.a Tank System Description

D.2.a.(1) Wastewater Tank System

Four (4) above ground tanks are used for storage and treatment of RCRA hazardous wastes and are designated as Tanks #1, #2, #3 & #4. They are located adjacent to the southeast corner of CSP #4 as shown on Drawing # PRMI-R11, PRMI-C11, -C12, and -C13. Tank Certifications and associated construction dates are provided in Appendix D.2.2. The typical dimension of each Wastewater Tank is 12 ft. in diameter and 20 ft. in height with a capacity of approximately 16,900 gallons.

The four (4) tanks are constructed of welded carbon steel and the physical characteristics of these tanks are listed in Table D-2. Tanks are constructed of ⅜ in. carbon steel/A36 plate, and conform to the specifications and requirements of the American Petroleum Institute (API) Standard 650. API 650, Appendix A was used in conjunction with measured shell thickness and fluid properties to determine the maximum specific gravity each tank can safely hold. Appendix D.2.1 contains the results of the 2012 shell thickness measurements performed by Thurgood Engineering.

All four tanks are vertical, shell-mounted, uniformly structurally supported and anchored on concrete foundations satisfying the requirements of the American Concrete Institute Building Code 318 (ACI 318) and the on-site soil bearing pressures. Tanks are equipped with a manway, a conservation breather vent, a liquid level indicator, inlet and outlet valves, and spare valves. Each tank is equipped with a cover (a fixed roof) vented through a closed system to a control device (carbon adsorption canister) to remove volatile organic vapors and are insulated for freeze protection. The vessel design data sheets for these tanks are shown in Figures D-3 to D-6.

The flow diagram shown on Drawing # 720C-P02, illustrates how they are integrated into the facility's RCRA operations and provide instrumentation details for each tank. Drawing # 720C-P01 provides this information on the leachate piping and Appendix D.2.4 provides the specifications for the leachate piping. The tanks are operated under ambient temperature and pressure conditions and are heat traced to prevent freezing in the winter.

All equipment (i.e., pumps, etc.) ancillary to the tanks are anchored, where necessary, in accordance with the manufacturer's recommendations. Drawing # 720C-G01, -G02, -G03, -G04, -G05, -G06 and -G07 show the tank system, including the piping from landfill Cell 14 and 15 to the tanks, from the tanks to Collection Pond 3, and continuing to the Evaporation Pond. The piping consists of butt welded HDPE pipe (SDR-11, 160 psi) which has been placed above ground surface to facilitate regular inspection. The specification for this piping is included in Appendix D.2.4. The pipes are placed and the leachate piping system is operated such that it is essentially empty when not in use and pipe freezing is not a concern. Pipe culverts have been constructed at all road crossings to protect the pipes from vehicle traffic. The leachate piping system for Cell 16 is discussed and illustrated in Appendix D.5.1.

Ignitable, reactive, or incompatible (in separate tanks, only) wastes may be stored in the tanks in accordance with IDAPA 58.01.05.008 [40 CFR § 264.198, § 264.199, and § 264.200]. . Procedures for safely managing ignitable, reactive, or incompatible wastes are described in Section F.

D.2.a.(2) Containment Building Mixing Bin Tanks (Stabilization Portion)

The Containment Building, which houses the two (2) stationary Mix Bin Tanks constructed in 1998, is located adjacent to the west wall of the debris portion of the Containment Building as shown on the Facility Site Plan, Figure D-1. The Containment Building consists of a steel framed building supported by concrete spread footings. The units' walls and roof are insulated metal panels. The floor consists of a reinforced concrete slab with perimeter curbs underlain by an 80 mil HDPE liner. Two (2) stationary below-grade reinforced concrete Mixing Bin Tanks are located within the building. The two (2) stationary Mix Bin Tanks consist of interior steel wear plates, reinforced concrete interior walls, two (2) 80 mil HDPE liners, geonet, and an exterior reinforced concrete wall. The Mixing Bin Tank liner systems drain to collection sumps and have monitoring ports to detect and remove liquids. The design of this building is shown on Drawing #793P-C13.

The Mix Bin Tanks were designed and constructed as an integral part of the Containment Building. The Mix Bin Tanks are placed on a base designed to withstand pressure gradients to the sides, above and below the system as well as capable of preventing failure due to settlement, compression, or uplift and therefore meet the requirements of 40 CFR 264.193(c). Design calculations are found in Appendix D.2.6.

Ignitable, reactive, or incompatible wastes may be managed in the tanks in accordance with IDAPA 58.01.05.008 [40 CFR § 264.198, § 264.199, and § 264.200]. Procedures for safely managing ignitable, reactive, or incompatible wastes are described in Section F.

The two (2) Mixing Bin Tanks have a rectangular shape of approximately 13 ft. by 20 ft. with an irregular depth of about eight (8) ft., the capacity for Mix Bin Tank #1 is approximately 22,000 gallons and Mix Bin Tank #2 is 24,530 gallons.

D.2.a.(3) Containment Building Mixing Bin Tanks (Debris Portion)

The Containment Building (Debris Portion) was constructed in 1994. This portion of the building will house two (2) permitted stationary Mixing Bin Tanks when constructed. The Containment Building consists of a steel framed building supported by concrete spread footings. The unit's walls and roof are insulated metal panels. The floor consists of a reinforced concrete slab with perimeter curbs underlain by two (2) 80 mil HDPE liners. Two (2) permitted stationary above-grade steel Mixing Bin Tanks are located within the Debris Portion of the building. The Mixing Bin Tanks consist of steel tanks and steel drip pans installed on top of the existing floor. The liner systems drain to collection sumps, and have monitoring ports to detect and remove liquids.

