APPENDIX D-3

TANKS

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TANKS

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TANKS

I. INTRODUCTION

The CWM Model City Facility utilizes tanks for storing, treating and transferring many different materials including leachate, PCB liquids, organic liquids, products, aqueous waste, acids, caustics, sludges, recycle water, ground water, waste solids and lab waste.

All of the permitted tanks at the Model City Facility are listed in this Appendix.

II. TANKS AND THEIR SECONDARY CONTAINMENT SYSTEMS

The Permittee has constructed tankage specified in this Appendix with the required secondary containment and leak detection systems as specified in 6 NYCRR Part 373-2.10, except for Tank T-58 which was granted a variance from secondary containment requirements in CWM's 2005 Part 373 Permit No. 9-2934-00022/00097. Drawings and secondary containment volume calculations for each tank area are provided in the attached System schematics. Process and Instrumentation Drawings (P&IDs) are also provided.

The secondary containment for tanks located inside buildings is provided by the building itself and designed to contain, at a minimum, 100% of the volume of the largest tank. Tanks located outside of buildings are provided with secondary containment designed to contain a minimum of 100% of the largest tank plus a 25 year, 24 hour storm event.

Precipitation that falls into outdoor secondary containment areas is typically collected and removed via pump, vacuum truck or equivalent and treated in the Aqueous Waste Treatment System, or if appropriate, tested and discharged to the surface water drainage system if analysis indicates that it meets surface water standards. Under normal circumstances, the secondary containment will be pumped free of liquid no later than the end of the next business day after the end of a rainfall event or thaw.

All ancillary equipment for the permitted tank systems is provided with secondary containment, except for that ancillary equipment meeting the exemption specified in 6NYCRR 373-2.10(d)(6). All exempted ancillary equipment, e.g., welded piping, which is located outside of secondary containment, is visually inspected on a daily basis (except for groundwater extraction systems during the winter shut down period).

All hazardous waste tank systems have been evaluated to determine if any such systems meet the definition of being interconnected, in accordance with 6NYCRR 370.2(b)(105). Criteria has been used to identify all areas where equipment failure at any point in the tank system or operator error could result in the release from more than one tank for tank systems interconnected in the same, or separate, secondary containments. As specified by 6NYCRR 373-2.10(d)(5)(i)(a), secondary containment systems must be designed or operated to contain 100% of the largest tank or the volume of all interconnected tanks, whichever is greater.

CWM has installed valving and electronic safeguards for all interconnected tanks at the Model City Facility whose combined volume exceeds the volume of secondary containment provided for these tanks to prevent potential secondary containment volume exceedences which could be caused by operator error.

III. GENERAL PROCESS SYSTEMS

A. The Aqueous Waste Treatment Facility

CWM has engineered and constructed an Aqueous Wastewater Treatment System (AWTS) designed to treat on-site waters, landfill leachate and gate receipts from customers. The system occupies an area of approximately two acres, and is located at the western edge of the existing operating facility. The facility features enclosed tanks for receipt of waste materials, reaction vessels, filter presses for the removal of solids, biotowers for the removal of biodegradable organics (alcohols and ketones), carbon adsorbers for the capture of residual organics, cartridge filter units for removal of residual solids, adsorption media for removal of arsenic and storage tanks for the treated waste. The alkalization/precipitation, lime slurry, filter press and gate receipts receiving operations are housed in the 10,000 square foot Aqueous Treatment (A/T) Building along with the control room, laboratory and offices. The 1,500 square foot Water Treatment (W/T) Building houses the filtration, arsenic adsorption and carbon adsorption processes.

The system features a Programmable Logic Controller (PLC) to monitor operations and transfers of materials within the facility. The PLC is also used to insure system safety by interlocking with various control equipment.

The Aqueous Treatment and Water Treatment Buildings were designed to provide an environmentally safe water treatment operation. Environmental control was one of the primary objectives in the design and operation of the facility. The system features concrete containment surrounding all tanks, reaction vessels, and other process equipment. In addition, where needed, process piping is lined with special corrosion resistant plastic (polypropylene) or is constructed of High Density Polyethylene (HDPE) in order to prevent corrosion on the interior surface of the piping and prolong the process life of the piping. Finally, process tanks within the A/T Building are tied into a vent collection system. This system controls acid vapors associated with receipt and treatment of the waste materials. In addition, carbon canisters are installed on the process tanks which contain Subpart CC wastes to control organic emissions.

The system is designed to be flexible in the treatment of waste streams. Flexibility is provided by the capability to by-pass or recirculate the process flow through major components of the treatment system. This allows for enhanced treatment and additional process capacity.

The incoming leachate, which is pretreated by oil/water separation when necessary, is pumped into the reaction/blending tanks where sulfuric acid and ferrous sulfate are added to lower the pH prior to metals precipitation, as needed and directed by the laboratory. Aqueous gate receipts can be mixed in the special treatment tanks and then transferred to the reaction/blending tanks. Each batch of blended waste is carefully prepared and analyzed by facility chemists.

The aqueous wastes then go through an alkalization step and filtration unit to remove metal contaminants. The filter cake from the process is incinerated or transported to the site's secure landfill depending on the F039 analysis and achievement of land ban treatment standards. The treated effluent is then pumped into the biological treatment system (biotowers), where the wastewater undergoes biodegradation to remove organics. Flow is then processed through the cartridge filter and arsenic adsorption units (for aqueous wastes requiring arsenic removal) and carbon adsorption unit and on to the effluent holding tanks for testing prior to discharge to the facultative ponds. The biotowers can also be bypassed if organic constituent concentrations are low and the carbon treatment system can handle the organic load. The final treated effluent undergoes extensive laboratory testing and is discharged to the lower Niagara River under a state SPDES permit.

While some AWTS tanks are used for storage only, various treatment options may be used in other tanks to facilitate the most efficient overall treatment, as listed in the following tank tables. For example, anti-foaming agents, nutrients and inoculum are typically added to lift station tanks T-3011 and T-3012 or tank T-3002 to improve organic reduction efficiency in the biotowers. Various agents may be added to filtrate storage tank T-100 and leachate tank farm tanks T-101, T-102 and T-103 to reduce the concentration of organics. Air sparging may be performed and various agents may be added to final effluent tanks T-58 and T-125 to reduce the concentration of organics. Hexametaphosphate is typically added to carbon adsorber feed tank T-3003 to prevent bridging of the carbon adsorbers. An oxidizer may be added to RMU-1 lift station tank T-160 to control the generation of hydrogen sulfide gas. A wide variety of other chemicals may also be used in any treatment tank depending on the type of treatment needed.

Aqueous Wastewater Treatment Building Tanks.

TANK #	OVERFILL CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-710 SPECIAL TREATMENT TANK	level indicator with high and high/high level alarms (PLC controlled)	FRP	8,000 storage/ treatment	aqueous waste	AWTS Building	above ground	24,440 gallons	10,000 gallons	visual
T-810 SPECIAL TREATMENT TANK	level indicator with high and high/high level alarms (PLC controlled)	FRP	8,000 storage/ treatment	aqueous waste	AWTS Building	above ground	24,440 gallons	10,000 gallons	visual
T-820 SPECIAL TREATMENT TANK	level indicator with high and high/high level alarms (PLC controlled)	FRP	8,000 storage/ treatment	aqueous waste	AWTS Building	above ground	24,440 gallons	10,000 gallons	visual
T-850 SOLIDS DISSOLVING TANK	visual observation with inspection hatch	FRP	846 treatment	aqueous waste	AWTS Building	above ground	24,440 gallons	10,000 gallons	visual
T-1010 METALS PRECIPITATION TANK	level indicator with high and high/high level alarms (PLC controlled)	Carbon steel	10,000 treatment	lime slurry/ aqueous waste	AWTS Building	above ground	24,440 gallons	10,000 gallons	visual
T-1020 METALS PRECIPITATION TANK	level indicator with high and high/high level alarms (PLC controlled)	Carbon steel	8,000 treatment	lime slurry/ aqueous waste	AWTS Building	above ground	24,440 gallons	10,000 gallons	visual
T-1111 FILTRATE TANK	level indicator with high and high/high level alarms (PLC controlled)	Polyethylene	300 storage	aqueous waste	AWTS Building	above ground	24,440 gallons	10,000 gallons	visual
T-1112 FILTRATE TANK	overflow pipe and level indicator with high and high/high level alarms (PLC controlled)	FRP	450 storage	aqueous waste	AWTS Building	above ground	24,440 gallons	10,000 gallons	visual
T-1310 CAUSTIC SCRUBBER	level indicator with high level alarm (PLC controlled)	FRP	580 treatment	caustic solution / aqueous wastewater	AWTS Building	above ground	24,440 gallons	10,000 gallons	visual

Solids Separation Building Tanks.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-3011 LIFT TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	375 storage/ treatment	aqueous waste	Solids Separator Building (South of AWTS Building)	above ground	14,851 gallons	4,291 gallons	visual
T-3012 LIFT TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	375 storage/ treatment	aqueous waste	Solids Separator Building (South of AWTS Building)	above ground	14,851 gallons	4,291 gallons	visual

Tanks North of AWTS Building.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-100 FILTRATE STORAGE	level indicator with high and high/high level alarms (PLC controlled)	carbon steel	160,545 storage/ treatment	aqueous waste	North of AWTS Building	above ground	571,328 gallons	424,410 gallons	visual/leak detection valve
T-125 EFFLUENT STORAGE	overflow pipe and level indicator with high level alarm (PLC controlled)	carbon steel	394,271 storage/ treatment	aqueous waste	North of AWTS Building	above ground	571,328 gallons	424,410 gallons	visual/leak detection valve

Tanks West of AWTS Building.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-58 EFFLUENT STORAGE	level indicator with high level alarm (PLC controlled)	Glass fused carbon steel	488,529 storage/ treatment	aqueous waste	East of AWTS Building	above ground	see note	see note	leak detection pipe and valve

Note: A request for variance from secondary containment for Tank T-58 has been approved by NYSDEC.

Tanks East of AWTS Building.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-210 REACTION BLEND TANK	level indicator with high and high/high level alarms (PLC controlled)	carbon steel	30,000 treatment	aqueous waste	Tank farm east of AWTS Building	above ground	44,350 gallons	36,903 gallons	visual
T-220 REACTION BLEND TANK	level indicator with high and high/high level alarms (PLC controlled)	FRP	30,000 treatment	aqueous waste	Tank farm east of AWTS Building	above ground	44,350gallons	36,903 gallons	visual
T-230 REACTION BLEND TANK	level indicator with high and high/high level alarms (PLC controlled)	carbon steel	30,000 treatment	aqueous waste	Tank farm east of AWTS Building	above ground	44,350gallons	36,903 gallons	visual
T-310 BIOTOWER	automatic shut off and overflow pipe to clarifier tanks, equipped with pressure relief vent	FRP	30,457 treatment	aqueous waste	Tank farm east of AWTS Building	above ground	44,350gallons	36,903 gallons	visual
T-320 BIOTOWER	automatic shut off and overflow pipe to clarifier tanks, equipped with pressure relief vent	FRP	30,457 treatment	aqueous waste	Tank farm east of AWTS Building	above ground	44,350gallons	36,903 gallons	visual

Waste Water Treatment Building Tanks.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-3007 CARBON ADSORBER	flow rate monitored at control panel and automatic feed pump shutoff	carbon steel	7,600 treatment	aqueous waste	WWT Building	above ground	15,317 gallons	15,200 gallons	visual
T-3008 CARBON ADSORBER	flow rate monitored at control panel and automatic feed pump shutoff	carbon steel	7,600 treatment	aqueous waste	WWT Building	above ground	15,317 gallons	15,200 gallons	visual
T-3010A ARSENIC ADSORBER	Flow rate monitored at control panel and automatic feed pump shutoff	carbon steel	470 treatment	aqueous waste	WWT Building	above ground	15,317 gallons	15,200 gallons	visual

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T-3010B ARSENIC ADSORBER	Flow rate monitored at control panel and automatic feed pump shutoff	carbon steel	470 treatment	aqueous waste	WWT Building	above ground	15,317 gallons	15,200 gallons	visual
T-3010C ARSENIC ADSORBER	Flow rate monitored at control panel and automatic feed pump shutoff	carbon steel	470 treatment	aqueous waste	WWT Building	above ground	15,317 gallons	15,200 gallons	visual
T-3010D ARSENIC ADSORBER	Flow rate monitored at control panel and automatic feed pump shutoff	carbon steel	470 treatment	aqueous waste	WWT Building	above ground	15,317 gallons	15,200 gallons	visual

Tanks South of Waste Water Treatment Building.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-52 CARBON TRANSFER TANK	overflow pipe to carbon adsorbers, equipped with pressure rupture disk	carbon steel	7,600 storage	aqueous waste	South of WWT Building	above ground	9,546 gallons	8,400 gallons	Visual

Tanks East of Waste Water Treatment Building.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-3001 pH ADJUST TANK	automatic shut off and overflow pipe to T-3002	FRP	1,255 treatment	aqueous waste	Tank farm east of WWT Building	above ground	1,872 gallons	1,549 gallons	Visual
T-3002 BIOTOWER FEED TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	900 treatment	aqueous waste	Tank farm east of WWT Building	above ground	1,872 gallons	1,549 gallons	Visual
T-3003 ADSORBER FEED TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	1,210 storage/ treatment	aqueous waste	Tank farm east of WWT Building	above ground	1,667 gallons	1,491 gallons	Visual
T-3009 BACKWASH TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	carbon steel	6,000 storage	aqueous waste	East of WWT Building	above ground	Double walled tank	N/A	visual/leak detection valve

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B. SLF 1-6 Leachate System

Oily leachate from SLF 1-6 can be pumped or transferred from the SLF 1-6 landfill leachate pumps into the SLF 1-6 lift station (T-105). The leachate received by the lift station is transferred by a pump into a surge tank (T-130). Oil and aqueous phases can be decanted and separately removed from T-130. Otherwise, mixed leachate is transferred to the SLF 1-11 Oil/Water Separator (T-158) by vacuum truck.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-105 LIFT STATION	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	carbon steel	3,000 storage	Leachate	SLF 1-6	above ground	4,143 gallons	3,000 gallons	visual
T-130 SURGE TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	stainless steel	5,732 storage	Leachate	SLF 1-6	above ground	8,228 gallons	6,819 gallons	visual

C. SLF 7, 10 and 11 Leachate Systems

Leachate generated by SLF 7, 10 and 11 is pumped from the SLF 7, 10 and 11 landfill leachate pumps into the associated lift station tank (T-107, T-110 and T-111). The leachate received by the lift station is pumped to holding tanks (T-108 and T-109) from which it is removed by vacuum truck and transferred to the T-200 series tanks or the SLF 1-11 Oil/Water Separator (T-158), which may also be used for various offsite commercial and onsite generated aqueous wastes. Oil from T-158 is transferred to vacuum trucks for offsite disposal. The aqueous phase from T-158 is transferred to tank T-159 and pumped to the Leachate Tank Farm. SLF 7 leachate may also be removed from T-107 by vacuum truck and transferred to AWT for treatment and/or transferred to an outbound tanker for treatment or disposal.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-107 SLF 7 WET WELL TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	350 storage	leachate	SLF 7	aboveground	2,765 gallons	350 gallons	visual
T-110 SLF 10 WET WELL TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	350 storage	leachate	SLF 10	aboveground	15,709 gallons	3,000 gallons	visual
T-111 SLF 11 WET WELL TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	350 storage	leachate	SLF 11	aboveground	15,709 gallons	10,000 gallons	visual
T-108 SLF 7/11 HOLD TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	10,000 storage	leachate	SLF 11	aboveground	15,709 gallons	10,000 gallons	visual
T-109 SLF 10 HOLD TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	3,000 storage	leachate	SLF 10	aboveground	15,709 gallons	3,000 gallons	visual

SLF 1-11 Oil/Water Separator Building

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-158 OIL/WATER SEPARATOR TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	steel	17,000 treatment	leachate, offsite and onsite aqueous wastes	East of Leachate Tank Farm	aboveground	24,876 gallons	17,000 gallons	visual
T-159 AQUEOUS TANK	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	FRP	1,000 storage	leachate, aqueous wastes	East of Leachate Tank Farm	aboveground	24,876 gallons	17,000 gallons	visual

D. SLF 12 Leachate System

Leachate generated by SLF 12 is pumped from the SLF 12 landfill leachate pumps into the SLF 12 lift station tank (T-150). Nonhazardous onsite generated aqueous wastes (i.e., site waters) may also be added to tank T-150. The aqueous wastes received by the lift station are transferred by a pump to the Leachate Tank Farm through above ground piping.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-150 LIFT STATION	control level indicator and controller	carbon steel	8,000 storage /treatment	leachate, onsite generated aqueous wastes	SLF 12 Lift Station	above ground	18,388 gallons	8,000 gallons	visual

Tank T-160 and Lift Station for RMU-1 are located within the northern footprint of the new Residuals Management Unit No. 2 (RMU-2) landfill. Tank T-160 and Lift Station will be closed in accordance with the Sitewide Closure Plan and will be demolished for the construction of the later northern phases of RMU-2. Therefore, new underground piping from RMU-1 will be installed to transfer leachate to tank T-150. Additionally, RMU-2 leachate will be pumped to T-150 through new underground piping. T-150 will be upgraded with new pumps to management the leachate from SLF-12 and RMU-1 and proposed RMU-2. The existing above ground piping used for transferring aqueous wastes from T-150 to the Leachate Tank Farm will be replaced with underground piping.

E. RMU - 1 Leachate System

Leachate generated by RMU-1 is pumped from the RMU-1 landfill leachate pumps and tank T-165 into the RMU-1 lift station tank (T-160). The leachate received by the lift station is transferred by pump through double walled underground piping and aboveground piping, then to the Leachate Tank Farm through aboveground piping.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-160 LIFT STATION	automatic shut off and level indicator with high and high/high level alarms (PLC controlled)	carbon steel	3,000 storage/ treatment	leachate	RMU-1 Landfill	above ground	7,563 gallons	3,000 gallons	Visual
T-165	automatic shut off and level indicator with high and high/high level alarms	Glass fused carbon steel	876,769 storage	leachate	RMU-1 Landfill	above ground	913,155 gallons	889,529 gallons	Visual

Tank T-160 and Lift Station are located within the footprint of the new Residuals Management Unit No. 2 (RMU-2) landfill. Tank T-160 and Lift Station will be closed in accordance with the Sitewide Closure Plan and will be demolished for the construction of later phases of RMU-2. Tank T-165 will be retained for management of leachate from RMU-1.

