Clean Harbors Environmental Services, LLC
Lone Mountain Facility
Waynoka, Oklahoma

RCRA/HSWA Permit Renewal Application

Volume 5

October 1, 2020

Lone Mountain RCRA Permit Renewal

Volume 5

Volume 5 Contents:

SECTION 4

CONTAINER STORAGE

4.1

Container Storage Management Procedures

Table of Contents

List of Tables

List of Figures

1.0 Introduction

The requirements of 40 CFR Part 264, Subpart I and 40 CFR 270.15 will apply to the Drum Dock, Container Management Building, and Miscellaneous Container Storage Areas.

1.1 Container Off-Loading, Handling, and Transfer Activities

Palletized containers are typically unloaded and handled by forklift, slid steer loader ("Bobcat"), or similar equipment. A hand truck, drum dolly, skid steer loader, etc. may be employed to unload and handle non-palletized shipments. Special ramps can be used to connect the rear of trailers to the receiving dock to ensure safety in transferring wastes onto the dock. Containers will be unloaded from the delivery van or trailers onto the storage area and placed in a storage aisle or sampling area. When containers exhibit corrosion, deterioration, or damage such that the handling of the container could result in a release, either the entire container will be placed in an overpack[1] or the contents of the container will be transferred to another container (either empty or containing other similar waste) in acceptable condition. The container design and construction materials must be compatible with the waste. In either case, the facility shipment identification number and the required labels and markings will be duplicated or transferred to the new container to properly identify the contents.

Drum inverting equipment, such as a rotating attachment mounted to the forks, a pump, or other suitable means of equipment will be used to facilitate transfer of wastes from a damaged container into a new or salvaged drum in good condition. Alternatively, equipment will be provided to transfer leaking containers into overpacks. Depending upon the physical characteristics, the wastes will either free flow from one container to another or require that an operator assist by employing hand tools or other appropriate devices to affect the transfer. Transfers will occur within the secondary containment systems.

1.2 Waste Inspection and Sampling

Containers selected for analysis will be opened and sampled. Once samples have been obtained, the containers will be re-sealed. Waste sampling and analysis are discussed in detail in the Waste Analysis Plan.

Containers will be opened for inspection and sampling by a variety of methods depending upon container and waste type. Liquid storage containers with screw-in bungs may be sampled by removing the bung, withdrawing a sample, and replacing the bung.

Containers with fully removable tops with retaining rings may be opened by removing the ring, sampling, and replacing the lid and ring. Another method of opening containers will involve using a

[1] "Overpacks" include containers capable of containing the entire contents of a container (i.e., 85 gallon overpacks) or other available containers, such as enviropacks which arc truncated, oversized containers capable of containing leakage from inner containers.

piercing machine which will create a hole in the drum lid. After removal of a sample, the hole will be plugged. A de-heading machine may also be employed in the drum processing area to open containers and facilitate liquid draw-off.

1.3 Container Opening and Closing

During storage, the containers are kept closed to prevent dispersion of wastes into the environment. Containers are only opened for the following reasons:

- Inspection
- Sampling
- Removal of free liquids
- Addition of similar wastes
- Filling to at least 90% full
- Stabilization (treatment)
- Removal of waste
- Shredding

1.4 Containers with Free Liquids

Clean Harbors expects, as a routine part of its business operations, to accept containers holding free liquids for treatment, storage, and disposal at the Lone Mountain Facility. Containers are inspected for free liquids, and if present, the liquids are decanted or removed by vacuum, treated in the container, treated in an on-site container, transported to the appropriate treatment unit, or otherwise appropriately managed. Liquids may be taken to the wastewater treatment system, stabilized, absorbed in non-leaking containers, shipped off-site for management, stored in on-site tanks, or otherwise appropriately managed.

To determine the presence of free liquids, personnel will probe the contents of the container, inspect, and/or sample and analyze (paint filter test) the material.

If the waste is stabilized in the container, sufficient amounts of stabilizing agents or other treated wastes will be added to ensure it is at least 90% full prior to disposal in a landfill. Mixing of stabilizing agents is accomplished by manual means or with mechanical equipment. The addition of solidification or stabilization reagents will ensure that no free liquids remain in the container. Treatment may also be performed to ensure that all land disposal restrictions are met. The stabilized mixture will be tested using Method 9095 (Paint Filter Test) to demonstrate the absence of free liquids.

1.5 Incompatible, Reactive, and Ignitable Waste Segregation

Reactive wastes and lab packs will be stored in the appropriate storage area(s) until they are further managed on-site or transshipped for management off-site. Specific procedures for lab packs are discussed in the Waste Analysis Plan. These procedures will be followed should it be necessary to re-pack lab packs at the facility prior to disposal. Additional detail is provided in the section titled Ignitable, Reactive, or Incompatible Waste.

1.6 Containers Transferred to Other Units

Containers which are transferred to other units within the facility are typically transported by forklift, front-end loader, skid steer loader or similar equipment fitted with container-handling forks. Containers may be loaded onto a flatbed orvan trailers to facilitate transfer. The specific method employed is primarily dependent on the quantities and sizes of container to be moved and the distances between units.

1.7 Drum Washing

Clean Harbors does not routinely wash drums for reuse at the Lone Mountain Facility. Drums which are emptied of waste are handled in one of five ways depending on the condition of the drum, it's prior contents, and the needs of the facility at the time. These methods are:

- The drum may be shredded and disposed of in a landfill cell.
- The drum may be sent off-site to a separate drum reconditioning facility. In this case, the drum must be classified as an "empty container" per RCRA.
- The drum may be refilled with waste that is compatible with its previous contents, either for storage or direct disposal.
- The drum may be crushed and disposed of in a landfill cell or recycled.
- Overpack drums can be visually inspected for the presence of waste materials or structural defects. If the overpacks drum is reasonably clean and in good condition, it may be rinsed with water at the Stabilization Tank System. The rinsate water will be handled as waste and processed with other materials through the Stabilization Tank System. The drums can then be used on-site either for storage or direct disposal.

1.8 Inspections

Scheduled inspections of the container storage areas are conducted to detect open or deteriorating containers, improper storage in the aisles, liquids in sumps, or other potentially unsafe conditions. The concrete containment will be inspected for evidence of cracking or gaps in concrete floors, breaching of curbs or walls, etc. Inspection schedules are discussed in detail in the Inspection program.

1.9 Aisle Spacing

Under all operating conditions, containers will be stacked no more than two (2) high and placed directly on the floor or on pallets. Typically, except for small containers, container storage rows will consist of both double rows and single rows.

Double stacking of containers in some cases requires vertical off-set and dividers (e.g., typically plywood sheets or pallets) as shown in Figure 1. However, boxes of conforming shape, nestable containers or palletized containers may be stacked without dividers if their structural integrity remains intact or if the top container is of such a size that it fits within the diameter of the bottom container (e.g., 5 gallon pail on top of a 55 gallon drum).

Aisle spacing can vary between the rows within the storage areas. Rows of small containers will be no wider than a pallet with a minimum of three foot (3') wide aisle space separating each row in long-term storage areas. For containers that are being received or in transit to their final storage, treatment, or disposal area or to facilitate the cleanup of a spill or leak, the aisle spacing may be two feet (2'). In all cases, these aisles will provide access to safety equipment, provide maneuvering room for mobile equipment, and permit personnel to conduct inspections.

1.10 LDR Prohibited Storage

Pursuant to 40 CFR 268.50, containers of waste subject to land disposal restrictions will be marked with the accumulation (received) date.

1.11 Truck Parking Pad

Prior to the promulgation of the Land Disposal Restrictions, the treatment of hazardous waste was generally not required prior to land disposal, and therefore, waste could be disposed of almost immediately after its arrival at a disposal facility. The Land Disposal Restrictions now require the treatment of virtually all hazardous waste prior to land disposal. This requirement and other waste analysis requirements (e.g., Subpart CC) lead to a variety of acceptance and management issues not previously envisioned when the hazardous waste regulations were written.

Management and acceptance issues virtually require the treatment, storage, and/or disposal facility to have flexibility concerning the waste delivery schedule, have the ability to temporarily park transport vehicles and/or containers while waiting for capacity to become available in permitted storage, treatment, or disposal areas, wait for the resolution of waste analysis and/or treatment recipe development issues, obtain the necessary reagents to perform treatment, etc. From an environmental perspective, it is much better for the waste to be held within the protected environment of the facility while accomplishing the above requirements. This prevents the needless rejection and transportation of waste on public highways as well as unnecessary storage at inadequate transfer facilities (e.g., truck stops, parking lots, etc.) which do not provide isolation from the public and appropriate secondary containment or management.

For the reasons listed above and in the Waste Analysis Plan, The Truck Parking Pad located west of Cells I and 2 was built in 1989 to provide an environmentally-secure area to stage shipments prior to acceptance, management, or potentially, rejection. The pad provides secondary containment for transport vehicles and/or containers of hazardous waste destined for the Lone Mountain Facility. It consists of three (3) bermed, reinforced, concrete containment areas, each sloped to a separate collection sump. The Truck Parking Pad is not a DEQ-permitted storage area.

Transport vehicles (e.g., van trailers, flatbed trailers, etc.) or containers (e.g., tank trucks, roll-off boxes, dump trailers, etc.) holding waste destined to be managed at the facility are allowed to be staged on the Truck Parking Pad prior to the waste being placed into a permitted storage, treatment, or disposal unit. The waste will be placed into a permitted unit within ten (10) days of receipt, except as noted in the Waste Analysis Plan. The DEQ authorization to unload shipments within 10 days is not based on the transfer facility rules at 40 CFR 263.12.

As noted in the Waste Analysis Plan, waste destined for another TSDF may also be held temporarily at the Lone Mountain Facility during transit. For these trans-shipped wastes, the transport vehicle may be staged on the Truck Parking Pad and in other locations for less than ten (<10) days in accordance with 40 CFR 263.12.

2.0 Drum Dock

The Drum Dock can store a maximum capacity of 24,365 gallons of hazardous waste (equivalent to 443, 55-gallon drums). The majority of the containers stored in this unit will typically be 55-gallon drums, 23 inches in diameter by 34 inches in height. The Drum Dock includes a receiving, storage, and processing area and segregated storage area. See Figure 2 for the typical container storage layout for the Drum Dock and the drum equivalent capacity of each segregated storage area. Assignment and transfer to the appropriate segregated storage or disposal area will occur in conjunction with waste characterization/analysis.

3.0 Container Management

The Container Management Building can store a maximum capacity of 182,930 gallons of hazardous wastes, (equivalent to 3,326 55-gallon drums). See Figure 3 for the typical container storage layout for the Container Management Building. The majority of the containers stored in this unit are 55-gallon drums, 23 inches in diameter by 34 inches in height. The unit can handle approximately 1,000 containers each of flammables, solvent-based wastes, acidic wastes, and caustic wastes. Approximately 300, 55-gallon drums may contain liquid reactive wastes (e.g., cyanides, sulfides, etc.) and lab packs.

These proportions may vary according to the daily fluctuations in the quantities received and stored at the facility.

The Container Management Building includes a receiving dock, segregated storage areas, and storage/processing area. Assignment and transfer to the appropriate segregated storage or disposal area will occur in conjunction with waste characterization/analysis.

4.0 Miscellaneous Container Storage Area

There are five (5) Miscellaneous Container Storage Areas located in the vicinity of the Wastewater Treatment System that are used for management of wastes associated with the Wastewater Treatment System and Tanks D1/D2. These storage areas will be used for relatively short-term storage of drums and similar containers. Having these areas in the vicinity of the wastewater system and Tanks D1/D2 allows simpler and safer transfer of the container contents into or out of the tanks. Without these areas, all incoming containers must be stored in either the Drum Dock or the Container Management Building with the contents being transferred by truck or pipeline.

The five areas are: the Truckwash Bay (Area 1) at the west end of the Wastewater Pre-treatment System; the Reactives Unloading Area (Area 9) located on the south side of the Wastewater Pre-Treatment System immediately adjacent to the Caustic Containment Area; the Tanks D1 and D2 Unloading Area (Area 11) adjacent to the Tanks D1 and D2 secondary containment; the Wastewater Final Treatment Container Storage Area (Area 12) located on the west side of the Wastewater Final Treatment Area; and the Acid Storage Area (Area 18) located on the south side of the Truckwash Bay. Drawings showing the location, layout, and cross-section of each of these areas are located in the Design Drawings for the Miscellaneous Container Storage Areas.

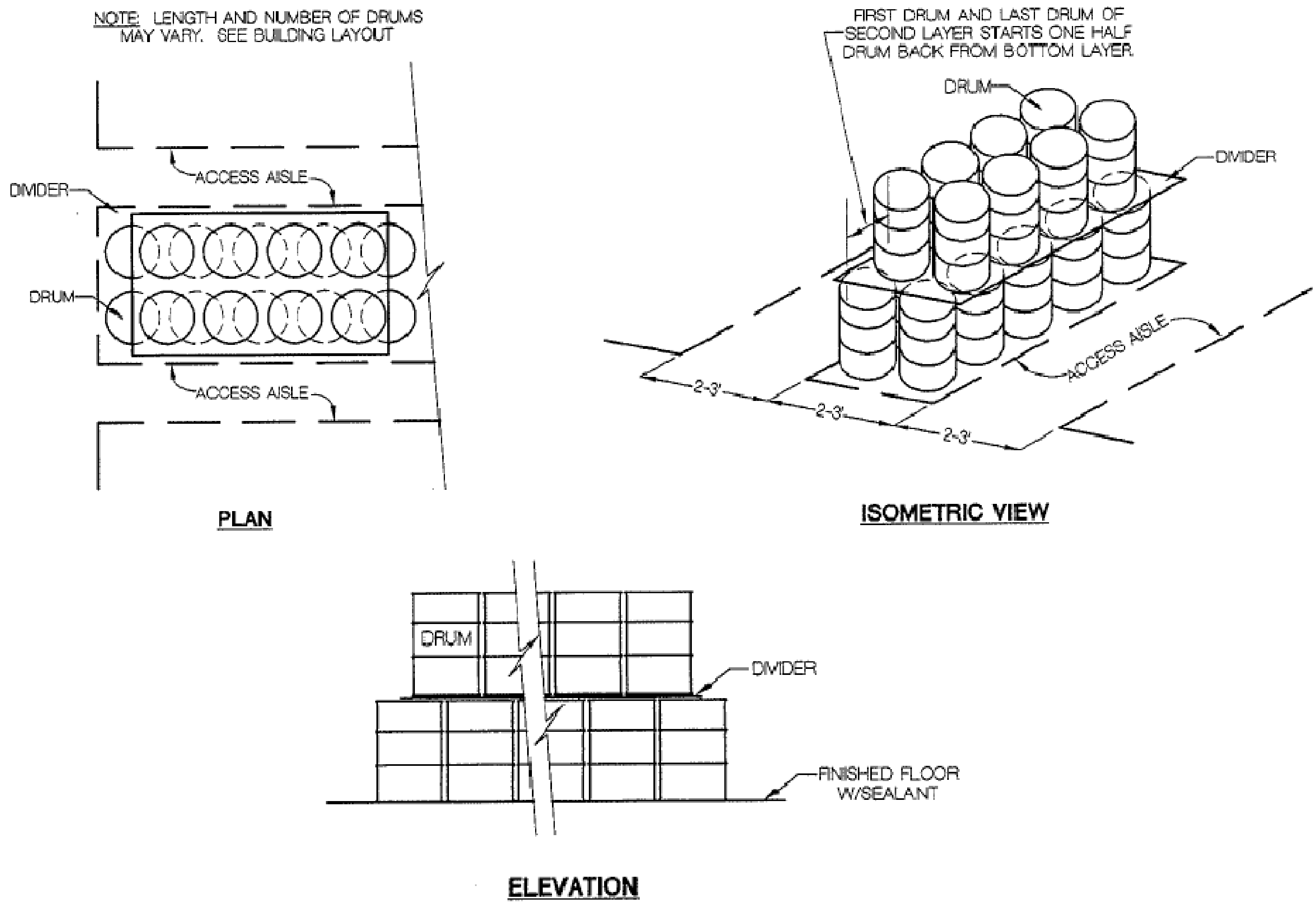
Individual volumes of wastes that may be stored in each of the areas are given in Table 1. These volumes are given in terms of 55-gallon drum equivalents, for ease of reference, however, any type or size of waste container may be stored in these areas, provided that the permitted volume is not exceeded, and the wastes are compatible or segregated. For the Truckwash Bay, the containment volume is based upon two (2) 6,000 gallon bulk storage containers (e.g., tank trucks, roll-off boxes, etc.) and thirty two (32) 55-gallon drum equivalents.

Table 1
Miscellaneous Container Storage Areas Permitted Storage Capacities

Containment Area	Description	Permitted Storage Volume (Gallons)	55-Gallon Drum Equivalents
8	Reactives Unloading Pad	880	16
11	Tanks D1 & D2 Unloading Pad	880	16
12	Wastewater Final Treatment Container Storage Pad	880	16
1	Truck Wash Bay	13,760	32 Plus two, 6,000-Gallon Containers
18	Acid Storage Area	1,760	32

