SECTION D-1

MANAGEMENT OF WASTE IN CONTAINERS

Revision No.
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TABLE OF CONTENTS

LIST OF APPENDICES

SECTION D-1

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This section describes, as required by 40 CFR 270.15 and ADEM Administrative Code Rule 335-14-8-.02(6), the management of wastes in containers. The management of wastes in containers will include storage, staging, repackaging, processing, and treatment within containers. The Facility receives a multitude of containers of waste each day. Container management units at the Facility are specifically designed and managed for the purpose of safely storing, processing, and treating hazardous waste.

The containerized waste management systems at the Facility are listed in Table D-1 in Section D of this Application and include the following:

- Container Storage Unit 406;
- Container & Tank Management Unit 520;
- Container & Tank Management Unit 600;
- Container Storage Unit 602;
- Container Storage Unit 603;
- Container Management Unit 604;
- Container Management Unit 700;
- Container Management Unit 702;
- Container Management Unit 703A;
- Containment Building / Container & Tank Management Unit 1200A;
- Container Management Unit 2000; and
- Container Storage Unit 2200.

The container management systems provide for the systematic receipt, staging, storage, handling, processing, and transfer of waste through the Facility. Drawing No. 0100-010-001 (Operations Flow Sheet) in Appendix D-1 of Section D of this Application provides a schematic illustration of waste handling and processing procedures employed at the Facility. The Operations Flow Sheet also illustrates and delineates by general waste type the procedures and major treatment processes used at the Facility. After receipt and acceptance, wastes in containers can be handled in one or more of the following manners depending on waste type and characteristics:

- stored and transferred for treatment or disposal, or shipped off-site;
- stored, repackaged and/or consolidated for treatment or disposal, or shipped off-site;
- stored, decanted into tanks, tanker trailers or other containers, and/or mixed and blended for treatment or disposal, or for shipped off-site;
- stored, and decanted with the sludge portion repackaged or bulked for treatment, disposal, or shipped off-site; or
- stored, and treated (within the container or after removal), with the treatment residuals either stored for verification of treatment or re-treatment, transferred for disposal or further treatment, or shipped off-site.

Subsection D-1-1 describes the design features of, and the general management practices employed within each of the container management units at the Facility. The specifics regarding the design of each unit, processing and treatment equipment in each unit, the type and quantity of waste managed in the unit, and the management practices employed in each unit are described in Subsection D-1-2. The Facility Layout Drawing No. 0100-020-001, in Appendix D-1 of Section D of this Application, illustrates the location of the container management units within the active portion of the Facility. Drawings of each of the units used to manage waste are provided in the Appendix D-1. A summary of management activities conducted in each unit is provided in Section D as an introduction to the specific activities described in this section.

D-1-1 General Management Practices and Design Features

As previously stated, a waste management objective of this Facility is to safely store and treat waste in containers and tanks. This section describes the management of waste in containers. This management objective is achieved by the inherent design of the waste management units and processing equipment, the training of personnel and management, scheduled inspections, and specific management and treatment practices. Although each waste management unit is unique, certain management practices and design features apply to all units in which waste is stored, treated, processed or otherwise managed in containers. These features are provided in the subsections that follow.

D-1-1a General Management Practices

The general operational practices that are applied to all management units that store, treat and process waste in containers are provided in the following subsections. Additional unit-specific management practices are provided for each unit in Subsection D-1-2.

D-1-1a(1) Types of Containers

All containers used at the Facility are compatible with the wastes stored therein, or are equipped with a liner made of compatible, non-reacting material that does not react with the waste. For example, acidic corrosives will generally be stored in containers constructed of nonmetallic components. Metallic, plastic or composite, wooden, and fiber containers may be used, based upon waste characteristics. Generators shipping waste to the Facility are required to place waste in containers that are constructed of, or are lined with, materials that are compatible with the waste. New, reconditioned, or used (lined or cleaned) containers may be utilized. After the containers arrive at the Facility, the containers (i.e., both small and bulk size containers) are inspected for leaks. If leaking, the container is processed, repackaged, overpacked, or transferred to a clean, suitable container.

Throughout this section are references to small containers and bulk containers. As management activities are dependent upon the size of the container, it is important to distinguish between small and bulk containers; however, regulatory requirements and the definition of 40 CFR 260.10 and ADEM Administrative Code Rule 335-14-1-.02 apply uniformly to all containers, regardless of their size. Containers may be bulk-sized (e.g., tanker, dump, roll-off, etc. of a capacity greater than 650 gallons) or smaller, more common size containers (i.e., containers of less than 650-gallon capacity, such as 55-gallon drums, 80-gallon overpacked drums, palletized shipments of varying sizes, such as pint, quart, gallon and 5-gallon containers, loose containers of 5 or more gallons, bags and boxes; all of which may be identified as individual containers or as a lot).

The majority of small containers managed at the Facility will normally be drum size. Typically, drums are constructed of various types of metal or non-metal (e.g., plastic, paper, composite, wood, fiber, etc.) materials and have the general dimensions of 22" to 23" in diameter and 33" to 35" in height, with a normal full capacity of 55 gallons. Drums and containers of other dimensions and capacities will also be managed at the Facility. In addition, the Facility will manage waste in sacks, bags, boxes, cartons, and various sizes of cans, bottles, cylinders, canisters, barrels, tote tanks, etc., all of which are considered small containers. The term "bulk container" is generally used, in this Application, to describe containers such as tankers, dump trailers, roll-off boxes, roll-off tanks, lugger boxes, sludge boxes, intermodal containers (i.e., containers conforming to the standards of the Inter-Modal Association, IMA), or other containers that are too large to be managed by a standard size forklift. While the management of bulk size containers is restricted (due to their size) to container storage and management areas that can accommodate these size containers, the management of small containers is not restricted to certain areas.

Due to the varying size, shape, and capacity of the different containers that the Facility will manage, the exact number of each type that may be stored or processed in each of the waste

management units is nearly impossible to determine. Instead, a maximum total inventory capacity and/or the largest single container capacity are established for each of the management units. These capacity limitations are provided in the detailed description of each of the management units, and in Appendix D-1-1 and Appendix D-1-2 to this section. In all cases, the maximum total inventory capacity limits, and/or the largest single container capacity limits are determined by either the capacity of the secondary spill containment system in which the container will be stored or processed, the physical spatial limitations of the management unit, the mobility restrictions of certain equipment used to manage the containers, or by operational, safety, or code restrictions.

D-1-1a(2) Types of Waste

Containerized wastes include virtually every type of hazardous waste listed or identified by 40 CFR Part 261 and ADEM Administrative Code Chapter 335-14-2, TSCA-regulated PCB waste and certain non-hazardous wastes. With the exception of TSCA-regulated PCB waste, Tables C-1-1 and C-1-2, in Section C (Waste Characteristics), list the EPA waste codes for the hazardous wastes managed as containerized wastes at the Facility. All codes are listed because EPA has determined that treatment residuals, wastewaters, dilute concentrations of hazardous waste constituents, and mixtures of hazardous constituents in non-hazardous waste maintain, by virtue of the waste-derived rule and mixture rule (i.e., derived from rule), their listed code(s) regardless of the concentration of hazardous constituents in the waste. Treatment residues from wastes bearing those and other waste codes will also be managed in accordance with the Permit and, particularly, the Waste Analysis Plan contained within Section C. Containers of aerosol canisters may be stored in container management units for subsequent shipment off-site for treatment. From a standpoint of physical characteristics, waste types include predominantly free liquids, solids, pumpable and non-pumpable semi-solids, and all varieties or combinations of these physical states.

D-1-1a(3) Handling of Containers

Normally, small containers are managed in the storage and processing areas by means of motorized equipment such as forklifts. Typically, the forklifts are equipped with "hugger" tongs or other devices that allow the gripping of one or more containers. Fork tongs and other devices may be used for moving box or carton type containers, palletized containers, bags, sacks, and tote tank containers. Non-motorized equipment, such as dollies or other devices, may also be used to manually move containers as necessary. Bulk containers are normally moved with transport equipment such as tractors, forklifts, IMA and roll-off tilt and/or lifting frames, lugger lifts, flatbeds, cranes, rail tugs, and other equipment as appropriate.

D-1-1a(4) Storage and Treatment Decisions

After sampling, analyses, and acceptance procedures are complete, a determination is made (as outlined in the Waste Analysis Plan contained within Section C) as to the most appropriate

means of storing, processing, or treating the waste. The physical characteristics, chemical composition and chemical compatibility of the wastes within the containers dictate whether a certain waste stream is processed at this Facility or whether it is stored with containers of other compatible wastes and subsequently shipped off-site without further processing. All decisions regarding waste storage, treatment and/or processing are made in accordance with the Waste Analysis Plan (see Section C).

D-1-1a(5) Management of Empty Containers

Containers emptied during the processing of waste are managed in accordance with 40 CFR 261.7 and ADEM Administrative Code Rule 335-14-2-.01(7). Empty containers, per 40 CFR 261.7 and ADEM Administrative Code Rule 335-14-2-.01(7), may be disposed of on-site or shipped off-site to reclamation facilities or to appropriate disposal or treatment facilities.

Empty containers from processing may be handled in any of the following methods:

- crushed, split, or shredded in compatible batches;
- refilled to form a container of solids; or
- salvaged for recovery off-site.

Crushed, split, or shredded containers may be accumulated on pallets, in van trailers, in roll-off boxes, in dump trailers, or otherwise re-containerized for subsequent treatment or disposal. Empty containers that held acute hazardous waste (see ADEM Administrative Code Rules 335-14-2-.04(2), (3), or (4)) must be rinsed in accordance with ADEM Administrative Code Rules 335-14-2-.01(7)(b)3 prior to shredding, splitting, or crushing.

Within container management units, containers will be processed through equipment (e.g., shredders, crushers, spitters, etc.) in batches or groups that are compatible. The equipment will be cleaned (i.e., incompatible residues will be removed by washing, scraping, or other means or by processing a mutually compatible transition waste through the equipment) prior to managing materials which are incompatible (i.e., incompatibility as described in the Waste Analysis Plan contained within Section C of this Application) with those previously processed. All clean-out residues and wash water from the equipment will be contained, collected, removed, containerized, and handled through the Facility as a solid waste, subject to evaluation as a hazardous waste. To increase effectiveness and possibly increase the depth of penetration, commercial cleaners or surfactants may be added to the wash water, when deemed necessary. Depending on the efficiency of high pressure washing, sandblasting or other means may also be employed. Empty containers for salvage are accumulated in trailers or within the storage area for transfer to a reclamation facility off-site.

The determination and inspection of empty containers is performed on a container-by-container basis within the waste management units. This determination will be made considering all waste remaining in the container. This procedure is performed by one of the Facility's Chemical Processors or a designee trained to perform this function. These procedures conform to ADEM Administrative Code Rule 355-14-2-.01(7)(b)1 and 40 CFR 261.7(b)(1).

D-1-1a(6) Opening Containers For Sampling

Sampling of containers may be performed at any time within the loading/unloading areas, sampling stations, storage areas or processing areas. Bulk containers may also be sampled in designated parking areas. Sampling of the container contents is performed by removing the tops, lids, covers, or bungs. For containers of reactive or ignitable waste, this is done using spark-proof or spark-resistant tools. In Units 700 and 702, as specified by the unit manager or supervisor, certain drum size containers (i.e., containers that appear to be under pressure with bulging lids or bottoms, or containers that are suspected to have difficult to remove bungs or lids, and other containers) may be opened by placing them in a hooded hydraulic punch apparatus which punches a hole in the top of the drum. A rubber stopper or other type plug is placed in the hole prior to moving the drums into the storage or processing areas in these units. Samples of the contents in these containers are taken through the punched hole. Further discussion of sampling techniques employed in all the waste management units at the Facility is provided in the Waste Analysis Plan contained within Section C of this Application.

D-1-1a(7) Maintaining Containers Closed or Covered

Within the storage areas of regulated storage units, containers are only opened for sampling, inspection, and for the transfer or management of waste from a leaking container. At times, containers of stabilized waste within storage and treatment units are allowed to remain uncovered for a period of time to allow for monitoring and for sufficient time to cool. After this period, these containers are covered or closed. These handling procedures comply with 40 CFR 264.173 and ADEM Administrative Code Rule 335-14-5-.09(4). Normally, containers of waste within processing and treatment areas of waste management units may be opened for tasks such as: adding waste, removing waste, transferring waste, adding reagent, treatment, inspection, sampling, or processing. Containers outside of the limits of a regulated waste storage or treatment unit at the Facility are only opened for inspection or sampling or, in the case of a leaking container, for the transfer of the waste to a suitable container. Normally, only bulk containers are sampled and inspected outside of regulated storage and treatment units.

D-1-1a(8) Inspection of Containers

As previously described in Subsection D-1-1a(1), the Facility requires generators to ship waste in containers compatible with the waste. The Facility inspects containers as they are off-loaded from the delivery vehicle for signs of leakage (i.e., severe corrosion or seepage). In addition, the Facility inspects containers within the waste management units (i.e., waste storage,

processing, and treatment areas) in accordance with the Inspection Plan (see Section F). If there is leakage, the waste is removed, processed, or repackaged in clean, reconditioned or new compatible containers, or the container and waste are placed in suitable overpack containers to prevent further leakage or otherwise managed. These procedures comply with 40 CFR 264.171 and ADEM Administrative Code Rule 335-14-5-.09(2).

D-1-1a(9) Inspection and Removal of Material from Secondary Spill Containments

Staging and placement of containers within the containment systems are such that visual inspection of the sumps is allowed. This allows an inspection of the integrity of the sumps as well as the detection of accumulated or standing liquids (see Inspection Plan, Section F). Any standing liquids from spills or leaks in the floor sumps are removed in a timely manner (i.e., as soon as practicable, but no longer than 24 hours after detection) to prevent the overflow of the collection system. The source of these liquids (e.g., a ruptured container) will be identified, and the liquids will be re-containerized, labeled according to the source material, and managed appropriately. If quantities in the sump are significant (i.e., pumpable quantities), they will be pumped to a new or clean container(s). Otherwise, they will be sorbed and containerized. If the source cannot be identified (an unlikely situation), the liquid will be containerized, placed into a bay designated for the same compatibility group as the bay from which it originated, and analyzed in accordance with the Waste Analysis Plan (see Section C) to characterize it for proper management. Any spills or leaks of waste onto the floor of units that do not drain to the floor sumps will be removed in a timely manner and managed as required by 40 CFR 264.175(b)(5) and ADEM Administrative Code Rule 335-14-5-.09(6)(b)5. If these wastes are removed with sorbent, the sorbent will be placed in the original container and, depending on the wastes, subsequently treated or disposed of in the same manner as the wastes from which they derived.

D-1-1a(10) Inspection of Management Units

Inspection of container storage, processing, treatment, and handling operations is performed in accordance with the Inspection Plan provided in Section F. This inspection program complies with 40 CFR 264.174 and ADEM Administrative Code Rule 335-14-5-.09(5).

D-1-1a(11) Separation of Incompatibles

Based on the results from sampling and analysis; and after acceptance procedures are completed, any chemically incompatible wastes are segregated into separate containment systems. Incompatible wastes are placed in separate containment systems which are empty or contain containers of compatible wastes. The containment areas of the waste management units are divided by design into separate sections which are physically separated by sloping floors, perimeter containment curbs, raised walkways, or berms that form dikes. These areas provide staging and storage areas for separating incompatibles. In addition, when incompatible wastes are processed, processing is restricted to compatible campaigns or batches to avoid

mixing of incompatibles. Containers of incompatible waste within the confines of a containment system may also be separated by placing the incompatible container(s) into a mobile containment unit (MCU). The MCU must be of sufficient size to contain the greater of the volume of the largest container or 10% of the total volume of all containers within the MCU, must allow inspection of the container, and must be compatible with the waste.

Prior to adding or combining waste, the compatibility of the waste is assessed, in accordance with the Waste Analysis Plan in Section C of this Application. This assessment will consider the compatibility of the waste with the contents of the containers, and the compatibility of the waste with the materials of construction for the container.

Before incompatible wastes are combined or mixed in a container, representative samples of respective wastes are subjected to laboratory evaluation as specified in Section C, Waste Analysis Plan, to ensure that mixing of the wastes will not generate extreme heat or pressure, fire or explosions, or violent reactions; will not produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment; will not produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion; or will not otherwise damage the structural integrity of the container or containment area or threaten human health or the environment in accordance with 40 CFR 264.177 and ADEM Administrative Code Rule 335-14-5-.09(8). Written documentation of the tests and results will become part of the Facility's operating record. This documentation may be referred to if and when subsequent batches of similar wastes are mixed. Methods used to perform this evaluation are specified in the Waste Analysis Plan in Section C of this Application.

D-1-1a(12) Special Requirements For Ignitable and Reactive Waste

Because ignitable and reactive wastes are handled at this Facility, no smoking or other ignition-causing activities will be permitted in or adjacent to waste management units that store, treat, or process these types of waste. Warning signs are posted at the main entrance gate and at outside entrances into the affected management unit. Maintenance activities that may require or generate ignition-causing activities are conducted a safe distance from the unit, when practical. If this is not possible or is impractical, the activities are conducted only with an expressly written permission from the Facility's Environmental, Health and Safety Manager (or designee) and are conducted in accordance with OSHA standards. These procedures comply with 40 CFR 264.17 and ADEM Administrative Code Rule 335-14-5-.02(8). As illustrated on the Facility Layout (Drawing 0100-020-001) in Appendix D-1 of Section D of this Application, all the regulated storage, treatment, and processing units are located more than 50 feet from the Facility property boundary, thereby complying with 40 CFR 264.176 and ADEM Administrative Code Rule 335-14-5-.09(7).

The quantity of liquids and the height of container stacking (i.e., in any single lot) for certain classes of ignitable waste will be restricted to limits given in Sections 4-5.7.6 and 4-5.7.12 of NFPA Code 30 standards, which are as follows:

- Maximum height of containers of ignitable waste when stacked is limited to six and one half (6½) feet, as measured perpendicular to the top of the lower most support. Stability shall be a consideration when stacking containers of any size.
- Minimum average aisle spacing between adjacent groups of containers of ignitable waste is four (4) feet.

When storing water reactive waste in containment areas that are protected by an automatic water sprinkler system, the sprinklers covering these areas will be isolated and turned off.

D-1-1a(13) Volumes Restricted

Within the waste management units, the secondary spill containments and sumps are sized to hold the largest container of waste or at least 10 percent of the total volume of waste in containers when stacked, whichever requires the greatest containment volume. The placement of containers within the containment areas will be managed such that 10% of the total volume of all containers (i.e., including and considering the containment volume occupied by containers of waste in storage and staging, non-hazardous waste, and materials) and the volume of the largest container in a containment area do not exceed the capacities of the secondary containment systems. In accordance with 40 CFR 270.15(a)(3) and ADEM Administrative Code Rule 335-14-8-.02(6)(a)3., Table D-1-1.1 in Appendix D-1-1 provides the largest quantity of waste in a single container and the maximum waste storage quantity for each containment area in each waste management unit at the Facility. Personnel responsible for the operations in each unit are trained in the volume and size restrictions provided in Table D-1-1.1 in Appendix D-1-1. As containers are placed in a containment area, the accumulative quantity of waste and the largest quantity of waste in a single container are monitored by personnel in each unit so as not to exceed the limits provided in Table D-1-1.1 in Appendix D-1-1 of this Application. In accordance with 40 CFR 264.175(b)(3) and ADEM Administrative Code Rule 335-14-5-.09(6)(b)3., detailed calculations of secondary containment capacity and maximum storage volumes for each of the waste management units are provided in Appendix D-1-2 and Appendix D-1-1, respectively. Drawings illustrating the physical characteristics of each of these units are provided in Appendix D-1 of Section D of this Application.

The maximum storage volumes provided in Appendix D-1-1 and Appendix D-1-2 of this Application include waste in storage and in staging within each unit.

D-1-1a(14) Containers Without Free-Standing Liquids

The methods utilized for storage, treatment and management of containers without free-standing liquids are the same as those used for containers with free-standing liquids in that these containers are managed within the limits of the waste management areas. The determination as to whether a container has freestanding liquids is made by visual inspection within sampling, storage, and treatment units at the Facility. Containers of waste that are destined for disposal in the Facility landfill are inspected for freestanding liquids. Procedures used to inspect and test for freestanding liquids are included in the Waste Analysis Plan in Section C of this Application.

D-1-1a(15) Arrangement of Containers in Storage Areas

Container storage areas within each storage unit are clearly marked, except for the temporary storage areas for containers within processing areas and work aisles as described in this section. Containers may be placed on the floor, stacked on top of other containers on the floor, or loaded on pallets which are placed on the floor or on top of other palletized waste. Containers may be arranged in various configurations within the limits of the storage areas. Containers may be tightly grouped (e.g., end-to-end and side-by-side) and stacked in regular or irregular fashion, provided that the configuration allows for the inspection for leaks and provides adequate aisle space between groups of containers as required by ADEM Administrative Code Rule 335-14-5-.03(6). A 3-foot space for egress is maintained between groups of containers and the perimeter walls of container management units. A 4-foot space is maintained between double rows (i.e., groups) of small-sized containers (e.g., drums) and between single rows of bulk containers of ignitable waste as described in Subsection D-1-1a(12).

Minor containers (e.g., pint, pail, 5-, 7-, and 30-gallon containers, etc.) may be stacked several high, but, for certain types of waste, stacking of containers may be limited as provided in Subsection D-1-1a(12). All containers having a capacity in excess of 30 gallons must not be stacked over two containers high in accordance with ADEM Administrative Code Rule 335-14-5-.09(4)(c). Stability shall be a consideration when stacking containers of any size. Container configurations, where shown on the drawings in Appendix D-1 of Section D of this Application, are only an example of the multitude of possible configurations.

Bulk size containers constructed to conform to the Inter Modal Association (IMA) standards and containers specifically designed (i.e., containers having structural components that are designed and intended to safely support the container(s) and contents when stacked) to be stacked, may be stacked two containers high in accordance with ADEM Administrative Code Rule 335-14-5-.09(4)(c). These containers, when stacked, shall interconnect or otherwise be stable so as to prevent the collapse or the displacement of the container(s) or its contents. In addition, these containers, when stacked, shall not compromise safety or exceed the secondary

containment capacity of the containment area. Placement and stacking of these types of containers shall be performed using appropriate equipment.

Within the confines of a waste management unit (i.e., within the perimeter containment curb) containers of waste may be temporarily positioned (i.e., while activities are in progress) in work and access aisles to allow positioning of containers into, within, or from a containment bay, to arrange containers for loading, transfer to a processing area, or to remove a container in response to a leak or a spill. This procedure is referred to as temporary storage. Containers within, or on, processing equipment awaiting movement through a system may also be considered in temporary storage.

D-1-1a(16) Receiving and Staging Waste in Containers for On-Site or Off-Site Management

Wastes arrive at the Facility in containers, as described in Section B of this Application. On arrival and after initial waste receiving operations, bulk containers are directed to the parking area PK-1000, or to one of the bulk storage units (i.e., Units 406 and 2200), or to one of the other bulk storage and/or treatment units (i.e., Units 520, 600, 604, 700, 702, 703A, 1200A, or 2000). Loads of other than bulk size containers (i.e., small containers) are normally directed to either parking area PK-700, an unloading dock at one of the waste management units to await off-loading, or are positioned in a contained area within one of the bulk container storage units (i.e., Units 406 or 2200). The procedures for receiving, holding, and accepting wastes are outlined in Subsection B-5a of Section B and in the Waste Analysis Plan, Section C of this Application.

The design and operation of the loading and unloading docks at the Facility are described in later subsections. At most units, the loading and unloading docks consist of a covered and contained reinforced concrete dock platform having a paved approach allowing the waste delivery trucks to back up to a dock-height access adjacent to the storage area. While the reinforced concrete dock platforms are not permitted storage areas, the flooring in these areas are sealed with a chemical resistant coating as a best management practice (see Appendix D-1-3 to Section D-1 for sealant systems). From the docks at the container storage units, containers are unloaded and moved to containment areas for staging (i.e., held within the confines of a segregated secondary spill containment system in a regulated waste management unit awaiting receiving, acceptance verification, and approvals). During staging, containers are received, sampled, analyzed (see the Waste Analysis Plan in Section C of this Application) and segregated by compatibility groups in compliance with Department of Transportation (DOT) classifications. In general, a staging period, not to exceed 72 hours, begins upon completion of the transfer of the containers from the loading docks to the containment slots and ends once the containers are accepted and placed into storage. The received date of the container(s) is recorded on labels attached to the container(s) once they have been sampled, or is noted by other means that provides a clear indication as to the date of the beginning of the staging period

for the container(s). When containers are stored, they will have a CWM-Emelle waste label attached. When containers are staged, they will not have a CWM-Emelle waste label attached until containers are sampled. In addition, when containers are staged in the same secondary spill containment system with stored containers, the staged containers will be considered to contribute to the capacity of that secondary spill containment system with regard to the secondary containment volume.

Waste in containers being transferred on-site or for off-site shipment may also be staged in the SWMU loading dock on the trailers or vans that are being used to transport the containers to their destination. The process of loading the trailers will take no more than 72 hours to complete. Following this staging process, the containers will be transported to the appropriate SWMU for further on-site management or shipped off-site to another permitted facility.

D-1-1a(17) Storage of Non-Hazardous Waste in Containers

As stated throughout this section, the Facility will manage virtually every type of non-hazardous and hazardous waste materials. Non-hazardous waste will be stored and managed in the same waste management units used to manage hazardous waste. In some respects, non-hazardous waste may be managed with techniques similar to those employed in the management of hazardous waste. For example, only chemically compatible non-hazardous waste will be stored in the same secondary spill containment area with other non-hazardous or hazardous waste. However, when containers of non-hazardous waste are stored adjacent to (i.e., within the same storage bay) containers of hazardous waste, the hazardous and non-hazardous containers will be clearly marked or otherwise made readily identifiable. In addition, when non-hazardous waste is stored in the same secondary spill containment system with hazardous waste, the non-hazardous waste will be considered to contribute to the capacity of that secondary spill containment system with regard to the secondary containment volume.

D-1-1a(18) Accumulation of Facility Generated Waste

Containers, usually drums, will be located within the general vicinity of waste management units and will be used to accumulate and store Facility generated residues, which will primarily be discarded PPE, but which may also include other Facility generated waste (e.g., pump strainer residues, tank bottoms, cleanup residues from small spills, etc.). The Facility will be the generator of these hazardous wastes. Wastes will be accumulated in containers (e.g., 55-gallon drums) that are clearly and properly labeled, positioned and managed in accordance with ADEM Administrative Code Rule 335-14-3-.01(5)(a)6 and 40 CFR 262.15(a)(6). When an accumulation container is determined to be full, the Facility will move it into a permitted storage unit within 3 days. Accumulation containers are not to be confused with containers inside the waste management units used to receive and store waste for processing or treatment. Accumulation containers holding more that 55-gallons of waste will be managed in accordance with 40 CFR 262.34(a) and ADEM Administrative Code Rule 335-14-3-.03(5)(a).

D-1-1a(19) Management of Trans-shipped Containers

For the purposes of this Permit Application, containers that do not originate at the Facility and are not destined for this Facility are referred to as trans-shipped containers. The Facility may manage either partial or full truckloads of trans-shipped containers and in some instances; these containers may require unloading, temporary storage, and re-loading. The management of these containers is limited by the DOT regulations as they apply to truck shipments, and the containers will not reside at the Facility for more than the transportation period (i.e., ten days or less), unless they are received by the Facility in accordance with Subsection B-5a of Section B and the Waste Analysis Plan, Section C. Prior to receiving, trans-shipped containers will be managed, staged, and clearly marked for separation from other containers of hazardous and non-hazardous waste.