F. Leachate Storage Tanks T-101, T-102, T-103 and Frac Tank #3

The Leachate Tank Farm contains three (3) leachate storage tanks which are used to collect the aqueous phase leachate from active and closed landfills as well as other site waters. The leachate is held in the tanks and transferred to the AWTS on a demand basis. Also, located within this secondary containment area is Frac Tank # 3 which is used for storage of aqueous waste prior to treatment at the AWTS or SLF 7 leachate prior to offsite shipment for treatment or incineration.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-101 STORAGE (southern)	level indicator and controller and overflow pipe to sump	carbon steel	350,000 storage/ treatment	aqueous waste	East of North Salts	above ground	500,959 gallons	392,765 gallons	visual
T-102 STORAGE (middle)	level indicator and controller and overflow pipe to sump	carbon steel	350,000 storage/ treatment	aqueous waste	East of North Salts	above ground	500,959 gallons	392,765 gallons	visual
T-103 STORAGE (northern)	level indicator and controller and overflow pipe to sump	carbon steel	350,000 storage/ treatment	aqueous waste	East of North Salts	above ground	500,959 gallons	392,765 gallons	visual
FRAC TANK #3	level indicator with high and high/high level alarms (PLC controlled)	carbon steel	21,000 storage	aqueous waste	East of North Salts	above ground	500,959 gallons	392,765 gallons	visual

G. Waste Stabilization Facility

Stabilization is a process that results in the reduction in the mobility (or leachability) of hazardous components within a hazardous waste matrix. This stabilization is accomplished by inducing a chemical reaction between the hazardous components and one or more reagents, such as cement, cement kiln dust, lime, flyash or other pozzolanic materials.

Typical materials to be stabilized are inorganic waste water treatment sludges, media with metals, contaminated soils, sand blast grit, incinerator ash, incinerator slag, emissions control dust and debris. These waste streams are chemically compatible and have no reactive properties, therefore, compatibility concerns are minimal.

Waste Profiles are carefully reviewed for EPA codes, components, types of metals present and stabilization recipe (type and quantity of reagents). Generally, bulk loads are processed as individual batches. Drum or other small quantities of waste and bulk loads that have similar characteristics, non-conflicting EPA waste codes and the same stabilization recipe may be combined to increase the batch size for processing.

Waste water from equipment wash down or compatible hazardous and non-hazardous gate receipts may be used as the water source in the recipe. The EPA codes will be tracked through the process tankage and the impact on the treatment standards will be assessed for each batch prior to processing. Alternatively, city water or non-hazardous site waters may be used to avoid code conflict.

The bulk waste material to be stabilized arrives at the site in dump trailers, rolloff boxes, drums, pneumatic trailers, and other types of containers. The waste can be wet, sticky, cohesive, dusty and contain rock, pipe sections, metal, concrete, rags, wire and other debris.

The majority of the waste that requires stabilization is deposited in a mixing basin. Reagents are metered into the basin in accordance with a predetermined recipe. Water is added to the mixture, and the waste with reagent and water is mixed to a homogeneous mixture. The stabilized waste mixture is then removed from the pit with a backhoe, loaded into a dump truck or container, and transported to the landfill or an off-site disposal facility. Waste in drums can be emptied into the pit using a forklift and drum handler or placed full into the pit and broken apart with the mixing backhoe.

Microencapsulation is a specified technology involving the immobilization of contaminants on debris by stabilization. Stabilization treatment is performed in the mixing basin (pit) system. As it is not possible to develop a waste stream specific recipe, the requirement is to utilize sufficient stabilization media to treat all surfaces. For material or debris that is not easily manageable in the mixing pits, a slurry of stabilization media can be mixed in the pit and transferred into the waste container where the material will be encapsulated.

Debris that may not be physically suitable for the stabilization equipment, or that contains organic contamination (e.g. pump contaminated with leachate) may be managed by macroencapsulation. This type of debris is placed in a non-degradable container such as a poly drum or HDPE box. The void space is then eliminated by the addition of stabilization material that does not need to be held and tested or other non-degradable absorbent/space filler. The container is then permanently sealed and disposed of in the landfill.

Stabilization-Northern Expansion Tanks

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
MIXING PIT 1	visual observation during operation	carbon steel	20,354 treatment	RCRA/TSCA wastes	Stab. Northern Expansion	underground	Double walled underground tank	Double walled underground tank	sensor probe
MIXING PIT 2	visual observation during operation	carbon steel	20,354 treatment	RCRA/TSCA wastes	Stab. Northern Expansion	underground	Double walled underground tank	Double walled underground tank	sensor probe

Stabilization-Southern Expansion Tanks

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
TA-1 PROCESS WATER	high level indicator	rubber lined carbon steel	20,000 storage	aqueous waste, miscellaneous site waters	Stab. Southern Expansion	above ground	28,174 gallons	24,739 gallons	visual
TA-2 PROCESS WATER	high level indicator	rubber lined carbon steel	20,000 storage	aqueous waste, miscellaneous site waters	Stab. Southern Expansion	above ground	28,174 gallons	24,739 gallons	visual

H. Truck Wash Facility

The Truck Wash Facility is comprised of the Truck Wash Building and the Truck Wash Bay. A collection tank (T-120) is contained in the Truck Wash Building for holding wash water accumulated as a result of washings from the Truck Wash Bay. Tank T-120 is permitted for hazardous waste in case collected wash waters are determined to be hazardous.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-120 WASH WATER STORAGE	electronic level control	FRP	1,650 storage	wash water	Truck Wash Building	aboveground	1,659 gallons	1,650 gallons	visual

I. Groundwater Pumping Systems

The groundwater pumping system tanks were constructed as part of the Corrective Measures Program at Model City. Originally installed as Interim Corrective Measures to check the spread of groundwater contamination and, ultimately, to improve groundwater quality in the affected areas, these systems were determined to be capable of achieving the goals of the Corrective Action Program and were made Final Corrective Measures by the NYSDEC on February 13, 2001.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	TANK CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-8001	level indicator with high and high/high level alarms (PLC controlled)	carbon steel	5,000 storage	groundwater	West Drum Area	above ground	6,445 gallons	5,000 gallons	visual
T-8002	level indicator with high and high/high level alarms (PLC controlled)	FRP	550 storage	groundwater	West Drum Area	above ground	6,445 gallons	5,000 gallons	visual
T-8004	level indicator (PLC controlled)	FRP	550 storage	groundwater	South of SLF 3	above ground	892 gallons	550 gallons	visual
T-8005	automatic shut off and high level alarm	carbon steel	300 storage	groundwater	South of SLF 10	above ground	356 gallons	300 gallons	visual
T-8006	automatic shut off and high level alarm	carbon steel	300 storage	groundwater	East of SLF 12	above ground	356 gallons	300 gallons	visual
T-8007	automatic shut off and high level alarm	FRP	500 storage	groundwater	South of PCB Warehouse	above ground	539 gallons	500 gallons	visual
T-8008	automatic shut off and high level alarm	FRP	500 storage	DNAPL	Tank T-125/T-100 Area	above ground	571,328 gallons	424,410 gallons	visual
T-8009	automatic shut off and high level alarm	HDLPE	525 storage	groundwater	Inside T.O. Building CSA	above ground	853 gallons	525 gallons	visual
T-8010	automatic shut off and high level alarm	HDPE	1,000 storage	groundwater	South of South Trailer Parking CSA	above ground	1,300 gallons	1,000 gallons	visual

J. Process and Secondary Containment Sump Systems

SUMP	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
FILTER PRESS SUMP SYSTEM	daily visual inspection and pumped as needed	concrete with FRP insert	175 storage	aqueous waste/floor washdowns	Filter Press Room AWTS Building	underground	Sump provided with FRP box insert and leak detection.	N/A- double walled sump	leak detection view pipe
AWTS BLDG. UNLOADING PAD SYSTEM	daily visual inspection and pumped as needed	concrete	14,851	aqueous waste/floor washdowns	South side of AWTS Building	underground	N/A - part of containment for unloading pad	N/A - part of containment for unloading pad	not required
AWTS BLDG. FLOOR SUMP SYSTEM	daily visual inspection and pumped as needed	concrete	230	aqueous waste/floor washdowns	Floor in AWTS Building	underground	N/A - part of containment for building	N/A - part of containment for building	not required

K. Fuels Tanks

The fuels tanks in the Process Area were previously used for bulking, storage and transfer of fuel and incinerable wastes such as PCB liquids, sludges and organic wastes. These tanks provided for the separation of solvent, oil and incinerable material, disposal of wastewater and sludge, and the blending and storage of fuels and incinerables for off-site shipment. All fuels tanks have been emptied, cleaned, removed and certified closed. Final closure of the secondary containment and underlying soils for all fuels tank areas is being addressed as part of the facility Corrective Measures.

L. Fac Pond 5 Tank

The Fac Pond 5 tank will be located on the berm of the surface impoundment. The tank will store waters pumped from the secondary collection sump of the impoundment. The surface impoundment (facultative pond) is used for storage of treated effluent from the AWTS.

TANK #	OVERFLOW CONTROL	MATERIAL OF CONSTRUCTION	CAPACITY IN GALLONS AND USAGE	CONTENTS	GENERAL LOCATION	VERTICAL LOCATION	SECONDARY CONTAINMENT VOLUME	REQUIRED CONTAINMENT VOLUME	LEAK DETECTION
T-9001	automatic shut off and level indicator with high level alarm	HDPE	1,100 storage	Secondary Leachate/Leak detection waters	East Berm of Fac Pond 5	above ground	Double walled tank	N/A	visual/leak detection valve

IV. PROCEDURES TO PREVENT HAZARDS

A. Inspections

Tanks will be inspected and evaluated according to the procedures and schedules provided in the CWM Inspection Plan.

B. Tank Inspection Criteria

Environmental Compliance Tank Inspection Criteria will generally include inspection items such as:

- above ground tank exterior free of signs of leakage, including discoloration that may be a residue of a prior release.
- above ground tank exterior free of signs of deterioration that could lead to potential leakage, including cracks, corrosion, defects, and obvious deformation.
- above ground tank ancillary equipment free of signs of leakage
- secondary containment shows no visible evidence of spills
- secondary containment intact and free of cracks which exhibit separation and coating is free of chips which expose the underlying concrete
- secondary containment not holding liquids for more than is allowable under the Inspection Plan
- overfill controls (where present) do not indicate overflow condition; overfill controls (where present) are operable
- liquids (not including condensate) not present in leak detection systems (visual or electronic indication); electronic leak detection systems (where present) are operable

C. Tank Assessments

All permitted hazardous waste tank systems must undergo a periodic assessment performed by an independent professional engineer who must certify that the tank is fit for continued use. Generally, all above ground tanks with secondary containment and leak detection are assessed once every five years. For certain tanks, an internal inspection is also required. The double walled, underground stabilization mixing pits and the AWTS floor sump are subjected to an annual, internal assessment. The assessment frequency and whether the tank will be internally inspected are specified in the attached Tank Assessment Schedule. In

addition, all secondary containments and sumps associated with permitted tank systems are inspected by a qualified inspector every year. Tank assessment and secondary containment inspection reports are submitted to the NYSDEC each year.

Tanks T-3010A, T-3010B, T-3010C, and T-3010D are part of the arsenic treatment system and will be periodically changed out as part of normal operations. During regular tank change out installations, CWM personnel will inspect the system components prior to start up to insure they are installed properly. In addition, the tanks, along with the associated flexible hoses and their connections, involved in the change out will be re-tested for tightness in accordance with the procedure specified in Section 3.2 of the "Tank System Design and Assessment Report for AWTS Arsenic Removal Tanks T-3010A/B/C/D". Also, prior to start up, CWM will comply with the requirements in Condition C.1.i.ii."b" of Exhibit D in Schedule 1 of Module I of the Permit. During start up after tank change out, CWM will visually inspect the system components to insure they are free of leaks and that any deficiencies are addressed immediately. Documentation of each tank change out, and associated tightness testing and installation inspections will be maintained on-site for Department review.

D. Overflow Protection

Generally, most tanks within the AWT system are connected to a programmable logic controller (PLC). This unit is programmed to continuously monitor tank level, pump status and valve positions for the process vessels. The logic in the PLC is arranged so that pumps are shut down should levels become too low or reach a pre-determined high or high-high level.

Tanks that are not equipped with mechanical or electronic overflow protection generally contain an overflow pipe which is directed into the tank's secondary containment. As part of normal operations, the process operators and department supervisors make visual checks of the status of the operation. Overflow conditions would be identified at that time. In addition, the Site Inspector inspects each permitted tank on a daily basis.

E. Repairs

When a system deficiency is identified by any of the above inspection programs, it will generally be repaired immediately, if possible. Otherwise, action will be initiated with an environmental or maintenance work order by the end of the next business day. The time period to complete a repair varies depending on the type and extent of the deficit. Some repairs, such as outdoor concrete work or coating applications cannot be efficiently completed during winter conditions. Major defects affecting human health or the environment such as a tank leak, require immediate action by taking the unit out of service. After repairs have been completed, the area will be re-inspected and the repairs will be documented on the work order or by a subsequent tank assessment or secondary containment inspection report.

V. REQUIREMENTS FOR IGNITABLE, REACTIVE AND INCOMPATIBLE WASTE STREAMS

The facility Waste Analysis Plan addresses the special hazards and compatibility concerns for tank storage. Ignitable or reactive wastes will only be placed in tanks which are designed for storage of ignitable or reactive wastes unless the tank is used for an emergency. The aqueous waste treatment system is equipped with treatment tanks designed to react and mix wastewaters requiring special treatment or handling techniques. These tanks are closed top tanks meeting the buffer zone requirements of NFPA Combustible Liquids Code (1984). All tanks must be at least 50 feet internal to property lines or public roadways. NFPA 30 sets minimum buffer distances required for Class I, II and IIIB materials at 5 feet from a building. The distance increases depending on capacity.

Process wastewater, other site water or city water may be added prior to the addition of concentrated incoming wastewaters to control the generation of significant heat during mixing. All reaction vessels and tanks which could be subject to significant chemical reactions are equipped with the appropriate level, pH and/or temperature monitoring devices.

Mixing of incompatible wastes, which could produce an uncontrolled reaction is avoided by adhering to a prescribed process for purging and flushing of all process lines and tanks following transfer operations.

Incompatible wastes which could produce an uncontrolled reaction will not be mixed in storage tanks. Control of waste mixtures in storage tanks will be accomplished by actual laboratory bench tests if the material to be stored in a tank is different than the existing stored material.

Procedures to prevent incompatible mixtures in tanks are detailed in the Waste Analysis Plan. Materials that indicate signs of reaction which may exceed the design specifications of the vessel will not be stored in the same tank. Hazardous wastes will not be placed into an unwashed tank which previously held an incompatible waste or material.

VI. AIR EMISSION STANDARDS

Air emission standards for tanks are specified in 6NYCRR 373-2.29 and 40CFR 264/265.1080-1091 (Subpart CC), which became effective on December 6, 1996. RCRA Subpart CC is applicable to owners and operators of a TSDF which treats, stores or disposes of hazardous waste containing greater than 500 ppmw volatile organics in tanks, surface impoundments and containers. If Subpart CC wastes are managed in tanks, either Level 1 or Level 2 controls must be implemented.

Level 1 controls are based on the size of the tank, vapor pressure of the waste contained in the tank and the use of the tank. As long as the tank and its contents meet the specifications below, Level 1 controls consisting of a fixed roof with no cracks, gaps or leaks (conservation vents and relief devices are allowed) are sufficient. All closure devices must be maintained in the closed position except when necessary to access the waste or equipment under the cover.

Tank size (gallons)	Maximum vapor pressure
≥ 40,000	< 5.2 kPa (< 0.75 psi)
≥ 20,000 but < 40,000	< 27.6 kPa (< 4.5 psi)
< 20,000	< 76.6 kPa (< 11.1 psi)

Level 2 controls are required for tanks that do not meet the Level 1 criteria and for tanks in which stabilization of wastes with greater than 500 ppmw volatile organics is performed. Level 2 tanks must be vented to a control device. Stabilization (any physical or chemical process used to reduce the mobility of hazardous constituents or eliminate free liquids, except for the addition of absorbent to the surface of a waste without mixing) must be performed in an enclosure vented to a control device.

Based on volatile organic content of the leachate from SLF 1-6, SLF 7, SLF 10 and SLF 11, the lift stations and collection tanks associated with these landfills, as well as the SLF 1-11 oil/water separator system and the leachate storage tanks in the Leachate Tank Farm, are subject to Subpart CC requirements. Based on vapor pressure, Level 1 controls are sufficient for these tanks. Tanks associated with SLF 12 and RMU-1 contain leachate with less than 500 ppmw volatile organics at the point of origin and are exempt from Subpart CC requirements.

AWTS tanks associated with the treatment of leachate from SLF 1-6, SLF 7, SLF 10 and SLF 11 are also subject to Subject CC requirements. These tanks must also meet Level 1 controls based on the vapor pressure of the waste. All AWTS tanks downstream of the carbon adsorbers contain treated wastewater meeting the exit concentration and are exempt from Subpart CC requirements. Other AWTS tanks, e.g., the special treatment tanks, may be used for wastes containing greater than 500 ppmw volatile organics and would then be subject to Subpart CC requirements.

CWM limits the types of waste processed through the stabilization facility to those containing less than 500 ppmw volatile organics. Therefore, the stabilization mixing pits are exempt from Subpart CC requirements. Liquids contained in tanks TA-1 and TA-2 contain less than 500 ppmw volatile organics and are exempt from Subpart CC requirements.