The secondary containment system installed during the original construction of the building was designed and constructed as an integral part of the Debris Portion of the Containment Building. Since the Mixing Bin Tanks are above-grade the building's primary and secondary containment systems are used to meet the requirements of 40 CFR 264.193(c) for the Mixing Bin Tanks.

Ignitable, reactive, or incompatible wastes may be managed in the tanks in accordance with IDAPA 58.01.05.008 [40 CFR § 264.198, § 264.199, and § 264.200]. Procedures for safely managing ignitable, reactive, or incompatible wastes are described in Section F.

The two (2) Mixing Bin Tanks have a rectangular shape of approximately 17 feet by 60 feet, with a depth of 8 feet. The total capacity of each Mixing Bin Tank (MBT-3 & MBT-4) for managing waste in solid form is approximately 61,000 gallons. The operating capacity, with 2 feet of freeboard, of each Mixing Bin Tank is approximately 45,780 gallons. The containment capacity of the Debris Portion of the Containment Building is approximately 45,135 gallons. See Table D-1 for maximum storage volumes. Due to the design of the building's secondary containment system and practical operational restrictions, the capacity of each Mixing Bin Tank (MBT-3 & MBT-4) for managing hazardous waste in liquid form is approximately 12, 000 gallons.

D.2.b Existing Tank Systems

D.2.b.(1) RCRA Storage Tanks Integrity Assessments

The secondary containment systems for the tanks meet the requirements of 40 CFR §264.193 and, as such, are not subject to the requirements of 40 CFR §264.191.

If visual inspections of the tanks and structures show signs of failure (e.g., a crack or leak), then the tank's contents will be drawn down, as necessary, and transferred into another tank or managed in another appropriate way, and the required repairs or replacement will be implemented in accordance with 40 CFR §264.196.

The tanks are used for storage of wastes that are compatible with each tank's construction materials and corresponding pipelines, gaskets, and pumps. Waste/tank compatibilities are determined by the waste material's chemical characteristics, the construction of the tank, and the known corrosion resistance properties of the tank or the selected protection system (lining, coating, etc.). Table D.2.3.1 of Appendix D.2.3 lists the general compatibility of the various materials of construction versus the waste chemical compatibility groups to be stored in the tanks. The tanks are constructed of carbon steel and do not have a lining or coating associated with them. Reference corrosion rates are given in Appendix D.2.3. Wastes which are incompatible with the Materials of Construction (MOC) will not be placed or stored within the tanks. The aqueous F039 wastes that these tanks usually hold are neutral in character.

Thickness measurements for the tank systems were performed by Thurgood Engineering on November 15, 2012, to assess the structural integrity and suitability of the Wastewater tank system for handling

hazardous waste. Copies of the Engineering Certification reports are included in Appendix D.2.1. Ongoing inspection requirements and the associated schedule are provided in Section F, Table F-1 of this Permit Application.

D.2.b(2) Stabilization Mixing Tanks Integrity Assessments

The secondary containment systems for the tanks meet the requirements of 40 CFR §264.193 and, as such, are not subject to the requirements of 40 CFR §264.191.

If inspections of the tanks indicate signs of failure (e.g., leak), then the tank will be emptied, as necessary, and the required repairs will be implemented in accordance with 40 CFR §264.196.

The tanks are used for storage and treatment of wastes that are compatible with each tank's construction materials.

The Mixing Bin Tanks are inspected daily (as outlined in Section F) and certified by an independent, qualified registered professional engineer in accordance with 40 CFR § 264.192(a) and/or § 270.16. A copy of this certification for the Stabilization Portion Mixing Bin Tanks is provided in Appendix D.2.2. A copy of the certification for the Debris Portion Mixing Bin Tanks is provided in the Construction Quality Assurance (CQA) report for the installation of the tank(s). Details for the construction of these Tanks and the Containment Building are included in Appendices D.9.1 through D.9.4.

D.2.b.(3) Wastewater Tanks External Corrosion Protection

The requirement for external corrosion protection applies to tank systems without secondary containment meeting the requirements of 40 CFR §264.193 and to new metal tank systems or components that are in contact with the soil or water in the environment (40 CFR §264.192(a)(3)). As such, this requirement does not apply to any of the tanks. However, the insulation and stainless steel jacketing do protect the exteriors of the tanks from corrosion as the tank exteriors are not exposed.

D.2.b.(4) Stabilization Portion Mixing Tanks External Corrosion Protection

Because there are no external shells made of metal, the requirements for corrosion protection are not applicable (40 CFR 264.192(3).

D.2.b.(5) Debris Portion Mixing Tanks External Corrosion Protection

Because the external metal shell will not be in contact with soil or water, the requirements for corrosion protection are not applicable (40 CFR 264.192(a)(3).

D.2.c New Tank Systems

D.2.c.(1) Integrity Assessments

If an existing tank is replaced the new tank(s) will conform to the requirement of integrity assessments of 40 CFR §264.192, Design and installation of new tank systems or components.

D.2.d Containment and Detection of Releases

D.2.d.(1) Wastewater Tanks Secondary Containment System Design, Construction and Operation

As shown on Drawing #'s PRMI-R11 and -C11, Tanks #1 & #4 share a common secondary containment area as do Tanks #2 & #3. The secondary containment systems were designed and installed to completely surround the tanks and to cover all surrounding soils likely to come in contact with any wastes released from the tanks. Both secondary containment areas meet the requirements of 40 CFR §264.193 and consist of sealed concrete pads and dikes. As such, the secondary containment systems are capable of preventing releases to underlying and surrounding soils. The sealant applied to the concrete is compatible with all wastes anticipated to be stored. The current sealant's waste compatibility is contained in Appendix D.1.2, however equivalent or superior sealants may be utilized.