D-1-1a(20) Recordkeeping For Containerized Waste

In accordance with 40 CFR 264.73(b)(1) and ADEM Administrative Code Rule 335-14-5-.05(4)(b)1 the Facility maintains, in the Facility Operating Record, a description and quantity of each hazardous waste managed in containers, and method(s) and date(s) of treatment, storage, or disposal. In addition, in accordance with 40 CFR 264.73(b)(2) and ADEM Administrative Code Rule 335-14-5-.05(4)(b)2 the Facility maintains, in the Facility Operating Record, a description and quantity of hazardous waste in containers transferred into and out of each of the container management units at the Facility.

D-1-1b General Design Features

The waste management units and the equipment utilized to store and treat waste are designed, constructed, and maintained to safely manage waste in containers. While the design and construction of each of the units are unique, certain features are common to all the units. These features are described in the subsections that follow. Additional descriptions of individual units are provided in Subsection D-1-2.

D-1-1b(1) Run-On Control

All container management units are covered with a roof and have sides or roof overhangs to prevent or minimize rain from falling or blowing into the containment areas. The perimeter containment curbs of the units are above the 100-year floodplain (see Section B) and the surrounding land surface grade. On units where the perimeter containment is achieved by sloping floors, ramps, or approach aprons, run-on is prevented by sloping the surrounding land surface away from the unit. Precipitation and surface water is routed away from the units by gutters, downspouts, slopes, swales, and drainage pipes. Thus, run-on will be prevented. Therefore, the units comply with ADEM Administrative Code Rule 335-14-5-.09(6)(b)4 and 40 CFR 264.175(b)(4). In the event that rainwater is blown into or is tracked into a regulated container management unit, the collected water will be properly managed (i.e., managed as a

Facility generated waste, characterized based on knowledge of the waste that it contacted, or characterized by other procedures as described in the Waste Analysis Plan).

D-1-1b(2) Impervious Floors and Dikes

To ensure the floors within the waste management units are free of leakable cracks and/or gaps (i.e., cracks or openings that compromise the containment system as opposed to, 1) minor surface striations; 2) surface fractures covered and sealed by coatings; 3) cracks sealed with an appropriate sealant system; or 4) other such partial penetrations that do not compromise the containment system), well-proven construction techniques and quality construction materials are used. The floor, curbs, and sumps of each containment area are formed of structurally reinforced concrete designed to support the greater of the weight of equipment and containers or the weight of full containers when stacked. These components are designed and constructed according to applicable American Concrete Institute (ACI), American Society of Mechanical Engineers (ASME), and/or American Society of Testing Materials (ASTM) standards to prevent structural failure due to pressure gradients, settlement, compression, uplift, climatic conditions (freeze/thaw) and daily operational stresses. Floors, sumps, curbs, and raised walkways are formed monolithically or with joints sealed by a waterstop. Joints and expansion control joints in containment floors are sealed and have waterstops. Construction details for each of the container storage units are provided in the drawings in Appendix D-1 of Section D of this Application. Furthermore, in areas where liquid wastes are handled, the reinforced concrete floor surfaces, interior edges of curbs, side walls of dikes, and bottoms of sumps are covered with a chemical-resistant sealing system, an impervious continuously welded steel, or a combination of chemical-resistant sealing and continuously welded protective steel floor. These systems are further described in Appendix D-1-3 of this Application.

D-1-1b(3) Perimeter Containment Curbs

The container management units are constructed with a perimeter containment curb that either complements the containment capacity of the individual segregated containment systems of the unit or provides the required containment capacity of the unit. The perimeter curbs are constructed of reinforced concrete, or other ADEM approved measure either formed monolithically or with joints sealed by a waterstop. The interior edge of the reinforced concrete curb is coated with a chemical resistant sealant system or with a continuously welded steel containment. In some areas where access over the curb is required, ramps complete the containment system. The curbs and ramps are maintained free of leakable cracks and/or gaps (i.e., cracks or openings that compromise the containment system as opposed to, 1) minor surface striations; 2) surface fractures covered and sealed by coatings; 3) cracks sealed with an appropriate sealant system; or 4) other such partial penetrations that do not compromise the containment system).

D-1-1b(4) Separation of Containments

In most cases, sloping floors with individual sumps, in conjunction with raised walkways or intermediate curbs, provide containments and also provide separation between adjacent containments. Reinforced concrete walkways and curbs that are not monolithic with the floor are sealed to the floor to complete the containment. Joints are sealed with waterstops, and all concrete containment is sealed with a chemical resistant sealant system or a continuously welded steel containment, thus providing impervious segregated secondary containment systems.

D-1-1b(5) Special Requirements for Ignitable Waste

Container management units that store, treat, or process ignitable wastes are constructed to comply with the applicable National Fire Protection Association (NFPA) standards regarding the placement of fire extinguishers, sprinkler systems, fire detection equipment, alarm systems, fire barriers and the classification of electrical equipment.

D-1-1b(6) Minor Deviations from the Permit Design

During final design and construction of proposed container management units, or alterations or expansions to existing container management units, minor deviations may be required from the permit designs included within this Application. Such deviations may be required to facilitate the final design and construction of the unit through adherence to standard design and construction practices and requirements so that the unit can serve its intended purpose. The necessity for minor deviations from the permit designs of container management units may stem from requirements within one or more of several categories such as the following:

- to enable compliance with applicable codes, standards or regulations such as Building Codes, OSHA, or NFPA;
- to aid in the constructability of the unit;
- to allow for the substitution of equivalent or superior equipment;
- to allow for the substitution of equivalent or superior materials of construction.

These deviations will not alter the intent of the permit design or functionality of the unit and will not compromise the ability to manage the unit as required by the regulations. In addition, these deviations will not decrease the capacity of the secondary containment system for the unit as described in this Application and will not increase the amount of waste to be managed within the unit as described in this Application. Any deviations from the designs contained within this Application that constitute a material or substantial alteration or addition to a permitted unit in accordance with 40 CFR 270.41(a)(1) and ADEM Administrative Code Rule 335-14-8-.04(2)(a)1

will be submitted to the Department as a request for modification in accordance with the applicable portions of ADEM Administrative Code Rule 335-14-8-.04.

D-1-1c General Management Practices for Treatment in Containers

This section pertains to the treatment of waste in containers in container management units and in containment buildings. Although each waste management unit and the treatment systems within the management units are unique, certain general practices apply to all units in which waste is treated or processed. These practices are provided in the subsections that follow. Additional unit-specific information is provided in the individual descriptions for each unit provided later in this section.

D-1-1c(1) Quantities and Types of Waste

The Facility receives varying quantities and types of wastes, and throughout the sections that follow, reference is made to the types and quantities of waste that may be treated in each unit. Each of the treatment systems is able to process a broad range of waste codes. Tables C-1-1 and C-1-2 of Section C list the EPA waste codes that are stored, treated and disposed at the Facility. All codes are listed because EPA has determined that treatment residuals, wastewaters, dilute concentrations of hazardous waste constituents, and mixtures of hazardous constituents in non-hazardous waste maintain, by virtue of the waste-derived rule and mixture rule, their listed code(s) regardless of the concentration of hazardous constituents in the waste. Thus, specific waste code groupings for each of the treatment systems cannot be assembled.

D-1-1c(2) Treatment Decisions

A determination is made, as outlined in the Waste Analysis Plan in Section C, of the best means of storing, processing, or treating the waste. The physical form, chemical composition, compatibility, and the operator's knowledge of the waste will dictate whether a waste stream is stored, treated, or processed in a container management unit at this Facility. In all cases, prior to treatment or processing (i.e., bulking, mixing, blending, etc.), the wastes are assessed for chemical compatibility. All decisions on treatment and processing are made in accordance with the Waste Analysis Plan and the Regulations.

D-1-1c(3) Compatibility

Before waste is placed in a container or treatment system, it is assessed in accordance with the Waste Analysis Plan to determine that:

- chemically, it belongs to one of the classes of wastes allowed to be managed in the container or system (e.g., it actually exhibits the properties of flammability, ignitability, corrosivity, or reactivity, etc.);
- it is compatible with the materials of construction of the container or system; and

- it is compatible with the waste currently or previously held in the container or system (i.e., if residues of the previous waste exist).

If these conditions cannot be met, the wastes are not placed in the container or system. In the case of incompatibility with waste previously stored in the container or system, the wastes are not placed in the container or system until it has been emptied of current wastes and/or one of the following procedures are completed:

- the container or system is rinsed to remove the residuals of the previous waste stream; or
- the container or system is flushed with a transition waste that meets the following criteria:
  - it is mutually compatible with the residuals of the previous wastes;
  - it is compatible with the waste to be placed in the container or system; and
  - it is compatible with the materials of construction of the container or system.

D-1-1c(4) Special Requirements For Ignitable and Reactive Wastes

Prior to transferring flammable, ignitable, or reactive waste between containers or into tank systems, the container will be electrically grounded to prevent ignition by static discharge.

D-1-1c(5) Inspection of Treatment and Processing Systems

Inspection of the processing areas, treatment and processing systems, and processing equipment used to manage waste in containers is described in the Inspection Plan (Section F). These procedures comply with 40 CFR 264.174 and ADEM Administrative Code Rule 335-14-5-.09(5).

D-1-1c(6) Capacities, Volumes, and Rates

In the unit-specific discussions, rates, and capacities of the treatment and processing systems are provided. These rates are based on waste received for treatment and may be expressed in time units of minutes, hours, days, weeks, months, or years. However, due to the wide variety of wastes processed and the varying physical states, instantaneous rates will vary and will exceed the stated rates. Thus, all units of treatment capacity are implied to be average annualized totals equated to the specific time units expressed within each of the discussions. Units of measure normally associated with liquids, such as gallons, may also be used to express the equivalent volume for solids. Likewise, units of measure normally associated with solids, such as cubic feet (cu. ft.), cubic yards (cu. yd.), or acre-feet (ac. ft.), may also be used to describe the equivalent volume for liquids.

D-1-1d Treatment Process Description

This Facility stores and treats waste in containers, in tanks, and in containment buildings. The processing functions performed in containers at this Facility (except for the handling and treatment processes in the Leachate Treatment Plant (Unit 2001) exempted by 40 CFR 261.4(a)(2) and ADEM Administrative Code Rule 335-14-2-.01(4)(a)2.) are as follows:

Container Treatment Processes (T04)	**Specific Handling Codes**
A. Chemical Treatment	
1. Chemical fixation	T21
2. Chemical oxidation	T22
3. Chemical precipitation	T23
4. Chemical reduction	T24
5. Degradation	T28
6. Detoxification	T29
7. Neutralization	T31
8. Other	
a. Extraction (Washing)	T34
b. Immobilization (Microencapsulation)	T34
B. Physical Treatment	
1. Separation of components	
a. Centrifugation	T35
b. Clarification	T36
c. Coagulation	T37
d. Decanting	T38
e. Encapsulation (Macroencapsulation)	T39
f. Encapsulation (Microencapsulation)	T39
g. Filtration	T40
h. Flocculation	T41
i. Sedimentation	T44
j. Thickening	T45

k. Other

(1) Extraction (Abrasive Blasting) T47

(2) Extraction (Scarification) T47

(3) Extraction (Spalling) T47

(4) Extraction (Vibratory Finishing) T47

(5) Extraction (High Pressure Washing) T47

(6) Size Reduction (Shredding) T47

(7) Encapsulation (Sealing) T47

(8) Screening T47

2. Removal of Specific Components

a. Activated carbon T49

b. Blending T50

c. Leaching T59

C. Biological Treatment

1. Activated sludge T67

2. Other

a. Aerobic T77

b. Anaerobic T77

Treatment may be accomplished by a number of processing steps applicable to the particular type of waste. The sequence of processing operations varies with the physical state of the waste (i.e., solid, semi-solid, or liquid). In order to treat a particular waste, it may be necessary to utilize one or more of the unit operations identified above. Normally, however, a particular waste requires only one type of treatment, and portions of the waste residuals are then directed for further treatment as appropriate. The necessary preceding steps for processing wastes, such as compatibility evaluations, acceptance, and treatability evaluations, are described in this section and in the Waste Analysis Plan in Section C of this Application. Within each management unit, certain general functions are conducted, such as decanting, repackaging, bulking, blending, mixing, phase and component separation, etc. These functions may be conducted in any of the management units. Descriptions of these general functions are provided in the following subsections. Unit-specific treatment and processing functions are described in the discussion of each management unit found later in this section.

D-1-1d(1) Phase and Component Separation

D-1-1d(1)a Process Description

The phase and component separation process consists primarily of pumps, suction wands, or other equipment, and containers (e.g., drums, tote tanks, etc.) and tanks. The system allows the selective withdrawal of freestanding liquid and sludgy portions of waste in containers. Certain wastes, when allowed to set in containers or in tanks, may stratify into fairly distinct layers of separate components. The careful withdrawal of these layers may provide components which are more readily treatable than the composite mixture. Multi-layering wastes are particularly amenable to phase separation. This separation is accomplished by selectively drawing off the layers. The withdrawal may be from the original container, or it may be from a larger composite, such as a tank. The separated fractions will be sent to appropriate off-site reclamation or treatment facilities, or directed to on-site treatment or disposal units. The phase and component separation process is conducted separately in both the organic and inorganic processing areas (including the neutralization/detoxification areas).

The phase and component separation process can also be applied to wastes that are solid or semi-solid. For example, large solids may be removed from a container of smaller solids and placed in a separate container, or sludge and semi-solids may be removed by using scoops.

D-1-1d(1)b Types of Waste Phase and Component Separated

Practically all types of liquid, semi-solid, and solid wastes may undergo phase and component separation. The actual types of waste considered for separation will depend on the type of end recovery, treatment or disposal required.

D-1-1d(1)c Management of the Process

Due to the relative simplicity of the process, the process design is not very intricate. The uniqueness of the process is in the identification of the strata within the container. The determination of the strata is made by sampling and by the wastes profile information. The process consists primarily of special suction wands, withdrawal pumps and hoses, and receiving containers and tanks. The separation of solids may be performed using screens or other devices. Since the process is conducted separately in both the organics and inorganics processing areas, particular attention is given to the compatibility of wastes with respect to the materials of construction of the pumps, hoses, receiving containers, and tanks. For example, in the inorganics processing area, plastic or lined containers or tanks may serve as receptacles, while carbon steel may serve in the organics area.

Due to the nature of the process, all operations are manually controlled. The operator must vary withdrawal rates and withdrawal depths. Prior to pumping, the operator will check the receiving containers or tanks to assure that ample capacity remains to prevent overfilling.

D-1-1d(2) Blending and Mixing

D-1-1d(2)a Process Description

Select wastes may be mixed or blended, providing the assessment prescribed in the Waste Analysis Plan demonstrates that none of the following is indicated due to mixing or blending:

- extreme heat or pressure;
- fire or explosion, or the risk thereof due to production of flammable fumes;
- violent reaction;
- production of harmful quantities of toxic mists, fumes, dusts, or gases; or
- other types of reactions which may harm the Facility structure, or human health, or environment.

The process consists of taking two or more wastes or waste and reagents and blending and mixing them to prescribed ratios. Although most wastes to be mixed will be liquids; semi-solids, sludge, and solid wastes may also be mixed. Mixing and blending are conducted separately in both the organics and inorganics processing areas. Certain reagents may be added, in accordance with the Waste Analysis Plan, to promote this process.

D-1-1d(2)b Types of Waste Blended, Mixed, and Bulked

Practically all types of liquid, semi-solid and solid waste may be blended and mixed, provided they conform to the requirements of the Waste Analysis Plan. The type and quantities of waste blended will depend on the type of end recovery, treatment, or disposal required.

D-1-1d(2)c Management of the Process

The mixing and blending processes are conducted separately within the inorganics and organics processing areas (including the neutralization/detoxification areas). These processes take place in containers, tanks, and containment buildings within the perimeter containment of the area. Depending on their physical and chemical characteristics, wastes are pumped or transferred into one or more receiving containers or tanks. Prior to transfer, the operator checks the receiving container or tank to assure that ample capacity remains to prevent overfilling. All operations are supervised and are generally manually controlled. Since the process is conducted separately in both the organics and inorganics processing areas, particular attention is given to the compatibility of wastes with respect to materials of construction of pumps, hoses, and receiving vessels.

D-1-1d(3) Bulking and Repackaging

D-1-1d(3)a Process Description

Wastes may be bulked and repackaged into smaller or larger containers, provided the wastes are compatible with the container. The process of bulking and repackaging may be performed in any unit.

D-1-1d(3)b Types of Waste Bulked and Repackaged

Practically all types of liquid, semi-solid and solid waste may be bulked or repackaged, provided they are of the same waste stream or, in the case of mixing different waste streams (see Mixing and Blending above), they conform to the requirements of the Waste Analysis Plan (see Section C), and provided the waste is compatible with the materials of construction of the container. The type and quantities of waste bulked or repackaged will depend on the type of end recovery, treatment, or disposal required.

D-1-1d(3)c Management of the Process

The bulking and repackaging processes may be conducted within any of the storage or management units. These processes take place within the perimeter containment of waste storage or management units. The operations are supervised and are manually controlled.

D-1-1d(4) Treatment of Debris Wastes

Several of the waste management units will be used to treat debris waste. The following describes the procedures and methods to accomplish this treatment.

One or more of the chemical or physical treatment techniques described below may be used to render a waste amenable to direct landfill disposal, subsequent treatment via stabilization, or subsequent management in containers or tanks.

Physical treatment technologies which may be employed to render contaminated debris available for landfill disposal include extraction techniques such as abrasive blasting, scarification, spalling, vibratory finishing, high pressure washing, or immobilization techniques including macroencapsulation and sealing. Other physical treatment techniques which may be employed to render wastes available for landfill disposal or more amenable to subsequent stabilization or management in containers or tanks include waste size reduction, waste blending and bulking, and leaching.

Chemical treatment technologies which may be employed to render contaminated debris available for landfill disposal include chemical extraction via washing with water or chemical reagents that enhance the removal of hazardous contaminants from the surface of debris, and immobilization techniques such as microencapsulation.

Debris treatment residuals such as blast grit or rinse waters generated from the aforementioned treatment technologies and treated wastes which do not meet the land disposal restrictions (LDR) will be collected, stored, and subsequently treated prior to final disposal. The process or storage areas of a unit may also be used to store wastes during curing, treatment, and verification testing, and as needed to schedule subsequent treatment or disposal.

Any of the aforementioned treatment techniques may be employed using specialized equipment to render contaminated debris available for landfill disposal or to provide treatment or pretreatment of debris treatment residuals or wastes separated from the contaminated debris prior to landfill disposal.

D-1-1d(4)a Physical Treatment Technologies

The primary physical treatments that will be performed include various physical extraction techniques that are designed to remove the surface contamination and/or surface layers from hazardous debris. The physical extraction techniques which may be performed in containers are as follows:

(a) abrasive blasting with water or air propelled solid media such as sand, steel shot or glass beads;

(b) scarification with surface striking heads or grinding wheels;

(c) spalling by drilling or chipping holes into the surface of the debris;

(d) vibratory finishing utilizing scrubbing media or oscillatory mechanical devices;

(e) spraying with high pressure steam or water; or

(f) removal of debris components; or

(g) any other method approved by ADEM through an approval letter not requiring a minor modification

The physical treatment techniques listed above may be performed utilizing portable equipment which may be temporarily stationed in the waste management unit. Solid treatment residuals from techniques (a) through (d) will be collected within the area with filtered vacuum systems. Liquid treatment residuals from technique (a) and (e) will be collected with portable pumps from the liquid collection sump in this area. Within containment buildings, the utilization of the ventilation system, dust collector and management practices, as described in Subsection D-9-3 of Section D-9, will minimize the escape of airborne fugitive emissions from the unit during the use of these techniques. The techniques for removal of the debris components (f) may be performed in any container management unit and allows the separation of debris from other

wastes for subsequent processing as debris, and the non-debris component to be treated as necessary to meet any required land disposal restrictions.

Other physical treatments which may be performed to render contaminated debris available for landfill disposal include immobilization techniques such as macroencapsulation or sealing. Both of these techniques involve the application of tightly adhering surface coating materials which will substantially reduce the exposure of contaminated debris surfaces to media which may leach contaminants after disposal. The application of such coatings will require the use of specialized portable mixing and/or application equipment, which may be temporarily stationed in an area of each unit. Specific requirements for the control of applied coatings and of airborne fugitive emissions will be addressed on a case-by-case basis to comply with Facility's air permits. Another macroencapsulation immobilization technique may also include the placement or compaction or compression of waste materials into a jacketing system (example: PPE compacted into a suitable container).

Macroencapsulation of debris waste shall be accomplished as described in Section D-9, Subsection D-9-5d.

These immobilization techniques will achieve complete encapsulation of the debris. All encapsulation materials used will be resistant to degradation by the debris, its contaminants and the materials with which it may come into contact after disposal (e.g., leachate). The determination as to the suitability of encapsulation materials will be based on the following:

- materials of construction of the land disposal unit (e.g., HDPE, etc.);
- industry standards and standards developed at other disposal facilities; or
- other materials as verified by testing (i.e., EPA Publication SW-846 Method 9090, etc.).

These standards will ensure that the likelihood of migration of contaminants is substantially reduced.

Some physical containment techniques may be employed to provide a waste that is subsequently more amenable to stabilization or other treatment. Waste size reduction, bulking and blending may be performed to achieve these goals. The average particle size of contaminated debris or other waste may be reduced with the use of portable shear shredders or other devices. Contaminated debris will not be reduced to a particle size of less than 60 mm prior to treatment unless waste-specific treatment techniques are to be subsequently employed. Debris which has been decontaminated by cleaning and separation of the debris from the waste via a physical or chemical extraction technique may be reduced in size to accommodate

subsequent disposal. Contaminated debris will not be sized subsequent to treatment unless it is to be retreated. Other wastes may be reduced in size prior to treatment. Such wastes which are compatible and require the same treatment prior to disposal may be blended into bulk loads within the confines of the waste management unit.

D-1-1d(4)b Chemical Treatment Technologies

Two primary chemical treatment technologies (i.e., chemical extraction and microencapsulation) will be performed on contaminated debris and other wastes, as applicable.

The chemical extraction of specific or non-specific contaminants from the surface of debris may be achieved by washing the debris surface with aqueous solutions of contaminant solubilizing chemicals. This process is similar to, and may be performed with the same equipment as is used for physical extraction of surface contamination of debris by high-pressure washing. However, the use of chemicals, surfactants, water baths and/or elevated temperatures or pressures will allow the removal of contaminants from the solids in a manner similar to leaching. Chemical extraction of contaminants via washing will be performed on the primary barrier surface of containment buildings, within containers, or within specialized portable washing equipment which may be stationed in the processing areas during use. Reagents to be used in the chemical washing process will be selected and managed in a manner to prevent accelerated corrosion or deterioration of the containment components. Wash solutions collected from the process may be recirculated to the application unit during the treatment of compatible waste batches requiring the same washing procedures. All wash solutions will be managed in accordance with ADEM Administrative Code Rule 335-14-9-.04(6) and 40 CFR 268.45(d).

Another chemical treatment technique, which may be performed, is immobilization of contaminants through microencapsulation. Microencapsulation may be utilized to immobilize or reduce the leachability of contaminants on debris surfaces or in other types of wastes. Microencapsulation or stabilization of debris or other wastes will be achieved by bringing the contaminant into intimate contact with one of a number of materials. Other reagents may also be added to the mixture to enhance the curing and/or compressive strength of treated wastes. In addition, other types of immobilization agents may be used, provided that a determination as to the suitability of these materials is made based on either industry standards and standards developed at other disposal facilities, or verification by testing that the leachability of contaminants are immobilized or reduced. Microencapsulation may be the final treatment of contaminated debris prior to disposal or may be pretreatment of wastes prior to final stabilization. As with macroencapsulation, units without fixed installations will employ specialized portable mixing and reagent application equipment which will be stationed within the unit to perform this treatment.

D-1-1d(4)c Combinations of Treatment Technologies

In some instances, the proper treatment of contaminated debris or other waste may only be achieved by utilizing combinations of the various physical and chemical treatment technologies discussed above. This section will provide a discussion of some of the potential treatment combinations which may be used. However, since there are a large number of potential combinations and since information on each individual treatment technique has been previously provided, a discussion of all treatment combinations is not warranted or required.

One of the most common combination treatments will involve the removal of surface contamination via a chemical or physical extraction technique, followed by macroencapsulation, sealing or even immobilization via microencapsulation. A specific example of this combination is the removal of surface contaminants from an article of debris to prepare the surface for application of sealants to still-contaminated debris, as certain surface contaminants may interfere with some immobilization techniques.

Another example of combination treatments involves the use of microencapsulated wastes as an agent in a mixture used for macroencapsulation of contaminated debris. Microencapsulated wastes are applied to contaminated debris to form a jacket of inert material, which substantially reduces the exposure of the surface of the debris to potential leaching media upon landfill disposal. Microencapsulated waste is applied to achieve a full surface coating on contaminated debris, to form a jacket around the debris, and/or to fill void spaces within the debris (i.e., macroencapsulation) by either submerging the debris within the microencapsulated waste, by pouring the microencapsulated waste into a container of debris such that the debris is completely surrounded, or by other similar methods that successfully achieve macroencapsulation. Microencapsulated waste used to macro-encapsulate debris is subject to compatibility and land disposal restriction (LDR) testing requirements as described in the Waste Analysis Plan provided in Section C of this Application. The use of microencapsulated waste to macro-encapsulate debris minimizes the use of reagents or materials.

For debris with hard to remove surface contamination, a combination of physical extraction techniques, such as abrasive blasting and high pressure washing, may be required to achieve a clean debris surface.

Other combination treatment techniques may be required to achieve the alternate treatment standards for hazardous debris or the waste-specific treatment standards for other types of wastes. Combination and multiple treatment techniques may be employed as required to achieve appropriate disposal treatment standards.

D-1-1d(4)d Treatment Capacities

As discussed in the previous sections, there are numerous hazardous waste treatment techniques which will be performed in the waste management units. The actual treatment capacity that may be achieved for each of these techniques will vary depending on the physical and chemical characteristics of the debris, waste or contaminants. The treatment capacities for each technique are provided within the unit-specific descriptions and represent the average capacity that may reasonably be achieved based on the physical and operational constraints of the unit and as observed in practice. The storage of untreated, treated, curing or cured wastes in the containers is not considered as a portion of the treatment capacities, but is considered part of the storage capacity and is limited by the capacities provided within each unit as described in Subsection D-1-1a(13).

	Treatment Technology	Treatment Technique	Treatment Code
Chemical	Extraction	Water Washing	T34
	Immobilization	Microencapsulation	T34
Physical	Extraction	Abrasive Blasting	T47
		Scarification	T47
		Spalling	T47
		Vibratory Finishing	T47
		High Pressure Washing	T47
	Size Reduction	Shear Shredding	T47
	Removal of Specific Components	Blending	T50
		Phase Separation	T50
		Screening	T50
	Immobilization	Macroencapsulation	T39
		Sealing	T47

D-1-2 Unit-Specific Information

The subsections which follow provide descriptions of each of the unique design features and the management practices utilized in each of the units in which waste is managed in containers. The general management and treatment practices and general design features described in Section D-1-1 apply to each of these units, with exceptions noted within the following subsections.

D-1-2a Container Storage Unit 406

Unit 406 is used to stage and store various types of bulk containers and trailer loads of small-sized containers including those awaiting off-loading to other storage, treatment, or disposal units at the Facility. The types of containers to be stored in this unit include tanker trailers, van trailers, and flat-bed trailers carrying containerized waste, dump trailers, roll-off boxes, and other types of containers. Only containers holding wastes that do not contain free liquids will be stored in Unit 406.

The plan view of the layout, sections, and details of the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, which include the following:

- Drawing No. 0406-020-001 Container Storage Unit 406, Plan View;
- Drawing No. 0406-030-001 Container Storage Unit 406, Sections;
- Drawing No. 0406-030-002 Container Storage Unit 406, Sections; and
- Drawing No. 0406-040-001 Container Storage Unit 406, Details.

There are three segregated containments in the southern end of the unit (i.e., Containment Areas 1, 2, and 3) in Unit 406 as shown in Drawing No. 0406-020-001.