Tanks associated with the groundwater pumping systems are part of the facility corrective measures and are exempt from Subpart CC requirements.

APPENDIX D-3, SECTION VII

TANK ANCILLARY EQUIPMENT
TIGHTNESS TESTING PROCEDURES
FOR
UNDERGROUND HAZARDOUS WASTE TRANSFER LINES

VII. Procedures for Pressure Testing of Underground Hazardous Waste Transfer Lines

The procedures in this section are not required for leachate piping under waste within the boundaries of a landfill liner and piping associated with the river discharge of treated wastewater.

1. **Procedures for Hydrostatic Testing the Inner Carrier Pipe of Double-Walled Underground Transfer Lines:**

   The Permittee shall perform either of the two (2) hydrostatic test procedures specified below, as derived from the "Plastic Pipe Institute=s (PPI=s) Technical Report 31 (TR-31)". The Permittee, at its discretion, may use a "tracer" (e.g., dye, etc.) in the water used in these tests to differentiate it from other liquids that may be present. The pressure measurement device used in either of these procedures must be incremented at, and sensitive to pressure fluctuations of 1 psi or less. Also, regardless of which test is used, the Permittee shall, throughout the test=s duration, periodically inspect the down-gradient end of the outer containment pipe associated with the section of inner carrier pipe being tested, for signs of liquid discharge. If liquid discharge is observed, or if a tracer is used and it is detected in the liquid, it shall be assumed to be leakage.

   a. Pressure Drop Procedure -

      1. Pipe to be tested shall be filled with fresh water or Department approved alternate, and have all air bled off from its highest point.
      2. Pipe shall be pressurized to not less than 1.5 times the system operating pressure with a minimum of 11 psi.
      3. Maintain this test pressure for four (4) hours by adding sufficient liquid at hourly intervals as necessary, to each time re-establish the test pressure.
      4. Drop the pressure by 10 psi, and measure and record the pressure one (1) hour thereafter. If the final pressure is within 5% of this reduced pressure, the pipe has passed the test.

      If any pipe fails to pas the above test, prior to initiating any leak location and repair activities, the Permittee, at its discretion, may perform the Volume Loss Procedure specified in Sub-section Ab@ below to verify that the pressure loss is not due to pipe expansion.

   b. Volume Loss Procedure -

      1. Pipe to be tested shall be filled with fresh water or Department approved alternate, and have all air bled off from its highest point.

2. Pipe shall be pressurized to not less than 1.5 times the system operating pressure with a minimum of 11 psi.
3. Maintain this test pressure to compensate for pipe expansion for four (4) hours by adding sufficient liquid at hourly intervals as necessary, to each time re-establish the test pressure.
4. After the four (4) hour expansion period, the test period shall begin lasting a maximum of three (3) hours. At hourly intervals, liquid shall be added as necessary, to each time re-establish the test pressure. The amount of liquid which is added, if any, shall be measured and recorded each hour.
5. The amount of liquid added after the first hour of the test period and, if necessary, the cumulative amounts added after hours two (2) and three (3), shall be compared to the Expansion Allowance Criteria presented in Table VIII-1 at the end of this Section.
6. If the cumulative quantity of liquid added each hour is equal to, or less than the applicable quantity presented in Table VIII-1, the pipe has passed the test.

2. **Procedure for Testing the Outer Containment Pipe of Double-Walled Underground Transfer Lines:**

The test procedure which follows must be performed prior to burying or otherwise obscuring from view, the installed, or repaired/altered section of the outer containment pipe.

a. Air Pressure Procedure -

1. Pipe to be tested shall be pressurized with air at ambient temperature to not less than 1.5 times the system operating pressure with a minimum of 10 psi.
2. After a minimum of one (1) hour of stabilization, the pipe shall be re-pressurized, if necessary, to re-establish the test pressure.
3. At one-quarter (1/4) hour intervals (i.e., every 15 minutes) after the end of the stabilization period, the pressure will be measured using a pressure measure device which is incremented at, and sensitive to pressure fluctuations of 1 psi or less. These pressure measurements shall be recorded. Also, each time a pressure measurement is taken, at a minimum, the entire length of the newly installed pipe, or the length of the repaired/altered section, shall be inspected for any visible or audible signs of escaping air.

4. The test period shall be a minimum of one (1) hour and shall terminate with a final check of the pressure and inspection of the pipe. The test shall be considered passed if there are no visible or audible signs of escaping air along the pipe and there is no detectable pressure drop.

Table VII 1
Allowances for Plastic Pipe Expansion Under Test Pressure
(Gallons per 100 feet of pipe)

Nominal Pipe Size (inches)	1-Hour Test Duration (gals. / 1 hr.)	2-Hour Test Duration (gals. / 2 hrs.)	3-Hour Test Duration (gals. / 3 hrs.)
3	0.10	0.15	0.25
4	0.13	0.25	0.40
6	0.30	0.60	0.90
8	0.50	1.0	1.5
10	0.75	1.3	2.1
11	1.0	2.0	3.0
12	1.1	2.3	3.4

APPENDIX D-3, SECTION VIII

TANK SYSTEM ASSESSMENT TABLE

Tank ID	Most Recent Assessment prior to January 2004 (year)	Internal Tank Inspection Required (yes/no)	Tank ID	Most Recent Assessment Prior to January 2004 (year)	Internal Tank Inspection Required (yes/no)
T-710	2002	no	T-810	2002	no
T-820	2002	no	T-850	1997	yes
T-1010	1999	yes	T-1020	1999	yes
T-1111	2003	no	T-1112	1999	no
T-1310	2003	no	T-3011	2003	no
T-3012	2002	no	T-100	1999	yes
T-125	1999	no	T-8008	2002	no
T-58	2003	yes	T-210	2001	yes
T-220	2010[3]	no	T-230	2003	yes
T-310	2001	no	T-320	2001	no
T-3010A	2013[5]	no	T-3010B	2013[5]	no
T-3010C	2013[5]	no	T-3010D	2013[5]	no
T-3007	1999	yes	T-3008	1999	yes
T-52	2003	no	T-3001	1999	no
T-3002	1999	no	T-3003	1999	no
T-3009	2000	yes	T-105	2003	yes
T-130	1999	yes	T-107	2001	no
T-108	2001	no	T-109	2001	no
T-110	2001	no	T-111	2001	no
T-158	2001	no	T-159	2001	no
T-150	2003	yes	T-160	2002	no
T-165	2010[3]	yes	T-101	1999	yes
T-102	1999	yes	T-103	1999	yes
Frac Tank 3	1999	no	Mix Pit Tank 1	2003[1]	yes
Mix Pit Tank 2	2003[1]	yes	TA-1	2003	no

Modified: Nov. 2013

Tank ID	Most Recent Assessment prior to January 2004 (year)	Internal Tank Inspection Required (yes/no)	Tank ID	Most Recent Assessment Prior to January 2004 (year)	Internal Tank Inspection Required (yes/no)
TA-2	2003	no	T-120	1999	no
T-8001	1999	no	T-8002	1999	no
T-8004	1999	no	T-8005	1999	no
T-8006	1999	no	T-8007	2001	no
T-8009	2012[4]	no	T-8010	2012[4]	no
Filter Press Sump Tank	2003[2]	yes	T-9001	TBD[6]	no

FOOTNOTES:

1. Mix Pit Tanks 1 & 2 shall be assessed annually instead of every five years in accordance with Condition B.1.c.i in Exhibit D of Schedule 1 of Module I of the Permit.
2. The Filter Press Tank Sump shall be assessed annually instead of every five years since it is part of the AWT secondary containment system, in accordance with Condition B.1.c.i in Exhibit D of Schedule 1 of Module I of the Permit.
3. Year of Tank T-165 & T-220 installation assessment.
4. Year of Tank T-8009 & T-8010 installation assessment.
5. Year of Tank T-3010A, T-3010B, T-3010C & T-3010D initial assessment. These tanks shall be re-assessed upon each operational change out in accordance with Condition C.1.i.ii."b" of Exhibit D in Schedule 1 of Module I of the Permit.
6. Year of Tank T-9001 instillation assessment.

FIGURES
&
CAPACITY CALCULATIONS

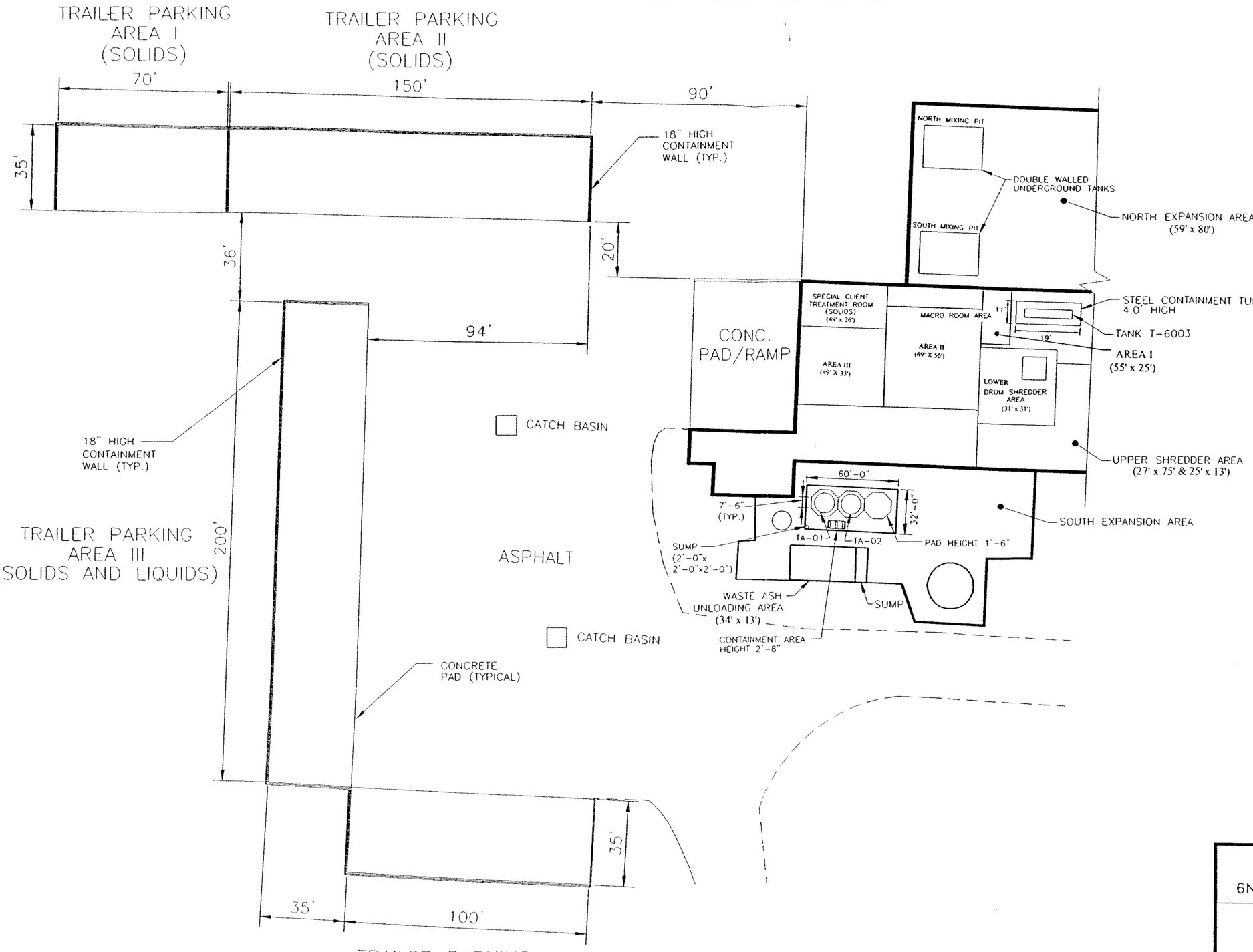
FOR

TANK SYSTEMS'
SECONDARY CONTAINMENT AREAS

FIGURE D-4

STABILIZATION FACILITY
SOUTH EXPANSION

TANKS TA-1 AND TA-2



NOTES:

1. BASE MAP BY RUST ENVIRONMENT & INFRASTRUCTURE 1/25/95. UPDATED BY BLASLAND, BOUCK AND LEE FEBRUARY 2001.
2. A MINIMUM OF TWO FEET BETWEEN CONTAINERS AND ROWS OF DRUM PAIRS WILL BE USED AS GUIDANCE FOR AISLE SPACING THROUGHOUT THE FACILITY.
3. CONTAINERS WILL BE STORED A MINIMUM OF 2 FEET FROM EDGE OF CONTAINMENT.
4. THIS FIGURE REPRESENTS THE CURRENT STORAGE ARRANGEMENTS AS OF FEBRUARY 2001.
5. DRAWING IS NOT TO SCALE. LOCATIONS OF FEATURES SUCH AS NORTH AND SOUTH PIT ARE APPROXIMATE.
6. TRAILER PARKING AREAS HAVE A MAXIMUM LIMIT OF 48 ROLLOFFS BASED ON AN AVERAGE DIMENSION OF 8'W X 22'L.
7. SOLID STORAGE:
   AREA I: 6 ROLLOFFS
   AREA II: 14 ROLLOFFS
   AREA III: 19 ROLLOFFS
   AREA IV: 9 ROLLOFFS
8. LIQUID STORAGE:
   AREA III: 21,836 GALLONS
   AREA IV: 10,918 GALLONS

L: REF*=QFF
P: STD-PCP/BL
4/2/01 ROC-S4-SLM
05052030/05052C13.DWG

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STABILIZATION FACILITY

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FIGURE D-4

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANKS TA-01 AND TA-02

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

60.0′ x 32.0′ x 2.67′ = 5,126.4 CF

Sump:

2.0′ x 2.0′ x 2.0′ = 8.0 CF

Subtractions:

Note:
Additional volume displacements such as tank legs, FRP stairway and carbon will only account for a very small volume and will not be included in the net containment volume.

Pump Pad:

12.0′ x 5.83′ x 1.5′ = 104.94 CF

Tank pads (3):

$3(\frac{1}{2}(8 \times 9.0' \times 7.5' \times 1.5')) = 1{,}215.0$ CF

Pads:

3.25′ x 0.67′ x 1.0′ = 2.18 CF

Pads:

4.0′ x 2.75′ x 1.42′ = 15.62 CF

Pads:

$(\frac{1}{2}(3.0' \times 2.75' \times 1.42')) = 5.86$ CF

Pads (2):

2(2.0′ x 2.0′ x 1.17′) = 9.36 CF

TANKS TA-01 AND TA-02 (continued)

Pads:

4.0′ x 2.0′ x 1.42′ = 11.36 CF

Pads (6):

6(0.67′ x 0.67′ x 1.3′) = 3.5 CF

Total Available Volume:

5,126.4 + 8.0- 104.94 - 1,215.0 - 2.18 - 15.62 - 5.86 - 9.36 - 11.36 - 3.5 = 3,766.58 CF
= 3,766.58 CF x 7.48 gal/CF = 28,174.0 gallons

Required Volume:

Volume of Largest Tank:

Tank TA-01 = 20,000 gallons

25 Year, 24 Hour Precipitation Event:

′ x 32.0′ x 0.33′ = 633.6 CF = 633.6 CF x 7.48 gal/CF = 4,739.3 gal
0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain).
This assumes that the rain gutters for tanks fail.

Required Volume:

20,000 gallons + 4,739.3 gallons = 24,739.3 gallons

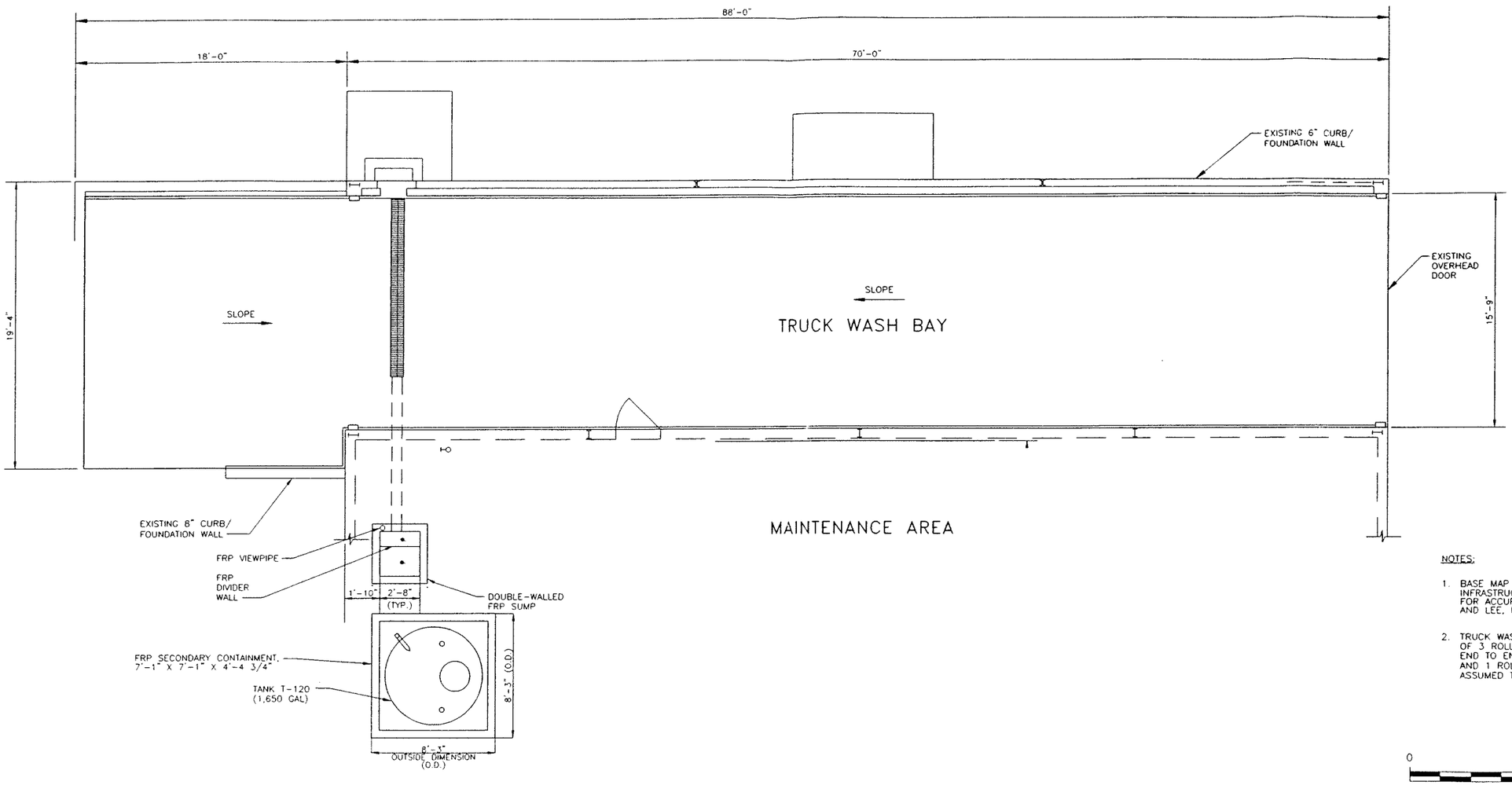
CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.
Calculations are based on eliminating the tank interconnections.