The concrete walls of the secondary containment system are one ft. thick and four ft. high. The system has more than sufficient strength and thickness to prevent failure caused by any pressure gradients (i.e., static head of rainwater and/or waste), climatic conditions, and the stress of daily operations. Because of the sealant, the concrete will also resist degradation by physical contact with wastes and precipitation.

The concrete foundation of the secondary containment systems is capable of providing support, resisting pressure gradients above and below the system, and preventing failure from settlement, compression or uplift. Drawing # PRMI-R11, -C11, -C12 and -C13 show the structural support for the tanks.

The containment systems for these tanks are open, above-grade, and readily inspected for cracks or gaps and system integrity or for evidence of leaks or spills from the tanks. Any leaks or spills from the tanks are promptly identified because the tanks and secondary containment systems are inspected daily when in use in accordance with Section F.2.b.(2) of Section F, Procedures to Prevent Hazards.

As demonstrated by the tank system secondary containment volume calculations in Appendix D.2.7, each of the secondary containment systems has the capacity to contain the greater of 10% of the total volume of all tanks within the containment area, or 100% of the capacity of the largest tank plus the rainfall from a 25-year, 24-hour rainfall event. Both containment areas are sloped to a low point to facilitate collection and removal of rainwater and leaked/spilled liquids. Because the tanks and secondary containment system walls are located above ground, run-on and infiltration of precipitation into the secondary containment systems is prevented.

Ancillary equipment, such as pumps and pipeline systems serving these tanks, are also located above ground and subject to daily visual inspection when in use in accordance with Section F. With the exception of the leachate piping, all existing ancillary equipment has secondary containment meeting the requirements of 40 CFR §264.193(b) and (c) as shown on Drawing #'s 720C-G01, -G02, -G03, and -G04. However, all leachate piping and other ancillary equipment (i.e., joints, connections, pumps and automatic shut-off devices) are inspected daily when in use to transfer waste material (40 CFR §264.193(f)).

D.2.d.(1)(a) Requirements for Tank Systems Until Secondary Containment is Implemented

As the four Wastewater treatment tanks have secondary containment systems meeting the requirements of 40 CFR §264.193, these requirements are not applicable.

D.2.d.(1)(b) Variance from Secondary Containment Requirements

As the four (4) Wastewater Treatment tanks have secondary containment systems meeting the requirements of 40 CFR §264.193, a variance from the secondary containment requirements is not requested.

D.2.d.(1)(c) Controls and Practices to Prevent Spills and Overflows

The general procedures for operating the Wastewater Treatment tanks are as follows:

- The tanks and waste material are compatible, and the tanks are not used for mixing of incompatible wastes, unless the provisions of 40 CFR §264.177 are met.
- Records for each tank are maintained which describe the contents or previous contents by waste type or name and date of waste placement/removal.
- Upon entering the facility, prior to unloading, the transportation vehicles containing waste materials are reviewed according to the procedures in the WAP. A compatibility test may, if necessary, be conducted to verify the waste's compatibility with the contents in an individual tank.
- At the unloading station, the liquid waste transport vehicles are placed within a contained area, or all connections will have drip pans placed beneath them and facility personnel wearing proper PPE make all necessary connections.
- Prior to waste transfer, facility personnel inspect all connections and overfill controls and verify that the waste is being transferred to the proper tank. The tank receiving the waste is checked to verify it has sufficient capacity to accommodate all of the waste to be transferred and facility personnel monitor transfer operations.
- Upon completion of waste transfer, the valves are closed and all hoses are disconnected.
- The tank area operators complete a daily tank inventory control log (an example is shown in Figure D-7) for each tank detailing the type and volume of waste received and placed into storage.
- Removal of liquid hazardous wastes from tanks follows the same procedures as loading.
- Each tank area is inspected per Section F. Any item checked as unacceptable is immediately investigated, and any required remedial action is promptly initiated.

D.2.d.(1)(d) Response to Leaks or Spills

Response procedures for significant leaks or spills from the Wastewater Tanks are described in the Contingency Plan. As required under 40 CFR §264.196(f), following any extensive repairs to a RCRA tank system, the tank system will not be returned to service until the repaired system is certified by an independent, qualified, registered, professional engineer. This certification will be submitted to the IDEQ within seven (7) days after returning the tank system to use.

D.2.d.(1)(e) Air Emission Standards

Based on the types of equipment and operations at the facility, Subparts AA and BB (40 CFR Part 264) are not applicable to the facility. In addition, the facility does not currently manage any wastes subject to the requirements of 40 CFR Part 264, Subpart CC in tanks. As such, these regulations do not apply to the facility's tanks.

D.2.d.(2) Stabilization and Debris Mixing Bin Tank Secondary Containment System Design, Construction and Operation

The stabilization portion of the Containment Building construction was completed in 1998. Construction included the two (2) stationary Mixing Bin Tanks located adjacent to the west wall of the debris portion of

the Containment Building as shown on the Facility Site Plan, Figure D-1. The two (2) stationary Mixing Bin Tanks consist of sacrificial steel wear plates, reinforced concrete interior walls, two (2) 80 mil HDPE liners, geonet, and an exterior reinforced concrete wall. The containment system includes a primary sump for liquid removal and a secondary sump for leak detection. Details on the containment system are provided in Section D.9.

The Containment Building's two (2) stationary Mixing Bin Tanks located in the Stabilization Portion are internally lined with sacrificial steel wear plates that do not act as the primary containment. The Mixing Bin Tanks leak detection and primary volume calculations are provided in Appendix D.2.7. Further detailed construction, design and certification information concerning the Containment Building and the two Mixing Bin Tanks is found in Appendices D.9.1 through D.9.4. This system is designed to manage both solid and liquid type waste streams that require stabilization prior to landfill.