Figure 1

DOUBLE STACKED DRUMS FOR MAXIMUM CAPACITY



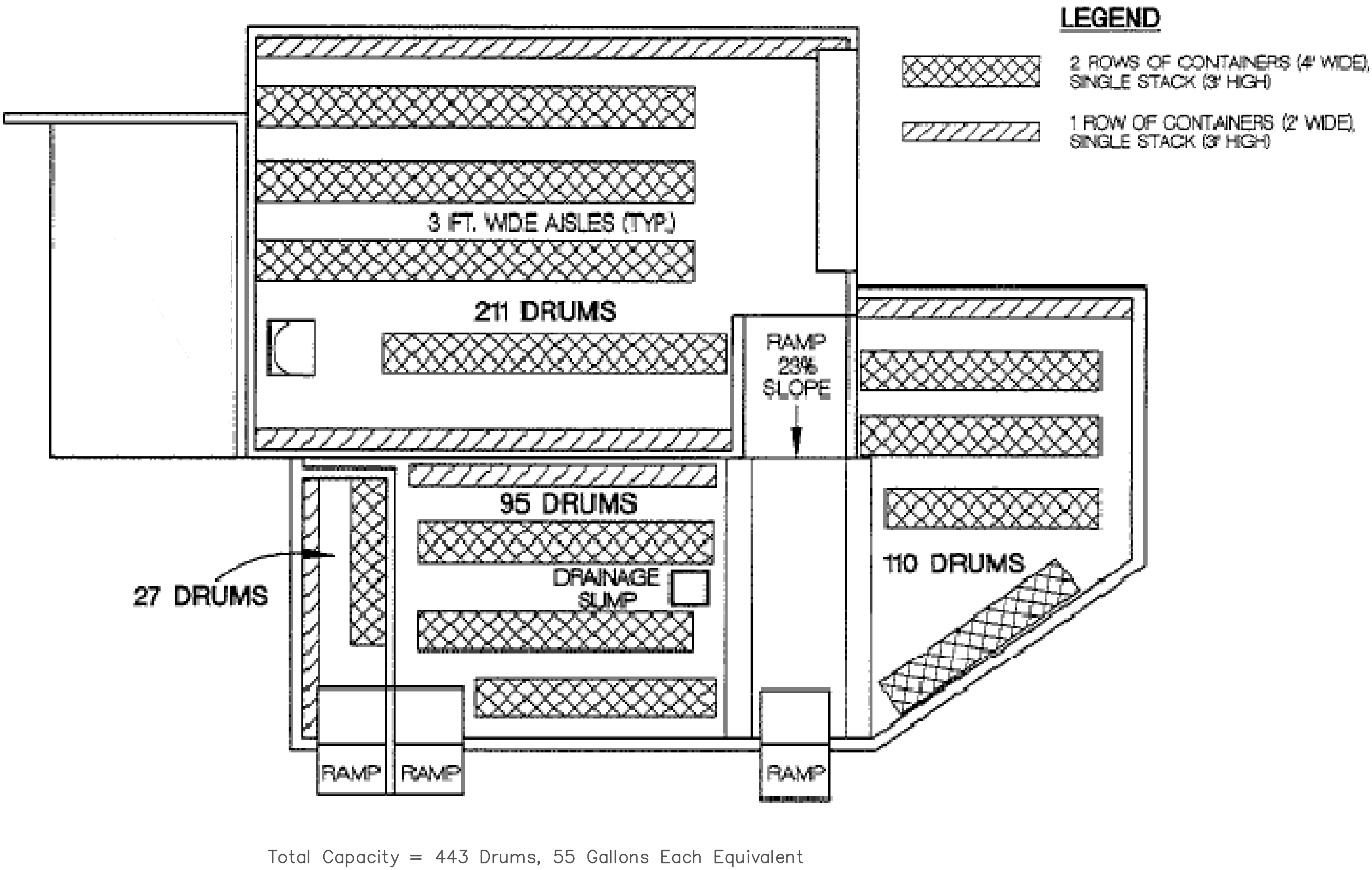
Clean Harbors Lone Mountain Facility

Figure 1
Volume 5, Section 4.1
Double Stacked Drums For Maximum Capacity

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com

Figure 2

DRUM DOCK TYPICAL CONTAINER STORAGE LAYOUT



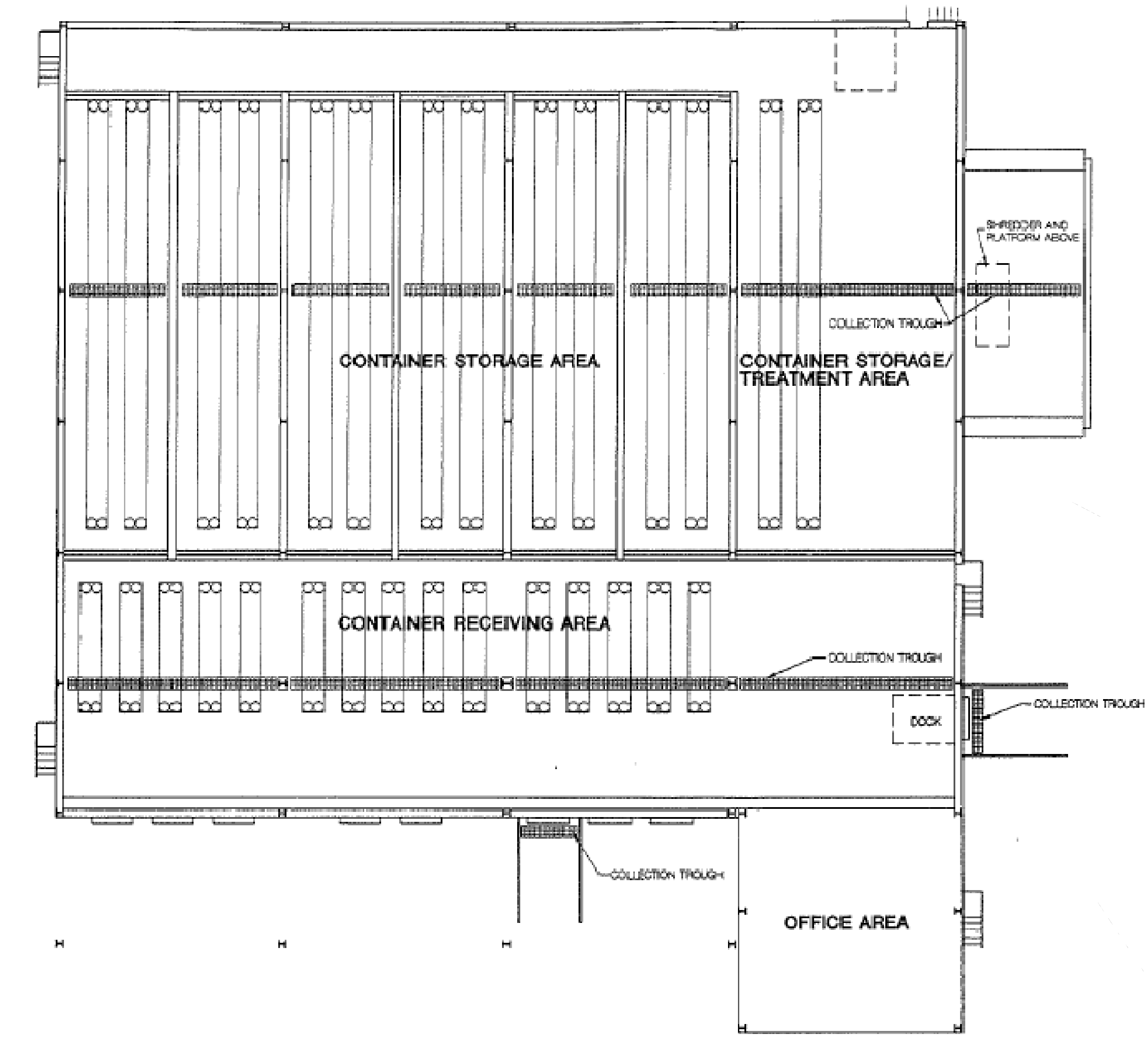
Clean Harbors Lone Mountain Facility

Figure 2
Volume 5, Section 4.1
Drum Dock— Typical Container Storage Layout

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com

Figure 3

CONTAINER MANAGEMENT BUILDING TYPICAL CONTAINER STORAGE LAYOUT



Clean Harbors Lone Mountain Facility

Figure 3
Volume 5, Section 4.1
Typical Container Storage Layout
Container Management Building

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com

4.2

Drum Dock Secondary Containment System Drawings

Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 Requirements for the Base or Liner to Contain Liquids

The containment system for the Drum Dock consists of eight (8) inch concrete reinforced by six (60 inches by six 960 inch) wire mesh. The slab is free of cracks or gaps[1] and is sufficiently impervious to contain leaks, spills, or accumulated liquids until the accumulation is detected and removed. Liquids in the secondary containment areas, sumps, or low points which are the result of spills or leaks will be removed within 24 hours of discovery, while liquids resulting from precipitation will be removed within 48 hours of discovery or when the precipitation event has ended.

Containment is provided by a curb of variable height around the perimeter of the unit. A concrete sealant/hardener compatible with acids, caustics, and solvents has been applied to all concrete surfaces in the containment system sump (see Appendix 2 and Figure 3).

2.0 Containment System Drainage

The upper containment area of the Drum Dock is sloped at a grade of one 10 inch per fifteen (15) feet towards the ramp leading down to the lower containment areas. The lower containment areas are sloped at a grade of one (1) inch per twenty (20) feet. The west storage area is also sloped at one (1) inch per twenty (20) feet. The slope is sufficient to promote good drainage and prevent the pooling of liquids which might damage the floor or containers. See Figure 1, Drum Dock Plan View, for details.

3.0 Containment System Capacity

A summary of the containment calculations for the different areas of the Drum Dock is presented in Table 1. Detailed calculations of the Drum Dock containment volume are provided in Appendix 1.

4.0 Control of Run-on

Run-on to the Drum Dock is prevented by the elevation of the dock and the curbs/walls around the perimeter of the dock and lower containment areas. The Drum Dock roof protects all storage areas from direct rainfall. Rain gutters intercept water draining from the roof and direct it to the ground, away from the containment areas.

Water from wind-blown rain will drain to the sump in the lower area. The lower area containment system is provided with fifteen inch high walls to protect the area from run-on. See Figure 2 for the Drum Dock Profile view.

[1] Cracks and gaps in the concrete surface will be corrected in a timely fashion. It is noted that superficial or insignificant crack and gaps may occur in the concrete surfaces which do not infringe upon secondary containment.

5.0 Removal of Liquids from Containment Systems

The slopes on the dock and lower pads promote drainage. Sumps and low points will be inspected daily for the presence of liquids. Inspection schedules are discussed in detail in the Inspection Program. Liquids present in sumps/low points will be removed by means of pumps or vacuum tanker. The estimated volume of liquid removed, available analytical data, and disposal method will be entered in the Operating Record. The liquids will be tested in accordance with the Waste Analysis Plan.

6.0 Containers without Free Liquids

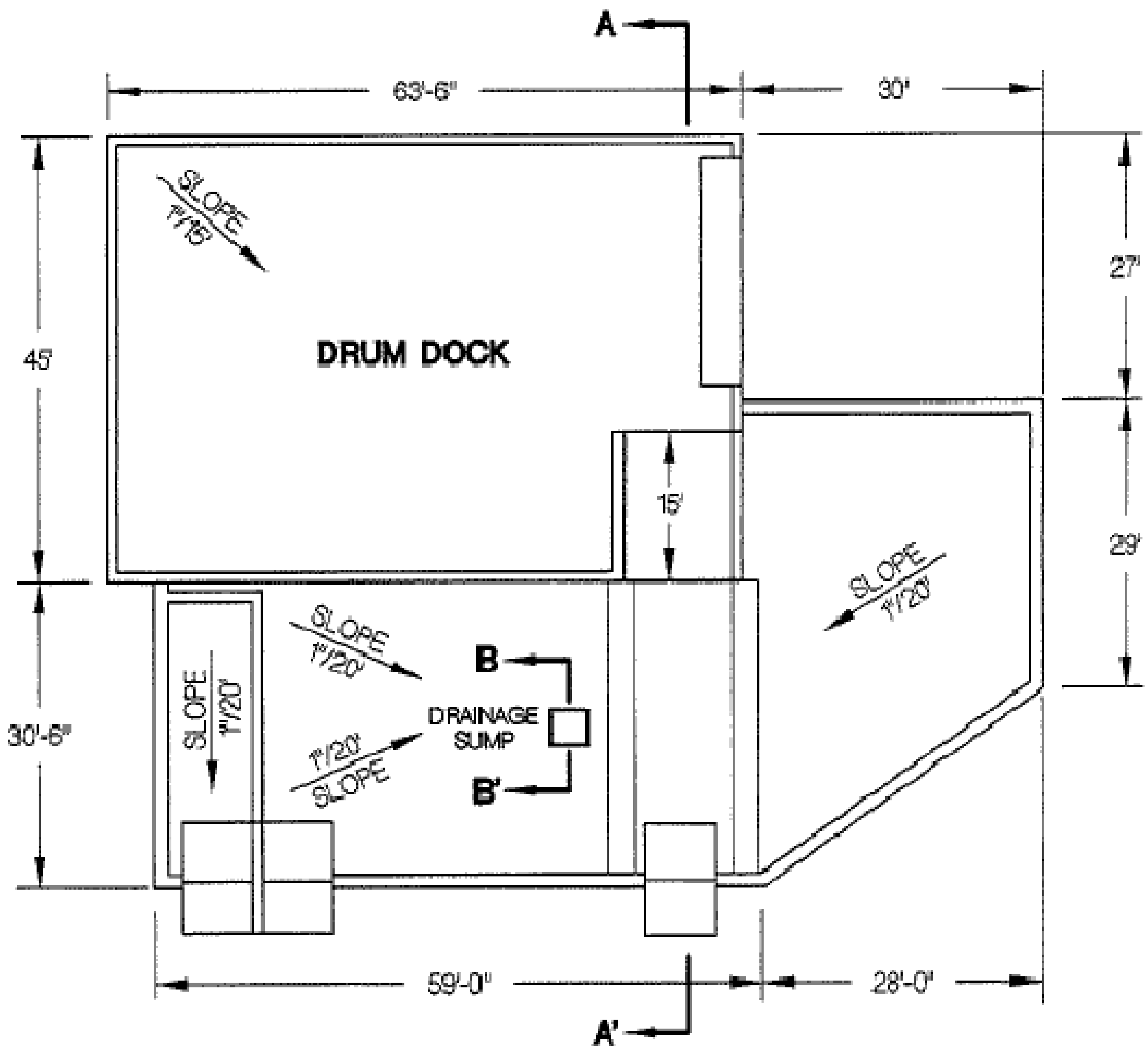
All containers stored in the Drum Dock are stored in areas provided with secondary containment and a drainage system designed to accommodate containers with free liquids. CHESI seeks no reduction in standards in accordance with 40 CFR 264.175(c).

Table 1
DRUM DOCK CONTAINMENT VOLUMES SUMMARY OF CALCULATIONS

	DRUM DOCK AND PAD	WEST STORAGE AREA
Maximum Number of 55 gal drums	416.0	27.0
Maximum Liquid Volume (cu ft)	3,058.4	198.5
CONTAINMENT VOLUMES (CU FT):		
Due to curb	3,095.8	329.2
Due to sump	4.0	0.0
Lost to ramps	51.2	25.6
Lost to drums	739.4	97.4
Internal curbs	48.3	0.0
Net Containment	2,260.8	206.2
Containment Volume Available for Containers	2,260.8	206.2
Percent Containment	73.9	103.9

As the figures demonstrate, the available containment volumes are well in excess of ten (10) percent of the volume of the stored containers, or the volume of the largest container, whichever is greater, as required by 40 CFR 264.l 75(b)(3).

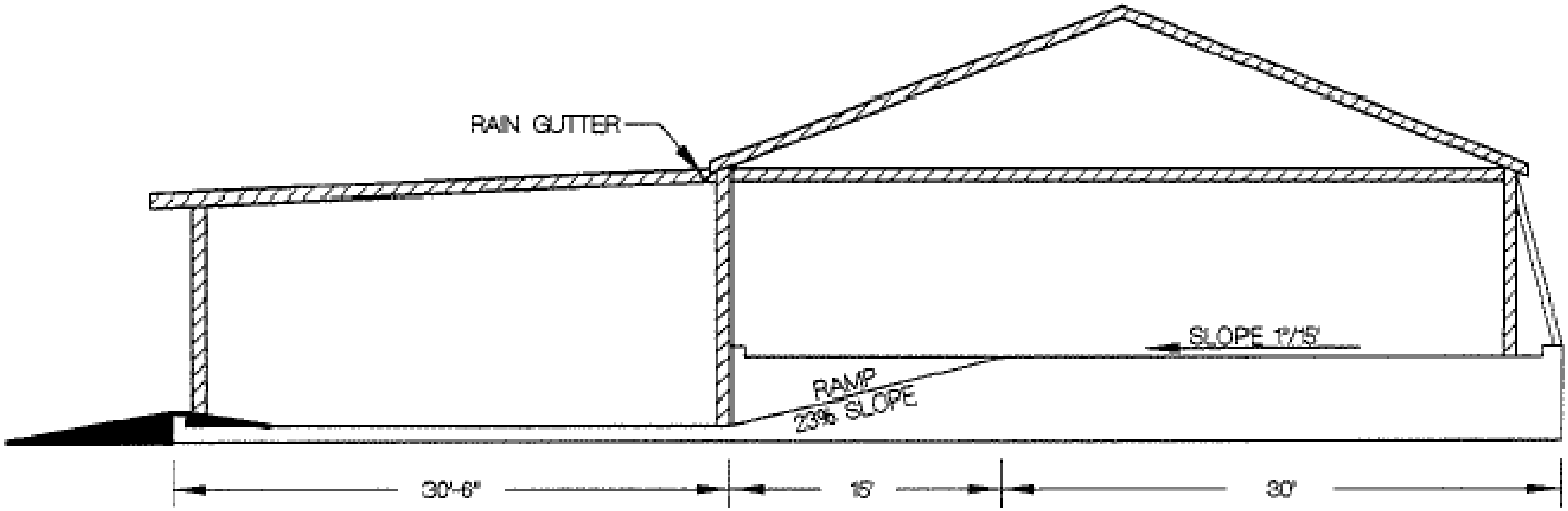
FIGURES



Clean Harbors Lone Mountain Facility

Figure 1
Volume 5, Section 4.2
Drum Dock Plan View

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com

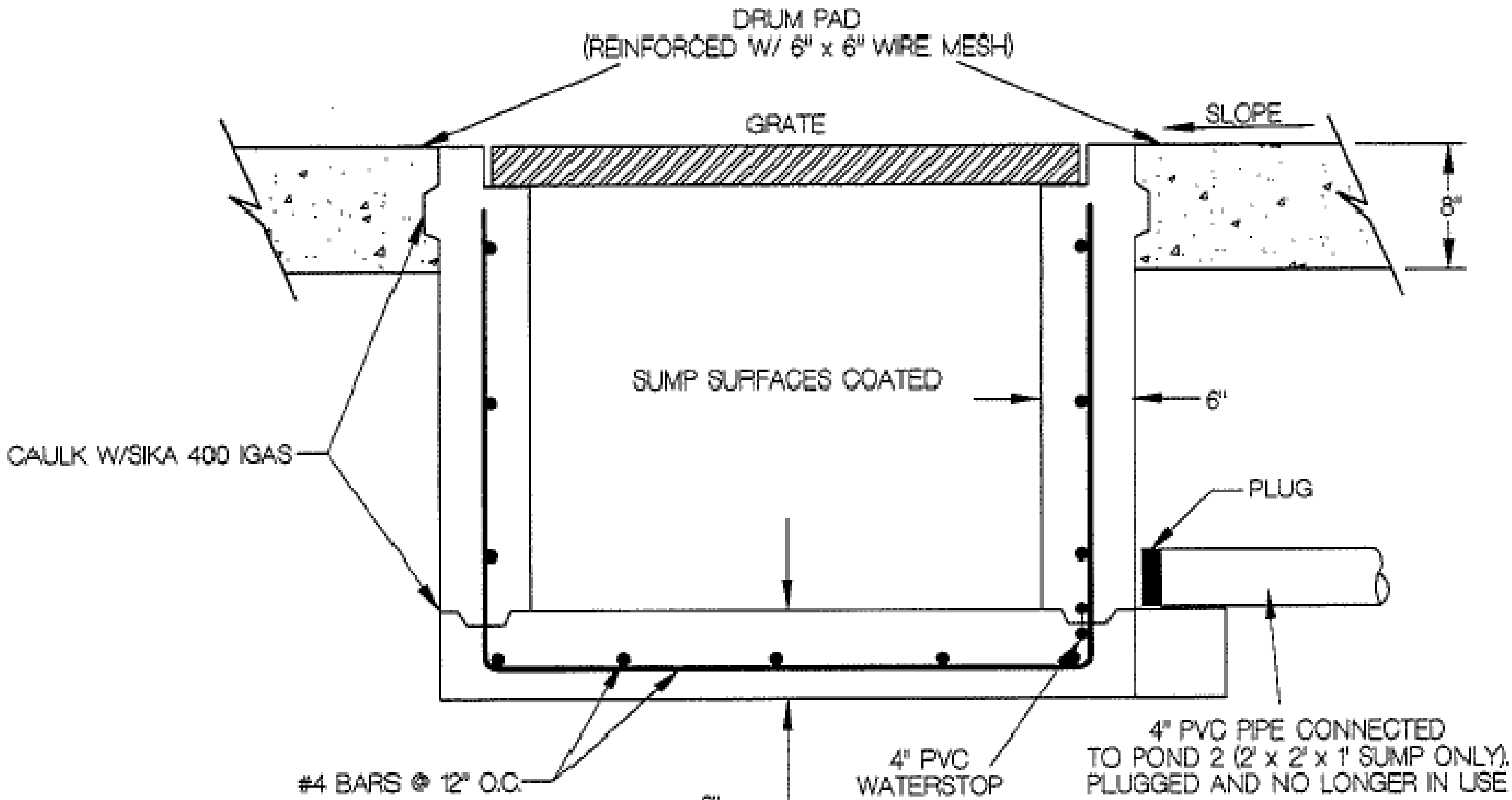


DRUM DOCK PROFILE
SECTION A - A'

Clean Harbors Lone Mountain Facility

Figure 2
Volume 5, Section 4.2
Drum Dock– Profile Section A–A'

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com



DRUM DOCK SUMP
SECTION B - B'

Clean Harbors Lone Mountain Facility

Figure 3

Volume 5, Section 4.2
Drum Dock Sump – Section B–B'

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com

APPENDIX 1

DRUM DOCK CONTAINMENT VOLUME CALCULATIONS

Drum Dock Containment Volume Calculation

CONTAINMENT CALCULATIONS	MAIN PAD	WEST PAD
33′6″ * 29′8″	993.95	
9′ * 27′6″		247.50
10′6″ * 29′3″	311.54	
(27′ * 19′2″)/2	258.75	
27′ * 10′4″	278.91	
28′6″ * 17′	484.50	
Area	2,327.65	247.50
Curb Height 16″		
Volume	3,095.77	329.18
ADDITIONS		
Sump 2′ * 2′ * 1′	4.0	0.00
SUBTRACTIONS		
Ramp 5.5′*7′*1.33′	51.20	
5.5′*7′*1.33′/2		25.60
Drums 205	739.40	
27		97.39
Internal Curbs 2′*29.5′*0.819′	48.30	0.00
SUB-TOTAL	**838.90**	**122.99**
Net Containment Volume	2,260.80	206.18
Available for Containers	2,260.80	206.18
Maximum Drum Volume		
416 Drums	3,058.41	
27 Drums		198.50
Percent Containment	73.92	103.87

Note: All areas/volumes are in square/cubic feet, respectively.