FIGURE D-7

TRUCK WASH BUILDING

TANK T-120



NOTES:

1. BASE MAP BY RUST ENVIRONMENT & INFRASTRUCTURE, 1/25/95. UPDATED FOR ACCURACY BY BLASLAND, BOUCK AND LEE, INC., JANUARY 2001.

2. TRUCK WASH BAY HAS A MAXIMUM LIMIT OF 3 ROLLOFFS: 2 ROLLOFFS END TO END, A 2' AISLE SPACING, AND 1 ROLLOFF. EACH ROLLOFF IS ASSUMED TO BE 8'W X 22'L.

0 8' 16'

GRAPHIC SCALE

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TRUCK WASH BUILDING

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FIGURE D-7

L: REF*=OFF
P: STD-PCP/BL
3/13/01 ROC-54-SLM
05052030/05052G18.DWG

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-120

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

7.1′ x 7.1′ x 4.4′ = 221.8 CF

Total Available Volume:

221.8 CF x 7.48 gal/CF = 1,659.1 gallons

Required Volume:

Volume of Largest Tank:

Tank T-120 = 2,118 gal

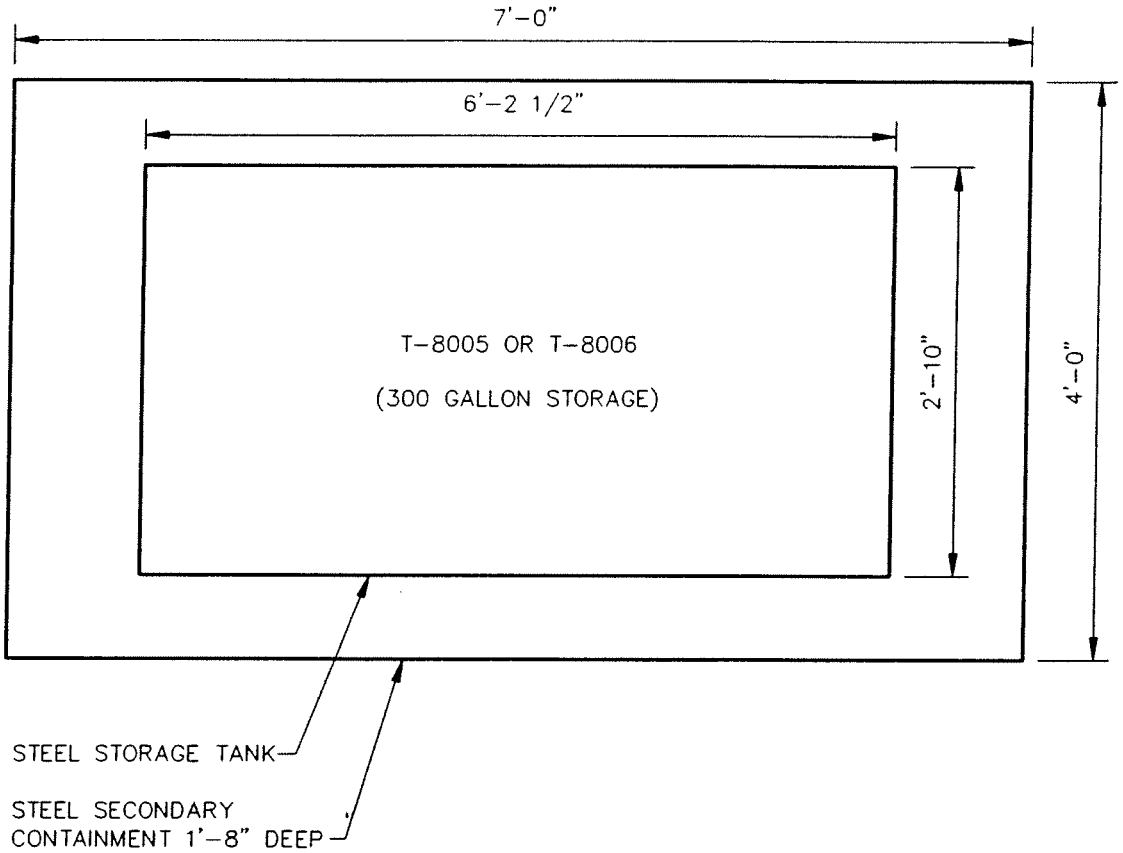
The maximum operating capacity of T-120 is 1,650 gal as determined by a side overflow.

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-9

TANKS T-8005 AND T-8006



PLAN

NOT TO SCALE

NOTE:

TANKS T-8005 AND T-8006 ARE IDENTICAL AS SHOWN.

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TANKS T-8005 OR T-8006

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FIGURE **D-9**

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/12/01 SYR-54-HSB DJP SDL
05052080/05052G19.DWG

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

CALCULATION SHEET

NYSDEC OHMS Document No. 201469232-00022

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-8005

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

4.0′ x 7.0′ x 1.7′ = 47.6 CF

Subtractions:

Note:
Additional volume displacements such as tank supports will only account for a very small volume and will not be included in the net containment volume.

Available Volume:

47.6 CF x 7.48 gal/CF = 356.0 gallons

Required Volume:

Volume of Largest Tank:

Tank T-8005 = 300 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-8006

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

4.0′ x 7.0′ x 1.7′ = 47.6 CF

Subtractions:

Note:
Additional volume displacements such as tank supports will only account for a very small volume and will not be included in the net containment volume.

Available Volume:

47.6 CF x 7.48 gal/CF = 356.0 gallons

Required Volume:

Volume of Largest Tank:

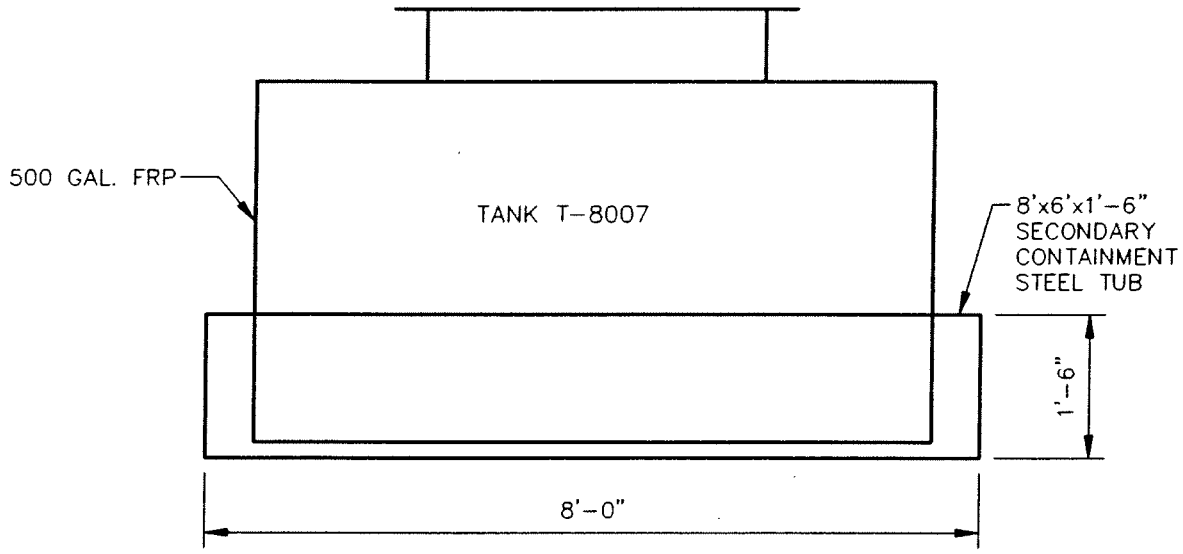
Tank T-8006 = 300 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-10

TANK T-8007



ELEVATION

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-8007

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **D-10**

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
2/28/01 SYR-54-HSB DJP
05052080/05052G10.DWG

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

CALCULATION SHEET

NYSDEC OHMS Document No. 201469232-00022

PROJECT NO.: 05052.030

CL[illegible]: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001

SU[illegible]JECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-8007

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

8.0′ x 6.0′ x 1.5′ = 72.0 CF

Subtractions:

Note:
Additional volume displacements such as tank supports will only account for a very small volume and will not be included in the net containment volume.

[illegible] Available Volume:

72.0 CF x 7.48 gal/CF = 538.6 gallons

Required Volume:

Volume of Largest Tank:

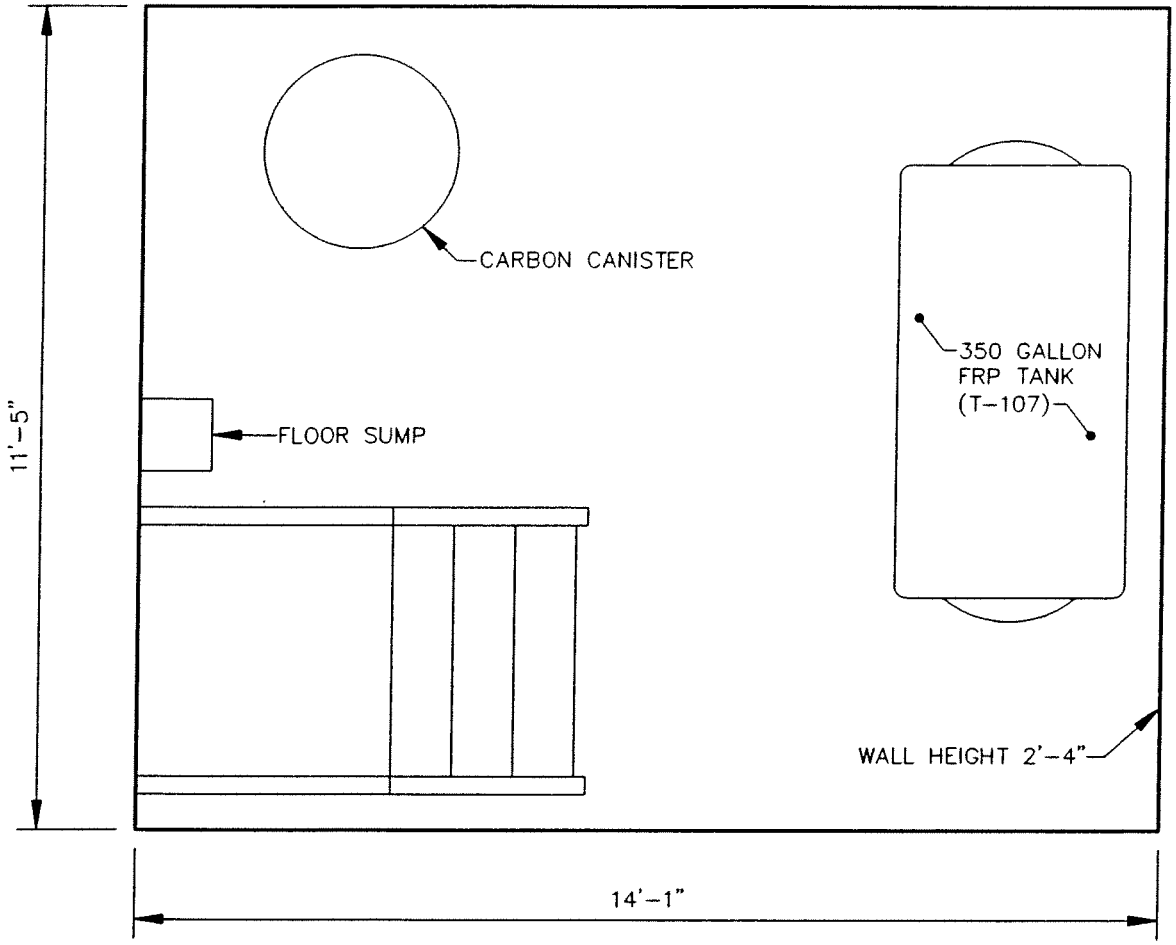
Tank T-8007 = 500 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-11

TANK T-107



PLAN

NOT TO SCALE

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TANK T-107

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FIGURE D-11

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-DJP SDL ROC-54-SLM
05052080/05052G24.DWG

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

CALCULATION SHEET

NYSDEC OHMS Document No. 201469232-00022

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-107

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

14.1′ x 11.4′ x 2.3′ = 369.7 CF

Subtractions:

Note:
Additional volume of floor sump and displacements such as steel saddles, FRP stairway and carbon can will only account for a very small volume and will not be included in the net containment volume.

Total Available Volume:

369.7 CF x 7.48 gal/CF = 2,765.4 gallons

Required Volume:

Volume of Largest Tank:

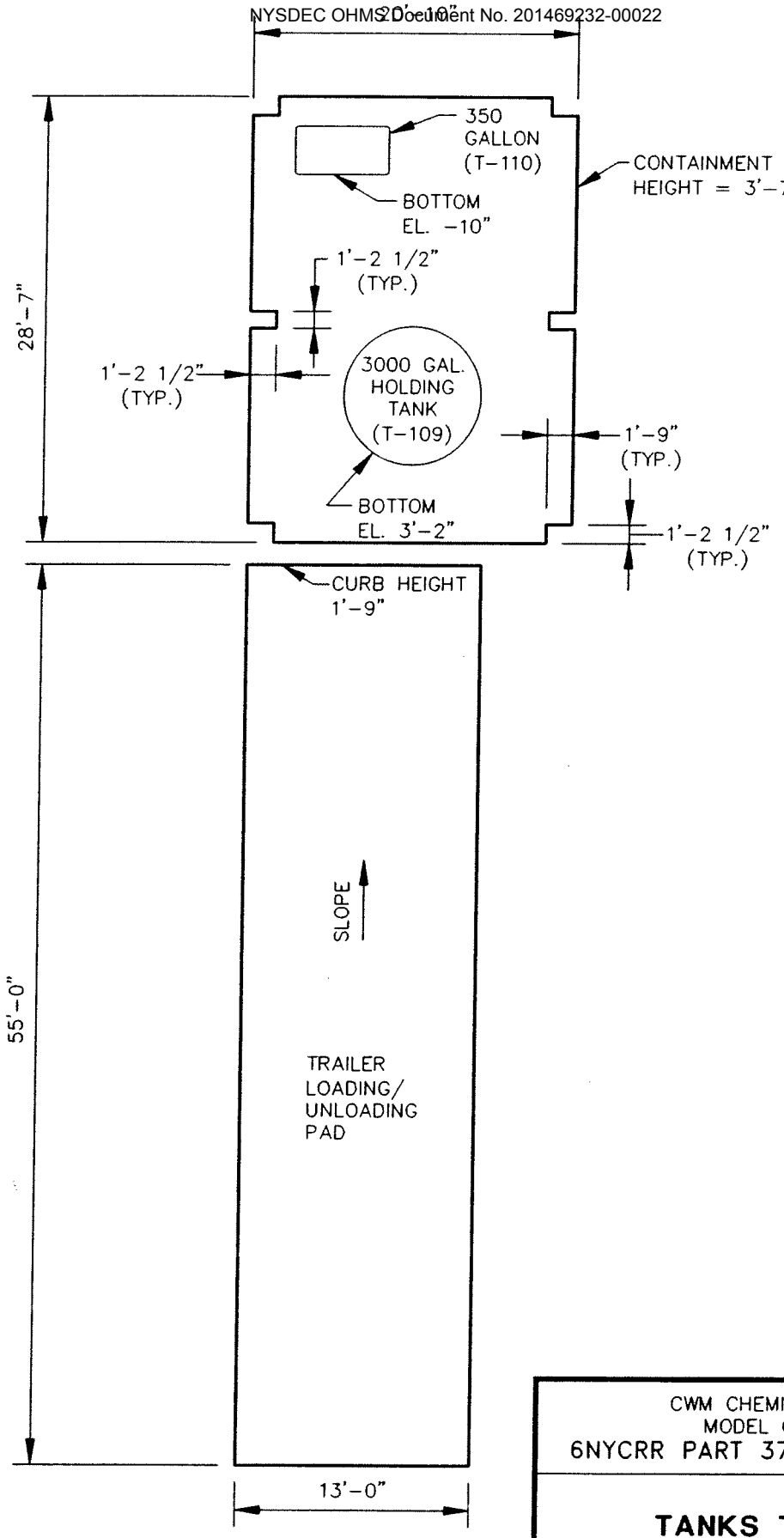
Tank T-107 = 350 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-12

TANKS T-109 AND T-110



PLAN

NOT TO SCALE

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-SDL DJP SDL ROC-54-SLM
05052080/05052G25.DWG

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TANKS T-109 & T-110

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FIGURE **D-12**

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engineers & scientists

CALCULATION SHEET

NYSDEC OHMS Document No. 201469232-00022

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANKS T-109 AND T-110

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

28.6′ x 20.8′ x 3.6′ = 2,141.6 CF

Subtractions:

Note:
Additional volume of floor sump and displacements such as tank legs, FRP stairway and carbon can will only account for a very small volume and will not be included in the net containment volume.