The drainage nets (geonets) promote drainage to the collection sump and allow removal of liquids from the primary liner at the earliest practicable time. The Mixing Bin Tanks have a collection and leak detection system that consists of the following:

- Inner concrete bin wall;
- Visqueen;
- 160-mil. (4-mm) thick geonet (leachate collection);
- 80-mil (2-mm) thick geonet (leak detection);
- 80-mil (2-mm thick geomembrane secondary liner);
- 16 oz/yd2 (540 gm/m2) non-woven geotextile; and outer concrete bin wall.

Original construction on the debris portion of the Containment Building was completed in 1994. Additional construction will be completed as needed. The additional construction will include the installation of two (2) stationary Mixing Bin Tanks located adjacent to the east wall of the Containment Building as shown on the Facility Site Plan, Figure D-1. The two (2) stationary Mixing Bin Tanks consist of steel construction and steel drip pans. Tank dimensions and operating capacities are provided in Table-D2a. These tanks will use the existing containment system installed during original construction to meet the regulatory requirements. The primary containment for the building will act as secondary containment for the Mix Bin Tanks. The secondary containment for the building will provide tertiary containment for the Mix Bin Tanks. The containment system consists of a reinforced concrete slab with perimeter curbs, two (2) 80 mil HDPE liners, and geonet. The containment system includes a primary sump for liquid removal and a secondary sump for leak detection. Details on the containment system are provided in Section D.9.

The drainage nets (geonets) promote drainage to the collection sump and allow removal of liquids from the primary liner within 24 hours or at the earliest practicable time. The Mixing Bin Tanks have a collection and leak detection system that consists of the following:

- Reinforced concrete slab
- Compacted crushed stone
- 16 oz./yd^2 geotextile
- 80 mil HDPE liner (leachate collection)
- Synthetic drainage net
- 80 mil HDPE liner (leak detection)

D.2.d.(2)(a) Requirements for Tank Systems Until Secondary Containment is Implemented

As the four (4) Mixing Bin Tanks have secondary containment systems meeting the requirements of 40 CFR §264.193, these requirements are not applicable.

D.2.d.(2)(b) Variance from Secondary Containment Requirements

As the four (4) mixing bin tanks have secondary containment systems meeting the requirements of 40 CFR §264.193, these requirements are not applicable.

D.2.d.(2)(c) Controls and Practices to Prevent Spills and Overflows

The general procedures for operating the Mixing Bin Tanks are as follows:

- The Mix Bin Tanks and waste material are compatible, and the tanks are not used for mixing of incompatible wastes, unless the provisions of 40 CFR §264.199 are met.
- Records for each batch are maintained which describe the contents or previous contents by waste type or name and date of waste treatment.
- Upon entering the facility, prior to unloading, the transportation vehicles containing waste materials are reviewed according to the procedures in the WAP. A compatibility test may, if necessary, be conducted to verify the waste's compatibility with the contents in an individual tank.
- At the unloading location, the waste transport vehicles are placed within the containment area of the Containment building.
- The Mixing Bin Tank receiving the waste is checked to verify it has sufficient capacity to accommodate all of the waste to be transferred and facility personnel monitor transfer operations.
- Each Mixing Bin Tank and area is inspected per Section F. Any item checked as unacceptable is immediately investigated, and any required remedial action is promptly initiated.

D.2.d.(2)(d) Response to Leaks or Spills

The leak detection system is monitored daily as described in Section F. If liquids are found within the secondary system they are removed as soon as possible or within 24 hours of a detection of four (4) inches or more (pumpable level by vacuum truck). Spills that occur while loading waste into the Mixing Bin Tanks are managed as soon as possible. Due to the location of the Mixing Bin Tanks within the Containment Building, leaks and spills can be easily controlled by use of appropriate equipment (e.g. shovels, front-end loaders etc.).

D.2.d.(2)(e) Leak Detection

Details of the LCRS for the stationary Mixing Bins in the Stabilization Portion are shown on Drawing #'s 793P-C13 and -C14. The liner systems are sloped toward the collection sumps and the secondary leak detection sumps (CBS12 and CBS13) as shown on Drawing #793P-C06. A detail of the leak detection sumps and collection sumps is shown on Drawing # 793P-C15. Any collected liquids greater than four (4) in. (pumpable level by vacuum truck) are removed from these sumps. Routine daily inspections of the Mixing Bin Tanks and the leak detection system are described in Section F.

Details of the LCRS for the Debris Portion of the Containment Building are shown on Drawing #D2020-R05. The LCRS is sloped toward the monitoring and collection sumps as shown on Drawing #D2020-C05. A detail of the monitoring and collection sumps is shown on Drawing #D2020-R05. Any collected liquids greater than four (4) inches (pumpable level by vacuum truck) are removed from these sumps. Routine daily inspections of the Mixing Bin Tanks and the leak detection system are described in Section F.

The leak detection monitoring system consists of a primary sump and a secondary leak detection sump. Each sump is equipped with a six (6) inch riser to monitor and remove liquids, if appropriate, as such the system meets and exceeds the requirements of 40 CFR §264.193(b) for secondary containment.

D.2.d.(2)(f) Air Emission Standards

Based on the types of equipment and operations at the facility, Subparts AA and BB (40 CFR Part 264) are not applicable to the facility. In addition, the facility does not currently manage any wastes subject to the requirements of 40 CFR Part 264, Subpart CC in tanks. As such, these regulations do not apply to the facility's tanks. In order to manage air borne particulates the following APC equipment has been installed in the Stabilization Portion of the Containment Building:

- Mixing Bin Tanks - Each of the two (2) Mixing Bin Tanks is equipped with curtains and dust collection hoods to collect airborne particulates and a water spray system for controlling dust that may be generated when off-loading waste into the Mixing Bins or during stabilization mixing activities.
- General Ventilation - The building has three (3) general ventilation intakes that route to a dedicated baghouse and then through a HEPA unit to maintain overall air quality in the building.