APPENDIX 2

PROPERTIES OF CONCRETE COATINGS

CHEMICAL RESISTANCE GUIDE

This guide is intended as an aid in determining the potential usefulness of SEMSTONE 140-SL as a protective barrier against chemical exposure. Each application should be evaluated according to its particular circumstances and conditions.

KEY: 1 = Suitable for constant immersion
2 = Suitable for shorter term containment and continual spillage
3 = Suitable for intermittent spills when followed promptly with water flushing
NR = Not recommended
C = Consult Sentry Polymers.

	RATING
Acetic Acid, 10%	2
Acetic Acid, 30%	3
Acetic Acid, Glacial	3
Acetone	NR
Acrylic Acid, up to 25%	NR
Acrylonitrile	NR
Alum (Aluminum Potassium Sulfate)	1
Aluminum Chloride	1
Aluminum Fluoride	1
Aluminum Hydroxide	1
Aluminum Nitrate	1
Aluminum Sulfate	1
Ammonia	2
Ammonium Bisulfite	1
Ammonium Chloride	1
Ammonium Hydroxide	1
Ammonium Nitrate	1
Ammonium Sulfate	1
n-Amyl Alcohol	NR
Aniline	NR
Barium Chloride	1
Barium Hydroxide	1
Barium Sulfate	1
Barium Sulfide	1
Benzene	2
Benzene Sulfonic Acid	1
Benzoic Acid	1
Black Liquor, Pulp Mill	1
Bleach Liquor, Pulp Mill	-
Boric Acid	1
Brine	1
Bromine, Liquid	NR
Bromine Gas (Dry & Wet)	NR
n-Butyl Alcohol	2
Butyl Cellosolve Solvent	3
n-Butyric Acid	NR
Cadmium Chloride	1
Calcium Chloride	1
Calcium Hydroxide	1
Calcium Hypochlorite	2,C
Calcium Nitrate	1
Calcium Sulfate	1
Calcium Sulfite	1
Carbon Dioxide Gas	1
Carbon Dissulfide	NR
Carbon Tetrachloride	NR
Chlorine Dioxide	3
Chlorine Gas (Dry & Wet)	3
Chlorine Water	2
Chlorobenzene	NR
Chloroform	NR
Chromic Acid, 15%	3
Chromic Acid, 50%	3
Citric Acid	1
Copper Chloride	1
Copper Cyanide	1
Copper Nitrate	1
Copper Sulfate	1

	RATING
Corn Oil	1
Crude Oil, Sour	1
Crude Oil, Sweet	1
Cyclohexane	3
Cyclohexanol	3
Cyclohexanone	3
Dichlorobenzene	NR
Diesel Fuel	1
Diethyl Benzene	NR
Ethyl Alcohol	2
Ethyl Benzene	NR
Ethyl Chloride	NR
Ethylene Dichloride	NR
Ethylene Glycol	1
Fatty Acids	1
Ferric Chloride	1
Ferric Nitrate	1
Ferric Sulfate	1
Ferrous Chloride	1
Fluosilicic Acid	2,C
Formaldehyde	1
Formic Acid	3
Fuel Oil	1
Gasoline	1
Glycerine	1
Heptane	1
Hexane	1
Hydrobromic Acid	2
Hydrochloric Acid, 15%	1
Hydrochloric Acid, 37%	2
Hydrofluoric Acid	2,C
Hydrogen Peroxide	2
Hydrogen Sulfide	1
Isopropyl Alcohol	1
Jet Fuel	1
Kerosene	1
Lactic Acid	2
Lauryl Chloride	1
Lead Acetate	1
Linseed Oil	2
Lithium Bromide	1
Lithium Chloride	1
Lithium Hypochlorite	2,C
Lithium Hydroxide	1
Magnesium Bisulfite	1
Magnesium Carbonate	1
Magnesium Hydroxide	1
Magnesium Sulfate	1
Maleic Acid	2
Mercuric Chloride	1
Mercurous Chloride	1
Methyl Alcohol	2
Methyl Chloride	NR
Methylene Chloride	NR
Methyl Ethyl Ketone	NR
Mineral Spirits	2
Monochloroacetic Acid	3
Muriatic Acid	1
Naphtha	1
Naphthalene	1

	RATING
Nitric Acid, 5%	3
Nitric Acid, 30%	NR
Nitric Acid, 50%	NR
Nitric Acid/Sulfuric Acid	NR
Nitrobenzene	NR
n-Octyl Alcohol	1
Oils	1
Oleum	NR
Oleic Acid	3
Oxalic Acid	3
Perchloroethylene	3
Perchloric Acid	NR
Phenol	NR
Phosphoric Acid, 50%	1
Phosphoric Acid, 85%	2
Phosphorous Acid	3
Potassium Carbonate	1
Potassium Chloride	1
Potassium Dichromate	2
Potassium Hydroxide	1
Potassium Nitrate	1
Propionic Acid	2
Silver Nitrate	1
Sodium Acetate	1
Sodium Bicarbonate	1
Sodium Bisulfate	1
Sodium Bisulfite	1
Sodium Carbonate	1
Sodium Chloride	1
Sodium Chlorite	NR
Sodium Hydroxide, 10%	1
Sodium Hydroxide, 50%	1
Sodium Hypochlorite	2,C
Sodium Sulfate	1
Sodium Sulfide	1
Stannic Chloride	1
Stannous Chloride	1
Stearic Acid	1
Styrene	3
Sugar/Sucrose	1
Sulfur Dioxide	2
Sulfuric Acid, 10%	1
Sulfuric Acid, 50%	1
Sulfuric Acid, 98%	NR
Tall Oil	2
Tannic Acid	1
Tartaric Acid	1
Toluene	2
Toluene Sulfonic Acid	1
Trichloracetic Acid	3
Trichloroethylene	3
Trisodium Phosphate	1
Urea	1
Water, Deionized	1
Water, Demineralized	1
Water, Distilled	1
Xylene	2
Zinc Chloride	1
Zinc Sulfate	1

Quantum Polymorphic Resin is specifically formulated to avoid the inherent problems and deficiencies experienced with common coating materials, as the charts below display:

COMPARISON of TYPICAL PHYSICAL PROPERTIES: Concrete and Polymer Coatings.

	Quantum Polymorphic Resin	Concrete**	Polyester**	Polyamide Epoxy**	Amine Epoxy**	Urethane**	Furan**
Min. Application Temp. °F	−25	40	40	60	60	60	45
Traffic Limitations — Light Return to Full Service	10 minutes to a few hours	28 days	16 hrs.	24 hrs.	24 hrs.	24 hrs.	24 hrs.
Tensile Strength PSI	10,000	300	2,000	4,000	2,000	1,000	3,000
Compressive Strength PSI	20,000	3,500	10,000	4,000	6,000	5,000	14,000
Flexural Strength PSI	17,000	—	1,500	1,000	1,500	1,500	6,000
Coeff. of Expansion In/In/F°	6.4×10^{-6}	6.5×10^{-6}	20×10^{-6}	40×10^{-6}	40×10^{-6}	—	—
Shrinkage %	Zero, linear	—	3	0.5	0.5	2	0.21
Adhesion Characteristics	Excellent	—	Poor	Good	Good	Good	Good
Abrasion Resistance	Excellent	—	Good	Good	Good	Good	Good
Resistance to Thermal Shock	Excellent	—	Poor	Poor	Poor	Poor	Poor

COMPARISON of CHEMICAL CORROSION RESISTANCE: Polymer Coatings.

	Quantum Polymorphic Resin	Coal-tar Epoxy**	Amine Epoxy**	Epoxy Ester**	Polyester**	Polyvinyl**	Urethane**	Chlorinated Rubber**
ACIDS:								
Sulfuric 10%	R*	LR	R	LR	R	R	LR	R
Sulphuric 70%	R	NR	NR	NR	R	NR	NR	R
Hydrochloric 10%	R*	LR	R	LR	R	LR	LR	R
...rochloric 35%	R	NR	NR	NR	R	LR	LR	R
...0%	R*	NR	LR	NR	R	R	LR	R
...50%	R	NR	NR	NR	NR	NR	NR	NR
Acetic 50%	R*	NR	NR	NR	NR	NR	NR	NR
WATER:								
Distilled	R*	R	R	R	R	R	LR	R
Salt Water	R*	R	R	R	R	R	LR	R
ALKALIES:								
Sodium Hydroxide 5%	R	R	R	LR	R	R	LR	R
Ammonium Hydroxide 10%	R	R	LR	LR	R	R	LR	R
GASES:								
Chlorine	R*	LR	LR	LR	R	LR	LR	R
Ammonia	R	—	—	—	—	—	—	—
Hydrogen Sulfide	R*	R	R	LR	R	LR	R	R
ORGANICS:								
Alcohols	R	LR	R	LR	R	NR	NR	LR
Aliphatic Hydrocarbons	R	LR	R	R	R	R	R	LR
Aromatic Hydrocarbons	R	LR	LR	LR	R	NR	R	NR
Ketones	LR	LR	LR	NR	NR	NR	NR	NR
Esters	R*	NR	LR	NR	LR	NR	NR	NR

*Tested to at least 150°F

**The above charts are reprinted from "Corrosion Engineer Reference Book" with the permission of the National Association of Corrosion Engineers, Houston, Texas, U.S.A. 1983

***See Quantum "Chemical Corrosion Resistance Guide" for specific recommendations.

R — Recommended; LR — Limited Recommendation; NR — Not Recommended

...acturer: Polymorphic Polymers Corp., Miami, FL.

4.3

Container Management Building Secondary Containment Systems and Drawings

Table of Contents

List of Appendices

List of Figures

1.0 Requirement for the Base or Liner to Contain Liquids

The Container Management Building was constructed on a nominal eight (8) inch thick reinforced concrete pad over a compacted fill base. All concrete construction was in accordance with ACI-318-83, reinforced concrete design standards. Compressive strength after twenty-eight (28) days would nominally be three thousand (3000) psi. The slab is free of cracks or gaps[1]. All joints will contain continuous water-stop to prevent any migration of liquid past the stop. The resulting containment system can contain leaks, spills, and accumulated liquids until the material is detected and removed. Liquids in the secondary containment areas, sumps, or low points which are the result of spills or leaks will be removed within 24 hours of discovery, while liquids resulting from precipitation will be removed within 48 hours of discovery or when the precipitation event has ended.

Containment has been provided by an eight (8) inch minimum thick, six (6) inch high curb around the building perimeter. Similar curbs segregate the storage areas from each other. Concrete sealant(s)/hardener(s), compatible with the waste types to which it may be exposed, has been applied to all concrete surfaces in the containment system sumps (see Figure 1). Technical data on the chemical resistivity of coatings is provided in Appendix 2 of the Drum Dock Secondary Containment System and Drawings.

2.0 Containment System Drainage

The floor of the container receiving and storage areas of the Container Management Building is sloped at a grade of one eighth (1/8) inch per foot from the front and rear of the slot towards a drainage trough along the slot centerline. The drainage trough is a minimum of twenty-four (24) inches deep and slopes at one quarter (1/4) inch per foot from one side of the slot towards the other side of the slot. See Figure 3, Container Management Building Plan View.

3.0 Containment System Capacity

A summary of the containment calculations for the different areas of the Container Management Building is presented in Appendix 1. As the figures demonstrate, the available containment volumes are well in excess of ten (10) percent or the volume of the largest container, as required by 40 CFR 264.175(b)(3).

4.0 Control of Run-on

The covered storage areas minimize infiltration of rain or dispersion of wastes by wind. Rainwater from the roof is brought to ground level by a system of roof drains. Site grading around the building

[1] Cracks and gaps in the concrete surface will be corrected in a timely fashion. It is noted that superficial or insignificant cracks and gaps may occur in concrete surface which do not infringe upon secondary containment.

diverts water away from the building. Walls, curbs, and elevated floors prevent the run-on of storm water into containment areas.

5.0 Removal of Liquids from Containment System

The slopes of the floors in the receiving and storage areas promote drainage toward troughs. Troughs will be inspected daily for the presence of liquids. Inspection schedules are discussed in detail in the Inspection Program. Liquids will be removed by means of pumps or a vacuum tanker. The estimated volume of liquid removed, available analytical data, and disposal method will be enteredinto the Operating Record. The liquids will be tested in accordance with the Waste Analysis Plan.

6.0 Containers Without Free Liquids

All waste containers stored at the Container Management Building are stored in areas provided with secondary containment and a drainage system designed to accommodate containers with free liquids. CHESI seeks no reduction in standards in accordance with 40 CFR 264.175(c).

APPENDIX 1

CONTAINER MANAGEMENT
CONTAINMENT VOLUME CALCULATIONS

CONTAINER MANAGEMENT BUILDING CONTAINMENT VOLUME CALCULATIONS

AREA SIZE	CONTAINER RECEIVING	CONTAINER STORAGE
173′8″ * 50′ * 6″	4,343.75 ft^3	
173′ * 100′ * 6″		8,687.5 ft^3
ADDITIONS		
TROUGHS		
2″ * 41′ * 2′	164 ft^3	
2″ * 40′ * 2′	160 ft3	
2″ * 40′ * 2′	160 ft3	
2″ * 40′ * 2′	156 ft3	
2″ * 20′ * 2′		80 ft^3
2″ * 20′ * 2′		80 ft^3
2″ * 20′ * 2′		80 ft^3
2″ * 20′ * 2′		80 ft^3
2″ * 20′ * 2′		80 ft^3
2″ * 20′ * 2′		80 ft^3
2″ * 41′ * 2′		164 ft^3
SUBTOTALS	4,983.75 ft^3	9,331.5 ft^3
	TOTAL CONTAINMENT	14,315.25 ft3
SUBTRACTIONS		
INTERNAL CURBS		
6 (1′ * 90′ * 6″)		270.0 ft^3
100′ * 6″ * 1′		50.0 ft^3
	TOTAL SUBTRACTIONS	320.0
	TOTAL NET CONTAINMENT	13,995.25 ft^3

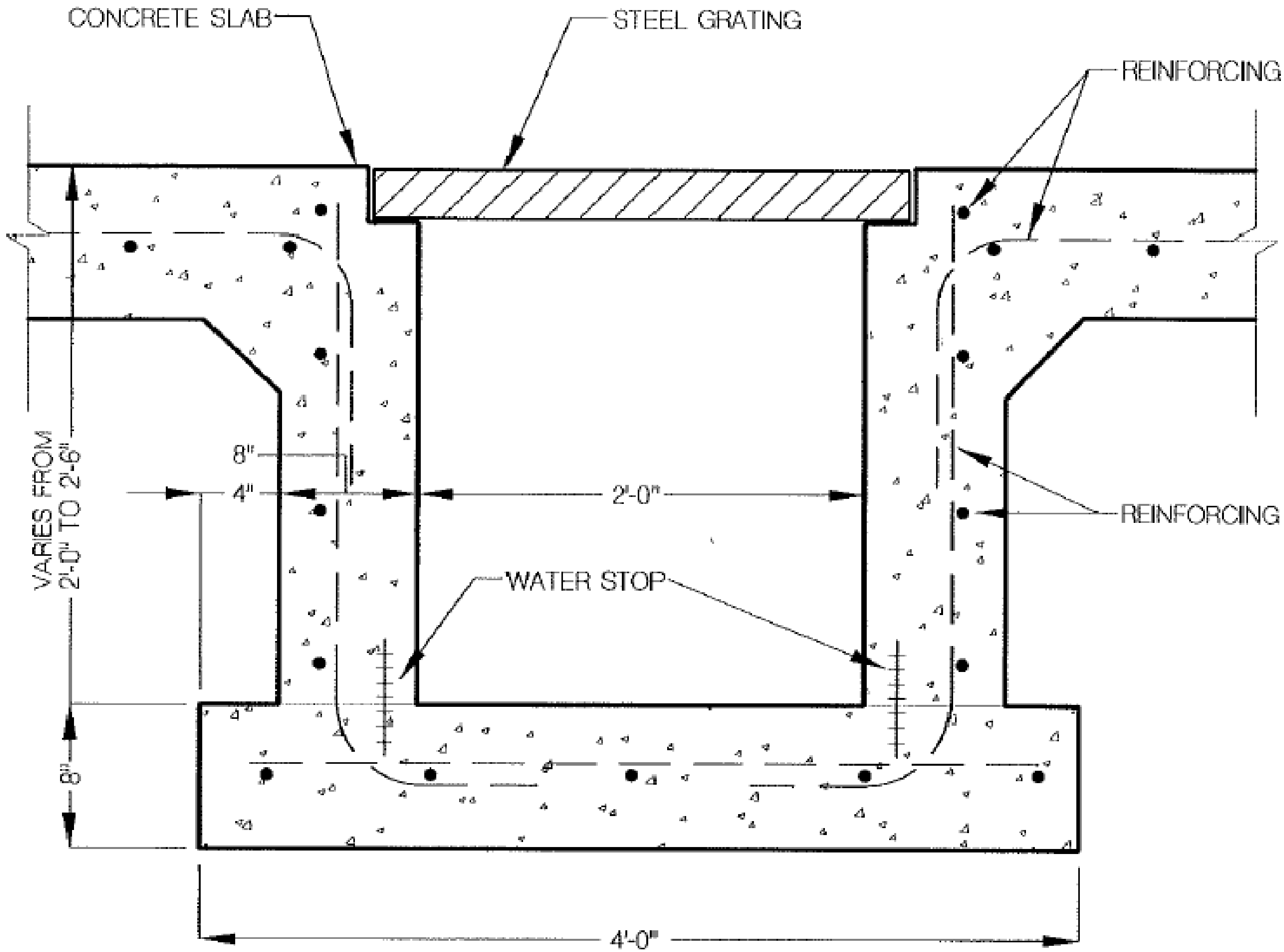
APPENDIX 2

CONTAINER MANAGEMENT
CONTAINMENT VOLUME CALCULATIONS
SUMMARY OF CALCULATIONS

CONTAINER MANAGEMENT BUILDING CONTAINMENT VOLUME CALCULATIONS
SUMMARY OF CALCULATIONS

MAXIMUM LIQUID VOLUME (GALLONS)		182,930
MAXIMUM LIQUID VOLUME (FT^3)		24,456
CONTAINMENT VOLUME (FT^3)		
Container Receiving		4,983.75
Container Storage		9,331.5
	TOTAL CONTAINMENT	14,315.25
LOST TO INTERNAL CURBS (FT^3)		
		270.0
		50.0
	TOTAL SUBTRACTIONS	320.0
	TOTAL NET CONTAINMENT	**13,995.25 ft^3**
	REQUIRED CONTAINMENT (10% OF STORAGE VOLUME)	**2,446 ft^3**