Corner Piers:

4 (1.2′ x 1.8′ x 3.6′) = 31.1 CF

Side Piers:

2 (1.2′ x 1.2′ x 3.6′) = 10.4 CF

Total Available Volume:

2,141.6 CF - 31.1 CF - 10.4 CF = 2,100.1 CF = 2,100.1 CF x 7.48 gal/CF = 15,708.7 gallons

Required Volume:

Volume of Largest Tank:

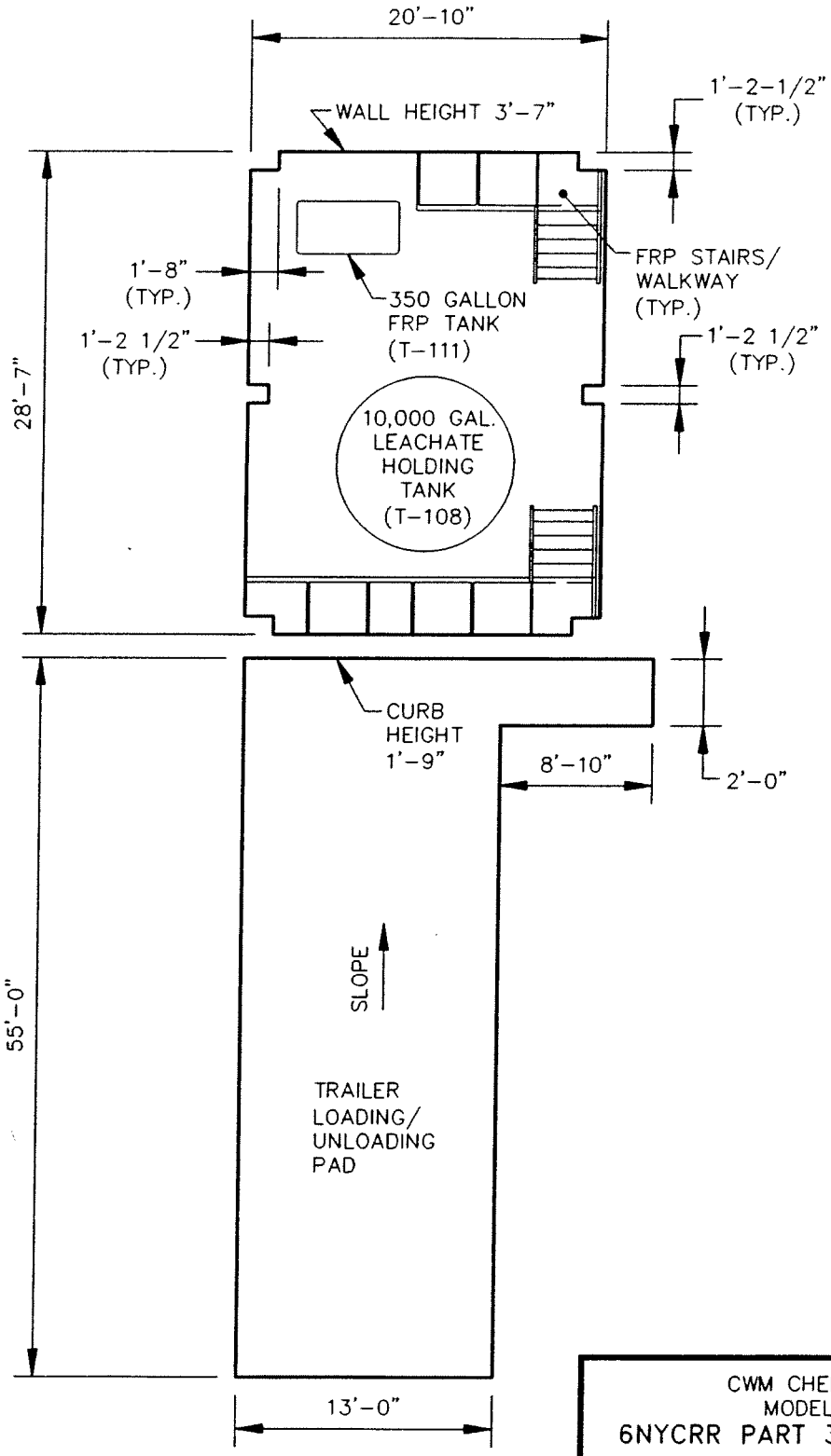
Tank T-109 = 3,000 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-13

TANKS T-108 AND T-111



PLAN
NOT TO SCALE

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-SDL DJP SDL ROC-54-SLM
05052080/05052G22.DWG

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TANKS T-108 AND T-111

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FIGURE **D-13**

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engineers & scientists

CALCULATION SHEET

NYSDEC OHMS Document No. 201469232-00022

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001

SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANKS T-108 AND T-111

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

28.6′ x 20.8′ x 3.6′ = 2,141.6 CF

Subtractions:

Note:
Additional volume of floor sump and displacements such as tank legs, FRP stairway and carbon can will only account for a very small volume and will not be included in the net containment volume.

Corner Piers:

4 (1.2′ x 1.8′ x 3.6′) = 31.1 CF

Side Piers:

2 (1.2′ x 1.2′ x 3.6′) = 10.4 CF

Total Available Volume:

2,141.6 CF - 31.1 CF - 10.4 CF = 2,100.1CF = 2,100.1CF x 7.48 gal/CF = 15,708.7 gallons

Required Volume:

Volume of Largest Tank:

Tank T-108 = 10,000 gallons

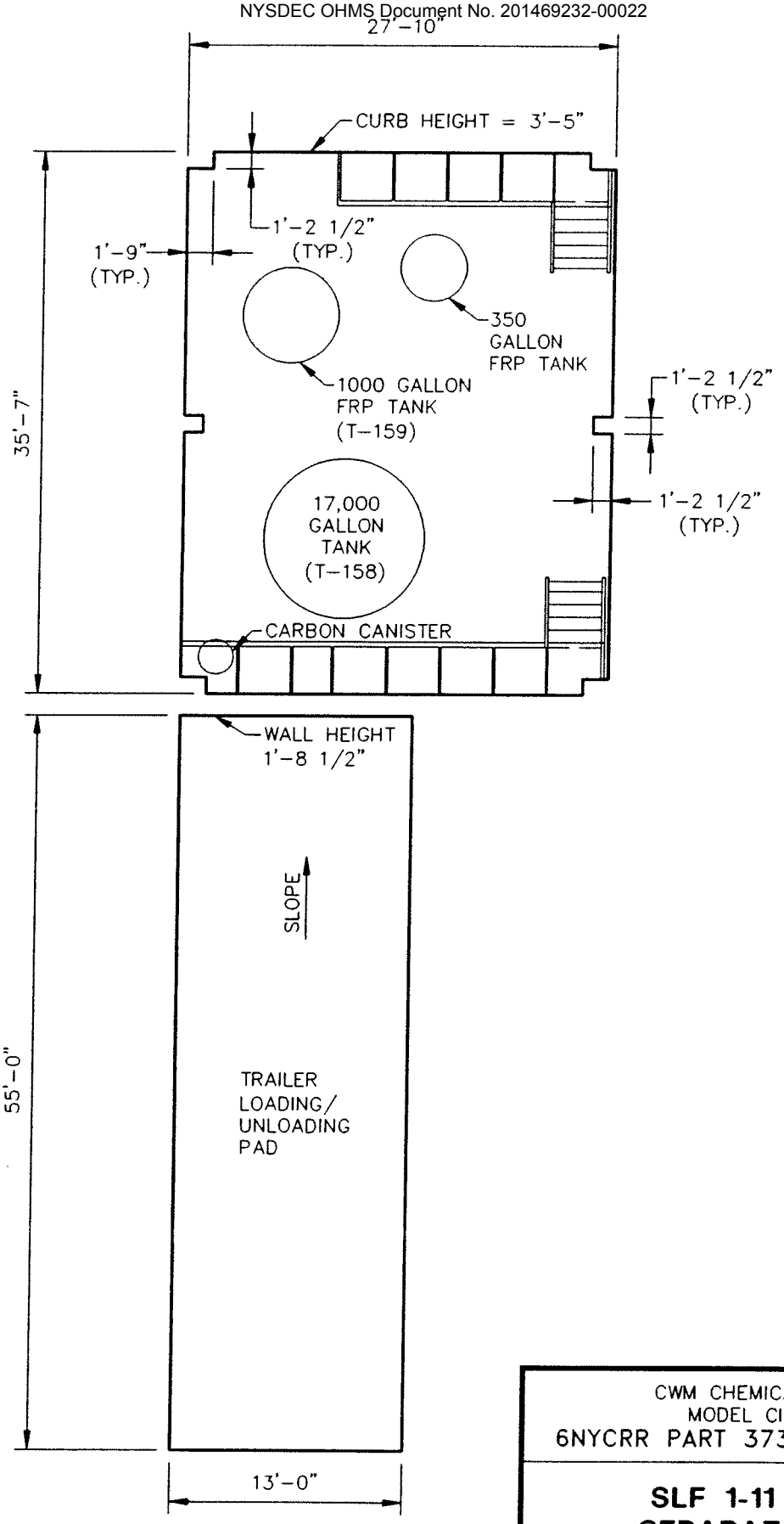
CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-14

SLF 1-11 OIL/WATER SEPARATOR BUILDING

TANKS T-158 AND T-159



PLAN

NOT TO SCALE

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-SDL DJP SDL ROC-54-SLM
05052080/05052G23.DWG

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6NYCRR PART 373 PERMIT APPLICATION

SLF 1-11 OIL/WATER SEPARATOR BUILDING

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FIGURE **D-14**

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CALCULATION SHEET

NYSDEC OHMS Document No. 201469232-00022

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001

SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANKS T-158 AND T-159

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

35.6′ x 27.8′ x 3.4′ = 3,364.9 CF

Subtractions:

Note:
Additional volume of floor sump and displacements such as steel tank supports, FRP stairway, piping, pumps and carbon can will only account for a very small volume and will not be included in the net containment volume.

Corner Piers:

4 (1.2′ x 1.8′ x 3.4′) = 29.4 CF

Side Piers:

2 (1.2′ x 1.2′ x 3.4′) = 9.8 CF

Total Available Volume:

3,364.9 CF - 29.4 CF - 9.8 CF = 3,325.7 CF = 3,325.7 CF x 7.48 gal/CF = 24,876.2 gallons

Required Volume:

Volume of largest tank:

Tank T-158 = 17,000 gal

CONCLUSIONS:

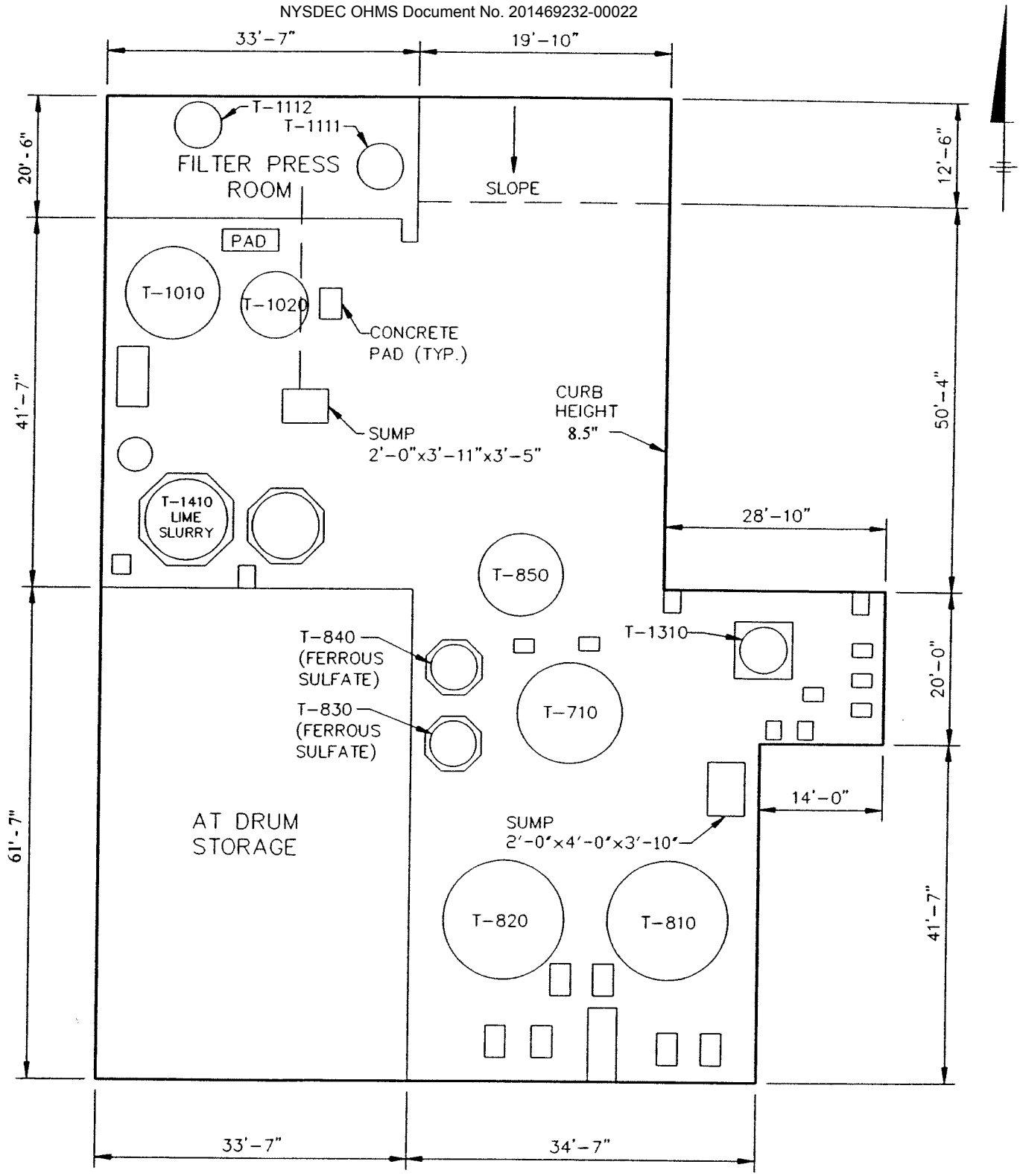
Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-15

AWTS BUILDING

TANKS

T-710	T-810
T-820	T-850
	T-1010
T-1020	T-1111
T-1112	T-1310



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
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6NYCRR PART 373 PERMIT APPLICATION

AWTS BUILDING

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE D-15

X: 05052X00.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-SDL DJP SDL ROC-54-SLM
05052080/05052G09.DWG

CALCULATION SHEET

AWTS BUILDING

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

(33.6' x 41.6') + (50.3' x 19.8') + (20.0' x 19.8') + (20.0' x 28.8') + (31.6' x 41.6') + (20.5' x 33.6')=

(5369.1ft^2 x 0.7') + 0.5(12.5' x 0.7' x 19.8') = 3845.0 CF

Sumps & Trenches:

(2.0' x 3.9' x 3.4') + (2.0' x 4.0' x 3.8') + (0.3' x 0.7' x 15') = 60.1 CF

Subtractions:

Note:
Additional volume displacements such as steel tank supports, piping, and pumps will only account for a very small volume and will not be included in the net containment volume.

Stairways (3):

3(3.2' x 2.2' x 0.7') = 14.8 CF

Pump Pad:

4.1' x 2.0' x 0.7' = 5.7 CF

Pump Pad:

2.0' x 5.0' x 0.6' = 6.0 CF

Stairway:

3.9' x 3.9' x 0.7' = 10.6 CF

Tank T-1310 Pad:

6.0' x 6.0' x 0.6' = 21.6 CF

Pump Pad:

2.2' x 5.0' x 0.7' = 7.7 CF

AWTS BUILDING (continued)

Pump Pads (5):

5(2.0' x 5.0' x 0.5') = 25.0 CF

Pump Pads (2):

2(1.5' x 3.7' x 0.5') = 5.6 CF

Pump Pad:

3.6' x 1.5' x 0.4' = 2.2 CF

Former Tank T-610 Pad:

6.5' x 6.5' x 0.5' = 21.1 CF

Walkway:

3.0' x 13.5' x 0.7' = 28.4'

Pump Pads (5):

5(2.0' x 5.0' x 0.5') = 25.0 CF

Pump Pad:

2.7' x 5.6' x 0.5' = 7.6 CF

Tank T-850:

$\pi \times 3.1'^2 \times 0.7'$ = 21.1 CF

Tank T-830 Pad:

(0.5 x 8 x 2.9' x 3.5') x 0.7' = 28.4 CF

Tank T-840 Pad:

(0.5 x 8 x 2.9' x 3.5') x 0.7' = 28.4 CF

Tank T-1410 Pad:

(0.5 x 8 x 5.2' x 6.2') x 0.7' = 90.3 CF

Tank T-910 Pad:

(0.5 x 8 x 5.2' x 6.3') x 0.7' = 91.7 CF

AWTS BUILDING (continued)

Tank T-1111:

$\pi \times 1.4'^2 \times 0.7' = 4.3$ CF

Tank T-1112:

$\pi \times 1.9'^2 \times 0.7' = 8.0$ CF

Tanks T-710, T-810 & T-820 Support Pedestals:

12(1.0' x 1.0') x 0.7' = 8.4 CF

Filter Press Room Roll-off:

8.0' x 22.0' x 0.7' = 123.2 CF

Filter Press Room Ramp:

2.0' x 10.2' x 0.7' = 14.3 CF

Filter Press Room Walkover:

4.0' x 8.0' x 0.3' = 10.0 CF

Filter Press Room Wall/Curb:

(33.6' + 20.5') x 0.75' x 0.7' = 28.4 CF

Total Available Volume:

3,845.0 CF + 60.1 CF - 637.8 CF = 3,267.3 CF = (3,267.3 CF x 7.48 gal/CF) = 24,440.0 gallons

Required Volume:

Volume of Largest Tank (Interconnected):