D-1-2a(1) Types and Quantities of Wastes in Unit 406

With the exception of wastes containing free-liquids, virtually all types of hazardous wastes listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, and non-hazardous wastes, as well as treatment residues from listed wastes, will be stored in this unit (see the Waste Analysis Plan in Section C).

As shown in Drawing No. 0406-020-001, there are a total of three segregated containments in which bulk containers, such as van trailers (containing small containers), tankers, dump trailers, flatbeds, roll-off boxes, etc., can be stored. The maximum storage capacity in containers (S01) for this unit is shown in Appendix D-1-1, with supportive calculations provided in Appendix D-1-2.

D-1-2a(2) Design of Unit 406

Unit 406 is a partially-open steel-framed building with a sheet metal roof. As previously stated, Containment Areas 1, 2, and 3 are located in the southern end of the unit. Some portions of the floor may have a protective layer to minimize damage to the concrete floor. This protective layer is bolted to the concrete floor; however, the bolts do not penetrate the concrete. The floors do not require a chemical resistant coating system since only wastes that do not contain free liquid are stored in Unit 406.

The sides of the north and south end sections are partially closed with metal siding panels (see Drawing No. 0406-030-001), whereas the middle sections are open-sided. In all sections of the unit, the roof overhangs and extends beyond the limits of containment to minimize rainfall blow-in into the unit.

The floor of storage bays in Containment Areas 1, 2, and 3 is a reinforced concrete slab. Containment volume for each of the three bays is provided by a combination of reinforced concrete curbs of varying height and outward sloping entrances and inward sloping floors leading to low points which can be pumped out if needed. Calculations of the net volume of secondary containment provided in each bay in Unit 406 are shown in Appendix D-1-2 of this Application.

D-1-2a(3) Management of Unit 406

Truck trailers, roll-off boxes, and other types of containers are staged and stored side-by-side in the southern area (i.e., Containment Areas 1, 2, and 3). Containers may rest on the floor (e.g., on pallets or on the rails of a roll-off container) or remain on the transport vehicle (e.g., tankers, flatbeds, in van trailers, etc.). The arrangement and positioning of containers in this unit shall be in accordance with Subsection D-1-1a(15) of this Application.

Additional information relative to the receiving and staging of waste in this unit is provided in Subsection B-5 in Section B of this Application.

Within this unit, samples of the container's contents are taken by removing the lid or cover of the container. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C of this Application. The sampling of vanloads of small-sized containers is normally performed in other container management units after the containers have been unloaded from the trailers.

D-1-2b Container & Tank Management Unit 520

The bulk container storage area of Unit 520 is located south of Unit 603 and east of the tank management area of Unit 520. The majority of bulk containers stored in this area of the unit are tanker trailers; however, other types of bulk containers (e.g., roll-offs, dumps, vans, or flatbed trailers holding small containers) are placed in the unit as well. Bulk containers of hazardous waste will normally be placed in this unit to await loading or unloading, for staging prior to waste transfer, and staging prior to shipment off-site. Due to the design of the container storage area in Unit 520, only containers of compatible waste types will be received and stored within the unit.

The process flow diagram (PFD), plan view of the layout, sections, and details of the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, including the following:

- Drawing No. 0520-010-001 Container & Tank Management Unit 520, P&ID;
- Drawing No. 0520-020-001 Container & Tank Management Unit 520, Plan View;
- Drawing No. 0520-030-001 Container & Tank Management Unit 520, Sections; and
- Drawing No. 0520-040-001 Container & Tank Management Unit 520, Details.

As shown on these drawings, there are two areas in Unit 520:

- the container storage area (i.e., the loading/unloading station; Containment Area 1) and
- the tank management area (i.e., Containment Area 2).

The management of waste in tanks in this unit is described in Section D-2 of this Application.

D-1-2b(1) Types and Quantities of Waste in Unit 520

This unit will primarily store containers of ignitable waste but, due to the derived-from rule, virtually all types of hazardous wastes listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, non-hazardous wastes, as well as treatment residues from listed wastes, may be stored in this unit (see Waste Analysis Plan Section C).

As shown in Drawing No. 0520-020-001, there is one area (Containment Area 1) for the storage of bulk and small containers. The maximum storage capacity in containers (S01) for this unit is shown in Appendix D-1-1 with supportive calculations provided in Appendix D-1-2. The maximum quantity for treatment in containers (i.e., T04; bulking and repackaging, mixing and blending, separation, decanting, etc.), in this unit, exclusive of treatment in tanks and the transfers between containers and tanks, is 25,000 gallons per day (based on processing five (5) 5,000-gallon tankers per day).

Information on the additional storage and treatment capacities of waste managed in tanks in this unit is described in Section D-2 of this Application.

D-1-2b(2) Design of Unit 520

The loading and unloading station (i.e., the bulk container storage area; Containment Area 1) of Unit 520 is an open, steel framed structure with a sheet metal roof. The roof system has an eave height of 19'-6" and overhangs the containment as shown on the drawings. There are two back-in aisles in the unit which may serve as storage areas. The perimeter of the area is encircled by raised curbing or cross-sloping ramps which form a complete secondary containment system. These features are shown in Drawing Nos. 0520-020-001 and 0520-030-001.

The floor and perimeter curb of the container storage area are constructed of reinforced concrete, the surface of which is sealed with a chemical resistant sealant or covered by a protective steel floor containment system. The secondary containment volume is provided by a combination of reinforced concrete perimeter curbs, the sloping interior floor, and the sump. Calculations of the net volume of secondary containment provided in the storage area in Unit 520 are shown in Appendix D-1-2 of this Application. Information on the design of the area used for the management of waste in tanks in this unit is described in Section D-2 of this Application.

D-1-2b(3) Management of Unit 520

Various sizes of tanker trucks and other types of containers may be stored side-by-side within the unit. Adequate aisle space is maintained between groups of containers and the perimeter walls of the unit as described in Subsection D-1-1a(15). Sufficient operating space is maintained to accommodate container loading, unloading and transfer activities. The containers are placed in a lot on the floor (e.g., when placed directly on the floor of the unit, the container is on the rails of a roll-off container or, in the case of small containers, on pallets) or remain on the transport vehicle of the unit to await counting, inspection of the containers, and sampling and inspection of the contents. Samples of the container's contents are taken by removing the bung, lid, or cover of the container. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C of this Application.

Due to the design of the container storage area in Unit 520, only containers of compatible waste types will be received, stored, or processed within this unit. Based on sampling results and after acceptance procedures are completed, any incompatible wastes are removed from the unit.

Information on the management of waste in tanks in Unit 520 is described in Section D-2 of this Application.

D-1-2c Container & Tank Management Unit 600

The bulk container storage area of Unit 600 is located adjacent to Unit 604 and north of Unit 603. The only bulk containers stored in this area of the unit are tanker trailers. Bulk containers

of hazardous waste will normally be placed in this unit to await loading or unloading, for staging prior to waste transfer, and staging prior to shipment off-site. Due to the design of the container storage area in Unit 600, only containers of compatible waste types will be received and stored within the unit.

The process flow diagram (PFD), plan view of the layout, sections, and details of the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, including the following:

- Drawing No. 0600-010-001 Container & Tank Management Unit 600, P&ID;
- Drawing No. 0600-020-001 Container & Tank Management Unit 600, Plan View;
- Drawing No. 0600-030-001 Container & Tank Management Unit 600, Sections;
- Drawing No. 0600-030-002 Container & Tank Management Unit 600, Sections and;
- Drawing No. 0600-040-001 Container & Tank Management Unit 600, Details.

As shown on these drawings, there are two areas in Unit 600:

- the container storage area (i.e., the loading/unloading station; Containment Area 1 and Area 2) and
- the tank management area (i.e., Containment Area 3).

The management of waste in tanks in this unit is described in Section D-2 of this Application.

D-1-2c(1) Types and Quantities of Waste in Unit 600

This unit will primarily store containers of combustible and ignitable waste but, due to the derived-from rule, virtually all types of hazardous wastes listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, non-hazardous wastes, as well as treatment residues from listed wastes (except for corrosive and reactive wastes), may be stored in this unit (see Waste Analysis Plan Section C).

As shown in Drawing No. 0600-020-001, there are two areas (Containment Area 1 and Area 2) for the storage of tankers. The maximum storage capacity in containers (S01) for this unit is shown in Appendix D-1-1 with supportive calculations provided in Appendix D-1-2. The maximum quantity for treatment in containers (i.e., T04; bulking and repackaging, mixing and blending, separation, decanting, etc.), in this unit, exclusive of treatment in tanks and the

transfers between containers and tanks, is 20,000 gallons per day (e.g., based on processing four (4) 5,000-gallon tankers per day).

Information on the additional storage and treatment capacities of waste managed in tanks in this unit is described in Section D-2 of this Application.

D-1-2c(2) Design of Unit 600

The loading and unloading station (i.e., the bulk container storage area; Containment Area 1 and Area 2) of Unit 600 is a closed, steel framed structure with a sheet metal roof. The perimeter of the area is encircled by raised curbing or cross-sloping ramps which form a complete secondary containment system. These features are shown in Drawing Nos. 0600-020-001, 0600-030-001, and 0600-030-002.

The floor and perimeter curb of the container storage area are constructed of reinforced concrete, the surface of which is sealed with a chemical resistant sealant. The secondary containment volume is provided by a combination of reinforced concrete perimeter curbs and the sloping interior floor. Calculations of the net volume of secondary containment provided in container storage Areas 1 and 2 of Unit 600 are shown in Appendix D-1-2 of this Application. Information on the design of the area used for the management of waste in tanks in this unit is described in Section D-2 of this Application.

Unit 600 includes an existing tank system with an adjacent loading/unloading station for bulk containers. The loading/unloading station exists but is not currently regulated as a container management unit.

D-1-2c(3) Management of Unit 600

Tanker trucks may be stored side-by-side within the unit. Adequate aisle space is maintained between tankers and the perimeter walls of the unit as described in Subsection D-1-1a(15). Sufficient operating space is maintained to accommodate tanker loading, unloading and transfer activities. Samples of the tanker's contents are taken by removing the lid or cover of the tanker. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C of this Application.

Due to the design of the container storage area in Unit 600, only containers of compatible waste types will be received, stored, or processed within this unit. Based on sampling results and after acceptance procedures are completed, any incompatible wastes are removed from the unit.

Information on the management of waste in tanks in Unit 600 is described in Section D-2 of this Application.

D-1-2d Container Storage Unit 602

Unit 602 is located just south of Facility Operations/Maintenance Unit 606 and immediately adjacent to and east of Container Storage Unit 603. Unit 602 is actually interconnected to Unit 603 via a loading/unloading dock and a covered and contained ramp. This unit is used to receive, stage, store, and handle waste in containers.

The plan view of the layout, sections, and details of the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, including the following:

- Drawing No. 0602-020-001 Container Storage Unit 602, Plan View;
- Drawing No. 0602-030-001 Container Storage Unit 602, Sections & Details; and
- Drawing No. 0602-030-002 Container Storage Unit 602, Sections & Details.

As indicated on these drawings, there are two separate functional areas in Unit 602:

- the container storage area (i.e., Containment Area 1) and
- the storage / handling area (i.e., Containment Area 2).

Both areas are used to stage, store, and handle waste in containers; however, the storage / handling area may also be used for container loading and unloading.

D-1-2d(1) Types and Quantities of Waste in Unit 602

Virtually any type of hazardous waste listed and identified in 40 CFR 261 and in ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, non-hazardous wastes, as well as treatment residues from those wastes, will be managed in this unit.

The maximum storage capacity in containers (S01) for this unit is shown in Appendix D-1-1, with supportive calculations provided in Appendix D-1-2.

D-1-2d(2) Design of Unit 602

Unit 602 is designed to accommodate the storage of liquid and solid contaminated debris, debris treatment residues, and other wastes in containers.

As previously stated, and as indicated on Drawing 0602-020-001, there are two separate functional areas within Unit 602:

- the container storage area (i.e., Containment Area 1) and
- the storage / handling area (i.e., Containment Area 2).

The entire unit is covered by a metal roof system and enclosed by metal siding along the perimeter. The floor of the container storage area of Unit 602 is an 8-inch thick reinforced concrete slab with an 8-inch high, reinforced concrete perimeter curb. Containers will be raised off the floor of the unit by placing the containers on rails (see Drawing No. 0602-030-001) or on pallets when in storage. In the event of a leak or spill within the containment, the rails or pallets prevent containers from standing in waste.

As shown on Drawing No. 0602-020-001, the container storage area of Unit 602 consists of eight container storage slots and is separated from the storage / handling area of Unit 602, which consists of two container storage slots, by a metal dividing wall with a 14-foot-wide rollup door and an 8-inch-high containment curb.

As shown in Sections C, D, and E and Details 1 and 2 on Drawing No. 602-030-002, Appendix D-1, the reinforced, 8-inch-thick concrete floor slab in storage / handling area slopes to a common liquid collection sump and the entire area will be encircled by a 4-inch-high containment curb. The sump and perimeter curbs and ramps complete the secondary spill containment for this area. To accommodate loading and unloading procedures, there are two 14-foot-wide rollup doors located on the eastern and western walls of the storage / handling area.

Calculations of the net volume of secondary containment provided in each containment area of Unit 602 are shown in Appendix D-1-2 of this Application.

D-1-2d(3) Management of Unit 602

Unit 602 is used to stage, store, and handle wastes in containers. Due to the design of the unit and the limits of segregation within the unit, only chemically compatible waste types can be stored or processed in each respective containment area. Containers managed in the container storage area of Unit 602 (Containment Area 1) are stored in the storage slots on the rails or on pallets as shown in Drawing No. 0602-020-001. The storage / handling area (Containment Area 2) of Unit 602 can be used for container storage, but is primarily used for staging, sampling, transfers, and loading and unloading activities. Adequate aisle space is maintained between groups of containers and the perimeter walls of the unit as described in Subsection D-1-1a(15). Sufficient operating space is maintained to accommodate sampling, transfer, container loading and unloading activities, and inspection procedures as required by ADEM Administrative Code Rule 335-14-5-.03(6).

The containers are placed in a lot on the floor (on rails or pallets if staged in Containment Area 1) of the unit to await counting, inspection of the containers, and sampling and inspection of the contents. Samples of the container's contents (when applicable) are taken by removing the bung, lid, or cover of the container. Further discussion of sampling techniques is provided in the

Waste Analysis Plan in Section C-2 of this Application. Based on sampling results and after receiving and acceptance procedures are completed, the containers are placed into storage slots (on the rails or on pallets if stored in Containment Area 1) and any incompatible wastes are moved to other container management units in compliance with 40 CFR 264.177(c) and 264.17 and ADEM Administrative Code Rules 335-14-5-.09(8)(c) and 335-14-5-.02(8).

After acceptance in Unit 602, containers stored within Containment Area 1 (see Drawing No. 0602-030-001) must be placed on rails or pallets, or otherwise raised off the floor. While still being stored on rails or pallets, containers stored in Containment Area 1 may be stored within spill trays designed to contain the largest container of waste or at least 10 percent of the total volume of waste in containers within the spill tray, whichever requires the greatest containment volume. In the storage / handling area (Containment Area 2), containers may rest on rails, pallets, or directly on the on the sloped floor.

D-1-2e Container Storage Unit 603

Container Storage Unit 603 is located directly south of Unit 604. This unit is used to receive, sample and store containerized hazardous waste for transfer to other units or trans-shipment off-site.

The plan view of the layout, sections, and details of the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, including the following:

- Drawing No. 0603-020-001 Container Storage Unit 603, Plan View;
- Drawing No. 0603-030-001 Container Storage Unit 603, Sections & Details; and
- Drawing No. 0603-030-002 Container Storage Unit 603, Sections & Details.

As shown in these drawings, the unit consists of three areas:

- the small container storage area, which consists of twenty container storage slots formed within fourteen segregated containment areas (i.e., Containment Areas 1 through 14);
- a loading/unloading dock on the east side of the unit between Unit 603 and Unit 602; and
- a loading/unloading dock on the southern side of the unit (i.e., Containment Area 15) and a connecting corridor/ramp.

D-1-2e(1) Types and Quantities of Wastes in Unit 603

Virtually every type of hazardous waste listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, non-hazardous wastes, as well as treatment residues from those wastes, will be managed in this unit. This includes containerized ignitable, corrosive, acute hazardous, toxicity characteristic, and certain reactive wastes, and lab pack wastes. The physical characteristics of the waste cover the spectrum of liquid, sludge and solid wastes and combinations thereof, often in two or more phases.

The maximum storage capacity in containers (S01) in this unit is shown in Appendix D-1-1, with supportive calculations provided in Appendix D-1-2.

D-1-2e(2) Design of Container Storage Unit 603

Unit 603 provides areas for the storage of waste in containers. Drawings 0603-020-001, 0603-030-001 and 0603-030-002 (see in Appendix D-1 of Section D of this Application) provide plan and section views of this unit. As previously stated, there are three areas in Unit 603:

- the small container storage (i.e., Containment Areas 1 through 14);
- a loading/unloading dock on the east side of the unit between Units 603 and 602; and
- a loading/unloading dock on the southern side of the unit (i.e., Containment Area 15).

The small container storage area of Unit 603 consists of twenty (20) container storage slots which are formed within fourteen (14) segregated containment areas as shown on Drawing 0603-020-001. Each slot is comprised of sloping reinforced concrete floors that drain toward collection sumps. Each of the independent containment slots is separated from adjoining slots by raised concrete walkways or firewalls that form dikes. In addition, the entire perimeter of the storage area is encircled by a curb to ensure containment during the movement of containers. Calculations of the net volume of secondary containment provided in each bay in the storage area of Unit 603 are shown in Appendix D-1-2 of this Application.

On the east side of Unit 603 there is a loading/unloading dock and a ramp that leads to the dock. This loading/unloading dock is paved, and the ramp leading from the dock and the connecting corridor are covered and contained by a perimeter curb. The ramp and corridor are constructed of reinforced concrete as shown in Drawing Nos. 0603-030-001 and -002, and are sealed with a chemical resistant coating (see Appendix D-1-3 to Section D-1 for coating systems).

Immediately south of Unit 603, there are covered and contained loading/unloading docks (i.e., Containment Area 15; see Drawing 0603-020-001) and an access corridor/ramp that leads from the docks to Unit 603. The loading/unloading dock area is covered by a steel frame roof system that overhangs the limits of the containment on the north and south sides. The roof system has a 19' 6" eave and is open on the sides. The containment is formed by the sloping floor, the sumps, and perimeter curbs. This containment is constructed of reinforced concrete, as shown on Drawing Nos. 0603-030-001 and -002, and is sealed with a chemical resistant coating or protective steel flooring system (see Appendix D-1-3 to Section D-1). The access corridor/ramp that leads from the loading/unloading docks to Unit 603 is contained by a perimeter curb and is covered by a canopy. Calculations of the net volume of secondary containment provided in Containment Area 15 of Unit 603 are shown in Appendix D-1-2 of this Application.

D-1-2e(3) Management of Container Storage Unit 603

Containers managed in Unit 603 are staged, stored, and processed in the containments shown in Drawing No. 0603-020-001 (see Appendix D-1 of Section D of this Application). Adequate aisle space is maintained between groups of containers and the perimeter walls of the unit as described in Subsection D-1-1a(15). Sufficient operating space is maintained to accommodate container loading, unloading and transfer activities. The containers are placed in a lot on the floor of the unit to await counting, inspection of the containers, and sampling and inspection of their contents. Samples of the container's contents are taken by removing the bung, lid, or cover of the container. Based on sampling results and after receiving and acceptance procedures are completed, any incompatible wastes are moved to other areas of this unit or to other container management units. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C of this Application.

D-1-2f Container Management Unit 604

This unit is used to manage containerized waste. Normally, wastes are stored in this unit prior to trans-shipment, or for staging to other units, or for consolidation, separation, encapsulation, decanting or other treatment, or for repackaging, or bulking and trans-shipment.

The process flow diagrams (PFD), plan view of the layout, and details on the construction of this unit are provided in the following drawings in Appendix D-1 of Section D of this Application:

- Drawing No. 0604-010-001 Container Management Unit 604, Process Flow Diagram;
- Drawing No. 0604-020-001 Container Management Unit 604, Plan View;
- Drawing No. 0604-030-001 Container Management Unit 604, Sections; and
- Drawing No. 0604-040-001 Container Management Unit 604, Details.

As shown in these drawings, Unit 604 consists of three separate functional areas:

- the small container storage area (i.e., Containment Area 1);
- the bulk container storage area (i.e., Containment Area 2); and
- the loading/unloading dock and container processing area.

The small container storage area in Unit 604 is comprised of eighteen (18) storage slots formed within one (1) containment area (Containment Area 1). At the southeast corner of the container processing area near the loading/unloading dock, there is a decanting station for processing and decanting of waste stored in Unit 604. Decanted liquid wastes from this area may be directed through pipelines to tanks T-634 or T-636 in Unit 600 (see Subsection D-2-5b of Section D-2), or to the tanker trucks located in the Loading/Unloading Stations at Unit 520 and Unit 603. Tank T-635 is used to store clean rinsates (e.g., mineral oil). Solid waste may be decanted to a bulk container positioned in the bulk container storage area (Containment Area 2). Due to the design of Unit 604, only containers of compatible waste types will be received, stored, or processed in this unit.

The concrete floor of Containment Areas 1 and 2 are coated with a chemical-resistant coating system (See Appendix D-1-3 of this Application for a description of the concrete coating systems). To minimize damage to the concrete floor or concrete coating, the floors of Containment Area 1 and Containment Area 2 are also covered by a continuously welded protective steel floor (See Appendix D-1-3 of this Application for a description of the protective steel floor systems).

D-1-2f(1) Types and Quantities of Wastes in Unit 604

Virtually all types of hazardous wastes listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, and non-hazardous wastes will be stored in containers in this unit (see the Waste Analysis Plan, Section C). Due to limits of segregation, only chemically compatible waste types can be stored or processed in this unit.

The maximum storage capacities (S01) in the small container storage area (i.e., Containment Area 1) and within the bulk container storage area (i.e., Containment Area 2) are shown in Appendix D-1-1, with supportive calculations provided in Appendix D-1-2.

The maximum quantities for treatment in containers (i.e., T04; bulking, mixing and blending, repackaging, encapsulation, separation, decanting, or any of the other treatment process provided in Subsection D-1-1d) in Unit 604 are:

- 33,660 gallons (based on, but not limited to, decanting the entire storage volume in one day) within the small container storage area (i.e., Containment Area No. 1); and
- 20,200 gallons (based on processing four (4) 25 cubic yard roll-off boxes per day) within the bulk container storage area (i.e., Containment Area 2).

D-1-2f(2) Design of Unit 604

The layout of Unit 604 is provided in Drawing No. 0604-020-001. Unit 604 is covered by a steel-framed building with sheet metal roof and siding. The west end of the unit is open to Unit 600, and the east side of the unit adjoins the Central Inventory Building at a firewall.

The floor of the small container storage area (i.e., Containment Area 1) is a 6-inch thick reinforced concrete slab with an 8-inch wide and 7-3/4-inch high, reinforced concrete perimeter curb. Containers are raised off the floor of the unit by placing the containers on rails (see Drawing No. 0604-040-001) or on pallets when in storage. In the event of a leak or spill within the containment, the rails prevent containers from standing in waste. The secondary containment for Containment Area 1 is formed by the perimeter containment curb. Calculations of the net volume of secondary containment provided in Containment Area 1 of Unit 604 are shown in Appendix D-1-2 of this Application.

The bulk container storage area (i.e., Containment Area 2) is located adjacent to the east side of Unit 600 as shown in Drawing No. 0604-020-001. The containment for this area is formed by the sloping floor, the approach berm, the sump, the perimeter containment curb adjoining Unit 600, and the vertical walls of the adjacent docks. The area is roofed and enclosed on all sides, except for the access door to the north. Calculations of the net volume of secondary containment provided in Containment Area 2 of Unit 604 are shown in Appendix D-1-2 of this Application.

As shown in Drawing No. 0604-020-001, the container processing area is located on the docks adjacent to and between the bulk container storage area (i.e., Containment Area 2) and the small container storage area (i.e., Containment Area 1). The elevated dock area wraps around the bulk container storage area (i.e., Containment Area 2) and provides access to a container positioned in the storage area for decanting, bulking and repackaging solids. The dock also allows the loading/unloading of containers to/from transport vehicles. In addition, in the southeast corner of this area is a manually operated liquid decanting station that consists of pumps and strainers and a dual wall piping system between Unit 604 and the Loading/Unloading Stations at Unit 520 and Unit 603. The dual wall piping system is equipped with an interstitial space-monitoring device that can detect and annunciate the occurrence of a leak in the primary carrying pipe. Level controls in the tanker truck that is receiving the

decanted liquid are electrically interlocked with the decant pumps in Unit 604 to prevent overfilling of the tanker. While storage is not conducted in the loading/unloading dock and container processing area, the area is contained by the perimeter containment curb in the container processing area and the adjacent containment for the bulk container storage area (i.e., Containment Area 2).

D-1-2f(3) Management of Unit 604

Containers managed in Unit 604 are stored and processed in the containments shown in Drawing No. 0604-020-001. Adequate aisle space is maintained between groups of containers and the perimeter walls of the unit as described in Subsection D-1-1a(15). In all areas of Unit 604, sufficient operating space is maintained to accommodate container loading, unloading and transfer activities. The containers are placed in a lot on the floor of the unit to await counting, inspection of containers, and sampling and inspection of their contents. Samples of the container's contents are taken by removing the bung or lid of the container. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C of this Application.

Based on sampling results and after receiving and acceptance procedures are completed, the containers are placed into storage slots (i.e., on the rails or on pallets) and any incompatible wastes are moved to other container management units.

The operating procedures established in the Waste Analysis Plan (see Section C) for accepted wastes ensure that incompatible wastes are not stored or processed in the same containment. This procedure complies with 40 CFR 264.177(c) and 264.17 and ADEM Administrative Code Rules 335-14-5-.09(8)(c) and 335-14-5-.02(8).

After acceptance in Unit 604, containers stored within Containment Area 1 (see Drawing No. 0604-020-001) must be placed on rails or pallets, or otherwise raised off the floor. In the bulk container storage area (i.e., Containment Area 2), containers may rest on pallets or the rails of the roll-off container or remain on the transport vehicles (e.g., tankers, flatbeds, roll-off frames, in van trailers, etc.). During processing, containers in the container processing area adjacent to the bulk container storage area (i.e., Containment Area 2) may rest on the floor or on pallets.

D-1-2g Container Management Unit 700

This unit is utilized for the receipt, sampling, staging, storage, processing and treatment of waste in containers. This section describes the storage and treatment of waste in containers within Unit 700.

The process and instrumentation diagrams (P&ID), plan view of the layouts, and details on the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, including the following:

- Drawing No. 0700-010-001 Containerized Waste Processing, Unit 700, PFD;
- Drawing No. 0700-020-001 Container Management Unit 700, Plan View;
- Drawing No. 0700-020-002 Container Management Unit 700, Plan View;
- Drawing No. 0700-030-001 Container Management Unit 700, Sections;
- Drawing No. 0700-030-002 Container Management Unit 700, Sections; and
- Drawing No. 0700-040-001 Container Management Unit 700, Details.

Storage of waste in containers consumes most of the floor space of Unit 700. As shown on these drawings, the following four (4) general areas within Unit 700 are used to manage waste in containers:

- the main small container storage area, which includes eighteen storage slots configured from fifteen (15) segregated containments (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, 10, and 11), as shown on Drawing No. 0700-020-001;
- the treatment and processing area (i.e., Containment Area 17), which adjoins and is separated from the small container storage area by a firewall and includes the manual decanting systems, the container filling systems, and the container crushers, as shown on Drawing No. 0700-020-002;
- the bulk container storage and treatment area at the north end of the unit, which includes four storage slots configured from segregated containments (i.e., Containment Areas 12, 13, 14, and 15), as shown on Drawing No. 0700-020-002; and
- the bulk container storage and treatment area on the east side at the northern end of the unit, which includes a storage slot configured from a single segregated containment identified on Drawing No. 0700-020-002 as Containment Area 16.