FIGURES



Clean Harbors Lone Mountain Facility

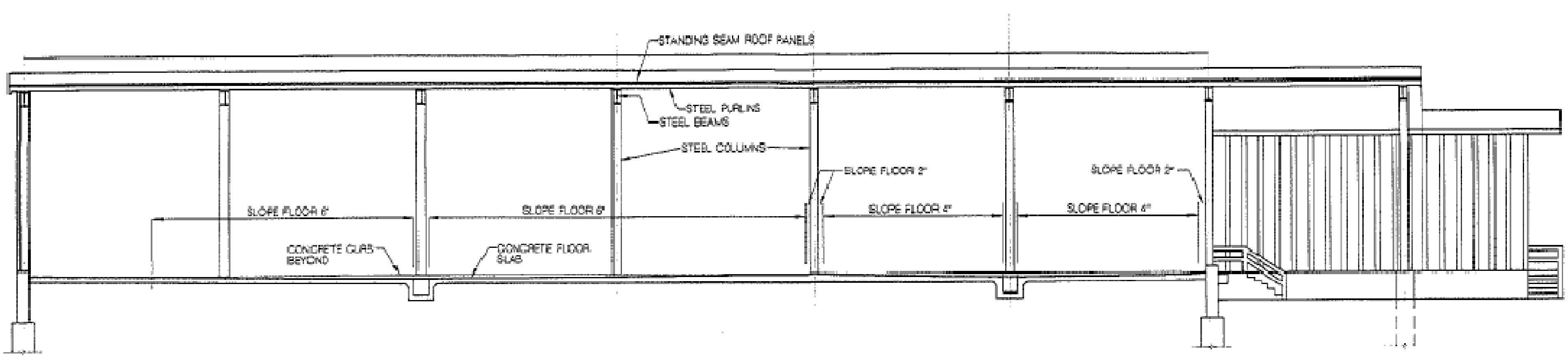
Figure 1

Volume 5, Section 4.3

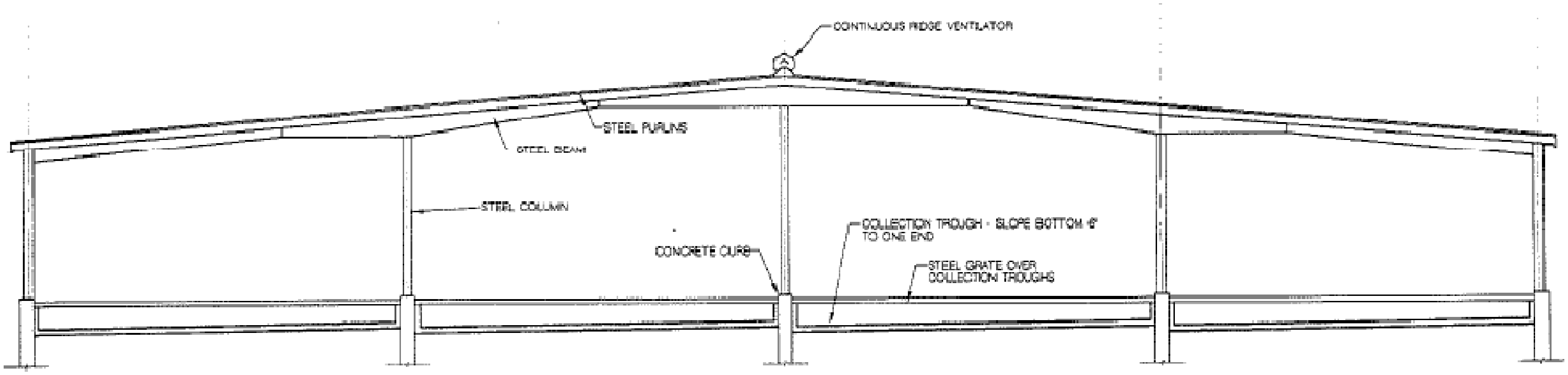
Container Management Building

Collection Trough Cross–Section

ENVIROTECH ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com



SECTION ACROSS TROUGHS

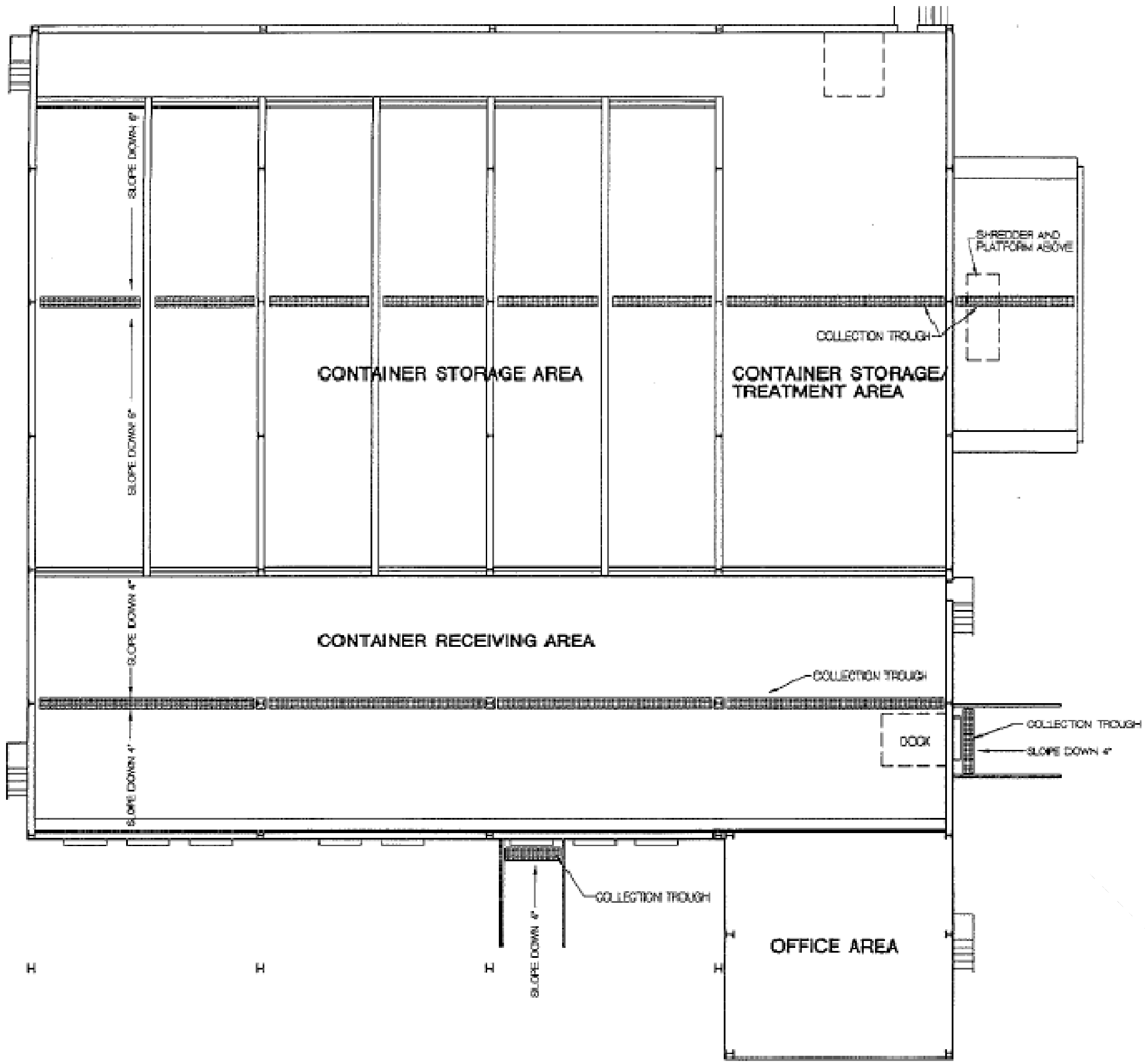


SECTION ALONG TROUGH

Clean Harbors Lone Mountain Facility

Figure 2
Volume 5, Section 4.3
Container Management Building

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com



Clean Harbors Lone Mountain Facility

Figure 3

Volume 5, Section 4.3

Plan View – Container Management Building

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com

4.4

Miscellaneous Container Storage Areas Secondary Containment Systems and Drawings

Table of Contents

List of Tables

List of Figures

Appendix 1

1.0 Requirement for the Base or Liner to Contain Liquids

The containment systems for the Miscellaneous Container Storage Areas consist (or will consist) of an eight (8) inch (nominal) thick concrete pad reinforced by either wire mesh and/or reinforcing steel. The slabs are (or will be) free of cracks or gaps[1]; as a result, the pads are (or will be) sufficiently impervious to contain leaks, spills, or accumulated liquids until the accumulation is detected and removed. Liquids in the secondary containment areas, sumps, or low points which are the result of spills or leaks will be removed within 24 hours of discovery, while liquids resulting from precipitation will be removed within 48 hours of discovery or when the precipitation event has ended.

Containment is provided by a curb of variable height around the perimeter of the units. A concrete sealant/hardener compatible with acids, caustics, and solvents has been (or will be) applied to all concrete surfaces in the containment system. See Appendix 2 of Section 4.2 title "Drum Dock Secondary Containment System" and associated Drawings for the properties of a typical sealant/hardener.

2.0 Containment System Drainage

The concrete containment area floors are sloped to a sump or low point at a grade sufficient to promote good drainage and prevent significant pooling of liquids which might damage the containment area or containers. See Figures 1 through 5 for plan view and cross section details of the containment areas.

3.0 Containment System Capacity

A summary of the containment calculations for the different storage areas is presented in Table 1. The 24-hour, 25 year storm event rainfall of 6.1 inches has been used in determining the net containment provided by uncovered areas. The Truckwash Bay can store two (2) 6,000 gallon containers (e.g., tank trucks, roll-off boxes, etc.) in addition to the equivalent of thirty-two (32) 55-gallon drums for a total capacity of 13,760 gallons. Detailed calculations are provided in Appendix 1.

As the figures demonstrate, the available containment volumes are well in excess of ten (10) percent or the volume of the largest container, as required by 40 CFR 264.17S(b) (3).

[1] Gaps and cracks in the concrete surface will be corrected in a timely fashion. It is noted that superficial or insignificant cracks and gaps may occur in concrete surfaces which do not infringe upon secondary containment.

TABLE 1
MISCELLANEOUS CONTAINER STORAGE AREAS - CONTAINMENT VOLUMES
SUMMARY OF CALCULATIONS

CONTAINMENT AREA	DESCRIPTION	PERMITTED STORAGE VOLUME - GALLONS	REQUIRED CONTAINMENT CUBIC FEET[2]	CONTAINMENT PROVIDED			
				DUE TO CURBS	DUE TO SUMPS	LOSSES[3]	TOTAL
8	Reactives Unloading Area	880	12	6,576	0	1,615	4,961
11	Tanks D1 & D2 Unloading Area	880	12	667	0	482	184
12	Wastewater Final Treatment Storage Area	880	12	459	0	235	224
1	Truckwash Bay	13,760	802	899	311	1	1,209
18	Acid Storage Area	1,760	24	652	0	327	324

4.0 Control of Run-on

Run-on to the storage areas is prevented by the elevation of the curbs/walls around the perimeter of the storage areas. Site grading around the storage areas diverts water away from the storage areas. The Truckwash Bay is a covered storage area, which minimizes the infiltration of rain or dispersion of wastes by wind.

5.0 Removal of Liquids from Containment System

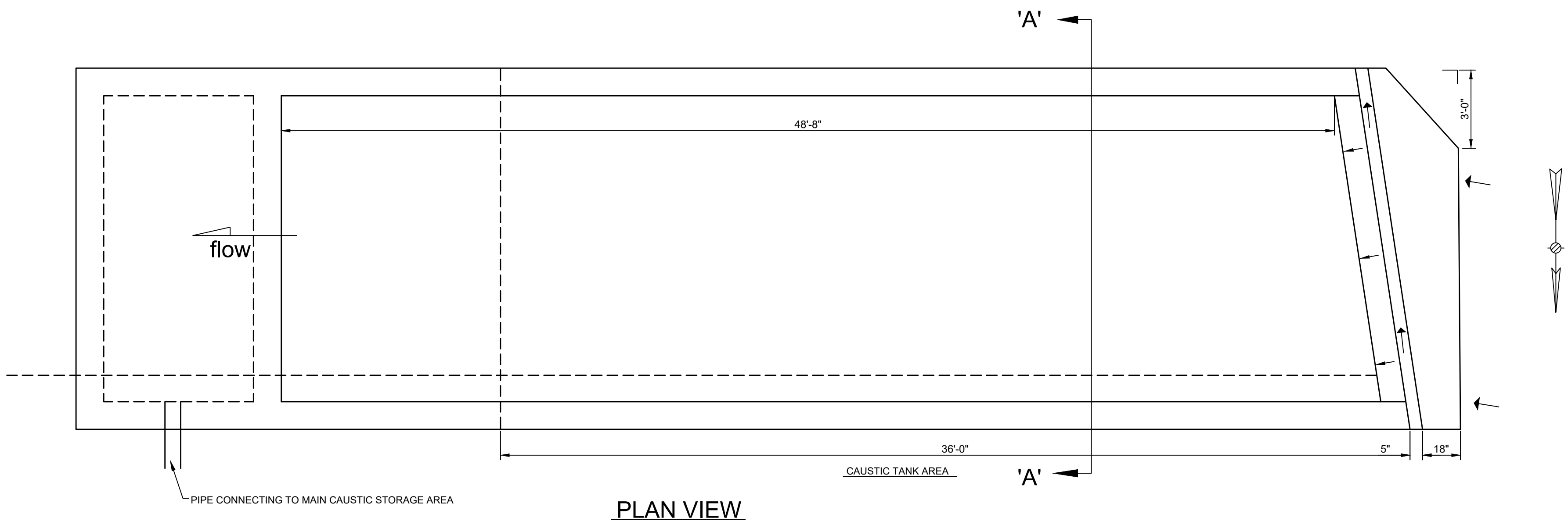
The slopes of the areas are designed to promote drainage. Sumps and low points will be inspected daily for the presence of liquids. Inspection schedules are discussed in detail in the Inspection Program. Liquids will be removed by means of pumps or vacuum tanker. The estimated volume of liquid removed, available analytical data, and disposal method will be entered in the operating record. The liquids will be evaluated in accordance with the Waste Analysis Plan.

6.0 Containers Without Free Liquids

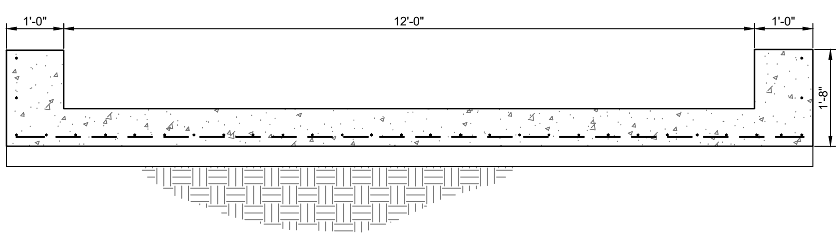
All containers stored at the Miscellaneous Container Storage Areas are assumed to contain free liquids; they are therefore stored in areas provided with secondary containment and a drainage system designed to accommodate containers with free liquids. CHESI seeks no reduction in standards in accordance with 40 CFR 264.175(c).

[2] Equals 10% of the total storage volume or the volume of the largest container, whichever is greater.
[3] Includes rainfall, if uncovered, of 6.1 inches and other losses due to displacement by containers, equipment, curbs, berms, etc.

Figures



PLAN VIEW



SECTION 'A' - 'A'

FIGURE - 1

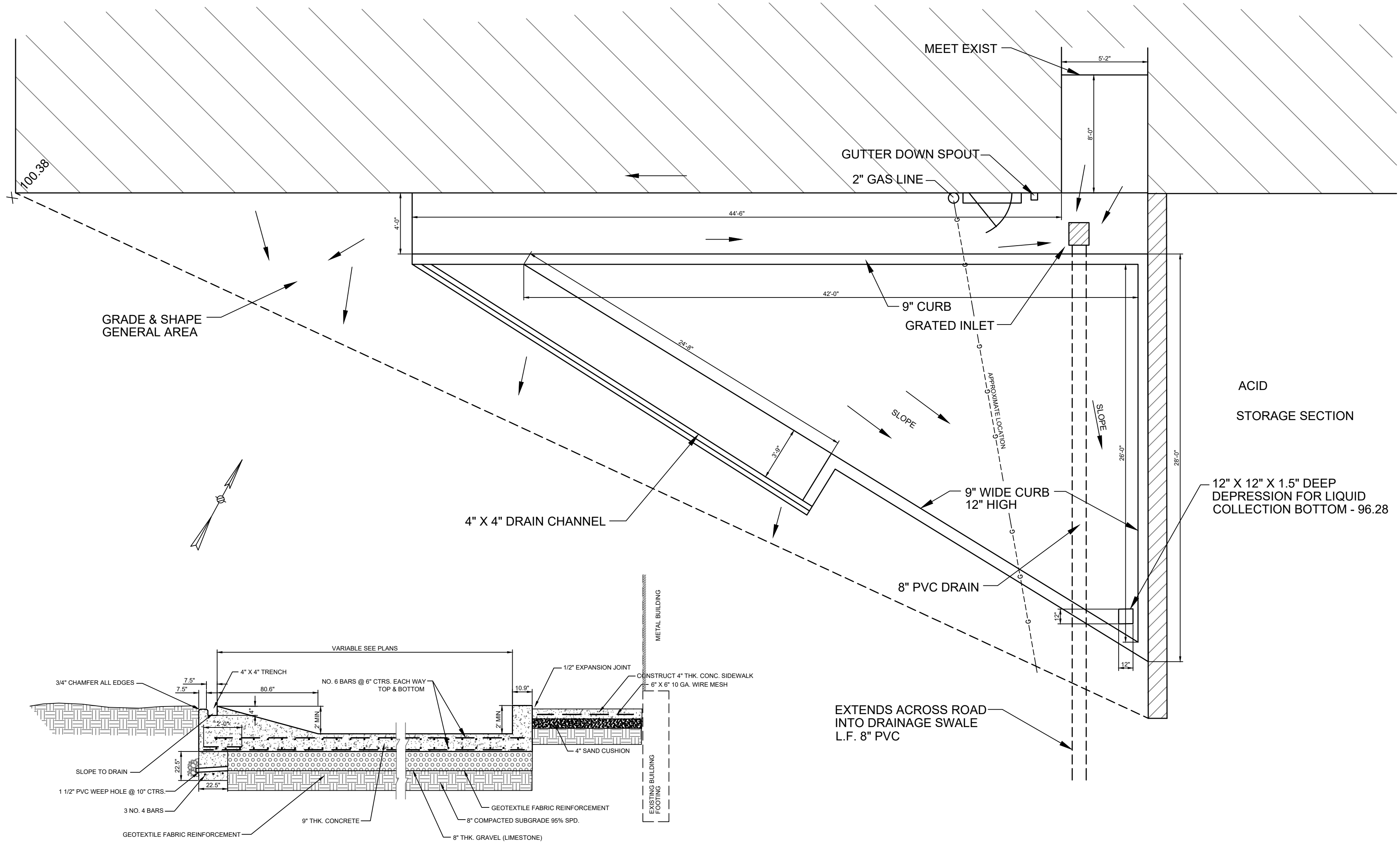
CleanHarbors
LONE MOUNTAIN

REACTIVE UNLOADING PAD

LONE MOUNTAIN FACILITY

Section 28 & 33, Township 23 North, Range 15 West
Indian Meridian. Major County.

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street -, Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
C.A. #1960 - Expiration Data: 6-30-2021
www.envirotechconsulting.com



SECTION 'A' - 'A'

FIGURE - 2

CleanHarbors LONE MOUNTAIN

THIS DRAWING IS THE PROPERTY OF CLEAN HARBORS LONE MOUNTAIN ANY INFORMATION CONTAINED HEREON MAY NOT BE COPIED OR USED WITHOUT WRITTEN PERMISSION OF OWNER.

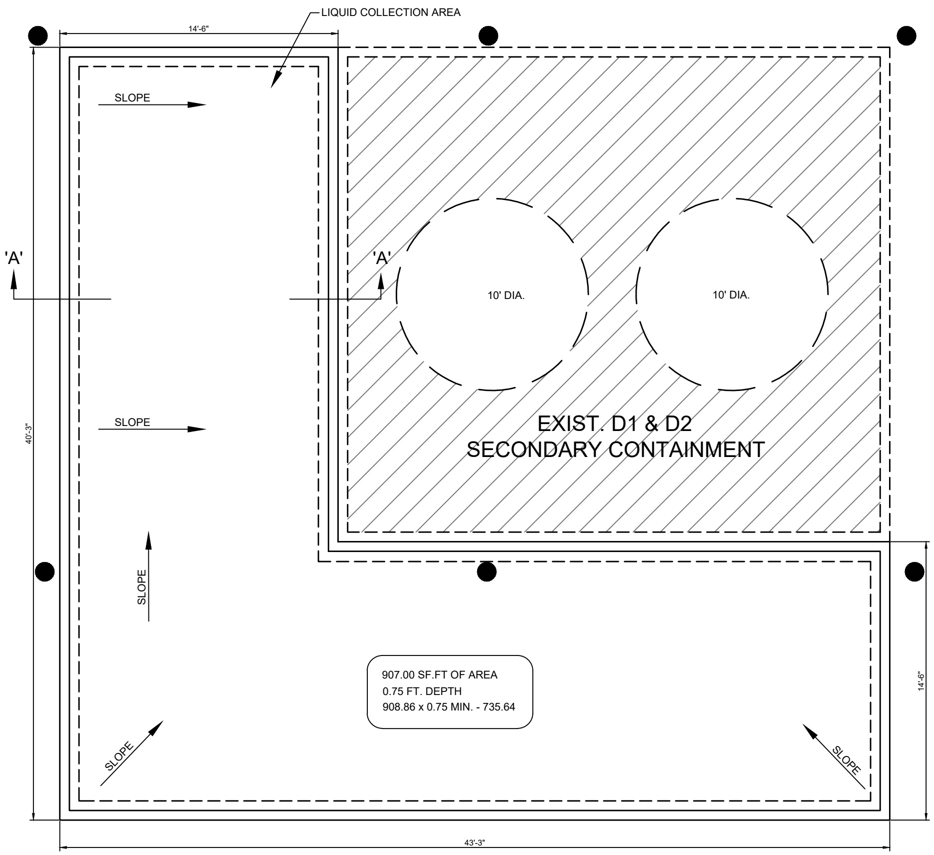
ACID STORAGE AREA AT PRETREATMENT

LONE MOUNTAIN FACILITY

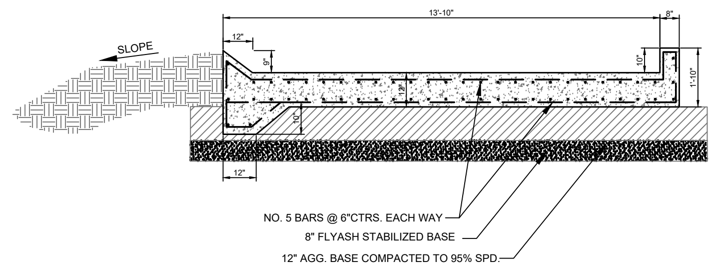
Section 28 & 33, Township 23 North, Range 15 West
Indian Meridian. Major County.