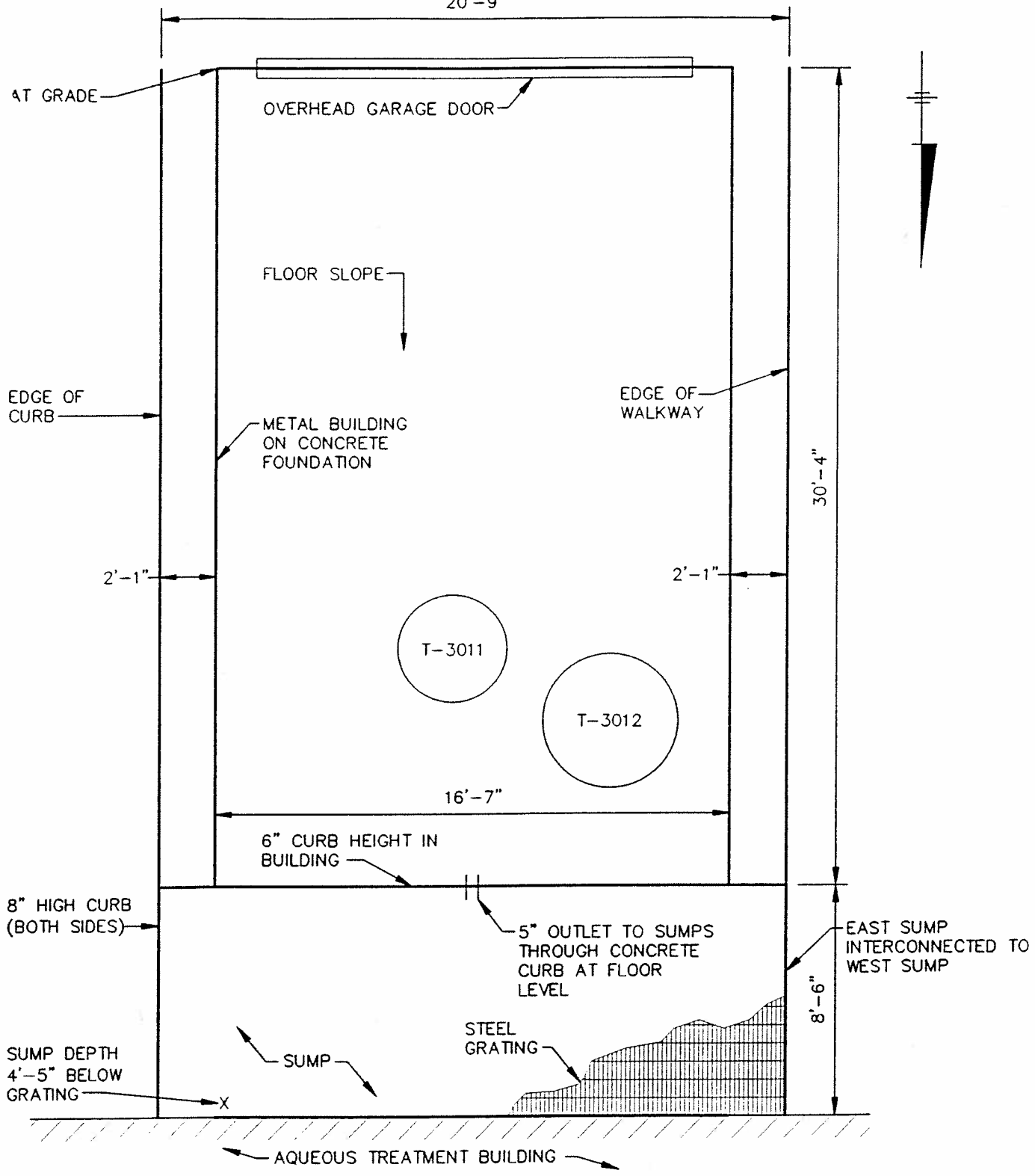
Tank T-710 + Tank T-810 + T-820 = 24,000 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore containment volume is acceptable.

FIGURE D-16

TANKS T-3011 AND T-3012



PLAN
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CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANKS T-3011 & T-3012

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE **D-16**

X: 05052X01.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/AP
12/28/01 SYR-54-HSB DJP SDL ROC-54-SLM
05052090/05052B02.DWG

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 12/21/2001
SUBJECT: Secondary Containment Calculations Reviewed By: AGL Date: 12/28/2001

TANKS T-3011 AND T-3012

TASK:

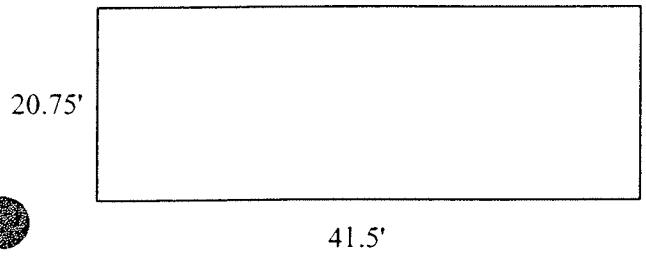
Calculate the total volume within the secondary containment area.

CALCULATIONS:

Dimensions (Individually):

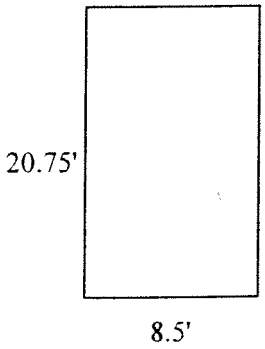
Ramp (East & West & Clarifier Building):

$20.75' x 41.5' x 0.667'$



Sump (East & West):

$8.5' x 20.75' x 4'$



Available Secondary Containment (East & West-Total):

Ramp Area (East & West-Total):

$41.5' * 20.75' * 0.667' * (0.50) = 287.2\,ft^3 \cong 2{,}148.1\,gallons * 2 = 4{,}296.3\,gallons$

Sump Area (East & West-Total):

$8.5' * 20.75' * 4' = 705.5\,ft^3 \cong 5{,}277.14\,gallons * 2 = 10{,}554.3\,gallons$

TANKS T-3011 AND T-3012(continued)

Total Available Secondary Containment (East & West-Total):

$$4{,}296.3 gallons + 10{,}554.3 gallons = 14{,}850.6 gallons$$

Subtractions:

Note:
Additional volume displacements such as steel tank supports, FRP stairway, piping, and pumps will only account for a very small volume and will not be included in the net containment volume.

25 Year, 24 Hour Precipitation Event:

East & West Ramp (minus clarifier building):

$$41.5' * 20.75' * 0.333' * 2 - (16.58' * 30.33' * 0.333') = 406.1 ft^3 \cong 3{,}037.3 gallons$$

0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain).

Sumps (East & West- Total):

$$8.5' * 20.75 * 0.333' = 58.7 ft^3 * 2 = 117.5 ft^3 \cong 878.6 gallons$$

0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain).

Total Precipitation:

$$3{,}037.3 gallons + 878.6 gallons = 3{,}915.9 gallons$$

Required Volume:

Largest Tank Volume: 375 gallons

Required Secondary Containment Including Precipitation Event (East/West & Clarifier Building-Total):

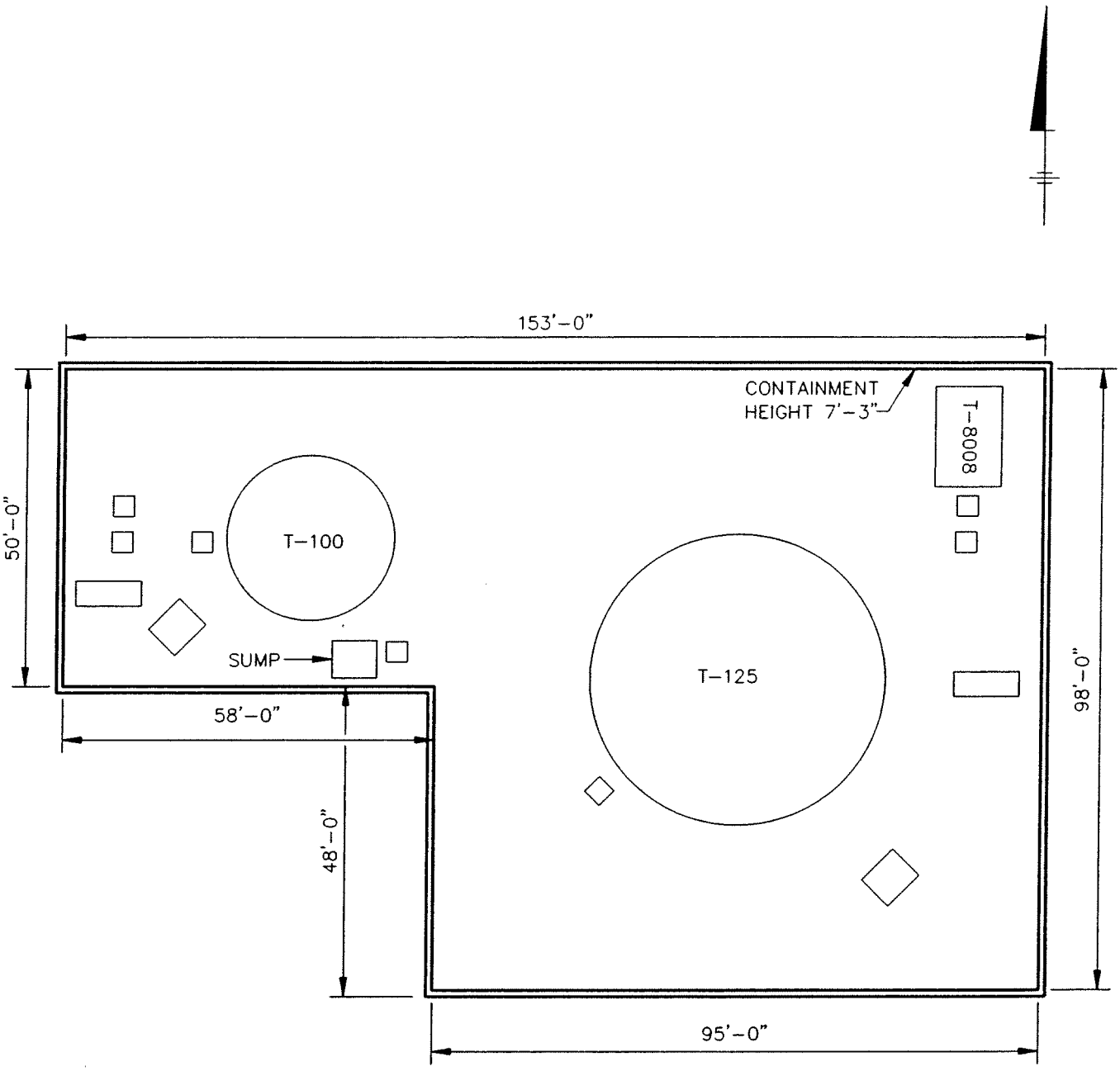
$$375 gallons + 3{,}915.9 gallons = 4{,}290.9 gallons$$

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable. Calculations are based on eliminating the tank's interconnections.

FIGURE D-17

TANKS T-100, T-125 AND T-8008



PLAN

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CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANKS T-100, T-125, & T-8008

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
D-17

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-HSB DJP SDL ROC-54-SLM
05052080/05052G20.DWG

CLIENT: CWM PROJECT: Permit Renewal Prepared By: CBT Date: 12/31/2001
SUBJECT: Secondary Containment Calculations Reviewed By: AGL Date: 12/31/2001

TANKS T-100, T-125, AND T-8008

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

(48.0′ x 95.0′ x 7.3′)+ (50.0′ x 153.0′ x 7.3′) = 89,133.0 CF

Subtractions:

Note:
Additional volume of sump and displacements such as tank supports, FRP stairway, piping and pumps will only account for a very small volume and will not be included in the net containment volume.

Tank T-100 Pad and Tank:

π x 18.0′^{2} x 7.25′ = 7,379.6 CF

Tank T-125 Pad:

π x 41.0′^{2} x 1.0′ = 5,281.0 CF

Concrete Pads:

4(1.0′ x 1.0′ x 0.7′) = 2.8 CF

Concrete Pads:

2(1.5′ x 4.5′ x 0.7′) = 9.5 CF

Concrete Pads:

2(1.83′ x 0.83′ x 0.96′) = 2.9 CF

Concrete Pad:

2.0′ x 2.0′ x 0.54′ = 2.2 CF

Concrete Pad:

6.0′ x 5.0′ x 0.8′ = 24 CF

TANKS T-100, T-125, AND T-8008 (continued)

Concrete Pad:

0.25' x 10.2' x 0.48' = 50.2 CF

Total Available Volume:

89,133.0 CF - 7,379.6 CF - 5,281.0 CF - 2.8 CF - 9.5 CF - 2.9 CF - 2.2 CF - 24 CF - 50.02 CF = 76,380.8 CF
= (76,380.8 CF x 7.48 gal/CF) = 571,328.4 gallons

Required Volume:

Volume of largest tank:

Tank T-125 = 394,271 gallons

25 Year, 24 Hour Precipitation Event:

(48.0' x 95.0' x 0.33') + (50.0' x 153.0' x 0.33') = 4,029.3 CF x 7.48 gal/CF = 30,139.2 gallons
0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain).
This assumes that the rain gutters for tanks fail.

Required Secondary Containment:

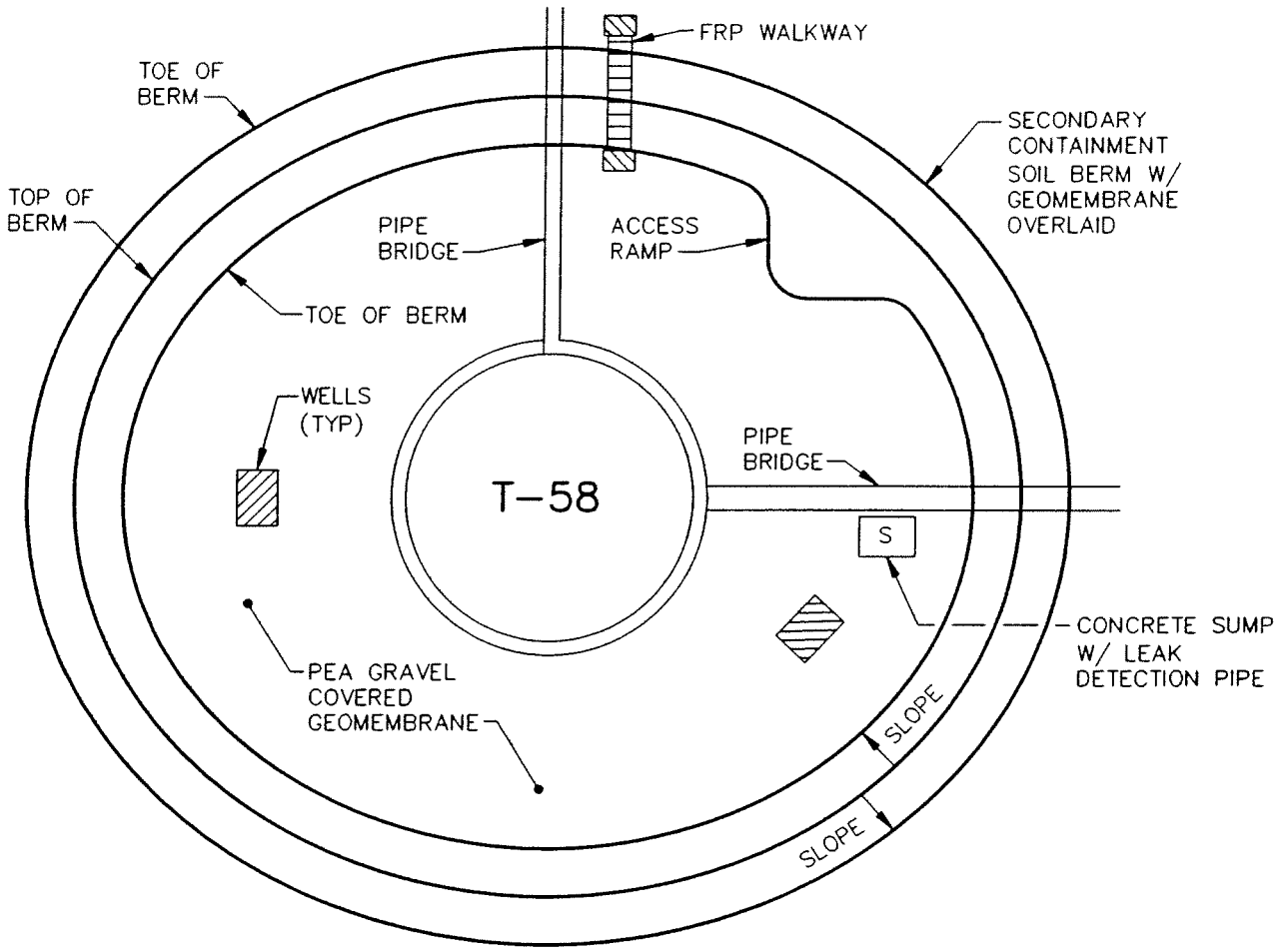
394,271 gallons + 30,139.2 gallons = 424,410.2 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.
Calculations are based on eliminating the tank interconnections.