The bulk container storage and treatment area on the east side at the northern end of the unit may be used to store and treat certain wastes by debris treatment methods, to manage the residuals from treatment, and to manage waste bulked, blended or repackaged from smaller containers, and waste to be treated, processed or shredded.

Unit 700 is used for receiving containerized wastes and holding these wastes until they can be sampled, analyzed, accepted, and transferred to the decanting and processing areas in this unit, the operating landfill trench, or other processing or storage units. On delivery, small

containers of waste are placed by lot in segregated containment slots. These slots are used to receive and stage truckload deliveries and to store containers. As described in Section D-1, Subsection D-1-1a(11), only compatible wastes are stored in any one slot at any time.

After placement in the containment slots, the containers are re-counted, inspected for the presence of freestanding liquids, and sampled and analyzed (see Waste Analysis Plan, Section C). After sampling and analysis are completed, all containers are marked for appropriate processing and then moved to the associated processing, storage or staging areas.

From this unit, containerized solid wastes are delivered to the landfill trench for disposal, or transferred to the appropriate management unit on-site for further treatment, or shipped off-site for treatment or disposal. All other containers are transferred to the decanting area in Unit 700 for removal of the freestanding liquid content, or to the solids decanting systems also located at the northern end of Unit 700, or to other appropriate storage or processing areas.

These decanting processing systems include the container pumping stations, the organic container and tanker truck loading stations, containers and tanks for bulking and blending, container crusher, and the container tipper repackager (CTR). In addition, processing within Unit 700 includes in-drum void filling, in-drum solidification, and debris treatment in containers.

D-1-2g(1) Types and Quantities of Wastes in Unit 700

Virtually every type of hazardous waste listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, non-hazardous wastes, as well as treatment residues from those listed wastes, are received and processed (sampled and analyzed) in Unit 700 (see Tables C-1-1 and C-1-2 of Section C). Thus, Unit 700 is used to manage ignitable, acute hazardous, corrosive, toxicity characteristic, and certain reactive wastes. The physical characteristics of the wastes cover the spectrum of liquid, semi-solid, and solid wastes, and combinations thereof, often in two or more phases.

The maximum storage capacities in containers (S01) in the main storage areas (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, 10, and 11); in the five (5) bulk container storage and treatment areas (i.e., Containment Areas 12, 13, 14, 15 and 16); and in the processing areas (i.e., Containment Area 17) are shown in Appendix D-1-1, with supportive calculations provided in Appendix D-1-2.

The maximum treatment capacities in containers (T04; bulking, mixing and blending, repackaging, encapsulation, separation, decanting, solidification, stabilization, debris treatment, or any of the other treatment process provided in Subsection D-1-1d) for Unit 700 are based on the following:

- 46,000 gallons per day (based on the daily processing of four truckloads of pallet boxes = 4 truckloads x 24 boxes/load x 64 cu.ft./box x 7.48 gal/cu.ft.) of bulking and repackaging in the main storage areas (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, 10, and 11);
- 101,540 gallons per day (based on processing the full storage volume in one day) of debris treatment, except for macroencapsulation, which has a treatment capacity of 40 tons per hour, in the five (5) bulk container storage and treatment areas (i.e., Containment Areas 12, 13, 14, 15 and 16);
- 80,000 gallons per day (based on decanting 485 drums per shift, 3 shifts per day to tankers) of decanting, bulking, mixing, and repackaging in the manual processing area;
- 79,200 gallons per day (based on processing one drum every one minute) of decanting, bulking, blending, and mixing in the in-drum void filling and in-drum solidification system; and
- 26,400 gallons per day (based on processing one drum every three minutes) of decanting, blending, bulking, and mixing in the container tipper repackager (CTR).

D-1-2g(2) Design of Container Management Unit 700

This unit is covered by a steel-framed building with a sheet metal roof and sides. The north side of this unit opens to a building extension which covers the decant processing systems and the bulk container storage and processing areas. The east side is largely closed with sheet metal siding, except for the covered and contained dock area located near the northeast corner of the unit (i.e., Containment Area 16), which is also a bulk container storage area. The south side of the unit is closed by sheet metal siding. The west side is predominantly open to allow loading/unloading of containerized wastes onto and off of the receiving floor. Also, along the west side, there is a canopy that covers and protects the loading/unloading docks.

The approach to and the floor of the loading/unloading dock area on the west side of Unit 700 is paved and covered with a canopy, but the area is not completely contained. The canopy, in conjunction with berms along the exterior side of this area, minimizes or protects this area from rainfall and run-on.

As previously stated, there are five (5) general areas within Unit 700:

- the main small container storage area (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, 10, and 11);
- the treatment and processing area which adjoins and is separated from the small container storage area by a firewall;

- the bulk container storage and treatment area (i.e., Containment Areas 12, 13, 14, and 15);
- the bulk container storage and treatment area (i.e., Containment Area 16) on the east side at the northern end of the unit; and
- the processing areas (i.e., Containment Area 17).

The main small container storage area (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, 10, and 11) is within the perimeter containment for Unit 700, as illustrated in the Drawing No. 0700-020-001. The floor of this area is a reinforced 8-inch concrete slab with a 4-foot-wide, raised concrete walkway around the perimeter, except at the openings on the east and west sides where there are floor ramps to maintain the containment while allowing forklift access. The fifteen (15) segregated containments within this area are each comprised of sloping floors that lead to sumps with curbs separating adjacent containments. These features and other construction details are shown in the drawings. Calculations of the net volume of secondary containment provided in these areas of Unit 700 are shown in Appendix D-1-2 of this Application.

The treatment and processing area (i.e., Containment Area 17) within Unit 700, which adjoins the small container storage area at its northern limits (see Drawing 0700-020-002), is contained by the perimeter curb, the firewall, and by ramps that lead to the bulk container storage and treatment area (i.e., Containment Area 16) on the east side. Along the northern edge of this area, there is a retaining wall separating this area from the bulk container storage and treatment area (i.e., Containment Areas 12, 13, 14, and 15). At two locations (i.e., Containment Areas 13 and 14; see Drawing No. 0700-020-002), the retaining wall is inset into this area. The differential height provided by this wall and the insets aides in performing several of the treatment functions (e.g., the decanting and bulking of small containers into large containers). There are numerous types of treatment processes performed in this area including the following:

- manual processing area and manual decanting systems;
- container tipper repackager (CTR);
- in-drum void filling and in-drum solidification system; and
- container crushers / compactors.

The manual processing area is contained by the perimeter curb and the firewall separating the processing areas (i.e., Containment Area 17) from the main small container storage area (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, 10, and 11). Containers are placed in this area for decanting, repackaging, encapsulation, bulking, mixing, and blending.

Normally, containers are placed directly on the sealed reinforced concrete floor in this area. Portable pumps and hoses are used to decant liquids directly to tanker trucks positioned in the bulk container storage and treatment area (i.e., Containment Areas 12, 13, or 14), or to other containers positioned in the manual processing area. Solids may be processed in this area by rotating the containers while on the forklift, or by inverting containers and bulking to a container positioned in the processing area or at the retaining wall in Containment Area 13. Debris treatment, such as encapsulation, etc. may also be conducted in this area. Calculations of the net volume of secondary containment provided in the manual processing area (i.e., Containment Area 17) of Unit 700 are shown in Appendix D-1-2 of this Application.

The container tipper repackager (CTR) consists of a feed conveyor that positions containers in the inverter, a proportional container inverter, a discharge chute, an empty container feed conveyor, receiving containers and a repackaged container accumulation conveyor. The entire system is raised off the sealed reinforced concrete floor. The system is located inside the perimeter containment of the work aisle. The entire system is manually controlled, and the level in the receiving container is visually monitored.

The manual decanting system has two container pumping stations; with each station having two pump systems (one dedicated to inorganic waste decanting and the other to organic wastes decanting). Each station is equipped with an air supply that drives the pumping systems, separate discharge piping systems for inorganic and organic wastes, and two variable-speed diaphragm pumps. Free-standing liquids are removed from containers by opening the container, inserting a wand and pumping the liquids from the container. During decanting and phase separation, the containers are raised off the floor on roller conveyors. The floor under the conveyors is sloped and separated from other areas by curbs to prevent incompatible wastes from mixing. Liquids removed from the containers can be directed to a tanker truck (see Drawing No. 0700-010-001).

The in-drum solidification and void filling system is located adjacent to (i.e., within the same conveyor system) the manual decanting system described above. The system is located within the perimeter containment for Unit 700. While in this system, containers are raised off the sealed concrete floor on the roller conveyors. The system consists of a manually operated transfer pump (that can split the contents from one container to two containers) and a manually operated dry reagent metering system that can fill the void space in a partially full container or solidify waste, forming a container of solids. The metering system and the positioning and sequencing of containers through the system are manually controlled.

The bulk container storage and treatment area at the north end of Unit 700 consists of four separate containments (i.e., Containment Areas 12, 13, 14, and 15). The dimensions and size of each of these containments vary as shown on Drawing No. 0700-020-002. The containment

floor in these areas is constructed of reinforced concrete which has been sealed for chemical resistance or protected by a steel floor system. The containment for these areas is formed by sloping approach ramps, the sloping containment floor, and perimeter and intermediate curbs. Containment Areas 12, 13, and 14 are used as storage and treatment areas. Calculations of the net volume of secondary containment provided in these storage areas of Unit 700 are shown in Appendix D-1-2 of this Application.

The bulk container storage and treatment area (i.e., Containment Area 16), on the east side at the northern end of Unit 700, is a covered and contained area with a reinforced concrete floor that varies in thickness with 8" being the minimum. The containment for this area is formed by the sloping approach ramp, the sloping containment floor, and perimeter curbs. Calculations of the net volume of secondary containment provided in this storage area of Unit 700 are shown in Appendix D-1-2 of this Application.

D-1-2g(3) Management of Unit 700

Containers are managed in Unit 700 in the containments shown in Drawing No. 0700-020-001 and Drawing No. 0700-020-002. Adequate aisle space is maintained between groups of containers and the perimeter walls of the unit as described in Subsection D-1-1a(15). In all areas of Unit 700, sufficient operating space is maintained to accommodate container loading, unloading and transfer activities.

In the small container storage area in Unit 700, small containers are removed from the receiving truck at the docks and are placed in a slot on the floor of the unit to await counting, inspection of containers, and sampling and inspection of their contents, and acceptance. As specified by the unit manager or supervisor, certain drum size containers (i.e., containers that appear to be under pressure with bulging lids or bottoms, containers that are suspected to have difficult to remove bungs or lids, and other containers) are taken from the docks and placed in a hooded hydraulic punch apparatus which punches a hole in the top of the drum. A rubber stopper or other type plug is placed in the hole prior to moving the drums into the slots. Samples of the contents in these containers are taken through the punched hole. This procedure is utilized to avoid the danger of manually opening certain drums by removing the tops or bungs. Drums and other containers that are not punched in this manner are inspected and sampled by removing the top, lid, cover, or the bung. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C.

Based on the results of the above-described sampling, and after receiving and acceptance procedures are completed, any incompatible wastes are segregated and moved to separate storage slots. While in storage, incompatible wastes are managed as described in Subsection D-1-1a (11).

The manual decanting systems in the northern end of Unit 700 are divided into separate sections. These sections provide staging areas for processing the containers of waste. In these sections, processing is restricted to compatible campaigns or batches to avoid the inadvertent mixing of incompatible wastes. Prior to processing wastes that are incompatible with the previous waste processed in these areas, the area must be inspected for spills or leaks to assure that inadvertent mixing of incompatible wastes does not occur.

Only compatible waste, as determined in accordance with the Waste Analysis Plan, may be processed in the container tipper repackager (CTR). Prior to processing wastes that are incompatible with the previous waste processed, the system will be cleaned, as described in Section D-1-1c(3), to remove any previous waste.

D-1-2h Container Management Unit 702

This unit is used primarily to receive, sample, stage, store, and process waste in containers. The design and management of this unit is similar to Unit 700. Unit 702 primarily serves to manage waste prior to transfer to the Unit 700 or to other management units.

The process flow diagrams (PFD), plan view of the layout, and details on the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, which include the following:

- Drawing No. 0702-010-001 Containerized Waste Processing, Unit 702, PFD;
- Drawing No. 0702-020-001 Container Management Unit 702, Plan View;
- Drawing No. 0702-030-001 Container Management Unit 702, Sections;
- Drawing No. 0702-040-001 Container Management Unit 702, Details.

The following four (4) areas in Unit 702 are shown in these drawings:

- In the center and along the north end, occupying the majority of the unit, there are fifteen slots for the storage of waste in small-size containers. These slots are formed within fourteen segregated containments (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, and 10);
- In the northern end adjacent to the small container storage slots, there is a container storage and processing area (i.e., Containment Area 12);
- In the southeast corner, there is an isolated area (i.e., Containment Area 11; see Drawing No. 0702-020-001) that allows the storage and decanting of inorganic wastes and the processing of lab packed waste. The decanted wastes can be

pumped to a tanker within the loading station adjacent to the east side near the southern end of the unit (i.e., Containment Area 13); and

- The bulk container storage and loading station located adjacent to the east side of Unit 702 near the southern end of the unit (i.e., Containment Area 13).

Within Unit 702, in the receiving process, containerized wastes are off-loaded from delivery trucks and placed onto the floor of the unit. Containers from each delivery are generally placed, by truckload lots, into segregated containment slots for staging. After receiving, containers are counted, inspected, and sampled and analyzed as per the Waste Analysis Plan (see Section C). After acceptance, containers are then marked for appropriate storage or processing and then moved, if necessary, to the appropriate areas. The receiving, staging and storage procedures used in this unit are similar to those described for Unit 700.

D-1-2h(1) Types and Quantities of Wastes in Unit 702

Virtually every type of waste listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, non-hazardous wastes, and treatment residues from such wastes are received, sampled, analyzed, and stored in Unit 702 (see the Waste Analysis Plan in Section C of this Application).

The maximum storage capacities in containers (S01) for the small-size container storage areas (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, 10 and 11), the container storage and processing area (i.e., Containment Area 12), and the bulk container storage and loading/unloading station (i.e., Containment Area 13) are shown in Appendix D-1-1, with supportive calculations provided in Appendix D-1-2.

The maximum treatment capacities in containers (T04; bulking, mixing and blending, repackaging, encapsulation, separation, decanting, solidification, stabilization, lab pack processing, or any of the other treatment process provided in Subsection D-1-1d) for Unit 702 are based on the following:

- 46,000 gallons per day (based on the daily processing of four truckloads of pallet boxes = 4 truckloads x 24 boxes/load x 64 cu.ft./box x 7.48 gal/cu.ft.) of bulking and repackaging in the main storage areas (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, and 10);
- 80,000 gallons per day (based on decanting 485 drums per shift, 3 shifts per day to tankers) of decanting, bulking, mixing, and repackaging in the inorganic wastes processing area (i.e., Containment Area 11; with the decanted wastes being pumped to a tanker within the loading station adjacent to the east side near the southern end of the unit; i.e., Containment Area 13);

- 5,750 gallons per day (based on the daily processing of four truckloads of pallet boxes = 12 boxes x 64 cu.ft./box x 7.48 gal/cu.ft.) of bulking and repackaging in the inorganic wastes processing area (i.e., Containment Area 11); and
- 2,640 gallons per day (based on the daily processing of 48 lab packs) in the lab pack processing section of the inorganic wastes processing area (i.e., Containment Area 11).

D-1-2h(2) Design of Unit 702

A layout of Unit 702 is provided in Drawing No. 0702-020-001, and sections are provided in Drawing No. 0702-030-001. Unit 702 is covered by a steel-framed metal roof system. The sides of the unit are covered with metal siding except for the opening along the east side of the unit at the loading/unloading docks. These openings are protected from rainfall blow-in by the canopy that covers and protects the loading/unloading docks.

The approach to and the floor of the primary loading/unloading dock area on the east side of Unit 702 is paved and covered with a canopy, but the area is not completely contained. The canopy, in conjunction with berms along the exterior side of this area, protects this area from rainfall and run-on.

As previously stated, there are four (4) areas in Unit 702 as follows:

- the small-size container storage area (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, and 10; see Drawing No. 0702-020-001);
- the container storage and processing area (i.e., Containment Area 12);
- the small-size container storage and processing area (i.e., Containment Area 11; see Drawing No. 0702-020-001); and
- the bulk container storage and loading station (i.e., Containment Area 13).

The small-size container storage area (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, and 10) is within the perimeter containment for Unit 702. There are fifteen (15) slots for small containers, comprised from fourteen (14) segregated containments (i.e., Containment Areas 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5, 6, 7, 8, 9, and 10). Each containment slot is separated by a raised concrete walkway and sloped floor systems which drain to individual sumps. The sloping floors provide isolated and segregated containment systems. The floor of the container management units in this area is a reinforced 8-inch concrete slab with a 4-foot-wide, raised concrete walkway around the perimeter, except at the loading/unloading docks where floor ramps are used to maintain the containment while allowing

forklift access. Calculations of the net volume of secondary containment provided in these storage areas of Unit 702 are shown in Appendix D-1-2 of this Application.

The container storage and processing area at the northern end of the unit (i.e., Containment Area 12) is within the perimeter containment for Unit 702. In the northeast corner of Containment Area 12, there is a transfer conveyor linking Unit 702 with Unit 700. This transfer conveyor is used to transfer containers between units and will not be used for storage of containers. Normally, containers are on this conveyor for only the period necessary to transfer, accumulate, and load/unload the containers. The conveyor system consists of sections of powered roller conveyors elevated above a reinforced concrete containment. The concrete slab has six-inch (6") high-curbed sides that provide containment in the event of a container rupture. The length of the conveyor's containment system is further separated into four intermediate areas by six-inch high raised berms. The conveyor system and containment are covered with a metal roof and enclosed with metal siding. Ridge vents, windows, and doors are provided for access and ventilation. A sectional view of the conveyor system is provided on Drawing No. 0702-030-001 in Appendix D-1 of Section D of this Application. Calculations of the net volume of secondary containment provided in Containment Area 12 of Unit 702 are shown in Appendix D-1-2 of this Application.

At the southeast corner in Unit 702, there is an area that is separated from the main area of Unit 702 by firewalls (i.e., Containment Area 11; see Drawing No. 0702-020-001). This area is comprised of a single containment formed by sloping floors, a sump, the perimeter firewalls and the perimeter containment curb for Unit 702. This area is used for storing small-sized containers, for decanting to containers that are located within this containment or in the adjacent Containment Area 13, and for processing lab pack wastes. Calculations of the net volume of secondary containment provided in Containment Area 11 of Unit 702 are shown in Appendix D-1-2 of this Application.

The lab pack processing section (i.e., within Containment Area 11) is separated from the other areas of Unit 702 by firewalls and fire-rated doors and has an isolated secondary containment system. Within this area, there is a ventilation hood. The ventilation hood is of sufficient size to contain one drum and a work shelf for arranging the small containers removed from the lab pack. The hood has a minor secondary spill containment system of sufficient capacity to contain the drum and the small containers on the shelf. (At a minimum, the minor secondary spill containment system for each ventilation hood has a capacity of approximately 110 gallons). Within this section, adjacent to the ventilation hood, there is a portable in-drum compactor for crushing empty glass, plastic, paper, and wood containers. In addition, there are spaces for placing containers to accumulate the sorbent removed from the lab pack.

The bulk container storage and loading station (i.e., Containment Area 13), located on the east side of the unit, is a steel framed structure with a sheet metal roof, which is open on the sides. This area is contained by a sloping floor and perimeter curbs. Containment Area 13 has a truck dock and ramp that lead into Unit 702 and the floor and base of this area is constructed of reinforced concrete. The construction details of Containment Area 13 are provided in the drawings in Appendix D-1 of Section D of this Application. Calculations of the net volume of secondary containment provided in Containment Area 13 of Unit 702 are shown in Appendix D-1-2 of this Application.

D-1-2h(3) Management of Unit 702

Containers are managed in the containments shown in Drawing No. 0702-020-001. Adequate aisle space is maintained between groups of containers and the perimeter walls of the unit as described in Subsection D-1-1a(15). In all areas of Unit 702, sufficient operating space is maintained to accommodate container loading, unloading and transfer activities.

In the small-size container storage areas of Unit 702, small-size containers are removed from the receiving truck at the dock and are placed in a slot on the floor of the unit to await counting, inspection of containers, and sampling and inspection of their contents, and acceptance. Certain drum size containers are taken from the docks and placed in a hooded hydraulic punch apparatus which punches a hole in the top of the drum. A rubber stopper or other type plug is placed in the hole prior to moving the drums into the slots. Samples of the contents in these containers are taken through the punched hole. This procedure is utilized to avoid the danger of manually opening certain drums by removing the tops or bungs. Drums and other containers that are not punched in this manner are inspected and sampled by removing the top, lid, cover, or bung. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C.

Based on the above-described sampling results, and after receiving and acceptance procedures are completed, any incompatible wastes are segregated and moved to separate containments. While in storage, incompatible wastes are placed in different slots which are empty, or which contain containers of compatible waste. When incompatible loads are processed at the voids filling system and in Containment Area 12, processing is restricted to compatible campaigns or batches to avoid mixing of incompatible wastes. The separate containment slots in Unit 702 provide segregated areas for storing incompatible wastes.

In the small-size container storage areas, the void space filling system, the small-size container storage and processing and lab pack area, or the bulk container storage and loading station, processing of containerized waste is restricted to compatible campaigns or batches to avoid the inadvertent mixing of incompatible wastes.

D-1-2i Container Management Unit 703A

The bulk container storage area of Unit 703A is located north and east of inactive Unit 703. The majority of bulk containers stored in this area of the unit are tanker trailers; however, other types of bulk containers (e.g., roll-offs, dump trailers, and vans or flatbed trailers holding small containers) may be placed in the unit. Bulk containers of hazardous waste normally placed in this area of Unit 703A are awaiting staging prior to waste transfer and staging prior to shipment off-site.

The plan view of the layout, sections, and details of the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, including the following:

- Drawings No. 0703A-020-001 Inactive Unit 703 and Container Management Unit 703A, Plan View;
- Drawing No. 0703A-030-001 Container Management Unit 703A, Sections;
- Drawing No. 0703A-030-002 Container Management Unit 703A, Sections; and
- Drawing No. 0703A-040-001 Container Management Unit 703A, Details.

As shown on these drawings, Unit 703A is comprised of the following area:

- the container storage area (i.e., the load/unloading station; Containment Area 1)

D-1-2i(1) Types and Quantities of Waste in Unit 703A

This unit will primarily store containers of ignitable waste but, due to the derived-from rule, virtually all types of hazardous wastes listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, non-hazardous wastes, as well as treatment residues from listed wastes, may be stored in this unit (see Waste Analysis Plan Section C).

The number and size of the containers that may be stored in this unit at any one time will vary. As shown in Drawing No. 0703A-020-001, there are three aisles for the storage of bulk containers. The maximum storage capacity in containers (S01) for this unit is shown in Appendix D-1-1, with supportive calculations provided in Appendix D-1-2.

D-1-2i(2) Design of Unit 703A

The loading and unloading station (i.e., the bulk container storage area; Containment Area 1) of Unit 703A is an open, steel framed structure with a sheet metal roof. The roof system has an eave height of 19'-6" and overhangs the containment as shown on the drawings. There are two

(2) back-in aisles in the unit which serve as container storage areas. The perimeter of the storage area is encircled by raised curbing, and cross-sloping ramps which form a complete secondary containment system. These features are shown in Drawing Nos. 0703A-020-001 and 0703A-030-001.

The floor and containment curbs of the container bulk storage area are constructed of reinforced concrete, the surface of which is sealed with a chemical resistant sealant or protected by a steel floor system. The secondary containment volume is provided by a combination of the perimeter curbs, sloping interior floor, and the sump. Calculations of the net volume of secondary containment provided in this area of Unit 703A are shown in Appendix D-1-2 of this Application.

D-1-2i(3) Management of Unit 703A

Various sizes of tanker trucks and other types of containers may be stored side-by-side within the unit. Adequate aisle space is maintained between groups of containers and the perimeter walls of the unit as described in Subsection D-1-1a(15). Sufficient operating space is maintained to accommodate container loading, unloading and transfer activities. The containers are placed in a lot on the floor or remain on the transport vehicle (e.g., on the rails of a roll-off container or on pallets) of the unit to await counting, inspection of containers, and sampling and inspection of their contents. Samples of the container's contents are taken by removing the bung lid or cover of the container. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C of this Application.

Due to the design of the container storage area in Unit 703A, only containers of compatible waste types will be received, stored, or processed within this unit. Based on sampling results, and as receiving and acceptance procedures are completed, any incompatible wastes are removed from the unit.

D-1-2j Containment Building / Container & Tank Management Unit 1200A

Unit 1200A is located to the south of existing Unit 1400 and to the east of Unit 2000, as shown in Drawing No. 0100-020-001, in Appendix D-1, of Section D of this Application.

The process and instrumentation diagrams (P&ID), process flow diagram (PFD), plan view of the layout, sections, and details of the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, including the following:

- Drawing No. 1200A-010-000 Building 1200A, Piping/Instrumentation Symbology;
- Drawing No. 1200A-010-002A Building 1200A, P&ID;
- Drawing No. 1200A-010-003 Building 1200A, P&ID;
- Drawing No. 1200A-010-004 Building 1200A, P&ID;

- Drawing No. 1200A-010-005 Building 1200A, P&ID;
- Drawing No. 1200A-010-006 Building 1200A, P&ID;
- Drawing No. 1200A-020-001 Building 1200A, General Arrangement;
- Drawing No. 1200A-020-002 Building 1200A, Floor Plan - South;
- Drawing No. 1200A-030-002 Building 1200A, Elevations;
- Drawing No. 1200A-030-003A Building 1200A, Sections;
- Drawing No. 1200A-030-004A Building 1200A, Liner System Subgrade Plan;
- Drawing No. 1200A-030-005 Building 1200A, Containment Details & Sections;
- Drawing No. 1200A-040-001 Building 1200A, Ground Floor and Foundation - Sections and Details;
- Drawing No. 1200A-040-002 Unit 1200A, Batch Stabilization Mixing Tanks - T-1201A & T-1202A; and

As shown in these drawings, Unit 1200A consists of the containment building / container management area, which is comprised of the following components:

- covered and contained area for the unloading and cleaning of waste delivery vehicles and for the storage and processing of waste in containers and managing waste in a containment building;
- two in-ground mixing tanks (T-1201A and T-1202A);
- backhoes to mix wastes with the reagent in the tanks;
- reagent storage silos and feed systems;
- fugitive dust collection and management systems; and
- contained areas for container unloading/loading, container storage and treating, storage and treatment of wastes on the floor of the unit and for operation of the backhoes.
- some portions of the floor may have a protective layer to minimize damage to the concrete floor. This protective layer will not penetrate the concrete or concrete coating, and will be removable for inspection purposes.

Unit 1200A is equipped with an eight foot (8') high containment wall, a dual barrier containment system and other features to comply with the requirements of 40 CFR 264 Subpart DD and ADEM Administrative Code Rule 335-14-5-.30 for Containment Buildings (see Section D-9, Subsection D-9-6b(2)).

D-1-2j(1) Types and Quantities of Wastes in Unit 1200A

Virtually every type of hazardous waste listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB wastes, non-hazardous wastes, as well as treatment residues from those listed wastes are received and processed (sampled and analyzed) in Unit 1200A (see the Waste Analysis in Section C). Thus, Unit 1200A is used to manage acute hazardous, corrosive, toxicity characteristic, and certain ignitable and reactive wastes. Hazardous wastes managed in this unit will not contain volatile organic compounds in excess of 500 ppmw, with the exception of Subpart CC regulated waste for container-to-container transfer pursuant to 40 CFR Part 264.1082c(4). This exemption is noted in Appendix D-10-1 of this Application.