ENVIROTECH
ENGINEERING & CONSULTING, INC.

2500 North 11th Street -, Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
C.A. #1960 - Expiration Data: 6-30-2021
www.envirotechconsulting.com



PLAN VIEW



SECTION 'A' - 'A'

FIGURE - 3

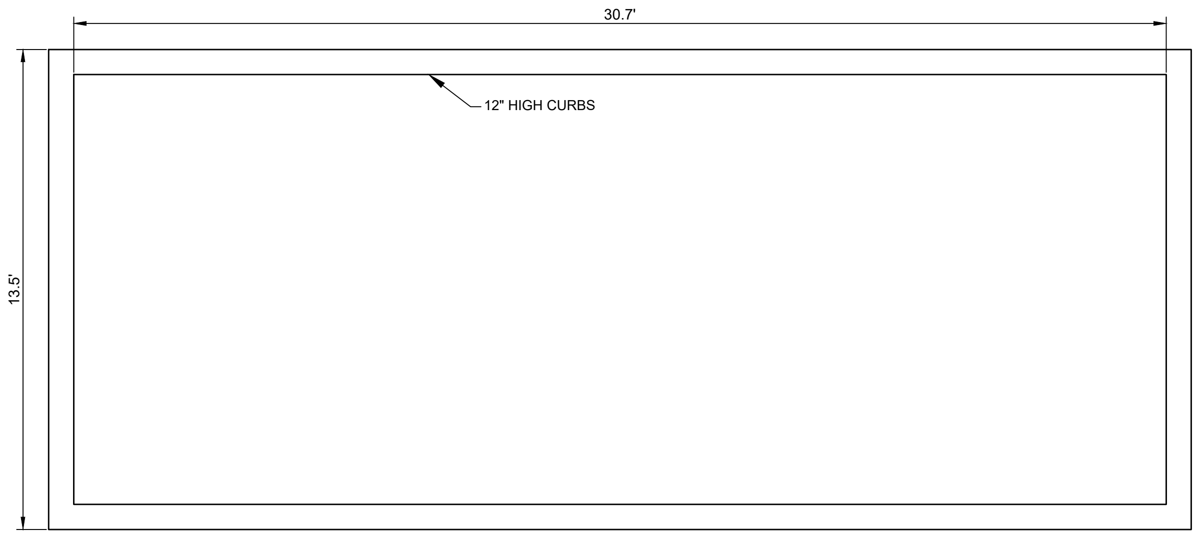
CleanHarbors®
LONE MOUNTAIN

TANK D1 & D2 UNLOADING PAD

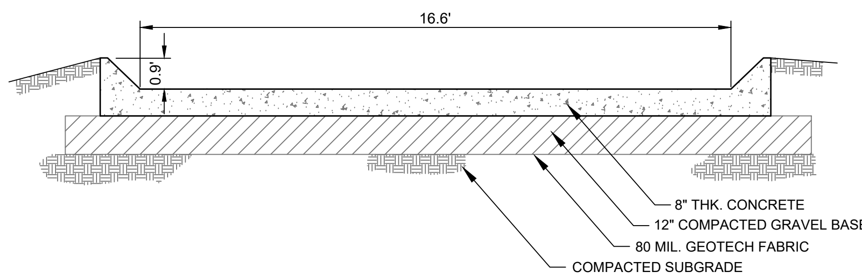
LONE MOUNTAIN FACILITY

Section 28 & 33, Township 23 North, Range 15 West
Indian Meridian. Major County.

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street -, Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
C.A. #1960 - Expiration Data: 6-30-2021
www.envirotechconsulting.com



PLAN VIEW



SECTION VIEW

FIGURE - 4

CleanHarbors®
LONE MOUNTAIN

WASTEWATER FINAL TREATMENT CONTAINER STORAGE PAD

LONE MOUNTAIN FACILITY
Section 28 & 33, Township 23 North, Range 15 West
Indian Meridian. Major County.

ENVIROTECH
ENGINEERING & CONSULTING , INC.
2500 North 11th Street -, Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
C.A. #1960 - Expiration Data: 6-30-2021
www.envirotechconsulting.com

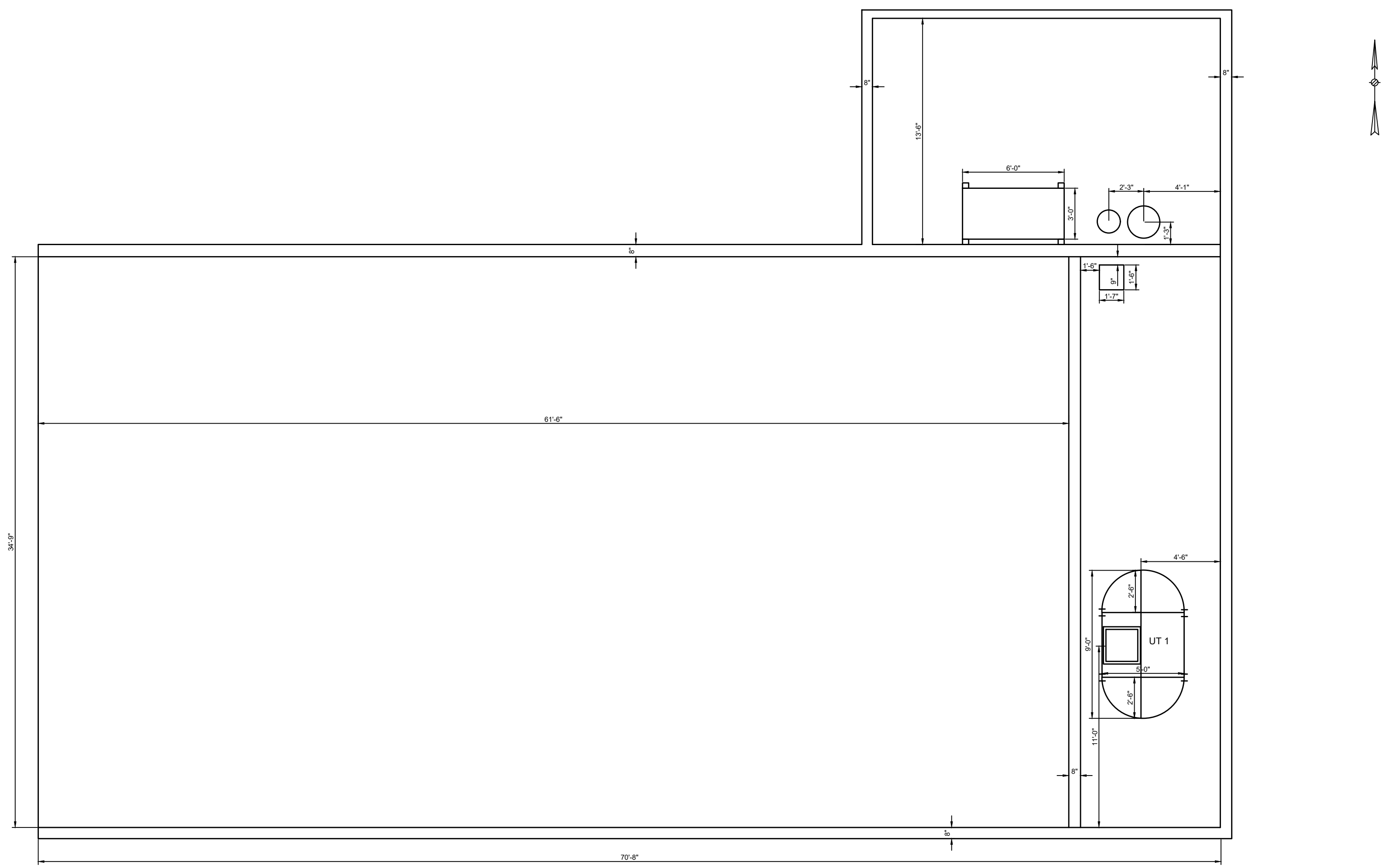


FIGURE - 5

CleanHarbors®
LONE MOUNTAIN

TRUCK WASH BAY SECONDARY CONTAINMENT

LONE MOUNTAIN FACILITY

Section 28 & 33, Township 23 North, Range 15 West
Indian Meridian. Major County.

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street -, Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
C.A. #1960 - Expiration Data: 6-30-2021
www.envirotechconsulting.com

Appendix 1

MISCELLANEOUS CONTAINER STORAGE AREAS CONTAINMENT VOLUME CALCULATIONS

Reactive Unloading Pad
Wastewater (Exterior) Secondary Containment Area No. 8

CONTAINMENT AREA NO. 8 VOLUME CALCULATIONS (CAUSTIC AREA)

Length =	70.70 feet
Width =	35.50 feet
Height =	2.62 feet
Surface Area =	2,509.85 ft^2

Gross Volume = Area * Height = 6575.81 ft^3

Volumes of Items of Displacement

Steel Skirting =	9.17 ft^3
Total Volume to Deduct for Items in Containment Are =	9.17 ft^3

Subtraction for Volume of Rainfall

Volume of Rain = Area x Depth of Rainfall

Depth of Rainfall =	6.15 in.
Area =	2,509.85 ft^2
Volume =	1,286.30 ft^3

Total Available Volume = Gross Volume – Subtractions =	6,575.81 ft^3
Items of Displacement	-9.17 ft^3
Volume of Rainfall	-1,286.30 ft^3
TOTAL AVAILABLE VOLUME AREA 8A	5,280.34 ft^3

CONTAINMENT AREA NO. 8C VOLUME CALCULATIONS (TRUCK PAD)

This area will collect rain and deposit it into the caustic containment area (8a) when the valve is opened. This area does not contribute any volume for containment.

Length =	52.00 feet
Width =	12.00 feet
Surface Area =	624.00 ft^2

Subtraction for Volume of Rainfall

Volume of Rain = Area x Depth of Rainfall

Depth of Rainfall =	6.15 in.
Area =	624.00 ft^2
Volume =	319.80 ft^3

SUMMARY OF SECONDARY CONTAINMENT DATA

Surface Areas:	
Caustic Area 8A =	2,509.85 ft^2
Truck Unloading Pad 8C =	624.00 ft^2
Gross Volumes:	
Caustic Area 8A =	6,575.81 ft^3
Truck Unloading Pad 8C =	0.00 ft^3
Volume of Displacements:	
Caustic Area 8A =	9.17 ft^3
Truck Unloading Pad 8C =	0.00 ft^3
Volume for 24-hour Rain:	
Caustic Area 8A =	1,286.30 ft^3
Truck Unloading Pad 8C =	319.80 ft^3
Total Gross Volume 8A =	6,575.81 ft^3
Total Displacement Volumes =	9.17 ft^3
Total Volume of Rain =	1,606.10 ft^3
Containment Capacity Available (CCA) =	4,960.54 ft^3 or 37,104.83 Gal.

Acid Storage Area

Pretreatment (Exterior) Secondary Containment For Drums Area No. 18

CONTAINMENT VOLUME CALCULATIONS

Area No. 1 - Triangle	
Length =	42.00 ft
Width =	26.00 ft
Height =	1.10 ft
Surface Area =	546.00 ft^2
Volume =	600.60 ft^3
Area No. 2 – South Ramp	
Length =	24.67 ft
Width =	3.75 ft
Height =	0.55 ft
Surface Area =	92.50 ft^2
Volume =	50.88 ft^3
Gross Area = Area 1 + Area 2 + Area 3 =	638.50 ft^2
Gross Volume = Vol 1 + Vol 2 + Vol 3 =	651.48 ft^3
Volumes of Items of Displacement	
There are no items in this area.	
Total Volume to Deduct for Items in Containment	0.00 ft^3
Subtraction for Volume of Rainfall	
Volume of Rain = Area x Depth of Rainfall	
Depth of Rainfall =	6.15 in.
Area =	638.50 ft^2
Volume =	327.23 ft^3
Total Available Volume = Gross Volume – Subtractions =	651.48 ft^3
Items of Displacement	0.00 ft^3
Volume of Rainfall	-327.23 ft^3
TOTAL AVAILABLE VOLUME =	**324.24 ft^3 or 2,425.34 Gal**

Tanks D1 & D2 Unloading Pad
Wastewater (Exterior) Secondary Containment for Drums Area No. 11

CONTAINMENT VOLUME CALCULATIONS

Area No. 1	
Length =	42.00 ft
Width =	11.25 ft
Height =	0.75 ft
Surface Area =	472.50 ft^2
Volume =	354.38 ft^3
Area No. 2 – West Side	
Length =	29.00 ft
Width =	12.54 ft
Height =	0.75 ft
Surface Area =	363.66 ft^2
Volume =	272.75 ft^3
Area No. 3 – Sloped Wall	
Length =	42.00 ft
Width =	2.50 ft
Height =	42.00 ft
Surface Area =	105.00 ft^2
Volume =	39.38 ft^3
Gross Area = Area 1 + Area 2 + Area 3 =	941.16 ft^2
Gross Volume = Vol 1 + Vol 2 + Vol 3 =	666.50 ft^3
Volumes of Items of Displacement	
There are no items in this area.	
Total Volume to Deduct for Items in Containment	0.00 ft^3
Subtraction for Volume of Rainfall	
Volume of Rain = Area x Depth of Rainfall	
Depth of Rainfall =	6.15 in.
Area =	941.16 ft^2
Volume =	482.34 ft^3
Total Available Volume = Gross Volume – Subtractions=	666.50 ft^3
Items of Displacement	0.00 ft^3
Volume of Rainfall	-482.34 ft^3
TOTAL AVAILABLE VOLUME =	**184.15 ft^3 or 1,377.45 Gal**

Wastewater Final Treatment Container Storage Pad
Wastewater (Exterior) Secondary Containment For WWFT Area No. 12

CONTAINMENT VOLUME CALCULATIONS

West Side	
Length =	34.00 ft
Width =	13.50 ft
Height =	1.00 ft
Surface Area =	459.00 ft^2
Volume =	459.00 ft^3
Gross Area = Area 1 - Area 2 + Area 3 =	459.00 ft^2
Gross Volume = Area * Height =	459.00 ft^3
Volumes of Items of Displacement	
There are no items in this area.	
Total Volume to Deduct for Items in Containment	0.00 ft^3
Subtraction for Volume of Rainfall	
Volume of Rain = Area x Depth of Rainfall	
Depth of Rainfall =	6.15 in.
Area =	459.00 ft^2
Volume =	235.24 ft^3
Total Available Volume = Gross Volume – Subtractions=	459.00 ft^3
Items of Displacement	0.00 ft^3
Volume of Rainfall	-235.24 ft^3
TOTAL AVAILABLE VOLUME =	**223.76 ft^2 or 1,673.74 Gal**

Truckwash Bay Secondary Containment Volume
Pretreatment Area (Interior) Containment Area No. 1

CONTAINMENT VOLUME CALCULATIONS

Area No. 1 – West End	
Length =	34.50 ft
Width =	8.5 ft
Height =	0.39 ft
Surface Area =	293.25 ft^2
Volume =	114.37 ft^3
Area No. 2 – East End	
Length =	61.50 ft
Width =	34.50 ft
Height =	0.37 ft
Surface Area =	2121.75 ft^2
Volume =	785.05 ft^3
Sump South End	
Length =	29.33 ft
Width =	3.75 ft
Height =	2.08 ft
Surface Area =	110.00 ft^2
Volume =	228.80 ft^3
Sump North End	
Length =	6.58 ft
Width =	3.75 ft
Height =	3.33 ft
Surface Area =	24.68 ft^2
Volume =	82.17 ft^3
Gross Area = Area 1 - Area 2 =	2549.67 ft^2
Gross Volume = Area * Height =	1210.38 ft^3
Volumes of Items of Displacement	
Pipe Supports (9)	1.00 ft^3
Steel Pump Base	0.17 ft^3
Total Volume to Deduct for Items in Containment	1.17 ft^3
Subtraction for Volume of Rainfall	
This entire area is covered and will not receive rain.	
Total Available Volume = Gross Volume – Subtractions=	1210.38 ft^3
Items of Displacement	-1.17 ft^3
Volume of Rainfall	0.00 ft^3
TOTAL AVAILABLE VOLUME =	**1209.21 ft^3 or 9,044.92 Gal**

4.5

Shredders

Table of Contents

1.0 Description

There is one (1) fixed shredder located at the Lone Mountain facility. The shredder is associated with one (1) permitted container storage area, the Container Management Building. The sole purpose of the shredder is to de-containerize waste prior to further handling. Per the definitions of treatment in 40 CFR 260.10 and the EPA handling codes for treatment in 40 CFR 264, Appendix I, no treatment of hazardous waste is performed through or during shredding operations. The shredder has a capacity to shred containers at a maximum rate of I00 55- gallon drums in one hour. The shredder is capable of being operated twenty-four hours per day, seven days per week.

2.0 Location, Design, and Construction

The shredder is located on the northwest side of the Container Management Building. See Figure 3 in the Container Storage management Procedures for the location within the unit. The shredder is located under a roof to minimize the effects of precipitation, and is isolated from the container storage areas by a one (1) one - foot thick steel-reinforced concrete wall.

The shredder utilized at the Lone Mountain facility is typical of commercially available equipment. The shredder are constructed primarily of carbon steel with some parts (e.g., knives) being constructed of stainless steel.

3.0 Containment

Containment for the shredder and shredded waste at the Container Management Building is provided initially by a roll-off container positioned immediately below the shredder. Additional containment is provided by a concrete pad located immediately beneath each shredder.

The concrete containment for the shredder area at the Drum Dock is a 25′ x 50′ reinforced concrete pad. It has a slope, allowing it to drain into a 4′ x 4′ x 4′ sump located in the center west of the pad. The capacity of the Drum Dock shredder containment is approximately 5,667 gallons, which is in excess of the anticipated largest roll-off container 9 i.e., 23 cubic yards or approximately 4,700 gallons) which may be present in the area. The containment area also has a curb to prevent run-on into the containment. If liquids are discovered in the sump, they will be removed and managed according to the procedures in the Waste Analysis Plan.

The concrete containment area for the shredder at the Container Management Building also is a 25′ x 50′ reinforced concrete pad which is capable of containing liquids. The containment has a 1-foot slope form both the east and west, which drains into a drainage trough located in the center of the containment. The drainage trough size is 20′ x 2′ x 2′.The capacity of the Container Management Building shredder containment is approximately 5,582 gallons, which is in excess of the anticipated largest roll-off container (i.e., 23 cubic yards or approximately 4,700 gallons) which may be present in the area. The containment area also has an elevated lip at the east and west entrances to prevent run-on into the containment. If liquids are discovered in the drainage trough, they will be removed and managed according to the procedures in the Waste Analysis Plan.

4.0 Operation

Operators are present at all times during shredding and are prepared to discontinue operations if necessary. Containers are fed into the shredder by means of a "drum" elevator, which is operated either in an automatic or manual mode. The elevator raises containers from the storage area floor and rotates them over the concrete wall into the feed hopper of the shredder. The containers are placed on the elevator by hand, dolly, or other handling equipment which minimizes damage to the containers and the potential for spill.