Drawing # 793P-H01 shows the location of all the dust collection hoods and intakes inside the Containment Building.

In order to manage air borne particulates the following APC equipment has been installed in the Debris Portion of the Containment Building:

- Sort Floors and/or Mixing Bin Tanks- Each of the sort floor areas is equipped with ducting to collect airborne particulate that may come from opening drums, dumped waste loads, opened bagged loads of debris, open bins, off-loading waste into the Mixing Bins and during stabilization mixing activities; and

- General Ventilation - The building has three (3) general ventilation intakes to maintain overall air quality.

Drawing #D2020-H03 shows the location of all the dust collection ducting and intakes inside the Containment Building.

Table D-2 – Physical Characteristics of USEI RCRA Waste Water Tanks

Physical Characteristics of USEI RCRA Waste Water Tanks				
Typical Use Waste/Process	**RCRA Tank No.**	**Diameter (ft)**	**Health or Length (ft)**	**Capacity (gal)**
General aqueous wastes (organic and inorganic	T-1	12	20	16,930
General aqueous wastes (organic and inorganic	T-2	12	20	16,930
General aqueous wastes (organic and inorganic	T-3	12	20	16,930
General aqueous wastes (organic and inorganic	T-4	12	20	16,930

RCRA Mix Bin Tanks					
Typical Use Waste/Process[1]	**Mix Bin Tank No.**	**Depth[2]**	**Width**	**Length**	**Capacity (gallons)[3]**
Part A Solid Wastes, Part A aqueous wastes (organic and inorganic), Part A Hazardous Debris	MBT No.1	5-9.5 ft	13	20	24490.6
Part A Solid Wastes, Part A aqueous wastes (organic and inorganic), Part A Hazardous Debris	MBT No. 2	5-9.5	13	20	24490.6

[1] Wastes over 500 ppm VOC are subject to 40 CFR 264.1080 Subpart CC

[2] Depth varies, see Attachment D.2 in this Section for details

[3] Volume assumes 2 ft. of freeboard, dimensions are slightly different from MBT No.1 to MBT No. 2, see Attachment D.2 of this Section for details

Figure D-3 - Vessel Data Sheet for RCRA Tank No. 1

Figure D-3 Vessel Data Sheet for RCRA Tank No. 1						
1.	PROJECT NO. ITEM NO. T–1 SPEC. NO.					
2.	CLIENT: US ECOLOGY IDAHO, INC. INQ./ REQ. NO.					
3.	LOCATION GRAND VIEW, IDAHO NO. REQUIRED ONE (1)					
4.	SERVICE OF UNIT WASTE PREPARED BY DATE					
5.	REV. A BY O. Todd DATE 19 Mar 87					
6.	PROCESS CONDITIONS					
7.	CONTENTS (MAT'L): WASTE					
8.	SP.GR : < 1.65 BULK DENSITY : < 103 LBS/ FT^3					
9.	NORM. PRESS. < 0.5 PSIG. TEMP 70 BF					
10.	CONTRUCTION DETAILS					
11.	MIN. DESIGN PRESSURE : 0 PSIG					
12.	MIN. DESIGN TEMPERATURE : -15 B F MAX 150B F					
13.	MATERIAL: A36 STL VOLUME 15,000 GAL					
14.	INSTALLATION : (OUTDOOR)					
15.	WIND LOAD DESIGN: SEISMIC ZONE : 1					
16.	DESIGN CODE: UL-142 ANGLE OF RESPONSE: N.A					
17.	ANGLE OF FRICTION AGAINST SIDE WALLS: N. A.					
18.	VERTICAL					
19.	ELEVATION ABOVE GRADE 20 FT 0 IN.					
20.	CONNECTIONS					
21	MARK	SERVICE	NO.REQ	SIZE	RATING	FACING
22.	A	FILL	1	3"	150#	RF
23.	B	RECIR	1	3"	150	RF
24.	CONSERVATION VENT & FLAME ARRESTOR					
25.	C		1	3"	150	RF
26.	D	SPARE	1	3"	150	RF
27.	E	MANWAY	1	16"	ASA	FLG
28.	& PRESS.REL. COVER VENT					
29.	F	MANHOLE & COVER	1	24"	API	FLG
30.	G	SUCTION	1	4"	150	RF
31.	H	SPARE	1	2"	150	RF
32.	J	LEVEL	1	4"	150	RF
33.	K	LEVEL	1	4"	150	RF
34.						
35.	REMARKS:					
	PROVIDE DROP TUBE TO WITHIN 6" OF BOTTOM ON (A& B).					
	DROP (G) TO WITHIN 6" OF BOTTOM.					
	PAINT W/ONE (1) COAT R.L. PRIMER & TWO (2) COATS LIGHT GRAY ENAMEL.					