Wastes may be stored within tanks in Units 1200A (See Section D-2), or on the containment floor (See Section D-9) or in containers. The maximum container storage capacity (S01) for Unit 1200A is shown in Appendix D-1-1, with supportive calculations provided in Appendix D-1-2. The maximum quantity for treatment in containers (i.e., T04; bulking and repackaging, mixing and blending, separation, decanting, debris treatment, or any of the other treatment process provided in Subsection D-1-1d), in this unit, exclusive of treatment in tanks, transfers between containers and tanks, and the treatment of waste in mass within the containment building, is 129,280 gallons per day (based on processing sixteen (16) 40 cubic yard roll-off boxes per day).

Information on the additional storage and treatment capacities of waste managed in tanks and in mass within the containment building in this unit is described in Subsection D-2-5i(1) of Section D-2 and Subsection D-9-6b(1) of Section D-9, respectively of this Application.

D-1-2j(2) Design of Container Storage Unit 1200A

This section describes the physical, mechanical and control design features of the area used to manage waste in containers in this unit; and demonstrates how these features allow compliance with the applicable RCRA standards for storage and treatment in containers.

The waste receiving, container storage and processing, containment building, and batch stabilization areas are constructed of a steel frame, metal building with an approximate eave height of 45 feet, and a reinforced concrete floor system with a perimeter curb. This building encompasses the waste truck unloading area, the dry reagent delivery systems, the dust collector systems, the container storage and processing area, the in-ground mixing tanks (see Section D-2), the excavator work aisles (i.e., work areas for two or more excavators), the treated waste truck and container out-loading aisles, and other ancillary items. The high building eave allows the waste delivery vehicles to off load containers and to back, tip, and unload directly over the edge of the mixing tanks while being within the confines of the building structure. This

area of the building is underlain by a dual liner system as part of the containment building system as described in Subsection D-9-6b(2) of Section D-9.

The base-wearing surface of the entire building is constructed of a sloping, reinforced concrete slab encircled by a perimeter containment curb. The height of the curb is a minimum of 8" at all doorways, and the containment wall is 8 feet high at all other perimeters. The wearing surface of the building slopes in the direction of each treatment tank at a minimum rate of approximately 8" per foot. The perimeter curb/wall provides containment, and the sloping floor of the building aids in the collection of solids, potential leaks from containers, and washwater generated during periodic cleaning of the walls, floors, etc. In addition, all the interior of the metal wall panels in the processing building are fitted with a metal turn-out that intercepts and connects the wall panels with the perimeter curb/wall. The turnout allows the wash-down of the interior wall surfaces and directs the washwater to the interior of the building's perimeter containment system. The interiors of the wall panels, the intermediate support members, and the main building supports are coated to prevent corrosion caused by periodic wash-downs. These features provide the secondary containment for this area. Calculations of the net volume of secondary containment provided in the storage area of Unit 1200A are shown in Appendix D-1-2 of this Application.

The concrete foundation and floor of the container storage and processing area is constructed of monolithic sections of concrete, with all concrete joints being sealed and having keyways and chemically resistant waterstops.

D-1-2j(3) Management of Wastes Unit 1200A

Waste is received at Units 1200A in dump trailers, roll-off boxes, or other containers. The container storage and processing area Unit 1200A accommodate the storage and treatment of various types of wastes in containers or in containment buildings. The management practices with regard to treatment in tanks in this unit are provided in Subsection D-2-5i of Section D-2 of this Application.

The wear surface and containment walls are maintained to be free of significant cracks, gaps or other deterioration that could allow hazardous waste to be released from the primary barrier or containment walls into the secondary containment system or to the outside of the unit. In accordance with the procedures provided in the Facility's Waste Analysis Plan (see Section C), incompatible wastes or reagents will not be managed within the area in a manner to cause accelerated corrosion or deterioration of the containment components or undetectable failure of the primary barrier or secondary containment system.

Within the containment building, waste may be stored or processed directly on the floor or within containers or tanks. When managing containers within this unit, adequate aisle space is

maintained between groups of containers and the perimeter walls of the unit, as described in Subsection D-1-1a(15).

The dust collector(s) described in Subsection D-9-2e of Section D-9 will be operated, and all building openings (e.g., doors, windows, etc.) within the containment building area of the unit (i.e., Containment Area 1) will be managed as required to maintain a state of no visible emissions from any openings in accordance with 40 CFR 264.1101(c)(1)(iv) and ADEM Administrative Code Rule 335-14-5-.30 (2)(c)1.(iv). If necessary to maintain this state of no visible emissions from the containment building area of the unit, waste treatment and other activities will be suspended during the periods required for personnel, vehicles or heavy equipment to enter or exit the building.

In order to prevent the tracking of any significant quantities of hazardous waste out of the containment building when managing waste in mass on the floor, the tires of delivery vehicles, heavy equipment, portable treatment equipment such as mixers, compactors, washers, etc., or other items that come in contact with waste will be observed and/or cleansed prior to removal from the containment area as described in Subsection D-9-4f of Section D-9 of this Application. Any rinsate generated from this decontamination process will be collected within the process container or the floor sumps in the unit, removed by portable pumps or other means, containerized, and properly managed (i.e., managed as a Facility generated waste, characterized based on knowledge of the waste that it contacted, or characterized by other procedures as described in the Waste Analysis Plan).

D-1-2k Container Management Unit 2000

Container Management Unit 2000 is used for macroencapsulation preparation and for storage and treatment of non-free liquid waste in containers. Treatment of leachate occurs in Unit 2001, which is a new Leachate Treatment Plant regulated under the Clean Water Act.

The plan view of the layout, sections, and details of the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, including the following:

- Drawing No. 2000-020-001 Container Management Unit 2000, Plan View;
- Drawing No. 2000-020-002 Container Management Unit 2000, Plan View;
- Drawing No. 2000-030-002 Container Management Unit 2000 (Macroencapsulation), Sections;
- Drawing No. 2000-030-003 Container Management Unit 2000, Sections; and
- Drawing No. 2000-040-001 Container Management Unit 2000, Details.

D-1-2k(1) Types and Quantities of Wastes in Unit 2000

Virtually all types of hazardous non-free liquid wastes listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, non-hazardous wastes, as well as treatment residues from listed wastes, will be stored in this unit (see the Waste Analysis Plan in Section C), except for waste identified as F020, F021, F022, F023, F026 and F027.

The maximum storage capacity in containers (S01) for this unit is shown in Appendix D-1-1. Containment Areas 1 and 2, shown in Drawing No. 2000-020-001 (see Appendix D-1 of Section D), can store a combined maximum of 32,320 gallons of waste. This is based on four (4) roll-off boxes, or containers totaling an equivalent total volume, at any one time. The maximum quantity for treatment in containers (i.e., T04; bulking and repackaging, mixing and blending, separation, decanting, encapsulation, etc.), in this unit is 32,320 gallons per day (based on processing four (4), 40 cubic yard roll-offs, or containers totaling an equivalent total volume, per day).

D-1-2k(2) Design of Unit 2000

Unit 2000 is a steel-framed structure with a sheet metal roof and reinforced concrete floor. Containment Area 1 of Unit 2000 is approximately 107 feet in length and 100 feet in width. Containment Area 2 is approximately 100 feet in length and 60 feet in width. Both areas have a minimum 12-inch-high containment berm surrounding them. The north, south, and east ends of the unit are closed with metal siding panels, whereas the west side is a solid concrete wall.

The floors of Unit 2000 do not require a chemical resistant coating system since only non-free liquid hazardous wastes are stored within. To minimize damage to the concrete floor or concrete coating, the floor of Containment Area 1 is covered by a contiguous protective steel floor (See Appendix D-1-3 of this Application for a description of the protective steel floor systems), while some portions of Containment Area 2 floor may utilize a protective layer that will be removable for inspection purposes.

Run-on into the storage/treatment areas is prevented by perimeter drainage patterns and the minimum 12-inch berm surrounding the area, including equipment entrances into the area. Precipitation into the building is prevented by the roof and walls.

Since the storage/treatment area is protected from accumulation of precipitation, only manages non-free liquid waste, and excludes the waste codes defined in ADEM Administrative Code Rule 335-14-5-.09(6)(d), secondary containment requirements of ADEM Administrative Code Rule 335-14-5-.09(6)(b) do not apply. The design of the building, protecting it from accumulation of precipitation satisfies the requirements of ADEM Administrative Code Rule 335-14-5-.09(6)(c).

D-1-2k(3) Management of Unit 2000

Roll-off boxes and other types of containers are stored/treated in containment areas of this unit. Containers are stored end-to-end and/or side-by-side in the area. Containers may rest on the floor or remain on the transport vehicle. Containers containing only non-free liquid hazardous waste will be stored/treated in Containment Areas 1 and 2 of Unit 2000.

Within this unit, samples of the container's contents are taken by removing the lid or cover of the container. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C of this Application. The sampling of vanloads of small-sized containers is normally performed in other container management units after the containers have been unloaded from the trailers.

Normally, waste managed in this area is within macroencapsulation devices. The process is as described in Section D-9, Subsection D-9-5d(1).

D-1-2l Container Storage Unit 2200

Container Storage Unit 2200 is used primarily to stage and store wastes. The unit consists of eighteen (18) segregated containment areas. Containers in this unit may be stored on the transport vehicle or directly on the concrete floor.

The plan view of the layout, sections, and details of the construction of this unit are provided in the drawings in Appendix D-1 of Section D of this Application, including the following:

- Drawing No. 2200-020-001 Container Storage Unit 2200, Plan View;
- Drawing No. 2200-020-002 Container Storage Unit 2200, Plan View;
- Drawing No. 2200-030-001 Container Storage Unit 2200, Sections; and
- Drawing No. 2200-040-001 Container Storage Unit 2200, Details.

D-1-2l(1) Types and Quantities of Wastes in Unit 2200

Virtually all types of hazardous wastes listed and identified in 40 CFR Part 261 and ADEM Administrative Code Rule 335-14-2, TSCA-regulated PCB waste, non-hazardous wastes, as well as treatment residues from listed wastes, will be stored in this unit (see the Waste Analysis Plan in Section C).

As shown in Drawing Nos. 2200-020-001 and -002 (see Appendix D-1 of Section D), there are a total of 18 bays in which containers can be stored. Each bay can accommodate varying numbers of containers, depending on their size. Bays 1 through 6 are used to store containers

holding solid and liquid wastes, while bays 7 through 18 are used to store containers with only non-free liquid wastes. The maximum storage capacity in containers (S01) for this unit is shown in Appendix D-1-1, with supportive calculations provided in Appendix D-1-2. The maximum quantity for treatment in containers (i.e., T04; bulking and repackaging, mixing and blending, separation, decanting, encapsulation, etc.), in this unit, exclusive of storage containers of curing wastes from stabilization or other treatments, is 80,800 gallons per day (e.g., based on processing ten (10), 40-cubic-yard roll-offs per day).

D-1-2l(2) Design of Unit 2200

Unit 2200 is a steel-framed structure with a sheet metal roof and reinforced concrete floor. Some portions of the floor may have a protective layer (e.g., rubber mats) to minimize damage to the concrete floor. This protective layer will not penetrate the concrete or chemical resistant concrete coating, and will be removable for inspection purposes. Since only non-free liquid wastes are stored in bays 7 through 18, the floors in these bays do not require a chemical resistant coating system. Alternatively, all containment areas may be protected by protective steel flooring systems as described in Appendix D-1-3. Unit 2200 is approximately 460 feet in length and 105 feet in width, and has a 4-foot wide overhang along both sides of its length. The north and south ends of the unit are closed with metal siding panels, whereas the east and west sides are open sided to allow vehicles to drive into and through the unit. Within the unit, there are eighteen (18) segregated storage and containment areas. On Drawing Nos. 2200-020-001 and 2200-020-002 (see in Appendix D-1 of Section D of this Application), these areas are numbered 1 through 18. Each containment area is separated from adjoining areas by a raised walkway or curbs that form dikes. Containment Areas 1 through 8 have berms at the leading edges, while Containment Areas 9 through 18 do not have berms at the leading edges. Each of the containment areas have inward sloping floors leading to closed sumps. The sloping floor, in conjunction with the side curbs and berms (where applicable), forms the secondary containment systems. These features are shown in the drawings in Appendix D-1 of Section D of this Application.

Containment volume for each of the bays is provided by a combination of reinforced concrete curbs of varying height, the sloped entrances and floors, and the berms at the entrances to the containments (where applicable). Calculations of the net volume of secondary containment provided in the storage areas of Unit 2200 are shown in Appendix D-1-2 of this Application.

Run-on into the storage area is prevented by perimeter drainage patterns with surfaces that slope away from the entrances surrounding the unit. At the approach to each end of the containment areas, there is an eight-foot (8') long reinforced concrete apron that slopes away from the leading edge of the containment areas. This outward sloping apron, in conjunction with the drainage pattern of the roadway, prevents run-on into the unit. Precipitation into the building is minimized by the roof, which overhangs the open perimeter, and by slotted rain curtains

(see Drawing No. 2200-030-001). As shown on Drawing No. 2200-030-001, the building has a thirty-foot (30') eave height. The four-foot (4') perimeter overhang, in conjunction with the eight-foot (8') covered approach apron, provides the equivalent of twelve feet (12') of perimeter overhang, which minimizes rainwater blow-in. Notwithstanding, the containment calculations for Unit 2200 in Appendix D-1-2 account for potential rainwater accumulation.

D-1-2l(3) Management of Unit 2200

Truck trailers, dump or roll-off boxes, and other types of containers are staged and stored in this unit. Containers are staged and stored end-to-end and side-by-side in the containments. Containers may rest on the floor (e.g., on pallets or on the rails of a roll-off container) or remain on the transport vehicle (e.g., tankers, flatbeds, in van trailers, etc.). The arrangement and positioning of containers in this unit shall be in accordance with Subsection D-1-1a(15) of this Application.

Additional information relative to the receiving and staging of waste in this unit is provided in Subsection B-5 in Section B of this Application.

Within this unit, samples of the container's contents are taken by removing the lid or cover of the container. Further discussion of sampling techniques is provided in the Waste Analysis Plan in Section C of this Application. The sampling of vanloads of small-sized containers is normally performed in other container management units after the containers have been unloaded from the trailers.

[End of Section D-1 Text]

APPENDIX D-1-1

SECTION D-1

CALCULATIONS OF STORAGE VOLUMES IN CONTAINERS

Revision No.
5.0

APPENDIX D-1-1

SECTION D-1

CALCULATIONS OF STORAGE VOLUMES IN CONTAINERS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDIX D-1-1

SECTION D-1

CALCULATIONS OF STORAGE VOLUMES IN CONTAINERS

D-1-1-1 Basis and Assumptions for the Storage Volume Calculations

a. The Facility manages waste in containers of various sizes. While storage is not necessarily limited to a particular size or type of container, primarily, the containers managed at the Facility are 55- and 85-gallon drums, 20-, 25-, 30- and 40-cubic yard roll-off containers and standard road tanker trucks. In addition, dump bed trailers, van trailers, tote tanks, pallet boxes, bulk bags, etc. are considered to be containers. Other assumptions regarding containers include:

- standard drums are approximately 22½" in diameter, 32½" tall and have a capacity of 55 gallons,
- fully loaded van trailers hold 88 drums (or 4,840 gallons),
- an average tanker truck has an approximate maximum capacity of 5,000 gallons, and
- roll-off containers vary in length from 20 to 26 feet, in height from 4 to 8 feet, and the width is normally 8 feet; for the purposes of these calculations the average external dimensions of a 20 cubic yard (4,040 gallons) roll-off container is assumed to be approximately 20' by 8' by 4'; the average external dimensions of a 25 cubic yard (5,050 gallons) roll-off container is assumed to be approximately 20' by 8' by 5'; the average external dimensions of a 30 cubic yard (6,060-gallons) roll-off container is assumed to be approximately 20' by 8' by 6'; and the average external dimensions of a 40 cubic yard (8,080 gallons) roll-off container is assumed to be approximately 20' by 8' by 8'.

b. In certain container management units, small containers, such as 55-gallon drums, may be stacked. Usually these containers will be stacked two high with the end containers being off-set at least one-half the width of a drum, as shown in Figure D-1-1.1.

c. The maximum storage volume of a container management unit may be determined by either the physical limitations (e.g., stacking arrangements) or the limitations of secondary spill containment capacity of a given unit or an area within a unit. Although the storage volumes within a unit may be based on the most common container to be stored in a given unit (e.g., 55-gallon drums for Unit 700 and 30 cubic yard roll-off containers for Unit 2200), any size containers may be stored in a given unit, based on physical limitation. However, the total volume of waste in containers is restricted to the limitations of capacity of the secondary spill containment systems. Therefore, it is prudent to present the maximum container storage volume for each unit, based on the limitations imposed by the secondary containment volume requirements. Table D-1-1.1 is a summary of the largest container that can be stored and the maximum volume of waste in containers to be stored within each unit at the Facility.

[End of Appendix D-1-1 Text]

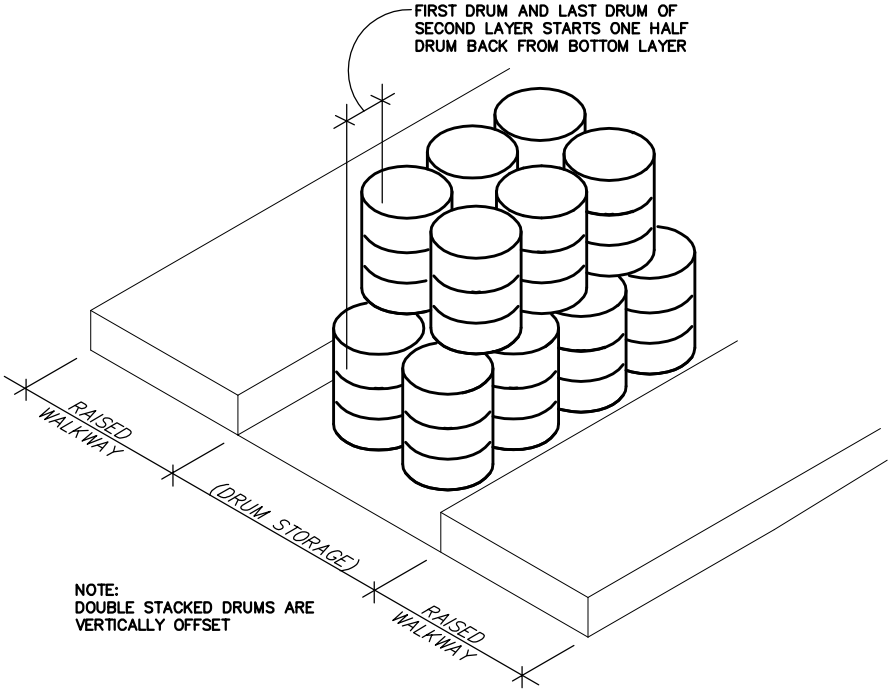
APPENDIX D-1-1

SECTION D-1

CALCULATIONS OF STORAGE VOLUMES IN CONTAINERS

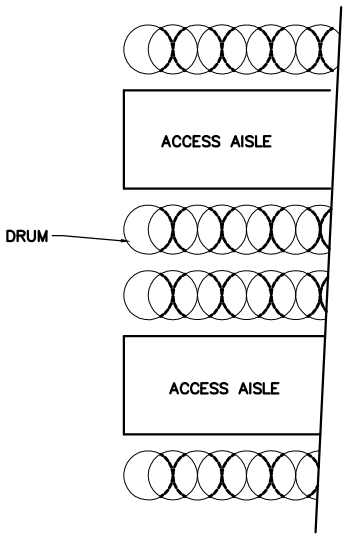
FIGURES

FIGURE D–1–1.1
TYPICAL ARRANGEMENT OF DOUBLE STACKED DRUMS



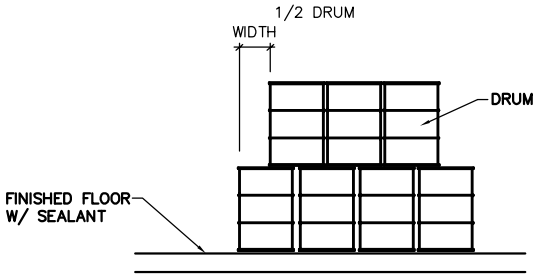
ISOMETRIC VIEW

N.T.S.



PLAN VIEW

N.T.S.



ELEVATION

N.T.S.

APPENDIX D-1-1

SECTION D-1

CALCULATIONS OF STORAGE VOLUMES IN CONTAINERS

TABLES

TABLE D-1-1.1

SUMMARY OF MAXIMUM CONTAINER SIZE
& MAXIMUM VOLUME IN CONTAINERS FOR
CONTAINER MANAGEMENT UNITS
CHEMICAL WASTE MANAGEMENT, INC. EMELLE, ALABAMA FACILITY

Unit Number	Containment Area Identifier	Largest Volume of Waste in a Single Container [1] (gallons)	Maximum Storage Volume [1] (gallons)	Secondary Containment Capacity	
				Required [2] (gallons)	Provided (gallons)
406	1	NA[3]	32,320	1,090	18,662
	2	NA[3]	32,320	1,109	19,036
	3	NA[3]	32,320	1,090	18,662
	TOTAL		**96,960**		
520	1	6,060	**12,120**	9,639	14,571
600	1	5,000	5,000	5,000	7,644
	2	5,000	15,000	5,000	24,310
	TOTAL		**20,000**		
602	1	650	29,040	2,904	43,463
	2	650	4,620	650	12,630
	TOTAL		**33,660**		
603	1	650	8,800	880	1,361
	2	450	4,400	450	478
	3	650	8,800	880	1,361
	4	650	8,800	880	1,361
	5	450	4,400	450	478
	6	450	4,400	450	478
	7	450	4,400	450	478
	8	450	2,420	450	478
	9	450	2,420	450	478
	10	450	2,420	450	478
	11	650	4,840	650	1,361
	12	650	4,840	650	1,361
	13	450	2,420	450	478
	14	650	4,840	650	1,361
	15	6,060	12,120	8,130	14,571
	TOTAL		**80,320**		

TABLE D-1-1.1

SUMMARY OF MAXIMUM CONTAINER SIZE
& MAXIMUM VOLUME IN CONTAINERS FOR
CONTAINER MANAGEMENT UNITS
CHEMICAL WASTE MANAGEMENT, INC. EMELLE, ALABAMA FACILITY

Unit Number	Containment Area Identifier	Largest Volume of Waste in a Single Container [1] (gallons)	Maximum Storage Volume [1] (gallons)	Secondary Containment Capacity	
				Required [2] (gallons)	Provided (gallons)
604	1	650	33,660	3,366	25,227
	2	5,050	20,200	5,698	9,791
	TOTAL		**53,860**		
700	1A	650	8,360	836	942
	1B	650	8,360	836	942
	2A	650	8,360	836	942
	2B	650	8,360	836	942
	3A	650	8,360	836	942
	3B	650	8,360	836	942
	4A	650	8,360	836	942
	4B	650	8,360	836	942
	5	650	8,360	836	942
	6	650	8,360	836	942
	7	650	8,360	836	942
	8	450	4,180	450	451
	9	450	4,180	450	451
	10	450	5,280	528	569
	11	450	5,280	528	569
	12	6,060	12,120	7,221	13,742
	13	8,080	40,400	9,259	15,439
	14	8,080	40,400	9,385	17,208
	15	6,060	12,120	7,158	13,137
	16	6,060	12,120	6,847	14,615
	17	650	6,930	693	22,379
	TOTAL		**234,970**		
702	1A	650	8,360	836	942
	1B	650	8,360	836	942
	2A	650	8,360	836	942
	2B	650	8,360	836	942
	3A	650	8,360	836	942
	3B	650	8,360	836	942
	4A	650	8,360	836	942
	4B	650	8,360	836	942

TABLE D-1-1.1

SUMMARY OF MAXIMUM CONTAINER SIZE
& MAXIMUM VOLUME IN CONTAINERS FOR
CONTAINER MANAGEMENT UNITS
CHEMICAL WASTE MANAGEMENT, INC. EMELLE, ALABAMA FACILITY

Unit Number	Containment Area Identifier	Largest Volume of Waste in a Single Container [1] (gallons)	Maximum Storage Volume [1] (gallons)	Secondary Containment Capacity	
				Required [2] (gallons)	Provided (gallons)
702 (cont)	5	450	3,740	450	546
	6	650	7,480	748	942
	7	350	3,740	374	448
	8	350	3,740	374	448
	9	350	3,740	374	448
	10	350	3,740	374	448
	11	650	6,930	693	1,929
	12	650	3,740	650	97,965
	13	1,900	3,800	4,896	4,896
	TOTAL		**107,530**		
703A	1	5,000	**10,000**	6,702	13,254
1200A	1	4,040	**24,240**	4,040	92,180
2000	1 and 2	NA[4]	**32,320**	NA[4]	NA[4]
2200	1	6,060	48,480	6,139	14,337
	2	6,060	48,480	6,130	12,630
	3	6,060	48,480	6,130	12,630
	4	6,060	48,480	6,130	12,630
	5	6,060	48,480	6,130	12,630
	6	6,060	48,480	6,130	12,630
	7	NA[3]	48,480	70	12,630
	8	NA[3]	48,480	70	12,630
	9	NA[3]	48,480	70	5,600
	10	NA[3]	48,480	70	5,600
	11	NA[3]	48,480	70	5,600
	12	NA[3]	48,480	70	5,600
	13	NA[3]	48,480	70	5,600
	14	NA[3]	48,480	70	5,600
	15	NA[3]	48,480	70	5,600
	16	NA[3]	48,480	70	5,600

TABLE D-1-1.1

SUMMARY OF MAXIMUM CONTAINER SIZE
& MAXIMUM VOLUME IN CONTAINERS FOR
CONTAINER MANAGEMENT UNITS
CHEMICAL WASTE MANAGEMENT, INC. EMELLE, ALABAMA FACILITY

Unit Number	Containment Area Identifier	Largest Volume of Waste in a Single Container [1] (gallons)	Maximum Storage Volume [1] (gallons)	Secondary Containment Capacity	
				Required [2] (gallons)	Provided (gallons)
2200 (cont)	17	NA[3]	48,480	70	5,600
	18	NA[3]	48,480	79	6,461
	TOTAL		**872,640**		

NOTES:

1) Quantities provided illustrate the maximum that can be placed in the corresponding containment area and are not intended to preclude or limit the storage of various sizes of containers within the containment area, except that the largest volume of waste within a single container shall not exceed the corresponding maximum volume as listed in the column titled "Largest Volume of Waste in a Single Container" of this table.

2) Required Capacity illustrates the larger of 10% of the total or 100% of the largest container, whichever is greater, and includes allowance for rainfall accumulation (where applicable) within the unit.

3) Secondary containment systems and supporting containment calculations are not required for Unit 406 - Containment Areas 1-3 or for Unit 2200 - Containment Areas 7-18 since containers stored within these areas do not contain free liquids, as cited in 40 CFR 264.175(b)(3) and ADEM Rule 335-14-5-.09(6)(b)(3); however, secondary containment calculations are provided to show that rainfall is accounted for in these containment areas.

4) Secondary containment systems and supporting containment calculations are not required for Unit 2000 - Containment Areas 1 and 2 since the containers stored within this unit do not contain free liquids, as cited in 40 CFR 264.175(b)(3) and ADEM Rule 335-14-5-.09(6)(b)(3). Since Containment Areas 1 and 2 of Unit 2000 are enclosed within a building, rainfall allowance is neglected and no secondary containment calculations are provided for these containment areas.

APPENDIX D-1-2

SECTION D-1

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

Revision No.

5.0

APPENDIX D-1-2

SECTION D-1

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES OF SECONDARY CONTAINMENT CALCULATIONS

APPENDIX D-1-2

SECTION D-1

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

In accordance with the requirements of 40 CFR 270.15(a)(3) and ADEM Administrative Code Rule 335-14-8-.02(6)(a)3., this appendix provides the calculations of secondary containment capacity for the storage of waste in containers. In conjunction with the information provided within Appendix D-1-1, Calculations of Storage Volume in Containers, this appendix demonstrates compliance with the requirements of 40 CFR 264.175(b)(3) and (4) ADEM Administrative Code Rule 335-14-5-.09(6)(b)3 and 4 regarding the provision of adequate secondary containment capacity within the container management units at the Facility.