Wastes are normally shredded in batches with neutral wastes being shredded between batches of acidic and caustic wastes. The shredder will be "neutralized" between loads of incompatible waste streams by shredding at least two bags of (or equivalent) of pozzolanic material (e.g., fly ash, Portland cement, etc.). One bag, or equivalent, will be placed in each drum elevator after the initial load or waste stream has been shredded.

An open top roll-off container is placed below the shredder to collect the shredded wastes. When the roll-off container is full or the batch of waste is complete, the container is transferred by truck to the stabilization tank system for decanting, treatment, etc., or to a landfill cell.

5.0 Maintenance

Maintenance of shredders is typically conducted once every six months or as necessary.

6.0 Detection and Monitoring

The shredders are equipped with hazardous gas detection equipment which will detect the presence of hydrogen cyanide, hydrogen sulfide, and/or combustible hydrocarbons (e.g., hexane). When gases are detected, an alarm will cause the drum elevator and shredder to shut down.

Fire protection is provided by an automatic fire suppression system that discharges a dry chemical fire suppression agent if a high temperature is detected in the shredder hopper or waste collected in the roll-off container. Triggering of the fire suppression system also causes a shutdown of the drum elevator and shredder operation.

Dust suppression for potentially dusty materials is provided by water spray nozzles located beneath the shredder and immediately above the container into which the waste is being shredded. Instructions regarding the likely need for dust suppression for each waste stream are typically provided by the laboratory. Prior to, during, and after shredding potentially dusty waste, the water spray nozzles are turned on as needed to provide dust suppression.

In addition, waste which is subject to the substantive emission control requirement of subpart CC (See Sections 9.4 and 9.5 of the Waste Analysis Plan) will not be shredded.

7.0 Inspection

Inspection schedules for the shredders are discussed in detail in the Inspection Program.

8.0 Closure

The closure requirements for the shredders are noted in the Container Storage Area Closure section of the Closure Plan. Post closure care will not be required as the shredders will be clean-closed or disposed as a waste.

9.0 Hydrology, Geology, and Meteorology

The hydrology, geology and meteorology information for the Lone Mountain Facility is discussed in detail in the Groundwater Monitoring section of this Permit Application.

10.0 Response to Release

The shredder is located above a concrete containment area, which will prevent releases of hazardous waste or hazardous waste constituents to the ground water or subsurface environment, or migration of waste constituents in surface water, wetlands, or soils. In addition, any spills or liquids discovered in the containment area will be removed and disposed of according to the requirements of the Waste Analysis Plan.

Prevention of airborne waste constituent releases to the air was previously discussed in the Detection and Monitoring sections.

SECTION 5

TANK STORAGE AND TREATMENT

5.1

Stabilization Tank Systems Procedures

Stabilization Tank System Procedures

Table of Contents

1.0 Stabilization Tank Procedures

The stabilization tank system consists of two (2) existing tanks. The tanks are double-walled rectangular carbon steel tanks, which are open top with an approximate capacity of 17,952 gallons each. The tanks are located on a concrete slab and are situated adjacent to and between two additional concrete slabs. One of these concrete slabs is at a similar elevation as the top of the stabilization tanks. This slab is use for trucks backing up to the tank and unloading waste, and also as a location for the equipment used during mixing and unloading. The second slab is located at a similar elevation as the base of the stabilization tanks and is use for access by trucks, which are loading and hauling waste to the landfill for disposal.

2.0 Stabilization Process

Waste to be stabilized[1] is unloaded from the truck, gondola, tank, etc., directly into the stabilization tanks from the upper pad. The upper concrete pad is designed so that the unloading actually takes place directly over the tank, minimizing spills from outlet nozzles, etc. Prior to unloading the waste, the load sheet and associated paperwork is inspected to determine proper stabilization reagent ratios. For acidic wastes with a pH of less than three (3), a buffer of a basic (alkaline) stabilization agent is placed in the tank before the waste is unloaded to protect the carbon steel tank from corrosion.

Once the waste is unloaded, the required treatment reagent (i.e., fly-ash, Portland cement, Cement Kiln Dust, lime, water, activated carbon, hypochlorite, etc.) is placed into the tank. The tank lids will be in the closed position during the feeding of reagents from the storage silos to inhibit the pozzolan from becoming air born. The tank lids may be in the open position during the addition of special chemical reagents. Addition of this treatment reagent material is sometimes done in increments, with mixing conducted in between.
Mixing of the waste and the treatment/stabilization agents is accomplished by a trackhoe, backhoe bucket, or similar equipment. The equipment sits on the outside of the tanks on the upper pad. The operator mixes the materials by using the bucket to stir the tank contents. The mixing continues until the required amounts of agents have been added, and waste/reagents have been adequately mixed together.

To ensure that no free liquids are present in the treated waste, each load of stabilized waste is subjected to the paint filter test (SW 846 EPA Method 9095). Loads which pass the paint filter test are ready for placement in the landfill. Those loads which fail the paint filter test will be further stabilized with additional reagents or cured until the load passes the paint filter test.

Once the load has been determined to be free liquids and acceptable for transfer to the landfill, the tank contents are placed into a transport vehicle (e.g., dump truck or gondola) located on the lower pad next to the stabilization tanks. Transfer of waste is also accomplished with a trackhoe or similar

[1] The term "stabilization" is used in its generic sense to mean the treatment of a waste material to make it physically and chemically stable. In this sense, it is those treatment processes which make the material pass the applicable land disposal restriction treatment standard or other applicable standards.

equipment. The stabilization tank is constructed with an apron that extends outward and upward from the top of the tank to a point above and just beyond the side of the receiving truck. This apron is designed to catch and direct any waste falling from the bucket during the transfer into the stabilization tank.

The operator(s) wear safety equipment and clothing in accordance with Preparedness and Prevention Procedures during the stabilization process.

5.2

Wastewater Treatment Systems Procedures

Table of Contents

1.0 Introduction

The following description is intended to provide information on the design and operation of the Wastewater Treatment System at the Lone Mountain Facility. The Lone Mountain Facility Wastewater Treatment System consists of a pretreatment system, a final treatment evaporator/distillation system, a leachate storage tank system, and a miscellaneous tank system. The distillation and evaporation treatment systems are connected in series but can be operated in parallel so that approximately 90 gallons/minute (130,000 gallons/day) can be processed through both systems. They may be operated independently of each other at any time.

2.0 Tank System Description-General

Different streams may be processed through the Wastewater Treatment System and wastes are handled on either a batch-type or near-continuous basis, with the treatment of each waste category or type being given individual consideration. Incoming waste is typically unloaded into the appropriate storage or treatment tanks (e.g., caustic tank, acid tank, cyanide tank, etc.) through either the primary receiving tank or by direct connection. The waste may be pretreated, which may involve oil, water, and sludge separation, pH adjustment, cyanide and/or sulfide destruction, chromium reduction, and coagulation/clarification[1]. After pretreatment, the waste is usually relatively low in suspended solids with a pH value typically between six (6) and eleven (11). The pretreated waste is commonly stored in one of the evaporator feed tanks or in Tank T6.

The treated waste can then be processed through an evaporator and/or distillation system which physically separates some of the water and volatile constituents from the feed water. Activated carbon absorption can be utilized to polish the distilled fractions to ensure the quality of the product water. Alternatively, direct effect evaporation can be employed. The product water may be stored in one of several tanks. The appropriate laboratory analyses are carried out prior to disposal or reuse of any treatment residuals or produced waters. The scope of any analyses, as well as restrictions or limitations on waste handling and descriptions of waste tracking, are described in the Waste Analysis Plan (WAP). If a produced water does not meet the appropriate specifications, then the "off-spec" water may be recycled to either the evaporator feed tanks or to the pretreatment system for additional processing, or in-situ treatment in the tanks can be performed, or disposed of as allowed by permits or appropriate regulations.

The pH-adjustment system, polymer injection, clarifier, and filters are usually operated eight (8) to twelve (12) hours a day. All other units (evaporator, distillation units, carbon adsorption units, etc.) are usually operated continuously twenty-four (24) hours a day, seven days a week, until the supply in the evaporator feed tanks is exhausted or maintenance, etc. is needed.
The sludge produced by the various treatment regimens (e.g., cyanide treatment) can be separated either through the filtration unit, by settling, or in the evaporator/distillation units. After filtration,

[1] This list is not meant to be all inclusive. Many different treatment reactions can be undertaken in the wastewater treatment system, and only the primary treatment reactions are listed for the sake of brevity.

settling, etc., the residue produced by the system will be managed as on-site generated waste according to the procedures specified in the Waste Analysis Plan.

Rinsing and/or flushing of lines, tanks, etc. will be required whenever there is a potential for incompatible materials to react in an uncontrolled or undesired fashion.

Following are unit-specific descriptions of the procedures used in the Wastewater Treatment System. These descriptions are intended as examples of the types of treatment utilized but are not to be considered as all-inclusive. Other types of aqueous waste treatment may be employed in the tank systems in the Wastewater Treatment System; similarly, depending upon the characteristics of the wastes, certain steps may be omitted or repeated.

3.0 Tank System Descriptions – Pretreatment Area

3.1 Waste and Reagent Types

A wide variety of waste types may be processed through the Wastewater Treatment System, with the main limitation on physical form being that they are primarily aqueous or water-soluble in nature. Due to the "mixture" and "derived-from" rules, these wastes may carry any of the waste codes listed in the WAP as being acceptable at the facility. There are five general waste categories that may be processed through the system: acids, neutrals, caustics, reactives, and specialty wastes. These wastes are described in general terms below, but these descriptions are not intended to be all-inclusive. These descriptions are based upon the chemical nature of the waste, which may have no direct relationship to the waste codes that apply.

- **Acids**: Waste with a pH of less than 4, with a Normality of greater than 1, is typically considered as an acid and stored in the Acid Storage Tanks. Compatibility between acids (e.g., nitric and sulfuric) is considered when managing these wastes.
- **Neutrals**: Waste with a pH of between 4 and 10 and a Normality of less than I is typically considered as neutral wastewater; most of these are compatible with the caustics and are stored with them or processed directly for solids removal and evaporation.
- **Caustics**: Waste with a pH greater than 10 and a Normality greater than 1 but not including reactive Cyanides or Sulfides.
- **Reactives**: Consist primarily of reactive forms of Cyanides and Sulfides which require special handling but may include other materials as well.
- **Specialty Wastes**: Wastes, such as hexavalent chromium waste, which can be treated to a trivalent state prior to disposal.

Reagents used for the treatment of wastewaters consist of both product materials as well as other waste streams. For example, waste acids may be neutralized with waste caustics, or a product caustic such as Sodium Hydroxide may be used. A hypochlorite-type reagent or Chlorine is generally used for Cyanide and Sulfide destruction, whereas bisulfites and various acids and caustics can be used for chromium reduction. To facilitate solids removal, various polymers or coagulants may be added, and defoamers are sometimes used in the distillation/evaporation units.

3.2 Truckwash/Truck Unloading Types

Bulk loads of wastewaters are typically unloaded through the truckwash bay at the far western end of the pretreatment area. This is a two-bay, enclosed structure providing protection from rainfall and wind. These bays may be segregated to provide separation of incompatibles while unloading reactives. Empty tank trucks and other containers (e.g., gondolas) may also be washed out here. There are several piping systems available to handle various waste movements. A piping manifold is available for unloading directly into the acid storage area, while caustics and neutrals are first unloaded into an unloading surge tank; some materials may go directly to the effluent storage tanks. Where appropriate, in-line strainers or filters are used to remove solid material from waste streams which might interfere with downstream systems.

Additionally, containers such as 55-gallon drums may be placed in the truckwash bay in order to transfer aqueous contents into the wastewater system. Additional information on this may be found in the Container Storage Management Practices.

3.3 Acid Storage

Bulk acid-type materials are stored in the Acid Tank area, which provides segregation from other waste types and has independent secondary containment. These wastes are typically unloaded to this area from the truckwash bay or may be transferred by piping from the container management areas of the facility. There are two tanks for the routine storage of acids in this area. In addition, the Acid Storage tanks are also vented to an overflow tank within the same secondary containment, so that accidental overfilling of tanks will not spill to the containment area. There are no drains in the containment area, and all rainfall and truckwash water captured is handled as described in the Waste Analysis Plan (WAP). In addition, sump in the containment area facilitates the removal of accumulated liquids.

3.4 Caustic and Neutrals Storage

After being unloaded into the unloading/surge tank, caustics and neutrals may be piped through an oil/water separator tank within the Pretreatment area proper. In this tank, tramp oils and similar materials can be removed to the oil storage tank and eventually transferred to the waste fuel tanks; they may also be containerized or placed into bulk tankers for other disposal off-site or stabilized for disposal. The remaining liquids are then transferred into the caustics storage area, if they require further treatment (neutrals may be piped directly to the effluent storage tanks, if they are already amenable to final treatment).

The Caustics Storage area contains four tanks for storage of aqueous or water-soluble wastes. In addition, the Caustic Storage tanks could also be vented to an overflow tank in the future within the same secondary containment, so that accidental overfilling of tanks will not spill to the containment area. There are no drains in the containment area, and all rainfall captured is handled as described in the WAP. A sump in the containment area facilitates the removal of accumulated liquids after precipitation events.

3.5 Reactives Storage Area

Reactive wastewaters can be unloaded directly into the Cyanide/Sulfide Storage Tank, either through the truckwash bay, or through a piping manifold adjacent to the unit. While the truck is being unloaded, it is parked on a curbed and sloped concrete pad which will provide containment for any spilled material. The Reactives Storage tank could also be vented to an overflow tank in the future within the same secondary containment, so that accidental overfilling of the tank will not spill to the containment area. There are no drains in the containment area, and all rainfall captured is handled as described in the WAP. A sump in the containment area facilitates the removal of accumulated liquids after rainfall events.

Within the Reactives area will be a tank utilized to measure the volume of wastewater prior to treatment. Treatment reactions will be carried out in a separate vessel within the Reactives area, keeping the handling of these materials completely separate from other waste streams until they are no longer considered as reactive. The reactor tank will be connected to an overflow tank to ensure that any overflows or effervesced materials do not spill into the secondary containment.

For treatment, each batch of waste will be measured, then transferred into the reactor tank. Specific quantities of reagent materials (e.g., hypochlorite, etc.) will be added to oxidize or destroy the constituent(s) of concern, and the tank may be circulated to facilitate mixing. During and after treatment, the pH of the waste can be adjusted to the levels desired. Following this step, the wastes will be pumped to the general treatment area, as described below. The reactives treatment system will be rinsed[2] as needed between batches.

3.6 General Treatment Area

In the general treatment area, aqueous wastes can be treated using routine chemical procedures (e.g., neutralization, oxidation/reduction, etc.) to produce a wastewater that is amenable for final treatment, ultimate reuse, or disposal. Typically, wastes will be pumped from one of the storage areas into the neutralization reactor tank (Tank NR1). As the waste is being transferred, it will pass through an in-line mixing chamber (or equivalent device, if necessary), where other reagents or wastes can be added as needed for treatment. Since these reactions are usually exothermic (produce heat), the materials may then pass through a cooling loop to control actual temperatures. The NR1 Tank is circulated to ensure adequate mixing. Treated reactive wastes may receive further attention in this area, to further adjust pH, etc.

[2] Rinse water may be from several sources, such as the rural water system, contained rainwater from area catchments, etc. The primary concern is that the water may be compatible with any materials left in the system.

ENVIROTECH
ENGINEERING & CONSULTING, INC.

Each batch of waste can be handled differently; for example, an acid containing lead will typically be neutralized with caustic and the pH raised to precipitate out the metal salts, while a solution containing hexavalent chromium might be acidified for later additional treatment to reduce the chromium to its trivalent state. Tank NR1 will be vented to a caustic scrubber so that any fumes or vapors produced by the reaction are not released to the atmosphere without controls.

Upon leaving NR1, if additional treatment is needed, the waste can be transferred to the secondary reaction tanks, where other reagents can be added either singly or in a series. Other wastes and the treated materials from the secondary reaction tanks may then be routed through a final reaction tank where polymers or coagulants may be added to induce solids precipitation. At this point in the system, the pH of the waste stream will be generally between 6 and 8.

After polymer/coagulant addition, the wastewater then typically will pass through several mixing tanks where it can be slowly circulated to promote the flocculation of solids and their growth to a size suitable for removal through either settling or filtration. The wastewater may then go to a plate-type settler or other solids separation device, where the supernatant can be pumped to an effluent feed tank, and the solids transferred to a sludge storage tank (or container). From the sludge storage tanks (or containers), the sludge can be disposed of in the landfill cells (following stabilization, if necessary) or transported off-site for management. If needed, the sludge may be further filtered (dewatered) to reduce its volume.

3.7 Effluent Storage

All wastewaters handled through the Wastewater Pretreatment System usually make their way to the effluent feed tanks at the far eastern end of the Pretreatment Area. At this point, the water is typically at a neutral pH (6-9), non-reactive, and relatively low in solids.

The effluent storage area primarily contains two large tanks[3] for storage of wastewaters. It should be noted, other smaller tanks may also be located in this area). There are no drains in the containment area and all rainfall captured is handled as described in the WAP; a sump/low point in the containment area facilitates the removal of accumulated liquids after precipitation events.

4.0 Tank System Description – Final Treatment Area

At the Final Treatment Area, pretreated or "raw" wastewaters receive further treatment by either evaporation or distillation. In cases where the particular waste stream is of good quality, such as some leachates or contained run-off water, the pretreatment step may be omitted, and the water will go directly to the final treatment area.

[3] The two tanks designated for effluent storage may be used for treated effluents from the pretreatment area, and/or "raw" or untreated wastewaters or leachates. When changing service from one type of wastewater to another, tank cleaning will be performed in accordance with the WAP if waste code carry-over is a concern.

The Final Treatment (WWFT) Area is located within a building, which has its own secondary containment areas. No significant rainfall should directly enter any of the controlled areas. However, as a precautionary measure, the roof drains near the evaporator outlets are valved such that rainfall on this portion of the roof may be directed into the WWFT secondary containment. There are no drains in the containment area, and any spills/precipitation that may be captured are handled as described in the WAP. Several sumps or low points in the containment area facilitate the removal of any accumulated liquids.

4.1 Wastewater Evaporation

Wastewaters from the effluent feed tanks or other tanks are typically transferred from the Pretreatment Area to one of two effluent feed tanks in the Final Treatment Area. These two feed tanks serve to control and balance the feed of the water to the system. From the feed tanks, the water is pumped into one of three parallel evaporation systems. First, the water enters a plate-and-frame or other type heat exchanger where the water is heated by steam produced by natural gas-fired boiler(s). From the heat exchanger, the water flows to an atmospheric pressure flash tank, where a portion of the water evaporates. The vapor from the flash tank passes through a demister before being released. Liquids collected by the demister will flow back into the flash tanks. An overflow tank will catch liquids if a pre-determined level in the flash tank is exceeded, as foaming sometimes occurs due to the high dissolved solids levels in the concentrate.

The concentrate from the flash tanks, including any sludges and solids produced, are removed (e.g., via "blowdown") from the system. These concentrates are typically transferred to a storage tank, a tank truck, or the solids removal system (i.e., filter press). From these tanks, the blowdown can be treated using basic neutralization/precipitation chemistry similar to the procedures used in the pretreatment area, or it can be filtered utilizing a filter press, rotary drum filter, etc. Liquids from the system may either be sent off-site for disposal or stabilized and disposed of on-site; they may also be fed back into the system for re-treatment and further solids removal. Sludges may be stabilized for on-site disposal or may be sent off-site.

4.2 Wastewater Distillation

Certain waste streams, particularly leachates from the landfill cells, are amenable to distillation rather than simple evaporation at the Final Treatment Area. These waters will be pumped from the appropriate storage tank (e.g., leachate feed tanks) into a secondary feed tank, where flow into the system can be balanced and controlled. From the secondary feed tank, the water may be routed to either the distillation train or an evaporation train.

The distillation train consists of storage tanks followed by a pre-heat tank. The water then enters a four-effect shell-and-tube or other type of distillation unit, where it passes in series through the four units. The final (distilled) produced water may then be passed through a series of carbon filters, if needed, where organic contamination is reduced. This water may then be disposed of or re-used at the facility.

Depending upon several factors, including the need for produced water within the facility, the wastewater may also be evaporated as described earlier.