FIGURE D-18

TANK T-58



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-58

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
D-18

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-DJP SDL ROC-54-SLM
05052080/05052G29.DWG

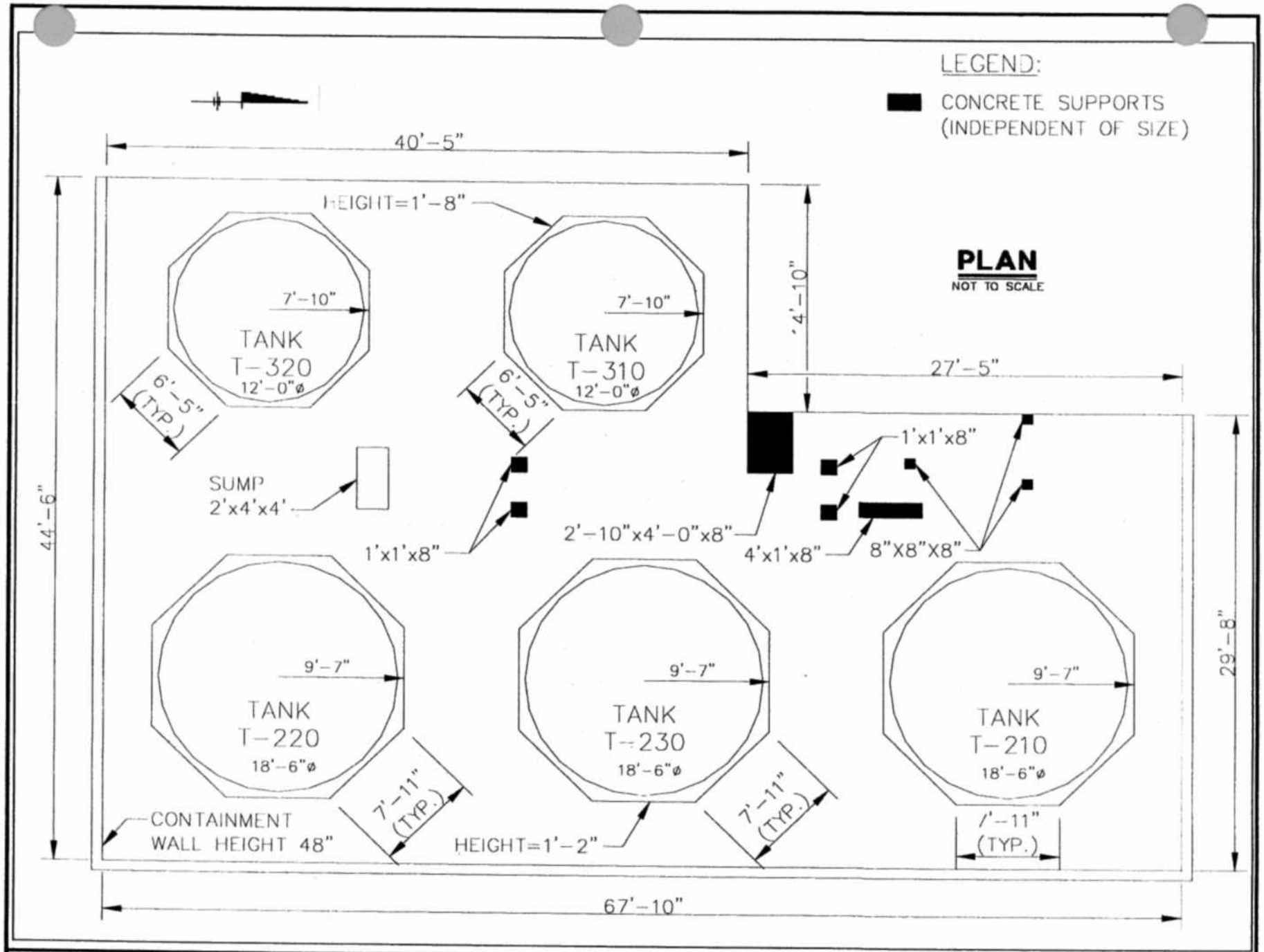
A VARIANCE FROM SECONDARY CONTAINMENT REQUIREMENTS IS ALLOWED FOR TANK T-58 IN ACCORDANCE WITH 6NYCRR 373-2.10(d)(7)

FIGURE D-19

AWT EAST TANK FARM

TANKS

T-210 T-220
T-230 T-310
T-320



EnSol, Inc. Environmental Solutions Niagara Falls, New York	CWM Chemical Services, LLC	6NYCRR PART 373 PERMIT APPLICATION AWTS EAST TANK FARM	Date: Aug-07 Project No: 07-7012 Figure: D-19

Modified: 06/10

BBL

CALCULATION SHEET

PROJECT NO.: 05052.030

CLIENT: CWM Chemical Services, LLC PROJECT: Permit Renewal Prepared By: PJC Date: 02/15 2001
TITLE: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001
Latest Revised Date: 01/12/2005

AWT EAST TANK FARM

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

(27.4′ x 29.7′ x 4.0′) + (40.4′ x 44.5′ x 4.0′) = 10,446.3 CF

Sump:

2.0′ x 4.0′ x 4.0′ = 32.0 CF

Subtractions:

Note:
Additional volume displacements such as small concrete supports, FRP stairway, piping, pumps, and carbon cans will only account for a very small volume and will not be included in the net containment volume.

Tanks T-210, T-220, and T-230 Pads:

3(0.5 x 8 x 7.9′ x 9.6′ x 1.2′) = 1,092.1 CF

Tanks T-210, T-220, and T-230:

$3(\pi \times 9.25'^2 \times 2.8') = 2{,}257.9$ CF

Tanks T-310 and T-320 Pads:

2(0.5 x 8 x 6.4′ x 7.8′ x 1.7′) = 678.9 CF

Tanks T-310 and T-320:

$2(\pi \times 6.0'^2 \times 2.3') = 520.2$ CF

Total Available Volume:

10,446.3 + 32.0 – 1,092.1 – 2,257.9 – 678.9 – 520.2 = 5,929.2 CF = 5,929.2 CF x 7.48 gal/CF = 44,350.4 gallons

Required Volume:

Volume of Largest Tank:

Tank T-310 = 30,457 gallons

BBL

CALCULATION SHEET

PROJECT NO.: 05052.030

CLIENT: CWM Chemical Services, LLC **PROJECT:** Permit Renewal **Prepared By:** PJC **Date:** 02/15 2001
TITLE: Secondary Containment Calculations **Reviewed By:** CBT **Date:** 02/19/2001
Latest Revised Date: 01/12/2005

AWT EAST TANK FARM (continued)

25-Year, 24-Hour Precipitation Event:

(27.4′ x 29.7′ x 0.33′) + (40.4′ x 44.5′ x 0.33′) = 861.8 CF x 7.48 gal/CF = 6,446.3 gallons
0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain).
This assumes that the rain gutters for tanks fail.

Required Volume:

30,457 gallons + 6,446.3 gallons = 36,903.3 gallons

CONCLUSIONS:

Available volume exceeds required volumes; therefore, containment volume is acceptable.
Calculations are based on eliminating the tank interconnections.

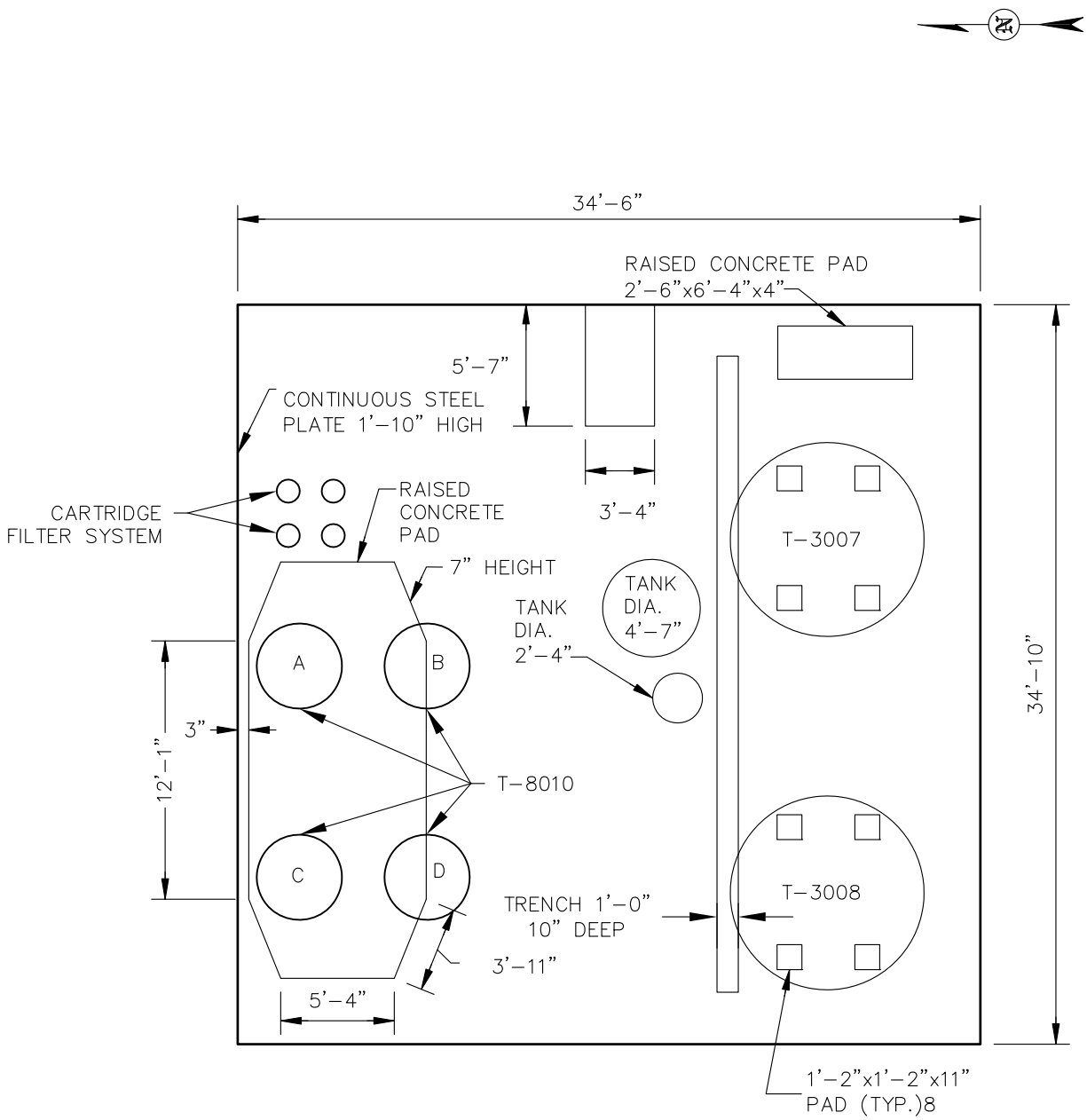
FIGURE D-20

WASTEWATER TREATMENT BUILDING

TANKS

T-3007	T-3008
T-3010A	T-3010B
T-3010C	T-3010D

Modified: Nov. 2013



PLAN

N.T.S.

Modified: Nov. 2013

WATER TREATMENT BUILDING 6NYCRR PART 373 PERMIT		
CWM CHEMICAL SERVICES LLC TOWN OF PORTER, STATE OF NEW YORK		
EnSol, Inc. Environmental Solutions	661 MAIN STREET NIAGARA FALLS, NY 14301 PHONE (716) 285-3920 FAX (716) 285-3928	FIGURE D-20
8/13/13	PN: 13-7028	

EnSol, Inc.
Environmental Solutions

PROJECT NO.:

CLIENT: CWM Chemical Services LLC **PROJECT:** 13-7028 **Prepared By:** TAS **Date:** 8/13/13
SUBJECT: Water Treatment Building Secondary Containment Calculations **Reviewed By:** BDS **Date:** 8/13/13

WATER TREATMENT BUILDING

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

34.5′ x 34.8′ x 1.83′ = 2,197.1 CF

Trench:

(29.9′ x 1.0′ x 0.8′) + (31.1′ x 1.3′ x 0.1′) = 27.9 CF

Subtractions:

Note:
Additional volume displacements such as steel tank supports, FRP stairway, piping, and pumps will only account for a very small volume and will not be included in the net containment volume.

Tank Pad:

[(12.083′ x 9.0′) + 2(3.75′ x 1.896′) + 2(3.75′ x 5.2083′)] x 0.5′ = 81.01 CF

Concrete pad:

6.3′ x 2.5′ x 0.3′ = 4.73 CF

Stairway:

5.7′ x 3.3′ x 1.8′ = 33.86 CF

4’-7” Tank:

π x $2.29'^2$ x 1.8′ = 29.65 CF

2’-4” Tank:

π x $1.17'^2$ x 1.8′ = 7.74 CF

Tank T-3007 and T-3008 Legs (8):

8(1.15′ x 1.15′ x 0.9′) = 9.52 CF

EnSol, Inc.
Environmental Solutions

PROJECT NO.:

CLIENT: CWM Chemical Services LLC **PROJECT: 13-7028** **Prepared By: TAS** **Date: 8/13/13**
SUBJECT: Water Treatment Building Secondary Containment Calculations **Reviewed By: BDS** **Date: 8/13/13**

WATER TREATMENT BUILDING (continued)

Cartridge Filters (4):

$4(\pi \times 0.54'^2 \times 1.5') = 5.50$ CF

Wall Outcrop:

$(^1/_2(14.4' + 15.5') 0.4) \times 1.8' = 10.76$ CF

Total Available Volume:

= 2,197.1 + 27.9 - 81.01 - 4.73 - 33.86 - 29.65 - 7.74 - 9.52 - 5.50 - 10.76 = 2,042.2 CF = (2,042.2 CF x 7.48 gal/CF) = 15,275.7 gallons

Required Volume:

Volume of Largest Tank (Interconnected):

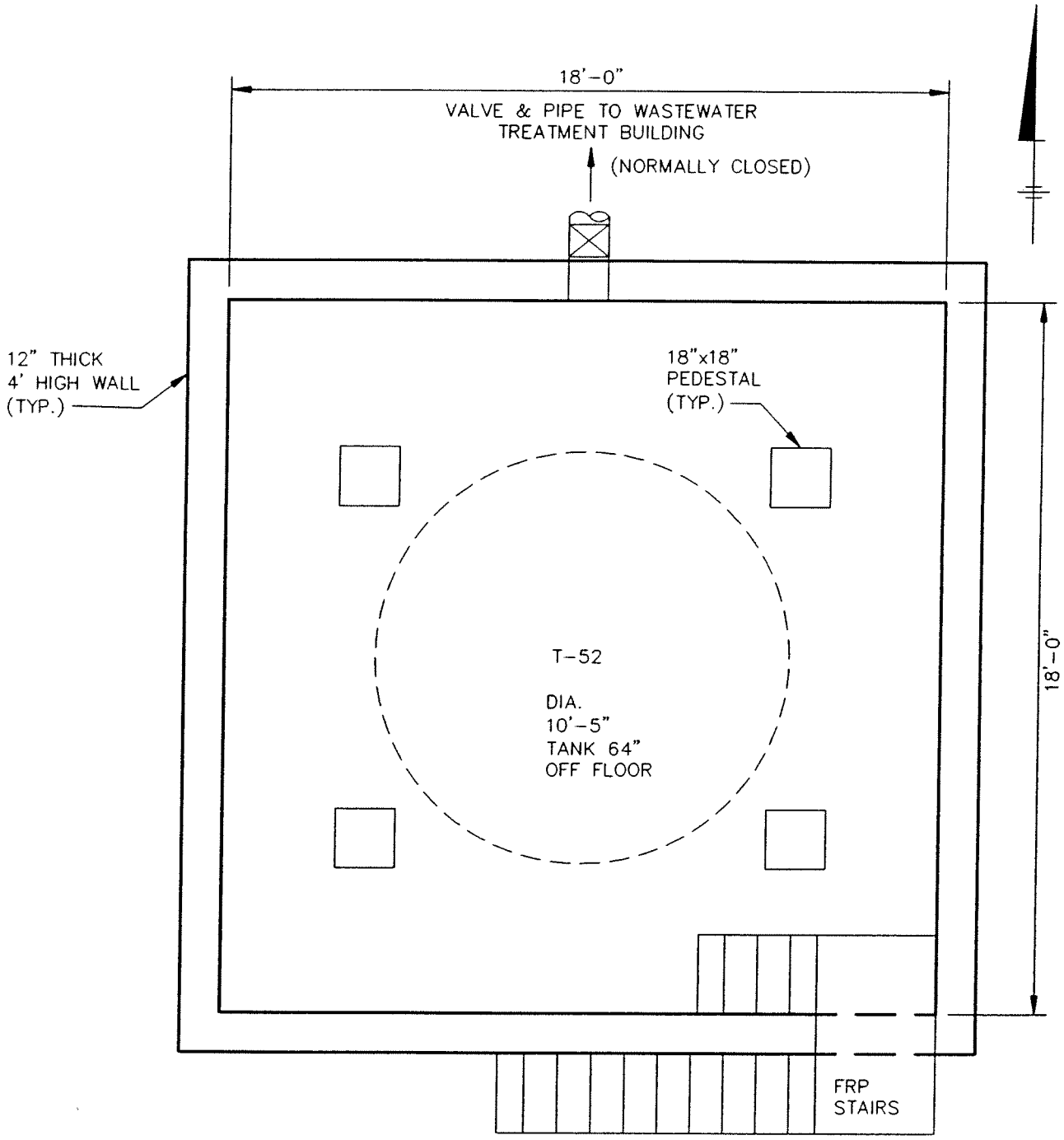
Tank T-3007 + Tank T-3008 = 15,200 gallons

CONCLUSIONS:

The available volume of secondary containment exceeds the volume of the largest tank (T-3007 and T-3008 interconnected).

FIGURE D-21

TANK T-52



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-52

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
D-21

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
4/2/01 SYR-54-HSB DJP SDL ROC-54-SLM
05052080/05052G17.DWG

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

CALCULATION SHEET

NYSDEC OHMS Document No. 201469232-00022

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-52

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

18.0′ x 18.0′ x 4.0′ = 1,296.0 CF

Subtractions:

Note:
Additional volume displacements such as steel tank supports, FRP stairway and piping will only account for a very small volume and will not be included in the net containment volume.

Concrete Tank Supports:

4(1.5′ x 1.5′ x 2.2′) = 19.8 CF

Total Available Volume:

1,296.0 CF - 19.8 CF = 1,276.2 CF = (1,276.2 CF x 7.48 gal/CF) = 9,546.0 gallons

Required Volume:

Volume of Largest Tank:

Tank T-52 = 7,600 gal

25 Year, 24 Hour Precipitation Event:

18.0′ x 18.0′ x 0.33′ = 106.9 CF = 106.9 CF x 7.48 gal/CF = 799.6 gallons
0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain).
This assumes that the rain gutters for tanks fail.