D-1-2-1 Basis for Secondary Containment Calculations

a. The Facility manages waste in containers of various sizes. While storage is not necessarily limited to a particular size or type of container, primarily, the containers managed at the Facility are 55- and 85-gallon drums, 20-, 25-, 30- and 40-cubic yard roll-off boxes and standard road tanker trucks. The Facility may also store 1-metric ton containers and 76-pound containers (for elemental mercury storage). In addition, dump bed trailers, van trailers, tote tanks, pallet boxes, bulk bags, etc. are considered to be containers. Other assumptions regarding containers include:

- standard drums are approximately 22½" in diameter, 32½" tall and have a capacity of 55 gallons;
- 1-metric ton containers are approximately 20” in diameter, 19¾” tall and have a capacity of 19.41 gallons, and the 76-pound containers are approximately 5” in diameter, 12” tall and have a capacity of 0.67 gallons;
- fully loaded van trailers hold 88 drums (or 4,840 gallons);
- an average tanker truck has an approximate maximum capacity of 5,000 gallons; and
- roll-off containers vary in length from 20 to 26 feet, in height from 4 to 8 feet, and the width is normally 8 feet; for the purposes of these calculations the average external dimensions of a 20 cubic yard (4,040 gallons) roll-off container is assumed to be approximately 20' by 8' by 4'; the average external dimensions of a 25 cubic yard (5,050 gallons) roll-off container is assumed to be approximately 20' by 8' by 5'; the average external dimensions of a 30 cubic yard (6,060 gallons) roll-off container is assumed to

be approximately 20' by 8' by 6'; and the average external dimensions of a 40 cubic yard (8,080 gallons) roll-off container is assumed to be approximately 20' by 8' by 8'.

b. The containment system must have sufficient capacity to contain 10% of the volume of waste in containers or the volume of waste in the largest container, whichever is greater, as required by 40 CFR 264.175(b)(3) and ADEM Administrative Code Rule 335-14-5-.09(6)(b)3.

c. In addition, the containment system must be capable of containing leaks, spills, and accumulated precipitation, as required by 40 CFR 264.175(b)(4) and ADEM Administrative Code Rule 335-14-5-.09(6)(b)4. For the purpose of this application, a 25-year, 24-hour storm event is used in determining the amount of precipitation which must be contained, where applicable. This storm event was selected because it coincides with the storm event requirements for tank systems per 40 CFR 264.193(e)(2)(ii) and ADEM Administrative Code Rule 335-14-5-.10(4)(e)2.(ii). The 25-year, 24-hour storm for the Facility is approximately 7½ inches as indicated in Figure D-1-2.1, excerpted from *Technical Paper No. 40*, published by the U.S. Department of Commerce, Washington, DC, in May 1961.

d. Rainfall allowance is not required for containment areas which are enclosed within a building. Where applicable, blow-in rainfall allowance is taken into account for the units or areas which are partially enclosed (e.g. roof only or units with partial siding). It is assumed that the rainfall blow-in will occur at a 30° angle to the vertical as measured at the top of the opening. This assumption of blow-in for an entire 25-year, 24-hour storm event is a worst-case scenario and provides a conservative approach.

D-1-2-2 Explanation of Terminology Referred to in the Containment Calculations

a. "Capacity within Perimeter Containment Curb" - This term refers to the capacity created by the perimeter containment curb only (see Figure D-1-2.2, Zone 1). The additional capacities created from sloped floors and/or sumps are not taken into account in this category.

b. "Capacity of Sloped Floor" - This term refers to the capacity created by the slope of the floor only (see Figure D-1-2.2, Zone 4). In cases where a sump is part of the containment system, the area above the sump is considered as part of the sloped floor capacity (see Figure D-1-2.2, Zone 2). As a conservative approach, the sloped floor capacity is calculated only when additional secondary containment capacity is required or when no containment curb capacity is available. An example of a scenario where the floor slope contributes to the

containment capacity is at the north end of Unit 700 - Bulk Container Management Area (Containment Area No. 14).

c. "Capacity of Sumps" - This refers to the capacity within the collection sumps (see Figure D-1-2.2, Zone 3).

d. "Capacity Deductions" - This term refers to the capacity which is occupied by equipment, structures, or other appurtenances within the containment area, such as the capacity of flat bottom tank pedestals, columns, pump pads, containers, roll-off boxes, etc. The capacity for each item is subtracted from the "Gross Secondary Containment Capacity" to obtain the "Net Secondary Containment Capacity." Additional equipment information and assumptions, which may affect the calculations of capacity deductions, are as follows:

- a typical roll-off box is equipped with either 2 rear wheels (8" diameter & 12" wide) and 2 bottom runners, which elevate the box approximately 8" off the ground surface, or 4 wheels (for secondary containment calculations, it is assumed that the roll-offs have 4 wheels);
- calculations are based on the largest container leaking; on this occurrence the free liquid from the leaking container would fill the containment to a level at which it became in equilibrium with the free liquid within the container; therefore, the deduction from the containment capacity for the volume occupied by the portion of the leaking container above the level of equilibrium would not be appropriate; however, a volume deduction from the containment capacity for the wheels of the leaking container is appropriate; as such, there will always be at least four more wheels than the number of roll-off boxes would normally predict; and
- the tires for van trailers, flatbed trucks and tanker trucks are approximately 40" in diameter and 12" wide.

e. "Required Secondary Containment Capacity" - This term refers to the amount of secondary containment capacity that must be provided within each containment area in order to comply with the regulations. The required capacity is the sum of:

- 10% of the total permitted volume (see Section D-1-2-1b, above) or 100% of the largest container, whichever is greater, and
- the rainfall allowance (see Section D-1-2-1c & d, above).

f. The abbreviation "NA" means "Not Applicable".

D-1-2-3 Certification of the Calculations of Secondary Containment for Containers

The estimated secondary containment capacities for the container management units at the Facility have been calculated based upon the overall containment area dimensions, the sump dimensions, the curb heights, the depths of containment due to floor slope, and other dimensional information depicted on the applicable RCRA Part B Permit Application Drawings provided in Appendix D-1 to Section D of this Application. These RCRA Part B Permit Application Drawings were prepared for the sole, specific purpose of providing the information required to obtain a RCRA Part B Permit for the Facility. This certification is intended to address the calculations of secondary containment capacities for the container management units at the Facility as provided within the tables of Appendix D-1-2, and does not certify the accuracy or completeness of any of the other information provided within this Application.

With regards to the secondary containment capacity calculations prepared to demonstrate compliance with the requirements of 40 CFR 264.175(b)(3) and (4), and ADEM Administrative Code Rule 335-14-5-.09(6)(b)3 and 4 for the container management units at the Facility, I certify under penalty of law that the modified calculations were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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[End of Appendix D-1-2 Text]

APPENDIX D-1-2

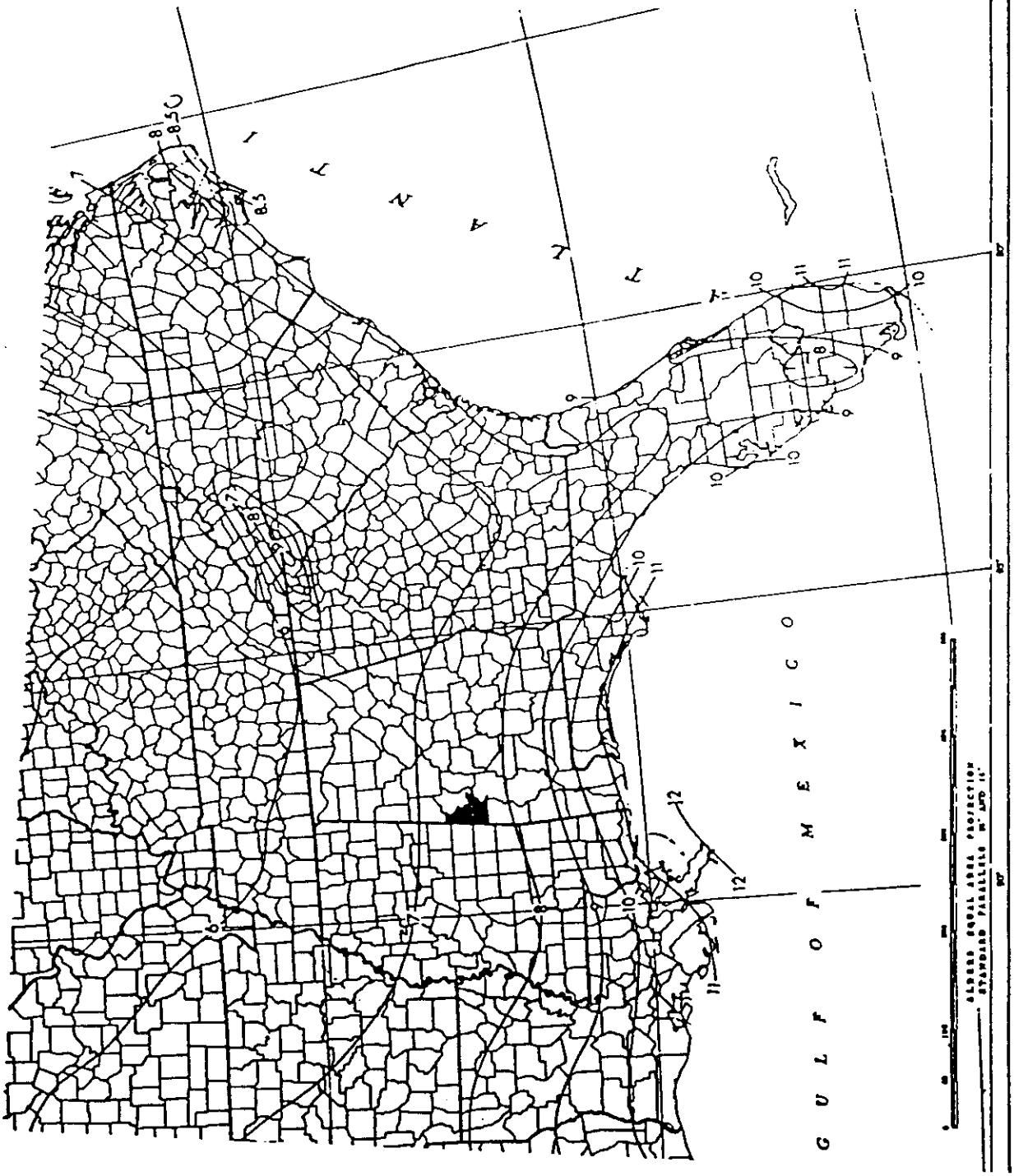
SECTION D-1

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

FIGURES

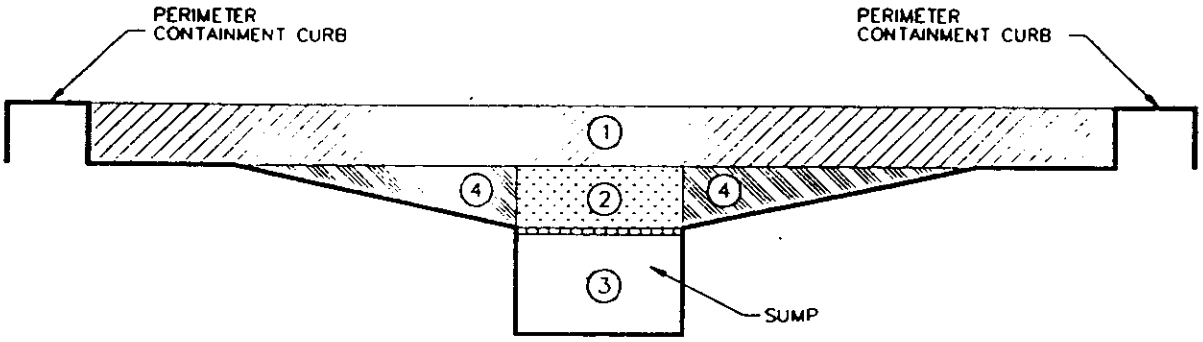
FIGURE D-1-2.1

NOTE: This figure is an excerpt from "Technical Paper No. 40, Rainfall Frequency Atlas of the United States," published in May 1961 by the U.S. Department of Commerce and the Weather Bureau



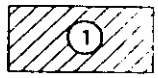
25-YEAR 24-HOUR RAINFALL (INCHES)

FIGURE D-1-2.2
TYPICAL CONTAINMENT AREA CONFIGURATION

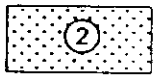


ILLUSTRATIVE SECTION VIEW
TYPICAL CONTAINMENT AREA

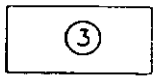
ZONE DESIGNATION



CONTAINMENT CAPACITY CREATED BY PERIMETER CONTAINMENT CURB



CONTAINMENT CAPACITY ABOVE SUMP



CONTAINMENT CAPACITY WITHIN SUMP

CONTAINMENT CAPACITY CREATED BY FLOOR SLOPE

APPENDIX D-1-2

SECTION D-1

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

TABLES

TABLE D-1-2.1
BASIS FOR DETERMINATION OF MAXIMUM WASTE VOLUME IN CONTAINERS
FOR SECONDARY CONTAINMENT FOR CONTAINER MANAGEMENT UNITS
CHEMICAL WASTE MANAGEMENT, INC. EMELLE, ALABAMA FACILITY

Unit Number	Containment Area Identifier	Maximum Volume of Waste Storage in Containers [1]			10% of Total Storage Volume (gallons)	Largest Volume of Waste in a Single Container (gallons)	Rainfall Allowance (gallons)	Secondary Containment Capacity	
		Size (gallons)	Quantity (quantity)	Total (gallons)				Required [2] (gallons)	Provided (gallons)
406	1	8,080	4	32,320	NA[3]	NA[3]	1,090	1,090	18,662
	2	8,080	4	32,320	NA[3]	NA[3]	1,109	1,109	19,036
	3	8,080	4	32,320	NA[3]	NA[3]	1,090	1,090	18,662
	TOTAL			**96,960**					
520	1	6,060	2	**12,120**	1,212	6,060	3,579	9,639	14,571
600	1	5,000	1	5,000	500	5,000	NA	5,000	7,644
	2	5,000	3	15,000	1,500	5,000	NA	5,000	24,310
	TOTAL			**20,000**					
602	1	55	528	29,040	2,904	650	NA	2,904	43,463
	2	55	84	4,620	462	650	NA	650	12,630
	TOTAL			**33,660**					
603	1	55	160	8,800	880	650	NA	880	1,361
	2	55	80	4,400	440	450	NA	450	478
	3	55	160	8,800	880	650	NA	880	1,361
	4	55	160	8,800	880	650	NA	880	1,361
	5	55	80	4,400	440	450	NA	450	478
	6	55	80	4,400	440	450	NA	450	478
	7	55	80	4,400	440	450	NA	450	478
	8	55	44	2,420	242	450	NA	450	478
	9	55	44	2,420	242	450	NA	450	478
	10	55	44	2,420	242	450	NA	450	478
	11	55	88	4,840	484	650	NA	650	1,361
	12	55	88	4,840	484	650	NA	650	1,361
	13	55	44	2,420	242	450	NA	450	478
	14	55	88	4,840	484	650	NA	650	1,361
	15	6,060	2	12,120	1,212	6,060	2,070	8,130	14,571
	TOTAL			**80,320**					

TABLE D-1-2.1
BASIS FOR DETERMINATION OF MAXIMUM WASTE VOLUME IN CONTAINERS
FOR SECONDARY CONTAINMENT FOR CONTAINER MANAGEMENT UNITS
CHEMICAL WASTE MANAGEMENT, INC. EMELLE, ALABAMA FACILITY

Unit Number	Containment Area Identifier	Maximum Volume of Waste Storage in Containers [1]			10% of Total Storage Volume (gallons)	Largest Volume of Waste in a Single Container (gallons)	Rainfall Allowance (gallons)	Secondary Containment Capacity	
		Size (gallons)	Quantity (quantity)	Total (gallons)				Required [2] (gallons)	Provided (gallons)
604	1	55	612	33,660	3,366	650	NA	3,366	25,227
	2	5,050	4	20,200	2,020	5,050	648	5,698	9,791
	TOTAL			**53,860**					
700	1A	55	152	8,360	836	650	NA	836	942
	1B	55	152	8,360	836	650	NA	836	942
	2A	55	152	8,360	836	650	NA	836	942
	2B	55	152	8,360	836	650	NA	836	942
	3A	55	152	8,360	836	650	NA	836	942
	3B	55	152	8,360	836	650	NA	836	942
	4A	55	152	8,360	836	650	NA	836	942
	4B	55	152	8,360	836	650	NA	836	942
	5	55	152	8,360	836	650	NA	836	942
	6	55	152	8,360	836	650	NA	836	942
	7	55	152	8,360	836	650	NA	836	942
	8	55	76	4,180	418	450	NA	450	451
	9	55	76	4,180	418	450	NA	450	451
	10	55	96	5,280	528	450	NA	528	569
	11	55	96	5,280	528	450	NA	528	569
	12	6,060	2	12,120	1,212	6,060	1,161	7,221	13,742
	13	8,080	5	40,400	4,040	8,080	1,179	9,259	15,439
	14	8,080	5	40,400	4,040	8,080	1,305	9,385	17,208
	15	6,060	2	12,120	1,212	6,060	1,098	7,158	13,137
	16	6,060	2	12,120	1,212	6,060	787	6,847	14,615
	17	55	126	6,930	693	650	NA	693	22,379
	TOTAL			**234,970**					
702	1A	55	152	8,360	836	650	NA	836	942
	1B	55	152	8,360	836	650	NA	836	942
	2A	55	152	8,360	836	650	NA	836	942
	2B	55	152	8,360	836	650	NA	836	942
	3A	55	152	8,360	836	650	NA	836	942

TABLE D-1-2.1
BASIS FOR DETERMINATION OF MAXIMUM WASTE VOLUME IN CONTAINERS
FOR SECONDARY CONTAINMENT FOR CONTAINER MANAGEMENT UNITS
CHEMICAL WASTE MANAGEMENT, INC. EMELLE, ALABAMA FACILITY

Unit Number	Containment Area Identifier	Maximum Volume of Waste Storage in Containers [1]			10% of Total Storage Volume (gallons)	Largest Volume of Waste in a Single Container (gallons)	Rainfall Allowance (gallons)	Secondary Containment Capacity	
		Size (gallons)	Quantity (quantity)	Total (gallons)				Required [2] (gallons)	Provided (gallons)
702 (cont)	3B	55	152	8,360	836	650	NA	836	942
	4A	55	152	8,360	836	650	NA	836	942
	4B	55	152	8,360	836	650	NA	836	942
	5	55	68	3,740	374	450	NA	450	546
	6	55	136	7,480	748	650	NA	748	942
	7	55	68	3,740	374	350	NA	374	448
	8	55	68	3,740	374	350	NA	374	448
	9	55	68	3,740	374	350	NA	374	448
	10	55	68	3,740	374	350	NA	374	448
	11	55	126	6,930	693	650	NA	693	1,929
	12	55	68	3,740	374	650	NA	650	97,965
	13	1,900	2	3,800	380	1,900	2,996	4,896	4,896
	TOTAL			**107,530**					
703A	1	5,000	2	**10,000**	1,000	5,000	1,702	6,702	13,254
1200A	1	4,040	6	**24,240**	2,424	4,040	NA	4,040	92,180
2000	1 and 2	8,080	4	**32,320**	NA[4]	NA[4]	NA	NA[4]	NA[4]
2200	1	6,060	8	48,480	4,848	6,060	79	6,139	14,337
	2	6,060	8	48,480	4,848	6,060	70	6,130	12,630
	3	6,060	8	48,480	4,848	6,060	70	6,130	12,630
	4	6,060	8	48,480	4,848	6,060	70	6,130	12,630
	5	6,060	8	48,480	4,848	6,060	70	6,130	12,630
	6	6,060	8	48,480	4,848	6,060	70	6,130	12,630
	7	6,060	8	48,480	NA[3]	NA[3]	70	70	12,630
	8	6,060	8	48,480	NA[3]	NA[3]	70	70	12,630
	9	6,060	8	48,480	NA[3]	NA[3]	70	70	5,600
	10	6,060	8	48,480	NA[3]	NA[3]	70	70	5,600
	11	6,060	8	48,480	NA[3]	NA[3]	70	70	5,600

TABLE D-1-2.1
BASIS FOR DETERMINATION OF MAXIMUM WASTE VOLUME IN CONTAINERS
FOR SECONDARY CONTAINMENT FOR CONTAINER MANAGEMENT UNITS
CHEMICAL WASTE MANAGEMENT, INC. EMELLE, ALABAMA FACILITY

Unit Number	Containment Area Identifier	Maximum Volume of Waste Storage in Containers [1]			10% of Total Storage Volume (gallons)	Largest Volume of Waste in a Single Container (gallons)	Rainfall Allowance (gallons)	Secondary Containment Capacity	
		Size (gallons)	Quantity (quantity)	Total (gallons)				Required [2] (gallons)	Provided (gallons)
2200 (cont)	12	6,060	8	48,480	NA[3]	NA[3]	70	70	5,600
	13	6,060	8	48,480	NA[3]	NA[3]	70	70	5,600
	14	6,060	8	48,480	NA[3]	NA[3]	70	70	5,600
	15	6,060	8	48,480	NA[3]	NA[3]	70	70	5,600
	16	6,060	8	48,480	NA[3]	NA[3]	70	70	5,600
	17	6,060	8	48,480	NA[3]	NA[3]	70	70	5,600
	18	6,060	8	48,480	NA[3]	NA[3]	79	79	6,461
	TOTAL			**872,640**					

TOTAL IN CONTAINERS **1,578,620**

NOTES:

1) Quantities provided illustrate the maximum volume that can be placed in the corresponding containment area and are not intended to preclude or limit the storage of various sizes of containers within the containment area, except that the largest volume of waste within a single container shall not exceed the corresponding maximum volume as listed in the column titled "Largest Volume of Waste in a Single Container" of this table.

2) Required Capacity illustrates the larger of 10% of the total capacity for the containment area or 100% of the largest container stored in the containment area, whichever is greater, and includes allowance for rainfall accumulation (where applicable) within the unit.

3) Secondary containment systems and supporting containment calculations are not required for Unit 406 - Containment Areas 1-3 or for Unit 2200 - Containment Areas 7-18 since containers stored within these areas do not contain free liquids, as cited in 40 CFR 264.175(b)(3) and ADEM Rule 335-14-5-.09(6)(b)(3); however, secondary containment calculations are provided to show that rainfall is accounted for in these containment areas.

4) Secondary containment systems and supporting containment calculations are not required for Unit 2000 - Containment Areas 1 and 2 since the containers stored within this unit do not contain free liquids, as cited in 40 CFR 264.175(b)(3) and ADEM Rule 335-14-5-.09(6)(b)(3). Since Containment Areas 1 and 2 of Unit 2000 are enclosed within a building, rainfall allowance is neglected and no secondary containment calculations are provided for these containment areas.

TABLE D-1-2.2

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 406
Containment Area Nos. 1 & 3
(Reference Drawing Nos. 0406-020-001, 0406-030-001, 0406-030-002 & 0406-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity (per Containment Area)			
A. Capacity within Perimeter Containment Curb (6" high containment berm) [(44'-8" × 55') × 6"/12]	=	1,228	cu. ft.
B. Capacity of Sloped Floor [½ × 44'-8" × 1'-3" × 55']	=	1,535	cu. ft.
C. Capacity in Sumps	=	NA	
Gross Secondary Containment Capacity	=	2,763	cu. ft.
D. Capacity Deductions			
1) less capacity of roll-off boxes within containment (1'-9" deep) [½ × (1.75' – 0.66') × 20' × 8'] × 3 roll-offs	=	-262	cu. ft.
2) less capacity of roll-off box wheels (4 roll-offs) [(pi × ((8"/12)²/4) × 12"/12 high) × 4 wheels × 4 roll-offs]	=	-6	cu. ft.
Capacity Deductions Subtotal	=	-268	cu. ft.
Net Secondary Containment Capacity	=	**2,495**	**cu. ft.**
	or	**18,662**	**gallons**
II. Required Secondary Containment Capacity (per Containment Area)			
A. 10% of Total Container Volume or 100% of Largest Container Volume (No free liquids are stored in these areas.)	=	NA	
B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are covered by a roof with siding on long sides of building; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an eave height of 16', and roof overhang of 5'.) [((tan 30° × 16' eave) - 5' overhang) × 55' width × (7½"/12) × 7.48 gal/ft³]	=	1,090	gallons
Total Capacity Required	=	**1,090**	**gallons**

TABLE D-1-2.3

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 406
Containment Area No. 2
(Reference Drawing Nos. 0406-020-001, 0406-030-001, 0406-030-002 & 0406-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Curb (6" high containment berm) [(44'-8" × 56') × 6"/12]	=	1,250	cu. ft.
B. Capacity of Sloped Floor [½ × 44'-8" × 1'-3" × 56']	=	1,563	cu. ft.
C. Capacity in Sumps	=	NA	
Gross Secondary Containment Capacity	=	2,813	cu. ft.
D. Capacity Deductions			
1) less capacity of roll-off boxes within containment (1'-9" deep) [½ × (1.75' – 0.66') × 20' × 8'] × 3 roll-offs	=	-262	cu. ft.
2) less capacity of roll-off box wheels (4 roll-offs) [(pi × ((8"/12)²/4) × 12"/12 high) × 4 wheels × 4 roll-offs]	=	-6	cu. ft.
Capacity Deductions Subtotal	=	-268	cu. ft.
Net Secondary Containment Capacity	=	**2,545**	**cu. ft.**
	or	**19,036**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume (No free liquids are stored in this area.)	=	NA	
B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is covered by a roof with siding on long sides of building; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an eave height of 16', and roof overhang of 5'.) [((tan 30° × 16' eave) - 5' overhang) × 56' width × (7½"/12) × 7.48 gal/ft³]	=	1,109	gallons
Total Capacity Required	=	**1,109**	**gallons**

TABLE D-1-2.4

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER & TANK MANAGEMENT - UNIT 520
Unloading/Loading Bay - Containment Area No. 1
(Reference Drawing Nos. 0520-020-001, 0520-030-001, & 0520-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor. However, additional containment capacity which may result from the ramp extension permitted in 2021 is considered to be minimal and has been conservatively ignored in calculating secondary containment capacity.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Berm (6" high)			
[((33'-10" + 4') × 30') × 6"/12]	=	568	cu. ft.
B. Capacity of Sloped Floor			
1) capacity of sloped floor from high point to sump			
[½ × (33'-10" × 2' × 30')]	=	1,015	cu. ft.
2) capacity above sump and adjacent to back wall			
[(4' × 30') × 2']	=	240	cu. ft.
C. Capacity in Sumps			
[30' × 4' × 2'] + [(½ × 6"/12 × 14' × 4') × 2 sides] + [2' × 4' × 1']	=	276	cu. ft.
Gross Secondary Containment Capacity	=	2,099	cu. ft.
D. Capacity Deductions			
1) less capacity of roll-off boxes within containment (2'-6" deep)			
[½ × (2.5' – 0.66') × 20' × 8']	=	-148	cu. ft.
2) less capacity of roll-off box wheels (2 roll-offs)			
[(pi × ((8"/12)²/4) × 12"/12 high) × 4 wheels × 2 roll-offs]	=	-3	cu. ft.
Capacity Deductions Subtotal	=	-151	cu. ft.
Net Secondary Containment Capacity	=	**1,948**	**cu. ft.**
	or	**14,571**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume	=	6,060	gallons
[12,120 gallons total volume × 10%] or			
[6,060 gallons per largest container × 100%]			
B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is covered by a roof with no siding; therefore, allowance must be made for blow-in on longest side. Assume 30° blow-in angle, with an eave height of 19'-6".)			
[(tan 30° × 19'-6" eave) × 68' width × (7½"/12) × 7.48 gal/ft³]	=	3,579	gallons
Total Capacity Required	=	**9,639**	**gallons**

TABLE D-1-2.5

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER & TANK MANAGEMENT - UNIT 600
Containment Area No. 1
(Reference Drawing Nos. 0600-020-001, 0600-030-001, 0600-030-002, & 0600-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**		
A1.	Capacity within Perimeter Containment Curb (7.25" high containment berm) [(19'-4" × 56'-10") × 7.25"/12]	=	663 cu. ft.
A2.	Capacity within Perimeter Containment Curb (7.25" high containment berm) [(19'-4" × 15') × 7.25"/12]	=	175 cu. ft.
B1.	Capacity of Sloped Floor [½ × 19'-4" × 3-3/16" × 56'-10"]	=	146 cu. ft.
B2.	Capacity of Sloped Floor [½ × 19'-4" × 3-3/16" × 15']	=	38 cu. ft.
C.	Capacity in Sumps	=	NA
	Gross Secondary Containment Capacity	=	1,022 cu. ft.
D.	Capacity Deductions		NA
	Capacity Deductions Subtotal	=	0 cu. ft.
	Net Secondary Containment Capacity	=	**1,022 cu. ft.**
		or	**7,644 gallons**
II.	**Required Secondary Containment Capacity**		
A.	10% of Total Container Volume or 100% of Largest Container Volume [5,000 gallons total volume × 10%] or [5,000 gallons per largest container × 100%]	=	5,000 gallons
B.	Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is enclosed in a building. All entrances are equipped with full-length rain curtains or roll-up doors that are assumed to be closed during rainfall events. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**5,000 gallons**

TABLE D-1-2.6

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER & TANK MANAGEMENT - UNIT 600
Containment Area No. 2
(Reference Drawing Nos. 0600-020-001, 0600-030-001, 0600-030-002, & 0600-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**		
A1.	Capacity within Perimeter Containment Curb (7.25" high containment berm) [(61'-5" × 56'-10") × 7.25"/12]	=	2,108 cu. ft.
A2.	Capacity within Perimeter Containment Curb (7.25" high containment berm) [(61'-5" × 15') × 7.25"/12]	=	556 cu. ft.
B1.	Capacity of Sloped Floor [½ × 61'-5" × 3-3/16" × 56'-10"]	=	464 cu. ft.
B2.	Capacity of Sloped Floor [½ × 61'-5" × 3-3/16" × 15']	=	122 cu. ft.
C.	Capacity in Sumps	=	NA
	Gross Secondary Containment Capacity	=	3,250 cu. ft.
D.	Capacity Deductions		NA
	Capacity Deductions Subtotal	=	0 cu. ft.
	Net Secondary Containment Capacity	=	**3,250 cu. ft.**
		or	**24,310 gallons**
II.	**Required Secondary Containment Capacity**		
A.	10% of Total Container Volume or 100% of Largest Container Volume [15,000 gallons total volume × 10%] or [5,000 gallons per largest container × 100%]	=	5,000 gallons
B.	Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is enclosed in a building. All entrances are equipped with full-length rain curtains or roll-up doors that are assumed to be closed during rainfall events. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**5,000 gallons**

TABLE D-1-2.7

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 602
Container Storage Area - Containment Area No. 1
(Reference Drawing Nos. 0602-020-001, 0602-030-001, & 0602-030-002)

Note: This containment area does not have a sloped floor.