5.0 Tank System Descriptions – Other Tank Systems

Several other tanks are or will be associated with the Wastewater Treatment System but are located in other areas of the facility. These tanks may be connected to the Wastewater Treatment System by above- ground piping with appropriate secondary containment.

5.1 Tank T6

The T6 Tank is located to the north of closed Cell 6 and east of closed Cell 8. T6 is a double- walled tank of carbon steel construction and which has been fully assessed. It may be used for treatment and/or storage of a variety of wastes which may include, but are not limited to, received wastewaters, treated wastewaters, or leachates.

5.2 Tanks T9A, T9B, PA1, and PA2

Tanks T9A and T9B were located west of Cell 13. At one time, these tanks were integrally constructed as double-walled tanks similar to T6. The tanks were disassembled and moved for the construction of Cell 13. The tanks will be placed back into service as single-walled tanks in a concrete containment structure. Once Tanks T9A and T9B are re-assembled, they will not be placed into service until they are fully assessed and certified as fit for use. Tanks T9A and T9B may be used for concentrates, treated or untreated wastewater, leachates, process water, etc.

Tanks PA1 and PA2 were located north of WWFT and were removed from service as they were not secondarily contained. The tanks will be placed back into service in a concrete containment structure but not used until they are fully assessed and certified as fit for use. Tanks PA1 and PA2 may be used for concentrates, treated or untreated wastewater, leachates, process water, etc.

5.3 Leachate Storage Tanks

A new tank storage area will be constructed and operated for the storage of, but not limited to, leachate, received wastewaters, treated wastewaters, wash waters, process water, etc. This tank storage area will be known as the Leachate/Wastewater Storage Area. Currently, four (4) tanks are planned for this containment structure; a truck loading/unloading pad will also be included.

6.0 Operational Practices

The following information is supplied to meet the specific requirements of RCRA regarding tank operating practices.

6.1 General Operating Requirements

Any material or waste that could cause the tanks, ancillary equipment, or secondary containment system to fail (i.e., rupture, leak, etc.) will not come into contact with the tank systems. CHESI will use appropriate controls and practices to prevent spills and overflows from tanks or containment systems. The WWT system is operated as a continuous or batch system with individual consideration given to the nature and makeup of each batch that is treated. Because of the predominantly batch nature of the treatment process, elaborate controls are not usually needed to prevent tank overflow, and the control system for the various tank systems is primarily manual in nature. Some of the tanks do have electrical or electronic gauging devices (e.g., level sensing device for pump activation) for convenience, and more may be added at a later date. The gauging system for each tank is listed in the Tank System Data Summary Table.

All waste movements through the WWT system are usually performed under constant supervision. An operator is always present in the near vicinity to monitor truck unloading, waste transfer and treatment operations, and related activity. Prior to major waste movements into or through the plant, the tank or tanks affected is/are checked to ensure that adequate volume exists to hold the waste being transferred. For example, if a load of waste caustic is being unloaded into the caustic storage tanks, the tank or tanks to be used will be checked for adequate volume before unloading is begun. In the case of acids, usually only a single waste stream is placed in each tank at a given time to avoid compatibility concerns. Similarly, before processing a batch of wastes, all affected tanks are checked for volume.

It is anticipated that the tank gauging and monitoring systems will change over time and additional electronic gauges may be added. Whenever this occurs, CHESI will provide the ODEQ with pertinent information on the gauges to be used, along with related changes in inspection procedures, if necessary.

Adequate freeboard will be maintained in any uncovered tanks in the WWT system which is located outside of a building. An operator will typically be present near the tank during unloading from the truck. The operator will stop the unloading operation before the freeboard level is exceeded.

6.2 Description of Feed Systems, Safety Cutoff, Bypass Systems, and Pressure Controls

Since the WWT system is largely operated as a manual system using batch operations, the control systems are relatively simple. A brief description of the feed systems, safety cutoff, bypass systems, and pressure controls is provided below for the WWT tank systems (see PFD's for additional information).

6.2.1 Feed Systems and Safety Cutoff

As of May 2020, twelve (12) tanks are equipped with high level instrumentation to prevent overfilling. The instrumentation is connected to a high-level switch which will activate when the waste level in a given tank reaches the high-level set point. The high-level set point for each tank usually corresponds to the vapor space or freeboard presented on the respective tank data sheets. In addition, this high-level switch will be connected to an audible or visual alarm to notify operational personnel of the high-level condition. To achieve waste-feed cutoff and prevent overfilling, when an alarm is sounded, the operator in attendance takes the appropriate action (e.g., shuts down the appropriate pumps or valves, etc.).

The types of level sensors that may be used in the tank systems in the future include, but are not limited to, ultrasonic (non-contact sensing), conductance or float (contact sensing), radio frequency (contact sensing in solids or sludges), or conductive polymer (for sensing interstitial spaces). The type of level sensing device to be used in each tank system will be based on each application and material compatibility requirements. In the caustic and acid storage areas, if the tank overfill control procedures fail, the overflow can be directed to a future overflow tank within the secondary containment system. Check valves are installed throughout the systems as appropriate, as indicated on the PFD's, to prevent reversal of flow.

6.2.2 Pressure Controls

All tanks (with the exception of some tanks associated with the distillation units) will either have pressure and/or vacuum relief valves or will be vented to the atmosphere directly. Therefore, the pressure in the tanks will not exceed the design pressure. Drawings in the Tank Assessments provide further details. Venting procedures are in accordance with the design standards specified in the Tank Assessments.

6.3 Special Requirements for Handling Ignitable, Reactive, or Incompatible Waste

The guidelines outlined in the Ignitable, Reactive, and Incompatibles Procedures will be followed when managing these wastes in the Wastewater Treatment System (WTS). Wastes exhibiting the characteristics of reactivity will only be placed in designated tank systems located at WWPT, specifically the reactive storage, mixing, and reactor tanks, unless the precautions noted in 40 CFR 264.17(b) are followed.

Design features and operating practices for the facility prevent the mixing of incompatible wastes in transfer lines (e.g., piping, hoses). For instance, dedication of transfer lines to one (1) type of service will ensure that incompatible wastes are not mixed. A change in service (e.g., from alkaline to acidic or vice versa) of the transfer lines will only occur if the line in question is first flushed with water or waste that is mutually compatible. Adequate flushing is determined by ensuring that the pH of the water is the same (or nearly so) upon leaving the system as it is upon entering.

6.4 Inspections

A list of inspections that will be performed on the various tank systems is provided in the Inspection Program.

6.5 Contingency Measurements

The procedures for responding to a situation where leaking or unfit-for-use tank systems are discovered are discussed in the Contingency Plan. If a leak or spill occurs, then CHESI will comply with the applicable requirements listed in 40 CFR 264.196.

6.7 Secondary Containment

A description of the Wastewater Treatment System secondary containment systems may be found in the section titled Tank Systems Secondary Containment Systems.

6.8 Installation of Tank Systems

6.8.1 New or Future Tank Systems

See New Tank System Installation Procedures for the discussion of the installation of new or future tank systems.

6.8.2 Pre-existing Tank Systems

The Wastewater Treatment System was constructed during 1986 and 1987, subject to regulation under the National Pollutant Discharge Elimination Program. As such, it was considered as exempt from 40 CFR Parts 264 and 270 and (then existing) state Rule 210 (current OAC 252:200). The RCRA/HSWA permit issued in November 1988 declared the WWT System to also be regulated as an Interim Status RCRA unit, making it subject to 40 CFR Part 265. This declaration also meant that a full RCRA/HSWA permit under 40 CFR Parts 264 and 270 could eventually be required for the unit.
Consequently, the tanks initially installed in the WWT System were not designed and installed following the requirements of 40 CFR 264.192 and 264.193. Specifically, although there are various design and installation records available, there were no independent engineer certified tank system designs, independent tank installer's reports, or complete Piping and Instrumentation Diagrams available for tank systems installed through the end of 1988. After the issuance of the RCRA/HSWA Permit in 1988, all new tank systems were designed and installed following 40 CFR 264.192 and 193, and proper documentation exists for these. However, for new tank systems installed between July 1986 and the end of 1988, the documentation required does not exist.

To rectify this difference, CHESI hired an independent, qualified registered professional engineering firm to evaluate all tank systems within the WWT System and perform such investigations, tests, etc. as were reasonably necessary to provide design standards for the systems. The engineer noted any problems that were identified, but installation documents could not be similarly re-constructed. Assessments of the tanks physically present were completed, and the useable Tank Assessments were submitted with the permit application(s) for the Wastewater Treatment System. The Wastewater Treatment System received its RCRA permit in April 1997. For the tanks which were existing tank systems but are not currently in service (e.g., T9A), the Permittee will provide appropriate and updated information to complete assessment requirements and to meet the requirements of 40 CFR Parts 264.192, 264.193, 264.194(b), and 270.16 to the Department for review and approval. This information will be provided in accordance with the requirements and timeframes specified in 40 CFR 270.42.

6.9 Closure

Closure of the various tank systems will be performed as outlined in the Closure Plan (Refer to Volume 2, Section 2.10 of this permit application).

5.3

Container Management Surge Tank Procedures

Table of Contents

1.0 General Description

The information here provides general detail about this tank system and its management practices. The information and design details are sufficient to meet the requirements of 40 CFR Parts 264.192, 264.193, 264.l 94(b), and 270.16.

The container management Surge Tanks will consist of four (4) 6,400 gallon aboveground tanks. Two (2) tanks will be constructed of stainless steel and will be used to store acids and waste fuels. The other two (2) tanks will be constructed of carbon steel and will be used to store caustic waste and waste fuel. The waste stored in these tanks will be transferred from the containers in the Container Management Building or from truck decanting operations and temporally stored until transfer to the Waste Fuel or Wastewater Treatment System, or for off-site shipment.

A Level Indicator Controller (LIC) in conjunction with a Pressure Differential Transmitter (PDT) will enable continuous monitoring of the liquid level. Level Alarms Horns (LAH) will sound audible alarms and automatically shut off waste feed when a high level is reached. The tanks will be equipped with dip tubes (fill pipes) to minimize the generation of hazardous vapors. Check valves will be installed throughout the system to prevent reversal of flow. Dry disconnect coupling connection will be used to eliminate spills in the transfer operations. The two (2) waste fuel Containers Management Surge Tanks has been designed to withstand a full vacuum. The remaining tanks will have vacuum relief valves. A combination of pressure control valves, pressure relief valves, and rupture disks will eliminate the possibility of over-pressurizing the tanks.

2.0 Waste Transfer

The waste will be transferred by vacuum suction from the containers to the tanks. Each tank has its own piping system. The procedures to be followed when transferring waste to the tanks and to prevent the mixing of incompatible wastes are:

1. Facility personnel will obtain a sample of the waste stream as detailed in the Waste Analysis Plan.

2. Facility personnel will obtain a sample of the waste in the tank to which the waste will be transferred.

3. The samples will be combined in the laboratory to check for incompatibility (e.g., extreme heat generation, fire or explosion, violent reaction, changes in physical form (e.g., liquid to solid, or production of significant amounts of vapors, fumes, or gas). If any of these reactions occur, the waste is then considered to be incompatible.

4. If the wastes are compatible, the waste in the containers may be transferred to the appropriate Container Management Surge Tank. The appropriate suction and discharge valves will be opened with the appropriate pumps being started.

5. If the wastes are incompatible, steps 2 and 3 may be completed with a sample from another Container Management Surge Tank, or the waste may be stored until compatible wastes are present in a Container Management Surge Tank, disposed of individually, or shipped off-site to another appropriate receiving facility. Potentially incompatible wastes will only be transferred or disposed when they can be appropriately managed.

5.4

Waste Fuel Tank Farm Procedures

Table of Contents

1.0 General Description

The information here provides general detail about this tank system and its management practices. Information and design details of this system are sufficient to meet the requirements of 40 CFR Parts 264.192, 264.193, 264.194(b), and 270.16.

In the Waste Fuel Tank Farm, thirteen (13) tanks, are used to store and blend waste fuels prior to being shipped off-site for energy recovery or incineration. It consists of thirteen (13) tanks. Fuel is unloaded into one of the ten (10) 17,650 gallon storage tanks. One of these tanks s constructed of stainless steel in case any waste fuels that are received have a pH below six (6) (these organic waste fuels are anticipated to be only slightly acidic - i.e., pH greater than 4). The remainder of the storage tanks are constructed of carbon steel. There are two (2) 105,700 gallon mixing tanks and one (1) 17,650 gallon water tank.

Ten (10) storage tanks in the Waste Fuel Tank Farm have been designed to withstand a full vacuum. The remaining tanks have vacuum relief valves. A combination of pressure control valves, pressure relief valves, and rupture discs will eliminate the possibility of over-pressurizing the tanks.

A level Indicator Controller (LIC) in conjunction with a Pressure Differential Transmitter (PDT) enables continuous monitoring of the liquid level. Level Alarm Homs (LAH) sounds audible alarms and automatically shut off waste feed when a high level is reached. The tanks are equipped with dip tubes (fill pipes) to minimize the generation of hazardous vapors. Check valves are installed throughout the system to prevent reversal of flow. Disconnect coupling connections are used to eliminate spills in the transfer operations.

2.0 Management Practices

The heating value and chloride content of the wastes in these tanks will be determined periodically, and if the values are acceptable, the waste will be transferred to one of two 105,700 gallon mixing tanks. The waste will then be agitated to yield a homogeneous solution and to suspend any solids. The objective will be to develop a mixture and to suspend any solids present in the waste fuels. The objective will be to develop a mixture in the mixing tanks that will have an acceptable heating value and chlorine content for an off-site incineration facility or an off-site energy recovery facility.

If the waste is to be shipped to an energy recovery facility, then the wastes accepted and blended at the waste fuel tank farm will have a minimum heating value of 5,000 Btu/lb.

If the waste fuel is to be shipped to a hazardous waste incineration facility, then a variety of waste fuels will be accepted (i.e., no heating value or halogen content limitations) and blended to yield an end product that meets facility permit conditions.

The waste will be transferred to the mixing tanks in such a way as to ensure that the mixture in the carbon steel mixing tanks has a pH greater than or equal to six (6).

To ensure an incompatible chemical reaction does not occur in the mixing tanks, the samples from the storage tanks will be obtained prior to the transfer of waste. The compatibility of the potential wastes will be determined in the laboratory with consideration being given to the pH of the samples and resultant waste mixture. If the pH of the mixture will be greater than or equal to six (6), facility personnel may transfer the contents of the tanks to the mixing tanks. If the potential pH of the waste will be less than six (6), then the ratio of the wastes will be adjusted to ensure the pH remains at or above six (6).

5.5

Tanks D1 and D2 Procedures

Section 5.5 – Tanks D1 and D2 Procedures

1.1 General Description

Future Tanks D1 and D2 are not currently in service. The information in this document provides general detail about these tanks and their management practices. The permittee will provide appropriate and updated information to complete assessment requirements and to meet the requirements of 40 CFR Parts 264.192, 264.193, 264.194(b), and 270.16 to the Department for review and approval. This information will be provided in accordance with the requirements and time frames specified in 40 CFR 270.42.

Future Tanks D1 and D2 will be used for waste fuel storage prior to the fuel being shipped to an off-site hazardous waste incinerator or an off-site energy recovery facility. The tanks will be surrounded by secondary containment. Tanks D1 and D2 will be equipped with the following devices:

1. High level switch that activates an audible alarm to prevent overflow.
2. Vent open to the atmosphere (vented through a flame arrestor) to prevent overpressure or vacuum.
3. Manual valve for waste feed cut-off.
4. Check valves to prevent reversal of flow.
5. Dry disconnect couplings to eliminate spills in transfer operations.

5.6

Solids Handling Building Tanks Procedures

Section 5.6 – Solids Handling Building Tanks Procedures

1.1 General Description

The Solids Handling Building Tanks system is a future tank system. The information here provides general detail about this tank system and its management practices. The Permittee will provide information and design details sufficient to meet the requirements of40 CFR Parts 264.192, 264.193, 264.194(b) and 270.16 to the Department for review and approval. This information will be provided at least fifteen (15) days prior to the installation of the tanks.

The Solids Handling Building will consist of a permanent, automated stabilization system that will be contained inside a building to facilitate control of airborne wastes, reagents, etc. Operations that involve solids handling (e.g., shredding, stabilizations, etc.) will be carried out in this building. The Solids Handling Building will be designed to receive, handle, process and store solids and sludge-type wastes prior to land disposal.

The enclosed receiving, processing, and storage areas will ensure that waste placed into storage and treated in this area ultimately contain no free liquids. The sludge processing procedures will generate compatible waste streams which will have no potential for leachate generation.

Six (6) carbon, steel above ground storage tanks will be located inside the Solids Handling Building. Four of these tanks (one 233,376 gallons and three 112,200 gallons) will be used for the storage of incoming solid waste. Two of the tanks (55,100 gallons each) will be used for the storage and treatment of waste. The receiving tanks (bins) and conditioned sludge tanks (bins) are uncovered tank systems that will be loaded/unloaded by trucks, backhoe, trackhoe, clamshell, etc.

Wastes will be unloaded into the appropriate receiving storage tank via four (4) truck unloading chutes equipped with covers. These covers remain closed except during unloading operations to prevent rain from entering the tanks. From the receiving tanks (bins), the waste may be transferred by overhead crane to a conditioned tank (bin), where the waste will be treated to meet the appropriate treatment standards, prior to transfer to the landfill for disposal. All waste will be processed to ensure waste compatibility within the conditioned sludge tank (bin). Waste will then be transloaded into haul trucks to be landfill disposed.

Waste which is shredded may also be processed from the various container storage areas on-site. The waste may be shredded either at the container storage areas or in the Solids Handling Building. Regardless of where the waste is shredded, it may be stored in a receiving tank or placed directly into a conditioned sludge tank for treatment to meet the applicable treatment standards prior to its transfer to the landfill for disposal.

5.7

Tank Systems Secondary Containment

Table of Contents

List of Tables

List of Figures

1.0 Introduction

Tank secondary containment systems have been or will be designed, installed, and operated to prevent any migration of wastes or accumulated liquid to the environment[1]. The containment systems will enable the detection and collection of releases and accumulated liquids until the material can be removed.

2.0 Containment Systems

The secondary containment systems for existing and new tanks (except for the double- walled Stabilization Tanks and Tank T6) consists of concrete slabs surrounded with concrete walls of varying height. The secondary containment systems have been designed and constructed to have sufficient structural strength and thickness to prevent failure owing to physical contact with any waste, climatic conditions, and the stress of daily operations. Additionally, the foundation will provide resistance to pressure gradients above and below the system, and will prevent failure due to settlement, compression, or uplift.

Each concrete tank secondary containment area (slab, walls, and sumps) has been or will be coated with a coating/sealant in order to protect against chemical attack of the concrete surface. The chemical resistance data for a typical coating (Semstone 140-SL) is provided in the Drum Dock Secondary Containment System and Drawings.

The liners (coated concrete) are or will be free of cracks or gaps[2]. Additionally, the areas have been designed and have been or will be installed to surround the tank completely and to cover all surrounding earth likely to come into contact with a release of waste (i.e., capable of preventing lateral and vertical migration).

The double-walled Stabilization Tanks and Tank T6 have been constructed as integral structures so that any release from the inner shell (primary tank) will be contained by the outer shell (secondary tank). The annulus between the inner and outer tank shells is enclosed so that no rainfall is allowed to enter. Additionally, no incompatible waste (i.e., acidic waste) will be in long-term direct contact with the Stabilization Tanks[3] and the external surface of the outer shell of the Stabilization Tanks will not be in long-term contact with standing water (i.e., sloped concrete slab under double-walled

[1] Tanks T9A, T9B, PA1, and PA2 will have secondary containment within the time limit prescribed by 40 CFR 264 Subpart J.

[2] Cracks and gaps in the concrete surface must be corrected in a timely fashion. It is noted that superficial or insignificant cracks and gaps may occur in concrete surfaces which do not infringe upon secondary containment. Also see Inspection Program for additional clarification.

[3] As described in the Waste Analysis Plan (WAP), corrosive materials may come into short-term contact with the tank floor and /or walls, prior to and during stabilization.

tanks). The soil near Tank T6 has been graded to minimize the exposure of the outer shell to long-term contact with standing water. Additional information on secondary containment systems can be found in the tank assessment documents.