Figure D-4 - Vessel Data Sheet for RCRA Tank No. 2

Figure D-4 Vessel Data Sheet for RCRA Tank No. 2						
1.	PROJECT NO. ITEM NO. T–2 SPEC. NO.					
2.	CLIENT: US ECOLOGY IDAHO, INC. INQ./ REQ. NO.					
3.	LOCATION GRAND VIEW, IDAHO NO. REQUIRED ONE (1)					
4.	SERVICE OF UNIT WASTE PREPARED BY DATE					
5.	REV. A BY O. Todd DATE 19 Mar 87					
6.	PROCESS CONDITIONS					
7.	CONTENTS (MAT'L): WASTE					
8.	SP.GR : < 2.0 BULK DENSITY : < 125 LBS/ FT^3					
9.	NORM. PRESS. < 0.5 PSIG. TEMP 70 BF					
10.	CONTRUCTION DETAILS					
11.	MIN. DESIGN PRESSURE : 0 PSIG					
12.	MIN. DESIGN TEMPERATURE : -15 B F MAX 150B F					
13.	MATERIAL: A36 STL VOLUME 15,000 GAL					
14.	INSTALLATION : (OUTDOOR)					
15.	WIND LOAD DESIGN: SEISMIC ZONE : 1					
16.	DESIGN CODE: UL-142 ANGLE OF RESPONSE: N. A					
17.	ANGLE OF FRICTION AGAINST SIDE WALLS: N. A.					
18.	VERTICAL					
19.	ELEVATION ABOVE GRADE 20 FT 0 IN.					
20.	CONNECTIONS					
21	MARK	SERVICE	NO.REQ	SIZE	RATING	FACING
22.	A	FILL	1	3"	150#	RF
23.	B	RECIR	1	3"	150	RF
24.	CONSERVATION VENT & FLAME ARRESTOR					
25.	C		1	3"	150	RF
26.	D	SPARE	1	3"	150	RF
27.	E	MANWAY	1	16"	ASA	FLG
28.	& PRESS.REL. COVER VENT					
29.	F	MANHOLE & COVER	1	24"	API	FLG
30.	G	SUCTION	1	4"	150	RF
31.	H	SPARE	1	2"	150	RF
32.	J	LEVEL	1	4"	150	RF
33.	K	LEVEL	1	4"	150	RF
34.						
35.	REMARKS:					
	PROVIDE DROP TUBE TO WITHIN 6" OF BOTTOM ON (A& B). DROP (G) TO WITHIN 6" OF BOTTOM. PAINT W/ONE (1) COAT R.L. PRIMER & TWO (2) COATS LIGHT GRAY ENAMEL.					

Figure D-5 - Vessel Data Sheet for RCRA Tank No. 3

Figure D-5 Vessel Data Sheet for RCRA Tank No. 3			
1.	CONTRACT NO. 8101 ITEM NO. T–3 SPEC. NO. API-650/UL-142		
2.	CLIENT: US ECOLOGY IDAHO, INC. REQ. NO.		
3.	LOCATION: GRAND VIEW, IDAHO NO. REQUIRED ONE (1)		
4.	UNIT OR AREA: LEACHATE TREATMENT, RCRA BY: J. BRENNAN DATE: 22 July 91		
5.	REV. B BY: M. WELSH DATE 19 November 91		
6.	VESSEL SERVICE: TREATED H2O STORAGE		
7.	PROCESS CONDITIONS		
8.	VESSEL FLUID H2O WATER		
9.	SPECIFIC GRAVITY G T 60 < 2.0		
10.	NORMAL PRESSURE PSIG < 0.5		
11.	NORMAL TEMPERATURE ^{0}F 70		
12.	CONSTRUCTION DETAILS		
13.	MINIMUM DESIGN PRESSURE PSIG 0		
14.	MINIMUM DESIGN TEMPERATURE ^{0}F -15^0 /+ 115^0		
15.	MATERIAL A 36 CARBON STEEL		
16.	VOLUME USG 15,000 (NOMINAL)		
17.	INSULATION OUTDOOR CODE UL-142		
18.	VERTICAL OR HORIZONTAL: VERTICAL		
19.	ELEVATION ABOVE GRADE FT. 20’ – 0”		
20.	CONNECTIONS		
22.	#1	24” 0	MANWAY W/O COVER
23.	#2	24” 0	MANWAY W/COVER GASKET
24.	#3	1$^{1/4}$” 0	LVL. BRD. CPL’G
25.	#4	20’	LVL. BRO. ASSY.
26.	#5	3” 0	FLG’D IN/OUTLET W/BLIND FLG
27.	#6	4” 0	FLG’D IN/OUTLET W/BLIND FLG
28.	#7	3” 0	FLG’D W/DIP TUBE TO WITHIN 6’ OF TANK BOTTOM, W/BLIND FLG
29.	#8	4” 0	FLG’D IN/OUTLET W/BLIND FLG
REMARKS: 12’ 0 X 20’ H, FLAT TOP NOTE: FAB/SHIP LOOSE (1) LADDER/CAGE ASSY. (2) (1) HANDRAIL W/KICKPLATE REV B AS-BUILT DETAILS OF CONNECTIONS			