I.	**Secondary Containment Capacity**		
	A. Capacity within Perimeter Containment Curb [88' × 100' × 8"/12]	=	5,867 cu. ft.
	B. Capacity of Sloped Floor	=	NA
	C. Capacity in Sumps	=	NA
	Gross Secondary Containment Capacity	=	5,867 cu. ft.
	D. Capacity Deductions		
	1) less capacity of ramp [½ x (14' x 6' x 8"/12)]	=	-28 cu. ft.
	2) less capacity of ramp [½ x (14' x 6' x 8"/12)]	=	-28 cu. ft.
	Capacity Deductions Subtotal	=	-56 cu. ft.
	Net Secondary Containment Capacity	=	5,811 cu. ft.
		or	**43,463 gallons**
II.	**Required Secondary Containment Capacity**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume [29,040 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	2,904 gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is enclosed in a building. All entrances are equipped with full-length rain curtains or roll-up doors that are assumed to be closed during rainfall events. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**2,904 gallons**

TABLE D-1-2.8

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 602
Storage / Handling Area - Containment Area No. 2
(Reference Drawing Nos. 0602-020-001, 0602-030-001, & 0602-030-002)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Berm	=	NA	
B. Capacity of Sloped Floor (use formula for "frustum of a pyramid") [⅓ × 12"/12 × {(57'-2" × 87'-4") + (2' × 2') + ((57'-2" x 87'-4") x (2' x 2'))^{½}}]	=	1,713	cu. ft.
C. Capacity in Sumps [2' x 2' x 1']	=	4	cu. ft.
Gross Secondary Containment Capacity	=	1,717	cu. ft.
D. Capacity Deductions			
1) less capacity of ramp [½ x (14' x 6' x 8"/12)]	=	-28	cu. ft.
Capacity Deductions Subtotal	=	-28	cu. ft.
Net Secondary Containment Capacity	=	**1,689**	**cu. ft.**
	or	**12,630**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume [4,620 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	650	gallons
B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is enclosed in a building. All entrances are equipped with full-length rain curtains or roll-up doors that are assumed to be closed during rainfall events. Therefore, rainfall allowance is neglected.)	=	NA	
Total Capacity Required	=	**650**	**gallons**

TABLE D-1-2.9

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 603
Drum Storage Area - Containment Area Nos. 1, 3, & 4
(Reference Drawing Nos. 0603-020-001, 0603-030-001, & 0603-030-002)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity within Perimeter Containment Curb	=	NA
	B. Capacity of Sloped Floor	=	NA
	C. Capacity in Sumps [15'-6" × 3' × 3'-11"]	=	182 cu. ft.
	Gross Secondary Containment Capacity	=	182 cu. ft.
	D. Capacity Deductions	=	NA
	Capacity Deductions Subtotal	=	NA
	Net Secondary Containment Capacity	=	**182 cu. ft.**
		or	**1,361 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume [8,800 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	880 gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are enclosed within a building. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**880 gallons**

TABLE D-1-2.10

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 603
Drum Storage Area - Containment Area Nos. 2, 5, 6, & 7
(Reference Drawing Nos. 0603-020-001, 0603-030-001, & 0603-030-002)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity within Perimeter Containment Curb	=	NA
	B. Capacity of Sloped Floor	=	NA
	C. Capacity in Sumps [5'-6" × 3' × 3'-11"]	=	64 cu. ft.
	Gross Secondary Containment Capacity	=	64 cu. ft.
	D. Capacity Deductions	=	NA
	Capacity Deductions Subtotal	=	NA
	Net Secondary Containment Capacity	=	**64 cu. ft.**
		or	**478 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume [4,400 gallons total volume × 10%] or [450 gallons per largest container × 100%]	=	450 gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are enclosed within a building. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**450 gallons**

TABLE D-1-2.11

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 603
Drum Storage Area - Containment Area Nos. 8, 9, 10, & 13
(Reference Drawing Nos. 0603-020-001, 0603-030-001, & 0603-030-002)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity within Perimeter Containment Curb	=	NA
	B. Capacity of Sloped Floor	=	NA
	C. Capacity in Sumps [5'-6" × 3' × 3'-11"]	=	64 cu. ft.
	Gross Secondary Containment Capacity	=	64 cu. ft.
	D. Capacity Deductions	=	NA
	Capacity Deductions Subtotal	=	NA
	Net Secondary Containment Capacity	=	**64 cu. ft.**
		or	**478 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume [2,420 gallons total volume × 10%] or [450 gallons per largest container × 100%]	=	450 gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are enclosed within a building. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**450 gallons**

TABLE D-1-2.12

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 603
Drum Storage Area - Containment Area Nos. 11, 12, & 14
(Reference Drawing Nos. 0603-020-001, 0603-030-001, & 0603-030-002)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity within Perimeter Containment Curb	=	NA
	B. Capacity of Sloped Floor	=	NA
	C. Capacity in Sumps [15'-6" × 3' × 3'-11"]	=	182 cu. ft.
	Gross Secondary Containment Capacity	=	182 cu. ft.
	D. Capacity Deductions	=	NA
	Capacity Deductions Subtotal	=	NA
	Net Secondary Containment Capacity	=	**182 cu. ft.**
		or	**1,361 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume [4,840 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	650 gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are enclosed within a building. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**650 gallons**

TABLE D-1-2.13

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 603
Loading/Unloading Station - Containment Area No. 15
(Reference Drawing Nos. 0603-020-001, 0603-030-001, & 0603-030-002)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Berm			
[((33'-10" + 4') × 30') × 6"/12]	=	568	cu. ft.
B. Capacity of Sloped Floor			
1) capacity of sloped floor from high point to sump			
[½ × (33'-10" × 2' × 30')]	=	1,015	cu. ft.
2) capacity above sump and adjacent to back wall			
[(4' × 30') × 2']	=	240	cu. ft.
C. Capacity in Sumps			
[30' × 4' × 2'] + [(½ × 6"/12 × 14' × 4') × 2 sides] + [2' × 4' × 1']	=	276	cu. ft.
Gross Secondary Containment Capacity	=	2,099	cu. ft.
D. Capacity Deductions			
1) less capacity of roll-off boxes within containment (2'-6" deep)			
[½ × (2.5' – 0.66') × 20' × 8']	=	-148	cu. ft.
2) less capacity of roll-off box wheels (2 roll-offs)			
[(pi × ((8"/12)²/4) × 12"/12 high) × 4 wheels × 2 roll-offs]	=	-3	cu. ft.
Capacity Deductions Subtotal	=	-151	cu. ft.
Net Secondary Containment Capacity	=	**1,948**	**cu. ft.**
	or	**14,571**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume	=	6,060	gallons
[12,120 gallons total volume × 10%] or			
[6,060 gallons per largest container × 100%]			
B. Rainfall Allowance (25-year, 24-hour storm event of 7.5")			
(This area is covered by a roof with no siding; therefore, allowance must be made for blow-in on longest side. Assume 30° blow-in angle, with an eave height of 19'-6".)			
[(tan 30° × 19'-6" eave) × 69'-4" width × (7½"/12) × 7.48 gal/ft³]	=	2,070	gallons
Total Capacity Required	=	**8,130**	**gallons**

TABLE D-1-2.14

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 604
Small Container Storage Area - Containment Area No. 1
(Reference Drawing Nos. 0604-020-001, 0604-030-001, & 0604-040-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**			
	A. Capacity within Perimeter Containment Curb [98'-8" × 58'-8" × 7¾"/12]	=	3,738	cu. ft.
	B. Capacity of Sloped Floor	=	NA	
	C. Capacity in Sumps	=	NA	
	Gross Secondary Containment Capacity	=	3,738	cu. ft.
	D. Capacity Deductions			
	1) less capacity of raised walkways (along north and south walls) [(3' × 90' × 4"/12 high) × 2 sides]	=	-180	cu. ft.
	2) less capacity of ramp (west side) [½ x (3' × 7¾"/12) × 58'-8"]	=	-57	cu. ft.
	3) less capacity of raised walkways (along east wall) [5'-8" × 58'-8" × 4"/12]	=	-111	cu. ft.
	4) less capacity of drum support rails on floor (4 rails per bay) [(18 bays × 4 rails) × (17' long × 1"/12 high × 2"/12 wide)]	=	-17	cu. ft.
	Capacity Deductions Subtotal	=	-365	cu. ft.
	Net Secondary Containment Capacity	=	**3,373**	**cu. ft.**
		or	**25,227**	**gallons**
II.	**Required Secondary Containment Capacity**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [33,660 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	3,366	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is enclosed within a building. Therefore, rainfall allowance is neglected.)	=	NA	
	Total Capacity Required	=	**3,366**	**gallons**

TABLE D-1-2.15

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 604
Bulk Container Storage Area - Containment Area No. 2
(Reference Drawing Nos. 0604-020-001, 0604-030-001, & 0604-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**			
	A. Capacity within Perimeter Containment Curb (8" high ramp and curb)			
	1) main bay area (using average width of main bay) minus SE dock section			
	[[(60' × [(30' + 26'-7")/2]) – (20'-1" × 12')] × 8"/12]	=	970	cu. ft.
	2) off-set side area			
	[25' × 10'-6" × 8"/12]	=	175	cu. ft.
	B. Capacity of Sloped Floor			
	1) main bay area (from door to sump) minus SE dock section			
	[½ × [[(60' – 5') × ((30' + 26'-7")/2)] – [(20'-1" – 5') × 12']] × (4"/12)]	=	229	cu. ft.
	2) area above sump and area adjacent to loading dock wall			
	[(3' + 2') × (4"/12) × (26'-7" – 12')]	=	24	cu. ft.
	C. Capacity in Sump Trench			
	[(12'-4" × 2' × 8"/12]	=	16	cu. ft.
	Gross Secondary Containment Capacity	=	1,414	cu. ft.
	D. Capacity Deductions			
	1) less capacity of roll-off boxes within containment (back two roll-offs only)			
	[½ × ((12" – 8")/12) × 20' × 8'] × 2 roll-offs	=	-55	cu. ft.
	2) less capacity of ramp (at north entrance)			
	[½ × 5' wide × 8"/12 high × 30' long]	=	-50	cu. ft.
	Capacity Deductions Subtotal	=	-105	cu. ft.
	Net Secondary Containment Capacity	=	**1,309**	**cu. ft.**
		or	**9,791**	**gallons**
II.	**Required Secondary Containment Capacity**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume	=	5,050	gallons
	[20,200 gallons total volume × 10%] or			
	[5,050 gallons per largest container × 100%]			
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5")			
	(This area is covered by a roof with siding on long sides of building; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an effective eave height of 8' accounting for half-length rain curtains.)			
	[(tan 30° × 8' eave) × 30' width × (7½"/12) × 7.48 gal/ft³]	=	648	gallons
	Total Capacity Required	=	**5,698**	**gallons**

TABLE D-1-2.16

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Drum Storage Area - Containment Area Nos. 1A thru 4B
(Reference Drawing Nos. 0700-020-001 & 0700-030-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity within Perimeter Containment Curb	=	NA
	B. Capacity of Sloped Floor	=	NA
	C. Capacity in Sumps [12' × 3' × 3'-6"]	=	126 cu. ft.
	Gross Secondary Containment Capacity	=	126 cu. ft.
	D. Capacity Deductions	=	NA
	Net Secondary Containment Capacity	=	**126 cu. ft.**
		or	**942 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume [8,360 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	836 gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**836 gallons**

TABLE D-1-2.17

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Drum Storage Area - Containment Area Nos. 5 thru 7
(Reference Drawing Nos. 0700-020-001 & 0700-030-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity within Perimeter Containment Curb	=	NA
	B. Capacity of Sloped Floor	=	NA
	C. Capacity in Sumps [12' × 3' × 3'-6"]	=	126 cu. ft.
	Gross Secondary Containment Capacity	=	126 cu. ft.
	D. Capacity Deductions	=	NA
	Net Secondary Containment Capacity	=	**126 cu. ft.**
		or	**942 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume [8,360 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	836 gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**836 gallons**

TABLE D-1-2.18

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Drum Storage Area - Containment Area Nos. 8 & 9
(Reference Drawing Nos. 0700-020-001 & 0700-030-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity within Perimeter Containment Curb	=	NA
	B. Capacity of Sloped Floor	=	NA
	C. Capacity in Sumps [5'-9" × 3' × 3'-6"]	=	60 cu. ft.
	Gross Secondary Containment Capacity	=	60 cu. ft.
	D. Capacity Deductions	=	NA
	Net Secondary Containment Capacity	=	**60 cu. ft.**
		or	**451 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume [4,180 gallons total volume × 10%] or [450 gallons per largest container × 100%]	=	450 gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA
	Total Capacity Required	=	**450 gallons**

TABLE D-1-2.19

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Drum Storage Area - Containment Area Nos. 10 & 11
(Reference Drawing Nos. 0700-020-001 & 0700-030-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**			
	A. Capacity within Perimeter Containment Curb	=	NA	
	B. Capacity of Sloped Floor	=	NA	
	C. Capacity in Sumps [7'-3" × 3' × 3'-6"]	=	76	cu. ft.
	Gross Secondary Containment Capacity	=	76	cu. ft.
	D. Capacity Deductions	=	NA	
	Net Secondary Containment Capacity	=	**76**	**cu. ft.**
		or	**569**	**gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [5,280 gallons total volume × 10%] or [450 gallons per largest container × 100%]	=	528	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA	
	Total Capacity Required	=	**528**	**gallons**

TABLE D-1-2.20

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Unloading/Loading Bay (North Side) - Containment Area No. 12
(Reference Drawing Nos. 0700-020-002 & 0700-030-002)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Curb (9 1/2" high)			
[68'-4" × 21'-6" × 9.5"/12]	=	1,163	cu. ft.
B. Capacity of Sloped Floor			
[½ × (68'-4" × (24"-9.5")/12 × 21'-6")]	=	888	cu. ft.
C. Capacity in Sumps			
[2' × 2' × 2']	=	8	cu. ft.
Gross Secondary Containment Capacity	=	2,059	cu. ft.
D. Capacity Deductions			
1) less capacity of roll-off box (nearest sump) within containment (Maximum containment depth is 24" & roll-off sets 8" off floor, therefore the roll-off will be submerged 16" at end nearest the sump.)			
[½× [(24" – 8")/12] × 20' roll-off length × 8' roll-off width]	=	-107	cu. ft.
2) less capacity of roll-off box wheels			
[(pi × ((8"/12)²/4) × 12"/12 wide) × 4 wheels × 4 roll-offs]	=	-6	cu. ft.
3) less capacity of ramp			
[½ × (10' × 9.5"/12) × 21'-6"]	=	-85	cu. ft.
4) less capacity of block-outs			
[((8' × 2') + (6'-8" × 2')) × 9.5"/12]	=	-23	cu. ft.
Capacity Deductions Subtotal	=	-221	cu. ft.
Net Secondary Containment Capacity	=	**1,837**	**cu. ft.**
	or	**13,742**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume	=	6,060	gallons
[12,120 gallons total volume × 10%] or			
[6,060 gallons per largest container × 100%]			

TABLE D-1-2.20

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Unloading/Loading Bay (North Side) - Containment Area No. 12
(Reference Drawing Nos. 0700-020-002 & 0700-030-002)

B. Rainfall Allowance (25-year, 24-hour storm event of 7.5")
(This area is covered by a roof with siding on long sides;
however, allowance must be made for blow-in at ramp entrance.
Assume 30° blow-in angle, with an eave height of 20'.)
[(tan 30° × 20' eave) × 21'-6" wide × 7½"/12 × 7.48 gal/ft³] = 1,161 gallons

Total Capacity Required = 7,221 gallons

TABLE D-1-2.21

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Unloading/Loading Bay (North Side) - Containment Area No. 13
(Reference Drawing Nos. 0700-020-002 & 0700-030-002)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Curb (9 1/2" high)			
1) capacity of main loading bay area			
[68'-4" × 21'-10" × 9.5"/12]	=	1,181	cu. ft.
2) capacity of inset loading area			
[20'-5" × 10'-4" × 9.5"/12]	=	167	cu. ft.
B. Capacity of Sloped Floor			
1) capacity of sloped floor in main area			
[½ × (68'-4" × (24"-9.5")/12) × 21'-10"]	=	901	cu. ft.
2) capacity sloped floor in small inset area (1/8 inch per foot)			
[½ × (20'-5" × 3"/12) × 10'-4"]	=	26	cu. ft.
C. Capacity in Sumps			
[2' × 2' × 2']	=	8	cu. ft.
Gross Secondary Containment Capacity	=	2,283	cu. ft.
D. Capacity Deductions			
1) less capacity of roll-off box (nearest sump) within containment (Maximum containment depth is 24" & roll-off sets 8" off floor, therefore the roll-off will be submerged 16" at end nearest the sump.)			
[½× [(24" – 8")/12] × 20' roll-off length × 8' roll-off width]	=	-107	cu. ft.
2) less capacity of roll-off box wheels			
[(pi × ((8"/12)²/4) × 12"/12 wide) × 4 wheels × 5 roll-offs]	=	-7	cu. ft.
3) less capacity of ramp			
[½ × (10' × 9.5"/12) × 21'-10"]	=	-86	cu. ft.
4) less capacity of block-outs			
[((8' × 1'-4") + (6'-8" × 2')) × 9.5"/12]	=	-19	cu. ft.
Capacity Deductions Subtotal	=	-219	cu. ft.
Net Secondary Containment Capacity	=	**2,064**	**cu. ft.**
	or	**15,439**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume	=	8,080	gallons
[40,400 gallons total volume × 10%] or			
[8,080 gallons per largest container × 100%]			

TABLE D-1-2.21

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Unloading/Loading Bay (North Side) - Containment Area No. 13
(Reference Drawing Nos. 0700-020-002 & 0700-030-002)

B. Rainfall Allowance (25-year, 24-hour storm event of 7.5")
(This area is covered by a roof; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an eave height of 20'.)
[(tan 30° × 20' eave) × 21'-10" wide × 7½"/12 × 7.48 gal/ft³] = 1,179 gallons

Total Capacity Required = 9,259 gallons

TABLE D-1-2.22

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Unloading/Loading Bay (North Side) - Containment Area No. 14
(Reference Drawing Nos. 0700-020-002 & 0700-030-002)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity				
A. Capacity within Perimeter Containment Curb (9 1/2" high)				
1) capacity of main loading bay area				
[68'-4" × 24'-2 1/2" × 9.5"/12]	=	1,310	cu. ft.	
2) capacity of inset loading area				
[20'-5" × 10'-4" × 9.5"/12]	=	167	cu. ft.	
B. Capacity of Sloped Floor				
1) capacity of sloped floor in main area				
[½ × (68'-4" × (24"-9.5")/12) × 24'-2 1/2"]	=	999	cu. ft.	
2) capacity sloped floor in small inset area (1/8 inch per foot)				
[½ × (20'-5" × 3"/12) × 10'-4"]	=	26	cu. ft.	
C. Capacity in Sumps				
[2' × 2' × 2']	=	8	cu. ft.	
Gross Secondary Containment Capacity	=	2,510	cu. ft.	
D. Capacity Deductions				
1) less capacity of roll-off box (nearest sump) within containment (Maximum containment depth is 24" & roll-off sets 8" off floor, therefore the roll-off will be submerged 16" at end nearest the sump.)				
[½× [(24" – 8")/12] × 20' roll-off length × 8' roll-off width]	=	-107	cu. ft.	
2) less capacity of roll-off box wheels				
[(pi × ((8"/12)²/4) × 12"/12 wide) × 4 wheels × 5 roll-offs]	=	-7	cu. ft.	
3) less capacity of ramp				
[½ × (10' × 9.5"/12) × 24'-2 1/2"]	=	-96	cu. ft.	
Capacity Deductions Subtotal	=	-210	cu. ft.	
Net Secondary Containment Capacity	=	**2,301**	**cu. ft.**	
	or	**17,208**	**gallons**	
II. Required Secondary Containment Capacity				
A. 10% of Total Container Volume or 100% of Largest Container Volume	=	8,080	gallons	
[40,400 gallons total volume × 10%] or				
[8,080 gallons per largest container × 100%]				

TABLE D-1-2.22

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Unloading/Loading Bay (North Side) - Containment Area No. 14
(Reference Drawing Nos. 0700-020-002 & 0700-030-002)

B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is covered by a roof; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an eave height of 20'.)		
[(tan 30° × 20' eave) × 24'-2" wide × 7½"/12 × 7.48 gal/ft³]	=	1,305 gallons
Total Capacity Required	=	**9,385 gallons**

TABLE D-1-2.23

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Unloading/Loading Bay (North Side) - Containment Area No. 15
(Reference Drawing Nos. 0700-020-002 & 0700-020-003)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Curb (9 1/2" high)			
[68'-4" × 20'-4 3/8" × 9.5"/12]	=	1,101	cu. ft.
B. Capacity of Sloped Floor			
[½ × (68'-4" × (24"-9.5")/12) × 20'-4 3/8")]	=	841	cu. ft.
C. Capacity in Sumps			
[2' × 2' × 2']	=	8	cu. ft.
Gross Secondary Containment Capacity	=	1,950	cu. ft.
D. Capacity Deductions			
1) less capacity of roll-off box (nearest sump) within containment (Maximum containment depth is 24" & roll-off sets 8" off floor, therefore the roll-off will be submerged 16" at end nearest the sump.)			
[½× [(24" – 8")/12] × 20' roll-off length × 8' roll-off width]	=	-107	cu. ft.
2) less capacity of roll-off box wheels			
[(pi × ((8"/12)²/4) × 12"/12 wide) × 4 wheels × 4 roll-offs]	=	-6	cu. ft.
3) less capacity of ramp			
[½ × (10' × 9.5"/12) × 20'-4 3/8"]	=	-81	cu. ft.
4) less capacity of concrete pedestals			
[(pi × ((12"/12)²/4) × 12"/12 high) × 10 pedestals]	=	-8	cu. ft.
Capacity Deductions Subtotal	=	-194	cu. ft.
Net Secondary Containment Capacity	=	**1,756**	**cu. ft.**
	or	**13,137**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume	=	6,060	gallons
[12,120 gallons total volume × 10%] or			
[6,060 gallons per largest container × 100%]			

TABLE D-1-2.23

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Unloading/Loading Bay (North Side) - Containment Area No. 15
(Reference Drawing Nos. 0700-020-002 & 0700-020-003)

B. Rainfall Allowance (25-year, 24-hour storm event of 7.5")
(This area is covered by a roof with siding on long sides;
however, allowance must be made for blow-in at ramp entrance.
Assume 30° blow-in angle, with an eave height of 20'.)
[(tan 30° × 20' eave) × 20'-4" wide × 7½"/12 × 7.48 gal/ft³] = 1,098 gallons

Total Capacity Required = 7,158 gallons

TABLE D-1-2.24

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Unloading/Loading Bay (East Side) - Containment Area No. 16
(Reference Drawing Nos. 0700-020-002 & 0700-030-002)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Curb			
[38'-4" × 58' × 12"/12]	=	2,224	cu. ft.
B. Capacity of Sloped Floor	=	NA	
C. Capacity in Sumps			
[1'-9" × 1'-9" × 1'-6"]	=	5	cu. ft.
Gross Secondary Containment Capacity	=	2,229	cu. ft.
D. Capacity Deductions			
1) less capacity of roll-off box within containment (Maximum containment depth is 12" & roll-off sets 8" off floor, therefore, the roll-off will be submerged 4".)			
[(12" – 8")/12 × 20' length × 8' width]	=	-54	cu. ft.
2) less capacity of roll-off box wheels			
[(pi × ((8"/12)²/4) × 12"/12 wide) × 4 wheels × 2 roll-offs]	=	-3	cu. ft.
3) less capacity of ramp			
[½ × (8' × 1'-5") × 38'-4"]	=	-218	cu. ft.
Capacity Deductions Subtotal	=	-275	cu. ft.
Net Secondary Containment Capacity	=	**1,954**	**cu. ft.**
	or	**14,615**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume	=	6,060	gallons
[12,120 gallons total volume × 10%] or			
[6,060 gallons per largest container × 100%]			
B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is covered by a roof with siding on long sides of building; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an eave height of 18', and roof overhang of 6'.)			
[((tan 30° × 18' eave) - 6' overhang) × 38'-4" width × (7½"/12) × 7.48 gal/ft³]	=	787	gallons
Total Capacity Required	=	**6,847**	**gallons**