3.0 Inspections and Detection of Releases

The majority of the tank systems are elevated and will be visually inspected for leaks, as indicated by the presence of liquids. Tank systems which cannot be visually inspected in their entirety, (e.g., Tanks EF1 and EF2) are equipped with an interstitial leak detection system. These leak detection systems are similar in concept for all on-ground tank systems. If a leak develops in the bottom of the tank, the liquid will flow downward to the base that supports the tank or the leak detection system that underlies the tank. The liquid will stop its downward flow when it contacts the base or the leak detection system and will flow laterally to the concrete containment area where it can be detected.

For double wall tanks, either of two methods may be used for determining the presence of liquids within the secondary tank: for those tanks so equipped (i.e., Stabilization Tanks, Tank T6), a visual inspection is made; otherwise, a probe (e.g., conductance probe) will be lowered through the riser pipe or inspection port to detect the presence of liquids. These inspections will be performed on a daily basis whenever a given tank system is in service.

The containment areas are sloped, typically ¼ to ½ inch per foot for the new tank systems and approximately 0.3 percent for the existing tank system, in order to drain any liquids to the sump or low points (or drain). Each sump or low point (or drain) will be inspected daily for the presence of liquids. Inspections will enable facility personnel to determine if failure of the primary tank may have occurred. Accumulated liquids will be removed to the extent specified in the Inspection Program and managed according to the procedures outlined in the Waste Analysis Plan.

4.0 Ancillary Equipment

Where possible, ancillary equipment associated with the various tank systems has been located within the tank systems secondary containment areas[4]. Sufficient secondary containment is provided for the ancillary equipment, with the exceptions noted. All piping that transfers hazardous waste to and from the various tanks will have secondary containment, be above ground, or will be welded, etc., and inspected daily for leaks or damage in accordance with 40 CFR 264.193(f). Tanks assessment documents provide additional details for ancillary equipment.

5.0 Containment Capacity

The concrete secondary containment areas and the outer shells (secondary tank) of double wall tanks have been designed to provide sufficient capacity to contain at least 100% of the volume of the largest tank within their boundaries. Also, each containment area has been designed and will be

[4] See Footnote 1.

operated to prevent run-on or infiltration of precipitation. If the tanks systems are not enclosed within a building or under a roof, the containment areas will also have sufficient additional capacity to contain a 25-year, 24-hour (6.1 inches) rainfall event.

6.0 Summary and Reference Data

There will be a total of twenty five (25) containment areas that will have either a liner system (coated concrete slab with walls) or be double walled tanks. These containment areas and the tanks located in each area are listed in the Tank System Data Summary Table. Drawings that provide details for the various secondary containment areas are provided in the specific tank assessment for tanks which are currently in hazardous west management service.

The secondary containment capacity calculations are given in Table 1. Figures 1 and 2 depict the location and show the containment area numbers indicated in Table 1 for the Wastewater Treatment System. Sixteen (16) of the areas listed in Table 1 are associated with the Wastewater Treatment System. The reader should see the Tanks System Data Summary Table for containment areas not shown on Figures 1 and 2.

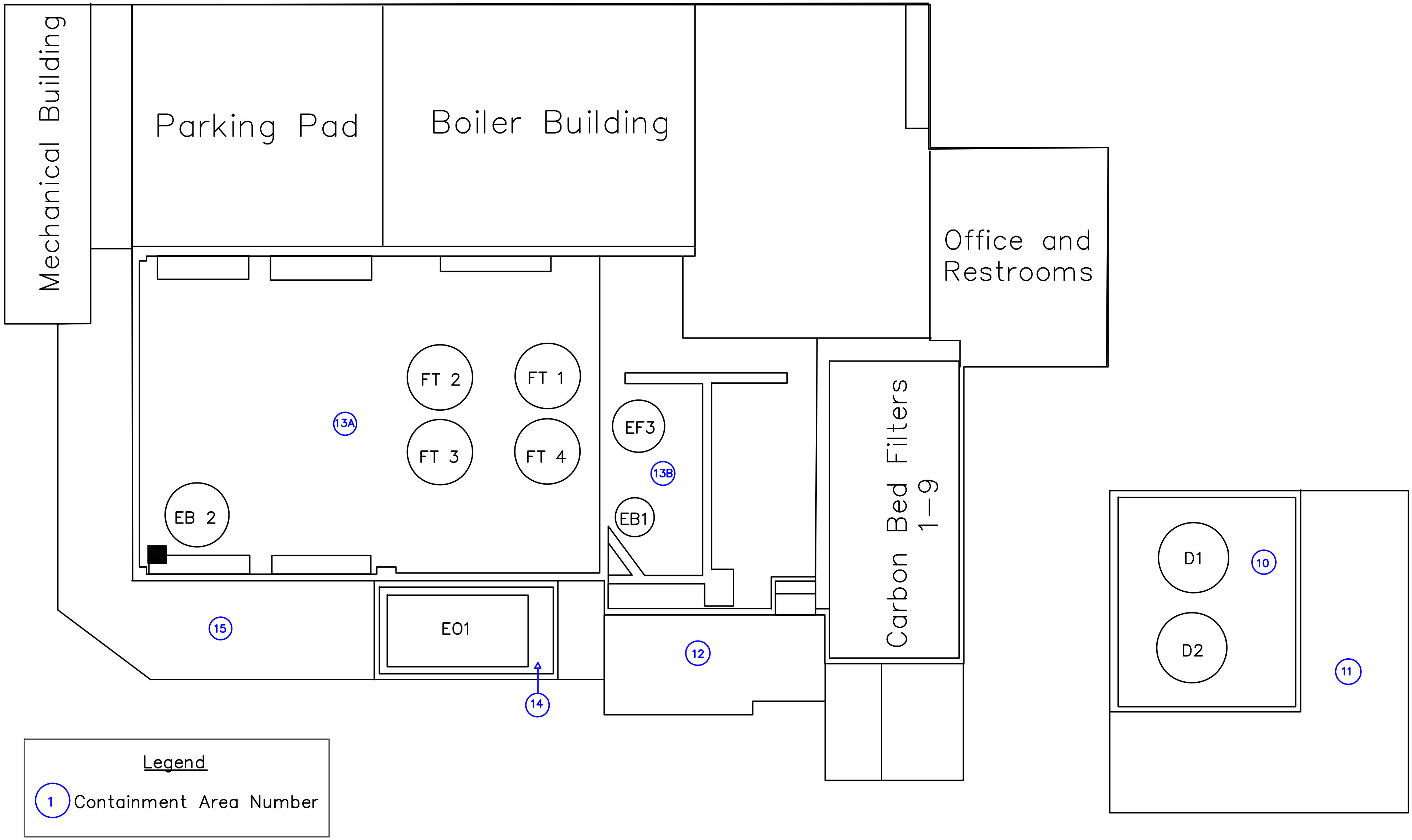
TABLES

Table 1
TANK SYSTEM SECONDARY CONTAINMENT AREA CAPACITIES

Containment Area	Drawing #	Volume of Largest Tank, FT^3	Volume of[a] Rainfall, FT^3	Unruptured[B] Tank Volume, FT^3	total Volume Required, FT^3	Containment Volume[C] (Including Sump), FT^3
1	Not Assigned	159.22	0	1.2	160.42	1,209.21
2	Not Assigned	1,900.0	0	147.0	2,047	3,342.3
3	Not Assigned	339.0	0	10.8	349.8	506.69
4	Not Assigned	141.3	0	10.11	151.41	182.93
5	Not Assigned	141.3	0	10.11	151.41	166.51
6	Not Assigned	44.1	0	3.9	48.0	122.1
7	Not Assigned	2,421.0	667.0	591.14	3,679.14	3,722.1
8	Not Assigned	4,426.27	1,606.10	9.17	6,041.54	6,575.81
9	Not Assigned	47,783.62	4,578.16	4,154.39	56,516.17	75,590.19
10	D-31-53-201	1,142.0	378.5	100.0	1,620.95	2,156.6
13A	Not Assigned	401.0	0	27.59	428.59	685.0
13B	Not Assigned	235.62	0	4.73	240.35	1,108.6
14	Not Assigned	737.29	151.3	0	888.59	900.44
16	Not Assigned	13,741.3	Still under design – will be submitted to DEQ for review.			
17	Not Assigned					
19	Not Assigned					
20 (#1)	D-31-20-702	2400	0	0	2400	3120
21 (#2)	D-31-20-702	2400	0	0	2400	3120
22	D-42-53-201	14,3323	5,115	3,090	22,537	30,250[D]
23 (Acid)	D-42-10-205	855.6	356	0	1,211.6	2,108
24 (Caustic)	D-42-10-205	855.6	356	0	1,211.6	2,108
25 (Solvent)	D-42-10-205	855.6	738	0	1,593.6	4,365
26	D-42-20-203	31,200	0	45,000	76,200	161,500
27	D-42-20-203	7,500	0	0	7,500	17,760
28	Not Assigned	4,909.6	Still under design – will be submitted to DEQ for review.			

A. Calculation: Volume of Rainfall (ft^3) = Pad Area x 6.1 in. (ft/12 in.)
B. Calculation: Unruptured Tank Volume = (cross sectional area of all tanks (or other objects) that would take up some of the capacity) x Height of Wall
C. Calculation: Containment Volume = (Pad Area x Height of Wall) + Sump Volume
D. The water storage tank in this tank farm provides an additional 2,360 ft^3 of containment volume (i.e., pump automatically transfers liquid from sump to water tank).

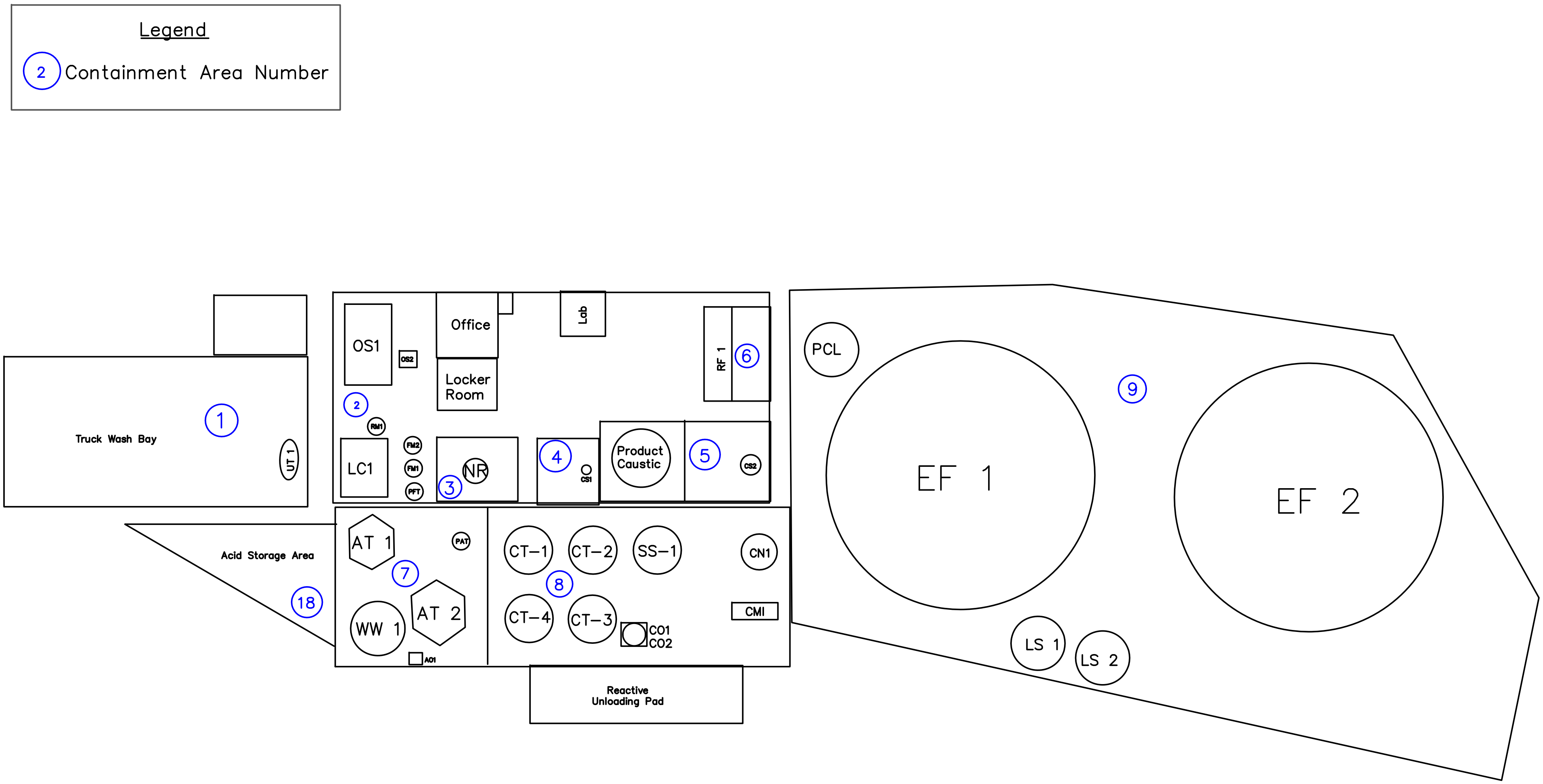
FIGURES



Clean Harbors Lone Mountain Facility

Figure 2
Volume 5, Section 5.7
Wastewater Final Treatment Containment Areas

ENVIROTECH ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com



Clean Harbors Lone Mountain Facility

Figure 1
Volume 5, Section 5.7
Wastewater Pretreatment Containment Areas

ENVIROTECH
ENGINEERING & CONSULTING, INC.
2500 North 11th Street - Enid, Oklahoma 73701
Phone (580) 234-8780, Fax (580) 237-4302
www.envirotechconsulting.com

5.8

Tank Systems Data Summary Table

Section 5.8 – Tank System Data Summary Table

1.1 General Operating Requirements

The Tanks System Data Summary Table summarizes detailed information for all tanks presently permitted at the Lone Mountain Facility. Additional information concerning the tanks may be found in the appropriate procedures sections (e.g., Stabilization Tanks System Procedures) and/or the assessment documentation for a specific tank (e.g., ST1).

For the tanks which are not physically present at this time (i.e., future), the Permittee will provide information and design details sufficient to meet the requirements of 40 CFR 264.192, 264.193, 264.194(b), and 270.16 to the Department for review and approval at least fifteen (15) days prior to the installation of those tanks.

5.9

Tank System Spill and Overflow Prevention Procedures

Section 5.9 – Tank System Spill and Overflow Prevention Procedures

1.1 General Operating Requirements

As mentioned previously, any material that could cause the tank systems or ancillary equipment to fail (i.e., rupture, leak, corrode, etc.) will not come into contact with the tank systems. The specific gravity of the waste stored in the future Waste Fuel Tanks Farm, Waste Fuel Tanks (01, 02), and the Container Management Surge Tanks will not exceed 1.20. The specific gravity of the waste stored in the Stabilization Tank and the Solids Handling Tanks will not exceed 3.50. CHESI will use the appropriate controls and practices to prevent spills and overflows from tanks or containment systems.

The control systems for the various tank systems are detailed in the process flow diagrams provided in Drawings D-42-53-002 (Lone Mountain Facility, Part B Permit Application dated August 2020, Volume 2), D-42-53-003, D-42-53-004, D-42-53-005, and D-42-10-001 (Lone Mountain Facility, Part B Permit Application dated August 2009, Book 3). The Waste Fuel Tanks Farm and the Container Management Surge Tanks will be equipped with one or more of the following control systems:

1. High Level Alarms;
2. Level Indicators;
3. Level Controllers;
4. Check Valves; and
5. Automatic Feed Cutoff.

Adequate freeboard (minimum of two (2) feet below the top of the splash guards) will be maintained for the Stabilization Tanks. One (1) foot of freeboard will be maintained for all other uncovered tanks except for the uncovered rotary drum filter tanks, for which a freeboard of six (6) inches will be maintained. Future Waste Fuel Tanks (D1 and 02) will be equipped with high level alarms, manually operated valves for waste feed cut-off, check valves, and dry disconnect couplings to prevent spills and overflows from the tank system (see Drawing D-31-53-001 of the Lone Mountain Facility Part B Application dated August 2009, Book 2) for more details).

The Stabilization Tanks area contains truck unloading and loading areas and treatment areas. The areas are constructed of reinforced concrete. During truck unloading into the Stabilizations Tanks and subsequent truck washout, equipment decontamination/cleaning, truck loading, or treatment, spillage may occur and/or wash water will fall onto the concrete pad. This spillage and wash water will be collected/washed into the Stabilization Tanks for treatment/disposal. These normal, contained, inherent process spills are not subject to reporting.

5.10

New Tank System Installation Procedures

Section 5.10 – New Tank System Installation Procedures

1.0 Installation of New Tank Systems

CHESI will ensure that proper handling procedures are adhered to in order to prevent damage to the tank system during tank installation. When new or replacement tanks are installed, they will be inspected for the following by an independent, qualified, registered professional engineer or and independent, qualified, installation inspector:

1. Weld Breaks;
2. Punctures;
3. Scrapes of protective coating (if applicable);
4. Cracks;
5. Corrosion; and
6. Any other structural damage or inadequate construction/installation.

All discrepancies discovered during the inspection will be remedied before the tanks systems are placed into service.

Qualified personnel will observe the off-loading of the tank for conformance with manufacturer's recommendations (i.e., the tank will not be dropped, handled with a sharp object, dented, dragged, or rolled). Additionally, qualified personnel will check the completed excavations and the foundations/secondary containment systems for conformance to the specifications and drawings. Qualified personnel will also monitor the installation of the piping, valving, pumps, and other ancillary equipment to ensure compliance with plans and specifications.

All new tanks and ancillary equipment will be tested for tightness prior to being placed into use. Tank systems will be tested according to appropriate procedures, such as those outlined in API Standard 650 Welded Steel Tanks for Oil Storage (Seventh Edition, November, 1980, Revision 1, 1984) or other method as determined by an independent, qualified registered professional engineer. Ancillary equipment will be tested for tightness by following the procedures outlined in the American national Standard Code for Pressure Piping, Chemical Plant and Petroleum Refinery Piping. (ANSI B31.3, 1987 edition) by the manufacturer's recommendations, or as determined by an independent, qualified registered professional engineer, as applicable.

If leaks are found, all repairs necessary to remedy the leaks will be performed prior to the system being placed into service. The method of repair will depend on the nature and extent of the effect. Minor repairs will be performed at the facility. Major defects may require that the tank be returned to the manufacturer for modifications. An appropriate repair methodology (e.g., the manufacturer's guidelines) will be followed. A repaired tank, and/or piping, will be tested again in the manner discussed above before being placed back into service, if required, by the independent engineer.

By following the ANSI B31.3 standards and/or manufacturer recommendations during the design and installation, all ancillary equipment will be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

5.11

Tank System Assessments

- **Stabilization System Tanks**
- **Wastewater Treatment System Tanks**

Section 5.11 – Tank System Assessment

1.1 Tank System Assessments

The tank assessments for the tanks located in the Stabilization Tanks System and Wastewater Treatment System along with the ancillary equipment associated (if applicable) with those tank systems located in the Lone Mountain Facility are in this section. The Ancillary Equipment section is a compilation of assessment documents complied through the past several years which total encompass all of the piping and ancillary equipment associated with a tank system at the Lone Mountain Facility. Following are the contents of the Ancillary Equipment section.

1. Envirotech Equipment System Assessment, April 1998

    - Appendix A ASME Code for Process Piping, ANSI/ASME Standard B31.3, 1996 Edition
    - Appendix B API Recommended Practice 574, Inspection of Piping, Tubing, Valves, and Fittings
    - Appendix C Pipe Specifications
    - Appendix D OSWER Policy Directive No. 9483.00-1, Table 4-3
    - Appendix E Component Standards, ASME B31.3, 1996 Edition, Table 326.1
    - Appendix F OSWER Policy Directive No. 9483.00-1, Section 7-8, Ancillary Equipment with Secondary Containment
    - Appendix G Certification Letters

2. Black and Veatch Wastewater Final Treatment Drawings, M-1 through M-5, August 1996

3. Envirotech Wastewater Line Certification for EO1, April 8, 1996

4. Envirotech Line Certification at the Lone Mountain Facility (WWFT), November 1995

5. Envirotech Carrier Pipes -Pipe Trough, August 18, 1994

6. Myers Engineering Ancillary Equipment Section Assessment Certification, April 6, 1993