Figure D-6 - Vessel Data Sheet for RCRA Tank No. 4

Figure D-6 Vessel Data Sheet for RCRA Tank No. 4						
1.	PROJECT NO. ITEM NO. T–4 SPEC. NO.					
2.	CLINT US ECOLOGY IDAHO, INC. INQ./ REQ. NO.					
3.	LOCATION GRAND VIEW, IDAHO NO. REQUIRED ONE (1)					
4.	SERVICE OF UNIT WASTE PREPARED BY DATE					
5.	REV. A BY O. Todd DATE 19 Mar 87					
6.	PROCESS CONDITIONS					
7.	CONTENTS (MAT'L): WASTE					
8.	SP.GR : < 2.0 BULK DENSITY : < 125 LBS/ FT^3					
9.	NORM. PRESS. < 0.5 PSIG. TEMP 70 BF					
10.	CONTRUCTION DETAILS					
11.	MIN. DESIGN PRESSURE : 0 PSIG					
12.	MIN. DESIGN TEMPERATURE : -15 B F MAX 150B F					
13.	MATERIAL: A36 STL VOLUME 15,000 GAL					
14.	INSTALLATION : (OUTDOOR)					
15.	WIND LOAD DESIGN: SEISMIC ZONE : 1					
16.	DESIGN CODE: API 650 ANGLE OF RESPONSE: N. A					
17.	ANGLE OF FRICTION AGAINST SIDE WALLS: N. A.					
18.	VERTICAL					
19.	ELEVATION ABOVE GRADE 20 FT 0 IN.					
20.	CONNECTIONS					
21	MARK	SERVICE	NO.REQ	SIZE	RATING	FACING
22.	A	FILL	1	3"	150#	RF
23.	B	RECIR	1	3"	150	RF
24.	CONSERVATION VENT & FLAME ARRESTOR					
25.	C		1	3"	150	RF
26.	D	SPARE	1	3"	150	RF
27.	E	MANWAY	1	16"	ASA	FLG
28.	& PRESS.REL. COVER VENT					
29.	F	MANHOLE & COVER	1	24"	API	FLG
30.	G	SUCTION	1	4"	150	RF
31.	H	SPARE	1	2"	150	RF
32.	J	LEVEL	1	4"	150	RF
33.	K	LEVEL	1	4"	150	RF
34.						
35.	REMARKS:					
	PROVIDE DROP TUBE TO WITHIN 6" OF BOTTOM ON (A& B). DROP (G) TO WITHIN 6" OF BOTTOM. PAINT W/ONE (1) COAT R.L. PRIMER & TWO (2) COATS LIGHT GRAY ENAMEL.					

Figure D-7 - Typical RCRA Waste Water Tank Inventory Control Log

Date	Description of Source or Destination	*Check appropriate column*		ICF Number	WPQ Number	Compatibility Group	Tank Start Level	Tank End Level	Inches Pumped	Total Gallons
		In	Out							

Appendix D.2.5
RCRA Tank Systems - Tank Operation Outline – Leachate Treatment System Description

The following is a summary of the Leachate Treatment System operations at the USEI Site B facility. The description of existing operating scenarios may, from time to time, be modified due to operational necessity, equipment modifications, and other unforeseen needs.

LEACHATE TREATMENT SYSTEM

When the presence of leachate is detected at the various sub-cell locations, the collected leachate is conveyed from the sub-cell primary sump via a submersible centrifugal pump installed in the side slope riser pipe. Each pump is provided with a low current sensing device that will automatically stop the pump when fluid flow is no longer present. The leachate is discharged to RCRA Tank #1 using the on-site mobile "vac" truck through a hose that is attached to a fitting provided at the top of the riser pipe, or via a hard piped system (Cells 15 and 16 and Sub-cell 14-6 only). During months when freezing temperatures could damage the piping system, all leachate is removed from the sumps using the "vac" truck.

The "vac" truck delivers the untreated leachate to the existing truck unloading/containment pad located on the southwest corner of the RCRA tank area at Container Storage Pad 4. The contents are pumped from the truck into RCRA Tanks through a hose connected to the tank fill line. Any minor spill encountered during the connection or disconnection of the fill hose to the truck (that is not captured by the use of drip pans) is contained in this unloading area, ultimately collected in an adjacent sump, and later transferred to RCRA Tanks for subsequent treatment.

Leachate that is detected at Sub-cell 14-6, Cell 15, or Cell 16 is conveyed from the primary sump via a submersible centrifugal pump installed in the side slope riser pipe. A submersible pressure transducer/transmitter attached to the primary leachate pump will monitor and provide a display of the liquid level in the sump. The level sensing system will also control the automatic cycling of the pump to properly withdraw the collected leachate from the sump. A low current sensing device will also cause the pump motor to stop when loss of fluid flow is detected (i.e., a "no-load" condition exists).

The leachate pump discharge is connected by a hose section into a hard-piped high density polyethylene (HDPE) pipeline installed at grade level that leads to the fill line for RCRA Tank #1. A flow sensor and flow totalizer system is provided at the inlet to the HDPE pipeline to record the total accumulated volume in gallons of leachate withdrawn and transferred to RCRA Tank #1. The HDPE pipeline is sloped in the direction of the pumped flow and is provided with the necessary drain valve(s) at the low point(s), as required, to completely evacuate any remaining liquid following pumping operations using the "vac" truck for subsequent transfer to RCRA Tank #1.

RCRA Tank #1 is provided with a level sensor that will detect a high level condition. This will provide an interlock that will automatically stop the primary leachate pump to prevent further transfer of leachate until the high level condition subsides.

A horizontal centrifugal *Untreated Leachate Feed Pump* conveys the leachate stored in RCRA Tank #1 to the treatment system at a rate of approximately 50 gpm. The suction and discharge piping to and from the pump is provided with the following components:

1. A single (simplex) basket strainer in the suction line to remove any gross solids that may be present in the liquid stream used to protect the feed pump.

2. A low-flow switch in the suction line designed to automatically stop the pump when there is insufficient liquid flow upon emptying the tank or if the basket strainer is clogged.
3. A pressure gauge in the discharge line to monitor pump performance.
4. A pressure switch in the discharge line to detect a low pressure condition which may be indicative of an upstream ruptured pipeline or other malfunction, and which will initiate an automatic shutdown of the pump.

The untreated leachate discharged from the pump is fed to a centrifugal separator/pleated cartridge type filter to remove finer suspended solids from the liquid stream that may foul/plug the downstream carbon filter media and interfere with the adsorption process. A pressure gauge is installed on both the inlet and outlet piping for this filter in order to determine the pressure differential (drop) across the unit while in operation. When the pressure drop across the filter exceeds the limit recommended by the filter manufacturer, the filter housing will be drained and the filter element (cartridge) cleaned or replaced as required.