TABLE D-1-2.25

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 700
Processing Area - Containment Area No. 17
(Reference Drawing Nos. 0700-020-002 & 0700-030-002)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Curb			
[57'-4" × 99'-4½" × 8"/12]	=	3,798	cu. ft.
B. Capacity of Sloped Floor	=	NA	
C. Capacity in Sumps			
[2' × 2' × 2']	=	8	cu. ft.
Gross Secondary Containment Capacity	=	3,806	cu. ft.
D. Capacity Deductions			
1) less capacity of roll-off storage bays at loading station level			
[21'-5" × 14' × 8"/12] × 2 bays	=	-400	cu. ft.
2) less capacity of ramps			
[1/2 × 8"/12 × {(10'-8"×(21'-8"+5')) + (5'×(13'+2'-6")) + (5'×(15'+2'-6")) + (8'×(22'10"+5'))}]	=	-224	cu. ft.
3) less capacity of miscellaneous equipment supports			
Assume an allowance of 5% of gross containment.	=	-190	cu. ft.
Capacity Deductions Subtotal	=	-814	cu. ft.
Net Secondary Containment Capacity	=	**2,992**	**cu. ft.**
	or	**22,379**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume	=	693	gallons
[6,930 gallons total volume × 10%] or			
[650 gallons per largest container × 100%]			
B. Rainfall Allowance (25-year, 24-hour storm event of 7.5")			
(This area is enclosed within a building. Therefore, rainfall allowance is neglected.)	=	NA	
Total Capacity Required	=	**693**	**gallons**

TABLE D-1-2.26

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 702
Drum Storage Area - Containment Area Nos. 1A thru 4B
(Reference Drawing Nos. 0702-020-001, 0702-030-001, & 0702-040-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**			
	A. Capacity within Perimeter Containment Curb	=	NA	
	B. Capacity of Sloped Floor	=	NA	
	C. Capacity in Sumps [12' × 3' × 3'-6"]	=	126	cu. ft.
	Gross Secondary Containment Capacity	=	126	cu. ft.
	D. Capacity Deductions	=	NA	
	Net Secondary Containment Capacity	=	**126**	**cu. ft.**
		or	**942**	**gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [8,360 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	836	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA	
	Total Capacity Required	=	**836**	**gallons**

TABLE D-1-2.27

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 702
Drum Storage Area - Containment Area No. 5
(Reference Drawing Nos. 0702-020-001, 0702-030-001, & 0702-040-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**			
	A. Capacity within Perimeter Containment Curb	=	NA	
	B. Capacity of Sloped Floor	=	NA	
	C. Capacity in Sumps [7' × 3' × 3'-6"]	=	73	cu. ft.
	Gross Secondary Containment Capacity	=	73	cu. ft.
	D. Capacity Deductions	=	NA	
	Net Secondary Containment Capacity	=	**73**	**cu. ft.**
		or	**546**	**gallons**
II.	**Required Secondary Containment Capacity**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [3,740 gallons total volume × 10%] or [450 gallons per largest container × 100%]	=	450	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA	
	Total Capacity Required	=	**450**	**gallons**

TABLE D-1-2.28

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 702
Drum Storage Area - Containment Area No. 6
(Reference Drawing Nos. 0702-020-001, 0702-030-001, & 0702-040-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**			
	A. Capacity within Perimeter Containment Curb	=	NA	
	B. Capacity of Sloped Floor	=	NA	
	C. Capacity in Sumps [12' × 3' × 3'-6"]	=	126	cu. ft.
	Gross Secondary Containment Capacity	=	126	cu. ft.
	D. Capacity Deductions	=	NA	
	Net Secondary Containment Capacity	=	**126**	**cu. ft.**
		or	**942**	**gallons**
II.	**Required Secondary Containment Capacity**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [7,480 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	748	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA	
	Total Capacity Required	=	**748**	**gallons**

TABLE D-1-2.29

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 702
Drum Storage Area - Containment Area Nos. 7 thru 10
(Reference Drawing Nos. 0702-020-001, 0702-030-001, & 0702-040-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**			
	A. Capacity within Perimeter Containment Curb	=	NA	
	B. Capacity of Sloped Floor	=	NA	
	C. Capacity in Sumps [5'-9" × 3' × 3'-6"]	=	60	cu. ft.
	Gross Secondary Containment Capacity	=	60	cu. ft.
	D. Capacity Deductions	=	NA	
	Net Secondary Containment Capacity	=	**60**	**cu. ft.**
		or	**448**	**gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [3,740 gallons total volume × 10%] or [350 gallons per largest container × 100%]	=	374	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (These areas are located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA	
	Total Capacity Required	=	**374**	**gallons**

TABLE D-1-2.30

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 702
Drum Storage Area - Containment Area No. 11
(Reference Drawing Nos. 0702-020-001, 0702-030-001, & 0702-040-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**			
	A. Capacity within Perimeter Containment Curb	=	NA	
	B. Capacity of Sloped Floor	=	NA	
	C. Capacity in Sumps [24'-8" × 3' × 3'-6"]	=	258	cu. ft.
	Gross Secondary Containment Capacity	=	258	cu. ft.
	D. Capacity Deductions	=	NA	
	Net Secondary Containment Capacity	=	**258**	**cu. ft.**
		or	**1,929**	**gallons**
II.	**Required Secondary Containment Capacity**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [6,930 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	693	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA	
	Total Capacity Required	=	**693**	**gallons**

TABLE D-1-2.31

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 702
Drums on Conveyor - Containment Area No. 12
(Reference Drawing Nos. 0702-020-001, 0702-030-001, & 0702-040-001)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**			
	A. Capacity within Perimeter Containment Curb [{((178'-8" - 8') × (98'-8" - 8')) - (27'-8" × 39'-4")} × 11 1/2"/12]	=	13,786	cu. ft.
	B. Capacity of Sloped Floor	=	NA	
	C. Capacity in Sumps	=	NA	
	Gross Secondary Containment Capacity	=	13,786	cu. ft.
	D. Capacity Deductions For ramps and misc. supports assume 5% of gross containment	=	-689	cu. ft.
	Capacity Deductions Subtotal	=	-689	cu. ft.
	Net Secondary Containment Capacity	=	**13,097**	**cu. ft.**
		or	**97,965**	**gallons**
II.	**Required Secondary Containment Capacity**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [3,740 gallons total volume × 10%] or [650 gallons per largest container × 100%]	=	650	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is located within a building with sufficient roof overhang to prevent any rainfall blow-in. Therefore, rainfall allowance is neglected.)	=	NA	
	Total Capacity Required	=	**650**	**gallons**

TABLE D-1-2.32

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 702
Unloading/Loading Bay (East Side) Containment Area No. 13
(Reference Drawing Nos. 0702-020-001, 0702-030-001, & 0702-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity			
A. Capacity within Perimeter Containment Curb	=	NA	
B. Capacity of Sloped Floor			
1) capacity of sloped floor			
[½ × (45' × (1'-8½"/12) × 13'-8")]	=	525	cu. ft.
2) capacity above sump			
[3' × (1'-8½"/12) × 13'-8"]	=	70	cu. ft.
3) capacity adjacent to dock			
[1'-10" × (1'-8½"/12) × 13'-8"]	=	42	cu. ft.
C. Capacity in Sumps			
[12' × 3' × 3']	=	108	cu. ft.
Gross Secondary Containment Capacity	=	745	cu. ft.
D. Capacity Deductions			
1) less capacity of flare from dock wall to sump			
[½ × (3'-7" – 3'-3") × 1'-10" × 13'-8")]	=	-5	cu. ft.
2) less capacity of roll-off boxes within containment			
[½ × (1.71' – 0.66') × 20' × 8'] × 1 roll-off	=	-84	cu. ft.
3) less capacity of roll-off box wheels			
[(pi × ((8"/12)²/4) × 12"/12 high) × 4 wheels]	=	-2	cu. ft.
Capacity Deductions Subtotal	=	-91	cu. ft.
Net Secondary Containment Capacity	=	**655**	**cu. ft.**
	or	**4,896**	**gallons**
II. Required Secondary Containment Capacity			
A. 10% of Total Container Volume or 100% of Largest Container Volume	=	1,900	gallons
[3,800 gallons total volume × 10%] or			
[1,900 gallons per largest container × 100%]			
B. Rainfall Allowance (25-year, 24-hour storm event of 7.5")			
(This area is covered by a roof with no siding; therefore, allowance must be made for blow-in on longest side. Assume 30° blow-in angle, with an eave height of 20'.)			
[(tan 30° × 20' eave) × 55'-6" width × (7½"/12) × 7.48 gal/ft³]	=	2,996	gallons
Total Capacity Required	=	**4,896**	**gallons**

TABLE D-1-2.33

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 703A
Loading/Unloading Bay - Containment Area No. 1
(Reference Drawing Nos. 0703A-020-001 & 0703A-030-002)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I. Secondary Containment Capacity

A. Capacity within Perimeter Containment Curb (6" high berm)
[(37'-10" × 6"/12) × 29')] = 548 cu. ft.

B. Capacity of Sloped Floor
1. capacity of floor slope
[½ × (33'-10" × 22"/12) × 29')] = 899 cu. ft.
2. capacity above sump
[22"/12 × 4' × 29'] = 212 cu. ft.

C. Capacity in Sump
[28'-8" × 4' × 2'] + [(½ × 6"/12 × 13'-4" × 4') × 2 sides]
+ [2' × 4' × 6"/12] = 260 cu. ft.

Gross Secondary Containment Capacity = 1,919 cu. ft.

D. Capacity Deductions
1) less capacity of roll-off box within containment
Containment is 22" deep & box sets 8" off floor, therefore the box will be submerged a maximum of 14" at end nearest the sump.)
[½× [(28" – 8")/12] × 20' length × 8' wide] = -133 cu. ft.
2) less capacity of roll-off box wheels
[(pi × ((8"/12)²/4) × 12"/12 wide) × 4 wheels × 2 roll-offs] = -2 cu. ft.
3) less capacity of wheel stops (4 wheel stops)
[(6' + 5'-4" + 5'-6" + 5'-10") × 8"/12 wide × 9"/12 high] = -12 cu. ft.

Capacity Deductions Subtotal = -147 cu. ft.

Net Secondary Containment Capacity = **1,772 cu. ft.**
or **13,254 gallons**

II. Required Secondary Containment Capacity

A. 10% of Total Container Volume or 100% of Largest Container Volume = 5,000 gallons
[10,000 gallons total volume × 10%] or
[5,000 gallons per largest container × 100%]

TABLE D-1-2.33

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER MANAGEMENT - UNIT 703A
Loading/Unloading Bay - Containment Area No. 1
(Reference Drawing Nos. 0703A-020-001 & 0703A-030-002)

B. Rainfall Allowance (25-year, 24-hour storm event of 7.5")
(This area is covered by a roof with no siding; therefore, allowance must be made for blow-in on longest side. Assume 30° blow-in angle, with an eave height of 19'-6", and roof overhang of 2'.)
[((tan 30° × 19'-6" eave) - 2' overhang) × 39'-4" width × (7½"/12) × 7.48 gal/ft³] = 1,702 gallons

Total Capacity Required = 6,702 gallons

TABLE D-1-2.34

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINMENT BUILDING/CONTAINER & TANK MANAGEMENT - UNIT 1200A
Process Building - Containment Area No. 1
(Reference Drawing Nos. 1200A-020-001, 1200A-020-002 & 1200A-030-003A)

Note: These calculations DO NOT account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**			
	A. Capacity within Perimeter Containment Curb [173'-9" × 108'-9" × 8"/12]	=	12,597	cu. ft.
	B. Capacity of Sloped Floor	=	NA	
	C. Capacity in Sumps	=	NA	
	Gross Secondary Containment Capacity	=	12,597	cu. ft.
	D. Capacity Deductions			
	1) less capacity of small ramps [4 × (½ × 16' × 8"/12) × 5']	=	-107	cu. ft.
	2) less capacity of large ramp [(½ × 100' × 8"/12) × 5']	=	-167	cu. ft.
	Capacity Deductions Subtotal	=	-273	cu. ft.
	Net Secondary Containment Capacity	=	**12,324**	**cu. ft.**
		or	**92,180**	**gallons**
II.	**Required Secondary Containment Capacity**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [24,240 gallons total volume × 10%] or [4,040 gallons per largest container × 100%]	=	4,040	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is enclosed within a building. Therefore, rainfall allowance is neglected.)	=	NA	
	Total Capacity Required	=	**4,040**	**gallons**

TABLE D-1-2.35

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 2200
Containment Area No. 1
(Reference Drawing Nos. 2200-020-001, 2200-020-002, 2200-030-001, & 2200-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**			
	A. Capacity within Containment Curb (6" high containment berm) [82'-4" × 6"/12 × 25'-7"]	=	1,053	cu. ft.
	B. Capacity of Sloped Floor			
	1) capacity of sloped floor [½ × (40'-5" × 12"/12) × 25'-7" × 2 sides]	=	1,033	cu. ft.
	2) capacity of sloped floor above sump & 18" wide center strip of floor [1'-6" wide × 12"/12 deep × 25'-7"]	=	38	cu. ft.
	C. Capacity in Sumps [2'-6" × 1'-6" × 1'-8"]	=	6	cu. ft.
	Gross Secondary Containment Capacity	=	2,130	cu. ft.
	D. Capacity Deductions			
	1) less capacity of roll-off boxes (nearest sump) within containment. Containment is 18" deep & box sets 8" off floor, therefore the box will be submerged 10" at end nearest the sump.) [½× [(18"/12) – (8"/12)] × 20' length × 8' wide]× 3 boxes	=	-202	cu. ft.
	2) less capacity of roll-off box wheels [(pi × ((8"/12)²/4) × 12"/12 wide) × 16 wheels]	=	-6	cu. ft.
	3) less capacity of building columns [((1/2 × pi/4 × (35"/12)²)-(35"/12 × 5"/12)) × 18"] × 2 columns	=	-6	cu. ft.
	Capacity Deductions Subtotal	=	-214	cu. ft.
	Net Secondary Containment Capacity	=	**1,917**	**cu. ft.**
		or	**14,337**	**gallons**
II.	**Required Secondary Containment Capacity**			
	A. 10% of Total Container Volume or 100% of Largest Container Volume [48,480 gallons total volume × 10%] or [6,060 gallons per largest container × 100%]	=	6,060	gallons
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is covered by a roof with siding on long sides of building; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an effective eave height of 15' due to partial-length rain curtains, and roof overhang of 8'.) [((tan 30° × 15' eave) - 8' overhang) × 25'-7" width × (7½"/12) × 7.48 gal/ft³]	=	79	gallons
	Total Capacity Required	=	**6,139**	**gallons**

TABLE D-1-2.36

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 2200
Containment Area Nos. 2 thru 6
(Reference Drawing Nos. 2200-020-001, 2200-020-002, 2200-030-001, & 2200-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity within Containment Curb (6" high berm)		
	[82'-4" × 6"/12 × 22'-10"]	=	940 cu. ft.
	B. Capacity of Sloped Floor		
	1) capacity of sloped floor		
	[½ × (40'-5" × 12"/12) × 22'-10" × 2 sides]	=	922 cu. ft.
	2) capacity of sloped floor above sump & 18" wide center strip of floor		
	[1'-6" wide × 12"/12 deep × 22'-10"]	=	34 cu. ft.
	C. Capacity in Sumps		
	[2'-6" × 1'-6" × 1'-8"]	=	6 cu. ft.
	Gross Secondary Containment Capacity	=	1,902 cu. ft.
	D. Capacity Deductions		
	1) less capacity of roll-off boxes (nearest sump) within containment Containment is 18" deep & box sets 8" off floor, therefore the box will be submerged 10" at end nearest the sump.)		
	[½× [(18"/12) – (8"/12)] × 20' length × 8' wide]× 3 boxes	=	-202 cu. ft.
	2) less capacity of roll-off box wheels		
	[(pi × ((8"/12)²/4) × 12"/12 wide) × 16 wheels]	=	-6 cu. ft.
	3) less capacity of building columns		
	[((1/2 × pi/4 × (35"/12)²)-(35"/12 × 5"/12)) × 18"] × 2 columns	=	-6 cu. ft.
	Capacity Deductions Subtotal	=	-214 cu. ft.
	Net Secondary Containment Capacity	=	**1,689 cu. ft.**
		or	**12,630 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume	=	6,060 gallons
	[48,480 gallons total volume × 10%] or		
	[6,060 gallons per largest container × 100%]		
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is covered by a roof with siding on long sides of building; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an effective eave height of 15' due to partial-length rain curtains, and roof overhang of 8'.)		
	[((tan 30° × 15' eave) - 8' overhang) × 22'-10" width × (7½"/12) × 7.48 gal/ft³]	=	70 gallons
	Total Capacity Required	=	**6,130 gallons**

TABLE D-1-2.37

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 2200
Containment Area Nos. 7 & 8
(Reference Drawing Nos. 2200-020-001, 2200-020-002, 2200-030-001, & 2200-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity within Containment Curb (6" high berm) [82'-4" × 6"/12 × 22'-10"]	=	940 cu. ft.
	B. Capacity of Sloped Floor		
	1) capacity of sloped floor [½ × (40'-5" × 12"/12) × 22'-10" × 2 sides]	=	922 cu. ft.
	2) capacity of sloped floor above sump & 18" wide center strip of floor [1'-6" wide × 12"/12 deep × 22'-10"]	=	34 cu. ft.
	C. Capacity in Sumps [2'-6" × 1'-6" × 1'-8"]	=	6 cu. ft.
	Gross Secondary Containment Capacity	=	1,902 cu. ft.
	D. Capacity Deductions		
	1) less capacity of roll-off boxes (nearest sump) within containment Containment is 18" deep & box sets 8" off floor, therefore the box will be submerged 10" at end nearest the sump.) [½× [(18"/12) – (8"/12)] × 20' length × 8' wide]× 3 boxes	=	-202 cu. ft.
	2) less capacity of roll-off box wheels [(pi × ((8"/12)²/4) × 12"/12 wide) × 16 wheels]	=	-6 cu. ft.
	3) less capacity of building columns [((1/2 × pi/4 × (35"/12)²)-(35"/12 × 5"/12)) × 18"] × 2 columns	=	-6 cu. ft.
	Capacity Deductions Subtotal	=	-214 cu. ft.
	Net Secondary Containment Capacity	=	**1,689 cu. ft.** or **12,630 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume (No free liquids are stored in these areas.)	=	NA
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is covered by a roof with siding on long sides of building; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an effective eave height of 15' due to partial-length rain curtains, and roof overhang of 8'.) [((tan 30° × 15' eave) - 8' overhang) × 22'-10" width × (7½"/12) × 7.48 gal/ft³]	=	70 gallons
	Total Capacity Required	=	**70 gallons**

TABLE D-1-2.38

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 2200
Containment Area Nos. 9 thru 17
(Reference Drawing Nos. 2200-020-001, 2200-020-002, 2200-030-001, & 2200-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity (per Containment Area)**		
	A. Capacity of Sloped Floor		
	1) capacity of sloped floor [½ × (40'-5" × 12"/12) × 22'-10" × 2 sides]	=	922 cu. ft.
	2) capacity of sloped floor above sump & 18" wide center strip of floor [1'-6" wide × 12"/12 deep × 22'-10"]	=	34 cu. ft.
	B. Capacity in Sumps [2'-6" × 1'-6" × 1'-8"]	=	6 cu. ft.
	Gross Secondary Containment Capacity	=	962 cu. ft.
	C. Capacity Deductions		
	1) less capacity of roll-off boxes (nearest sump) within containment Containment is 18" deep & box sets 8" off floor, therefore the box will be submerged 10" at end nearest the sump.) [½× [(18"/12) – (8"/12)] × 20' length × 8' wide]× 3 boxes	=	-202 cu. ft.
	2) less capacity of roll-off box wheels [(pi × ((8"/12)²/4) × 12"/12 wide) × 16 wheels]	=	-6 cu. ft.
	3) less capacity of building columns [((1/2 × pi/4 × (35"/12)²)-(35"/12 × 5"/12)) × 18"] × 2 columns	=	-6 cu. ft.
	Capacity Deductions Subtotal	=	-214 cu. ft.
	Net Secondary Containment Capacity	=	**749 cu. ft.**
		or	**5,600 gallons**
II.	**Required Secondary Containment Capacity (per Containment Area)**		
	A. 10% of Total Container Volume or 100% of Largest Container Volume (No free liquids are stored in these areas.)	=	NA
	B. Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is covered by a roof with siding on long sides of building; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an effective eave height of 15' due to partial-length rain curtains, and roof overhang of 8'.) [((tan 30° × 15' eave) - 8' overhang) × 22'-10" width × (7½"/12) × 7.48 gal/ft³]	=	70 gallons
	Total Capacity Required	=	**70 gallons**

TABLE D-1-2.39

CALCULATIONS OF SECONDARY CONTAINMENT CAPACITY

CONTAINER STORAGE - UNIT 2200
Containment Area No. 18
(Reference Drawing Nos. 2200-020-001, 2200-020-002, 2200-030-001, & 2200-040-001)

Note: These calculations DO account for the additional containment capacity provided by the sloped floor.

I.	**Secondary Containment Capacity**		
A.	Capacity of Sloped Floor		
1)	capacity of sloped floor [½ × (40'-5" × 12"/12) × 25'-7" × 2 sides]	=	1,033 cu. ft.
2)	capacity of sloped floor above sump & 18" wide center strip of floor [1'-6" wide × 12"/12 deep × 25'-7"]	=	38 cu. ft.
B.	Capacity in Sumps [2'-6" × 1'-6" × 1'-8"]	=	6 cu. ft.
	Gross Secondary Containment Capacity	=	1,077 cu. ft.
C.	Capacity Deductions		
1)	less capacity of roll-off boxes (nearest sump) within containment Containment is 18" deep & box sets 8" off floor, therefore the box will be submerged 10" at end nearest the sump.) [½× [(18"/12) – (8"/12)] × 20' length × 8' wide]× 3 boxes	=	-202 cu. ft.
2)	less capacity of roll-off box wheels [(pi × ((8"/12)²/4) × 12"/12 wide) × 16 wheels]	=	-6 cu. ft.
3)	less capacity of building columns [((1/2 × pi/4 × (35"/12)²)-(35"/12 × 5"/12)) × 18"] × 2 columns	=	-6 cu. ft.
	Capacity Deductions Subtotal	=	-214 cu. ft.
	Net Secondary Containment Capacity	= or	**864 cu. ft.** **6,461 gallons**
II.	**Required Secondary Containment Capacity**		
A.	10% of Total Container Volume or 100% of Largest Container Volume (No free liquids are stored in this area.)	=	NA
B.	Rainfall Allowance (25-year, 24-hour storm event of 7.5") (This area is covered by a roof with siding on long sides of building; however, allowance must be made for blow-in at ramp entrance. Assume 30° blow-in angle, with an effective eave height of 15' due to partial-length rain curtains, and roof overhang of 8'.) [((tan 30° × 15' eave) - 8' overhang) × 25'-7" width × (7½"/12) × 7.48 gal/ft³]	=	79 gallons
	Total Capacity Required	=	**79 gallons**

APPENDIX D-1-3

SECTION D-1

SECONDARY CONTAINMENT SYSTEMS – CONCRETE COATING AND PROTECTIVE STEEL FLOORING

Revision No.
5.0

APPENDIX D-1-3

SECTION D-1

SECONDARY CONTAINMENT SYSTEMS – CONCRETE COATING AND PROTECTIVE STEEL FLOORING

TABLE OF CONTENTS

APPENDIX D-1-3

SECTION D-1

SECONDARY CONTAINMENT SYSTEMS – CONCRETE COATING AND PROTECTIVE STEEL FLOORING

This section provides a detailed description of the flooring systems utilized in Solid Waste Management Units (SWMUs) that manage and handle liquid wastes to provide a secondary containment that is sufficiently impervious. Other SWMUs that manage only waste not containing free liquid may utilize these flooring systems as a best management practice. Section D-1 provides each container management unit's applicability to and the use of these flooring systems. For units that handle liquid wastes, a sufficiently impervious surface is achieved by either concrete coating systems or protective steel floor containment systems. Historically, most units at the facility have utilized chemical resistant concrete coating systems. Over time however, some units may be provided with protective steel floor containment systems in lieu of continued maintenance of chemical coating systems.

D-1-3-1 Concrete Coating Systems

A chemical-resistant coating system has been applied to the concrete floor surfaces, interior edges of curbs, interior side walls of dikes, and bottoms and sidewalls of sumps within existing container management units, containments for tank systems, and within existing containment building waste management units that manage liquid waste in containers.

Four (4) types of concrete coating systems have been utilized within secondary containment systems at the Facility. Within a given unit, any single system or a combination of two or more concrete coating systems may have been utilized to ensure that adequate physical and chemical resistance is achieved. Each type of coating system has been selected to provide the appropriate level of protection against chemical and abrasive degradation to all concrete systems and is differentiated by the configuration of the surface to which it is applied. The surface designations for the coating systems are Types A, B, C, and D. This appendix provides the following information on each of the four (4) types of concrete coating systems that have been utilized at the Facility:

- A description of the surface configuration to which each type of concrete coating system may have been applied, and the general functional properties required of each concrete coating system;
- Specifications for the concrete coating system to establish the minimum standards for each type of coating system; and

- Manufacturers' information on the chemical compatibility, performance specifications and application for the concrete coating systems specified in the appendix.

D-1-3-1a General Functional Description of Concrete Coating Systems

The concrete coating systems which have been used at the Facility are designated as Types A, B, C and D, and a description of these systems are as follows:

Type A: Coatings for horizontal surfaces outside of sumps and trenches. These coatings are designed for high volumes of abrasive traffic and for excellent chemical resistance.

Type B: Coatings for sumps and trenches. These coatings provide a very high degree of chemical resistance. These coatings may also be used for coating and sealing joints in the concrete outside of sumps and trenches.

Type C: Coatings for vertical surfaces outside of sumps and trenches. These coatings are similar to Type A coatings except that they have a somewhat lesser degree of abrasion resistance.

Type D: Coatings for expansion joints, construction joints and corner fillets, and for repairing cracks. These coatings are more elastic than most of the other coatings to provide a seal while accommodating slight movements at the concrete joints. Type D coatings are only used where slab movement is experienced or anticipated.

D-1-3-1b Concrete Coating Systems Specifications

The following concrete coating system specifications establish the minimum standards for each of the four (4) types of systems that have been used.

Any concrete coating system that meets or exceeds the standards established in the Facility's operating record by one of the following methods: (1) a detailed engineering analysis performed by an independent, registered professional engineer, or (2) a published, industry accepted demonstration, or (3) a manufacturer's certification that the performance of the substitute system meets or exceeds the performance of a system specified herein. In addition to the coatings, new chemical-resistant sealing measures may be implemented as appropriate for the intended purpose with approval of ADEM.

D-1-3-2 Protective Steel Floor Containment Systems

Protective steel floor containment systems may be utilized to provide secondary containment. These systems will consist of 3/8-inch thick steel “diamond plate” panels which are compatible with the waste materials being stored and continuously welded together so that they are impervious. Steel floor containment systems will cover the floor and containment curbs of facility units where the systems are utilized. The sumps in facilities where steel floor containments are utilized may be lined with welded steel, or chemical sealants may continue to be used. If chemical sealants are used in the sumps, the edges of the steel floor containment at the sump will be configured so liquids cannot flow beneath the steel floor.

All welding will be conducted in accordance with standards of the American Welding Society (AWS). All welds will be inspected in accordance with AWS D1.1 visual acceptance criteria for the following factors:

1. general structural installation;
2. weld location, length, and size; and
3. weld crack prohibition, weld/base metal fusion, crater cross-section, weld profile, undercut, and porosity.

Detailed inspection criteria contained in AWS D1.1 shall be followed, and welds shall be inspected by individuals with a minimum accreditation of at least Certified Welding Inspector from the AWS. Welds which meet the visual acceptance criteria summarized above, and detailed in AWS D1.1, are considered impervious.

The steel floor containment systems will rest directly upon the reinforced concrete floor and containment curbs. Therefore, the structural support for the steel floor is provided by the underlying concrete floor.

[End of Appendix D-1-3]