The leachate is then fed into a set of three (3) granular activated carbon adsorption filters (*Leachate Scrub Units)* connected in series by piping and hoses. These filters have an activated carbon capacity of approximately 2,000 lbs. each. According to the average feed rate of approximately 50 gpm and the typical VOC concentration expected in the untreated leachate, the carbon filters are currently changed out when the pressure differential across the system becomes too great for processing to continue. Pressure gauges are installed in the interconnecting piping system to indicate the pressure reading at the inlet and outlet of each of the three (3) carbon filter vessels. This allows the pressure differential (drop) to be monitored across each carbon bed to ensure against plugging of the filters according to the manufacturer's operating guidelines. Additionally, a sampling valve is provided downstream of each carbon filter to periodically check the VOC removal efficiency.

A horizontal centrifugal *Treated Leachate Transfer Pump* conveys the leachate from the discharge of the carbon filters to RCRA Tank #4. This pump provides the additional head pressure (lift) needed to transfer the treated leachate to the receiving tank. The suction and discharge piping to and from the pump is provided with the following controls:

1. A low-flow switch in the suction line designed to automatically stop the pump when there is insufficient, or loss of, liquid flow from the carbon filters.
2. A pressure gauge in the discharge line to monitor pump performance.
3. A back pressure regulating valve in the discharge line to maintain a constant flow rate from the pump to match the feed rate through the carbon filters.
4. A pressure switch in the discharge line to detect a low pressure condition which may be indicative of an upstream ruptured pipeline or other malfunction, and which will initiate an automatic shutdown of the pump.

The discharge flow of treated leachate is directed into RCRA Tank #4. RCRA Tank #4 is provided with a level sensor probe to detect when the tank has been filled to capacity. When a high level "Tank Full" condition is detected, a corresponding pilot light will illuminate on the Leachate Control Panel, both the feed pump and the transfer pump will automatically shut off, and the fill valve for that tank will close. This will stop the flow of leachate through the treatment system until the tank is emptied and the system is restarted.

The treated leachate collected and stored in RCRA Tank #4 is pumped to the Evaporation Pond at a rate of approximately 100-120 gpm, using a horizontal centrifugal *Treated Leachate Discharge Pump* . The pump suction piping to RCRA Tank #4 is arranged and valved to permit the treated contents of the tank to be withdrawn and transferred at one time. The suction and discharge piping to and from the pump is provided with the following controls:

1. A low-flow switch in the suction line designed to automatically stop the pump when there is insufficient, or loss of, liquid flow from the selected tank.
2. A pressure gauge in the discharge line to monitor pump performance.
3. A pressure switch in the discharge line to detect a low pressure condition which may be indicative of an upstream ruptured pipeline or other malfunction, and which will initiate an automatic shutdown of the pump.

The treated leachate discharged from the pump flows through a hard-lined HDPE pipeline installed at grade level to a tie-in connection with a 6 ft. HDPE pipeline adjacent to Collection Pond-#3, which ultimately discharges into the Evaporation Pond. All HDPE pipelines are sloped to drain at a common point near the tie-in connection, and the necessary drain valve(s) at the low point(s) are provided as required to completely evacuate any remaining liquid following pumping operations, using the "vac" truck, which will then transfer this treated liquid to the Evaporation Pond.

Additional Information

During *normal* operation, the leachate is processed through one set of granular activated carbon adsorption filters, consisting of three (3) filters connected in series by piping and hoses with quick-connect end fittings. Should sampling and analysis show the VOC concentration and/or chemical constituents differ from the normal expected leachate characteristics, the existing piping, valve and hose connections can be configured to allow flow patterns for the following *alternative* method of processing leachate through the carbon filters:

The piping system can be arranged so leachate can be fed to both sets of carbon filters, with the sets configured for *parallel* flow operation. This will allow for one third (1/3) of the flow stream to be processed through each filter to increase the adsorption residence (contact) time and effectiveness of VOC removal.

The following bypass arrangements are present in the existing leachate treatment system piping:

1. Valved bypass from the discharge of the untreated leachate "feed" pump directly to the piping for the individual fill lines to RCRA Tanks #2, #3 and #4. This piping arrangement allows the bypass of both the particulate filters and the carbon filters, as well as all the associated flow and pressure controls previously described.
2. Valved bypass from the downstream side of the particulate (solids) filters directly to the piping for the individual fill lines to RCRA Tanks. This piping arrangement allows the bypass of only the carbon filters. However, the flow and pressure controls described in Items 1 and 2 remain functional.
3. Valved bypass from the discharge of the "return" pump to the outlet of the three (3) carbon filters in series, to allow for reverse-flow "backflushing" of the carbon filters. The "backflush" liquid can then be directed into RCRA Tank #1 by means of manual operation of valving for subsequent reprocessing through the treatment system.

Sampling and analysis of on-site treated leachate is conducted as follows:

1. At a minimum, biennially or after 300,000 gallons, the pretreated leachate will be analyzed for F039 constituents reasonably expected to be present. The volatile constituents which fail to meet wastewater standards will comprise the "fingerprint" parameters for the post-treated leachate.
    a. If "fingerprint" parameters exist for the post-treated leachate, one in every five (5) treatment batches will be verified to ensure proper treatment. Upon reaching the twentieth (20) batch, the fingerprint will be verified for each subsequent batch until the carbon is replaced. Once the carbon is replaced, the verification process begins with one in five again.

   b. If no "fingerprint" parameters exist, sampling will be conducted biennially or after 300,000 gallons. The carbon and/or filters will be replaced when operational constraints are met (i.e. the pressure differential across the filter increases substantially).

2. Treated leachate which meets the criteria set forth in the above paragraph may be disposed of in the facility's evaporation pond providing the pond parameters are verified as well. Leachate not meeting wastewater treatment standards and evaporation pond parameters as outlined in 40 CFR 268.40 and the WAP will be reprocessed and/or disposed of in accordance with 40 CFR and the WAP.