Required Volume:

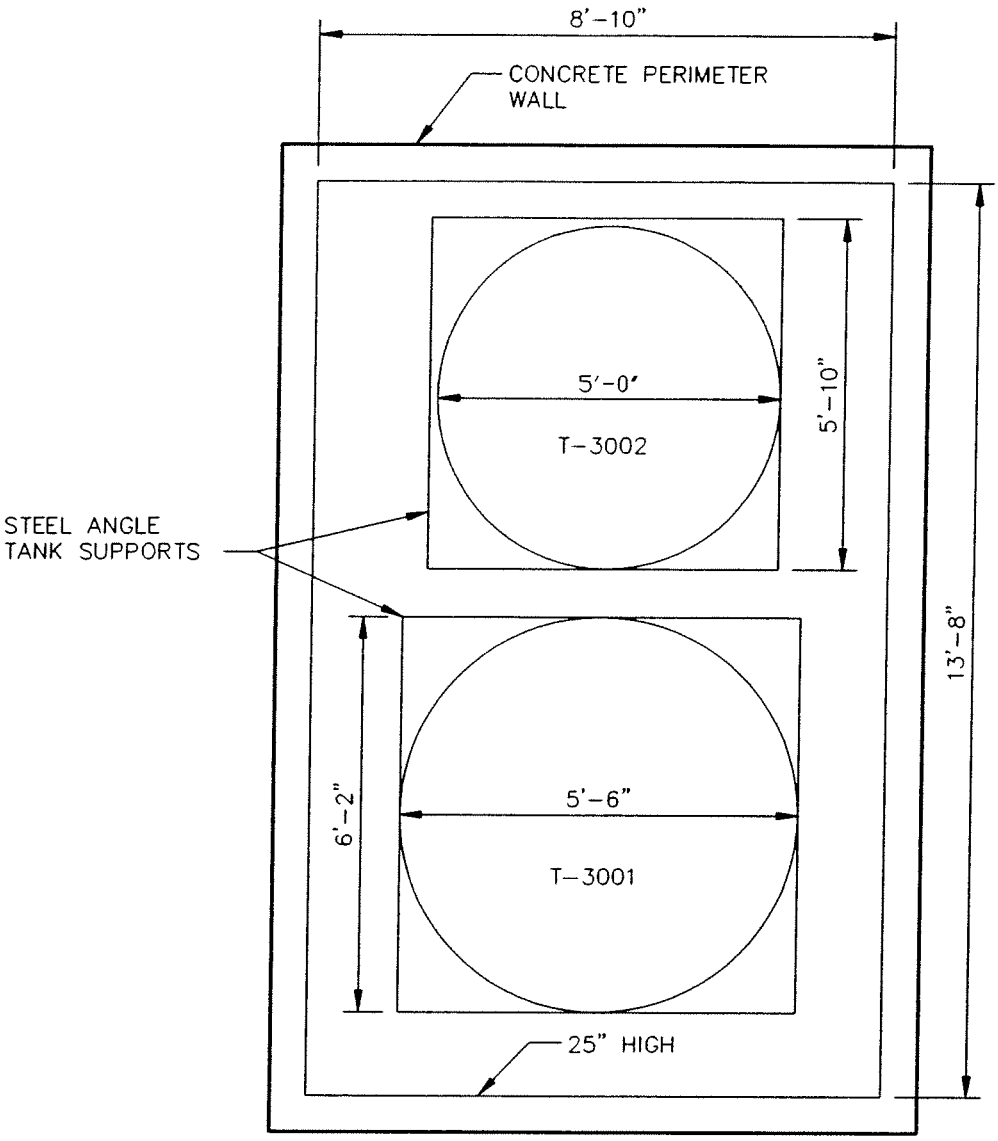
7,600 gallons + 799.6 gallons = 8,399.6 gallons

CONCLUSIONS:

[illegible]able volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-22

TANKS T-3001 AND T-3002



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANKS T-3001 AND T-3002

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE D-22

X: 05052X00.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-SDL DJP SDL ROC-54-SLM
05052080/05052G06.DWG

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

CALCULATION SHEET

NYSDEC OHMS Document No. 201469232-00022

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANKS T-3001 AND T-3002

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

13.7′ x 8.7′ x 2.1′ = 250.3 CF

Subtractions:

Note:
Additional volume displacements such as steel tank supports, and piping will only account for a very small volume and will not be included in the net containment volume.

Total Available Volume:

3 CF x 7.48 gal/CF = 1,872.2 gallons

Required Volume:

Volume of Largest Tank:

Tank T-3001 = 1,255 gallons

25 Year, 24 Hour Precipitation Event:

13.7' x 8.7' x 0.33' = 39.3 CF = 39.8 CF x 7.48 gal/CF = 294.0 gallons
0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain).
This assumes that the rain gutters for tanks fail.

Required Volume:

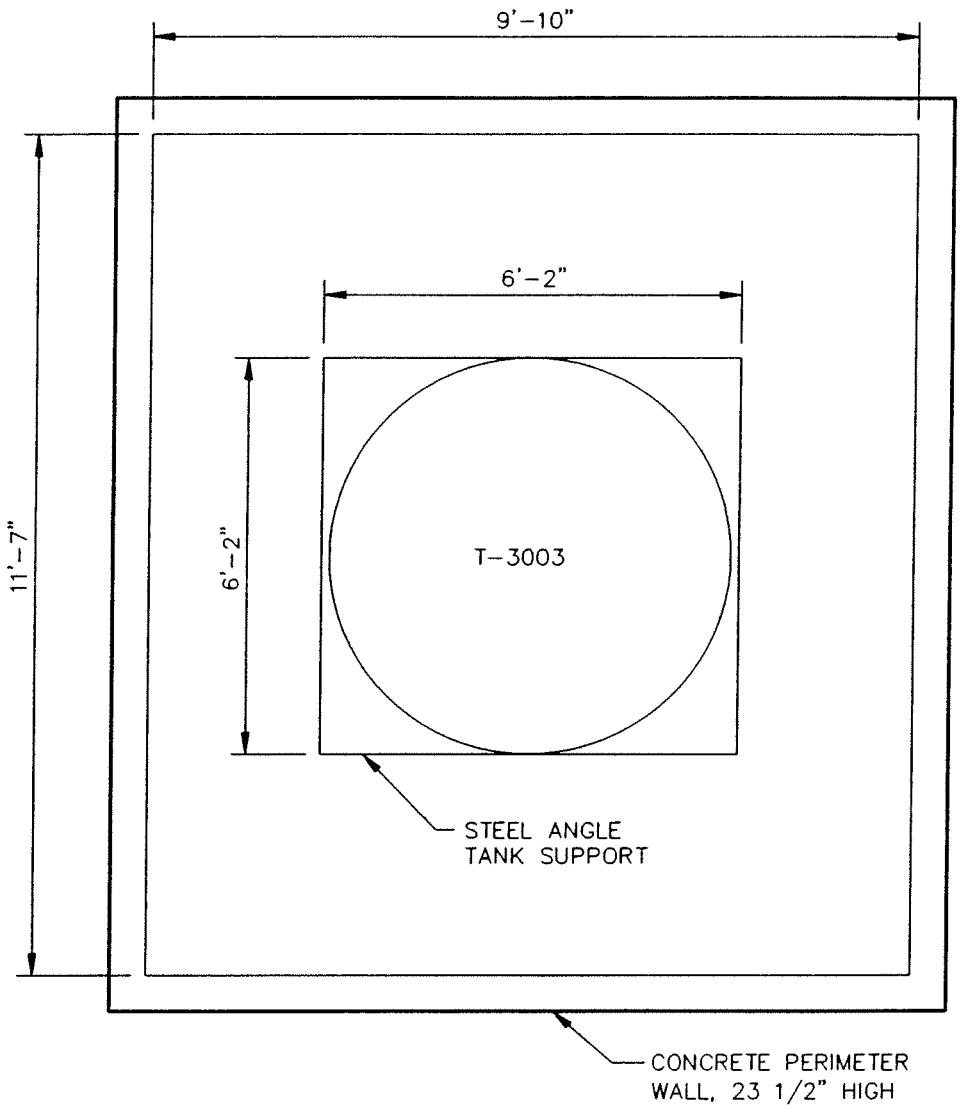
1,255 gallons + 294.0 gallons = 1,549.0 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.
Calculations are based on eliminating the tank's interconnections.

FIGURE D-23

TANK T-3003



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-3003

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
D-23

X: 05052X00.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-SDL DJP SDL ROC-54-SLM
05052080/05052G07.DWG

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-3003

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

11.6′ x 9.8′ x 1.96′ = 222.8 CF

Subtractions:

Note:
Additional volume displacements such as steel tank supports, and piping will only account for a very small volume and will not be included in the net containment volume.

Total Available Volume:

222.8 CF x 7.48 gal/CF = 1,666.5 gallons

Required Volume:

Volume of Largest Tank:

Tank T-3003 = 1,210 gallons

25 Year, 24 Hour Precipitation Event:

11.6' x 9.8' x 0.33' = 37.5 CF = 37.5 CF x 7.48 gal/CF = 280.5 gallons
0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain).
This assumes that the rain gutters for tanks fail.

Required Volume:

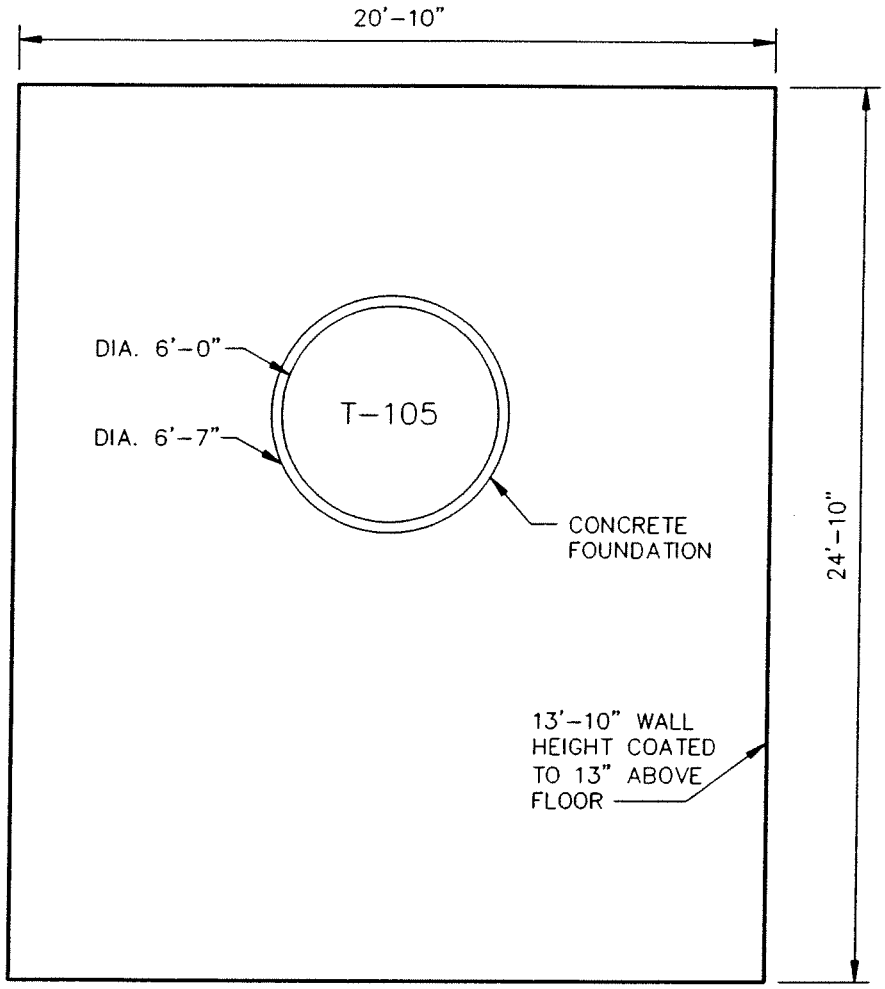
1,210 gallons + 280.5 gallons = 1,490.5 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.
Calculations are based on eliminating the tank's interconnections.

FIGURE D-24

TANK T-105



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-105

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **D-24**

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-HSB DJP SDL ROC-54-SLM
05052080/05052G11.DWG

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-105

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

24.8′ x 20.8′ x 1.1′ = 567.4 CF

Subtractions:

Note: Additional volume displacements such as steel tank supports, FRP stairway, piping, pumps and carbon can will only account for a very small volume and will not be included in the net containment volume.

Concrete Foundations:

$\pi \times 3.3'^2 \times 0.33' = 11.3$ CF

Column Foundations (4):

1.2′ x 1.2′ x 0.4′ x 4 = 2.3 CF

Total Available Volume:

567.4 CF - 11.3 CF - 2.3 CF = 553.8 CF = 553.8 CF x 7.48 gal/CF = 4,142.6 gallons

Required Volume:

Volume of Largest Tank:

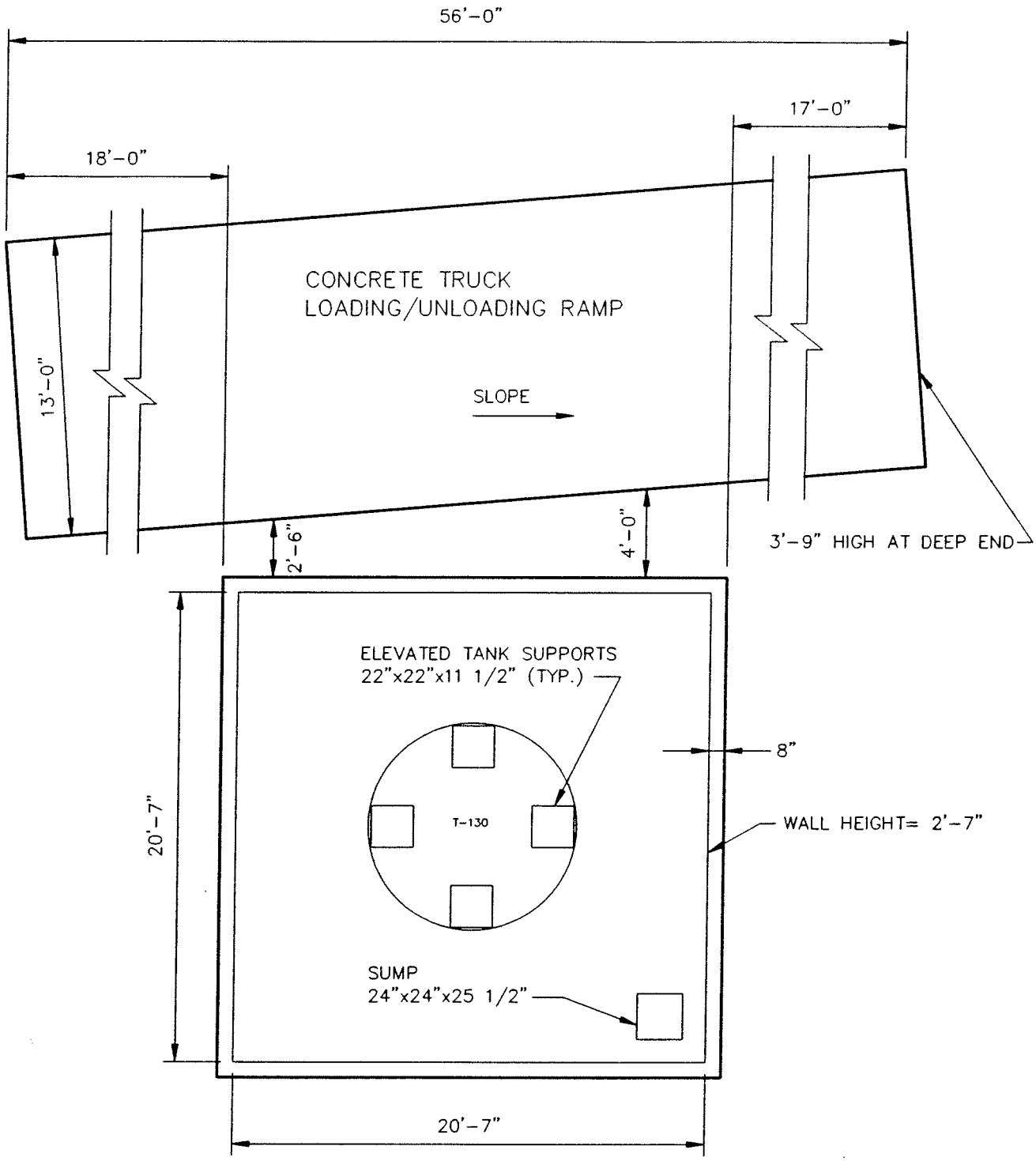
Tank T-105 = 3,000 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-25

TANK T-130



PLAN
NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-130

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE
D-25

X: 05052X00
L: ON=* OFF=*REF*
P: STD-PCP/AP
4/2/01 SYR-54-HSB DJP SDL ROC-54-SLM
05052080/05052G05.DWG

CALCULATION SHEET

TANK T-130

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

20.6' x 20.6' x 2.6' = 1,103.3 CF

Sump:

2.0' x 2.0' x 2.1' = 8.4 CF

Subtractions:

Note:
Additional volume displacements such as steel tank supports, FRP stairway, piping, pumps and carbon can will only account for a very small volume and will not be included in the net containment volume.

Concrete Pad:

4(1.8' x 1.8' x 0.9') = 11.7 CF

Total Available Volume:

1,103.3 CF + 8.4 CF - 11.7 CF = 1,100 CF x 7.48 gal/CF = 8,228 gallons

Required Volume:

Volume of Largest Tank:

Tank T-130 = 5,732 gallons

25 Year, 24 Hour Precipitation Event:

(20.6' x 20.6' x 0.33') = 141.3 CF = 141.3 CF x 7.48 gal/CF = 1,057.0 gallons
0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain).
This assumes that the rain gutters for tanks fail.

Required Volume:

5,732 gallons + 1,057.0 gallons = 6,789.0 gallons

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

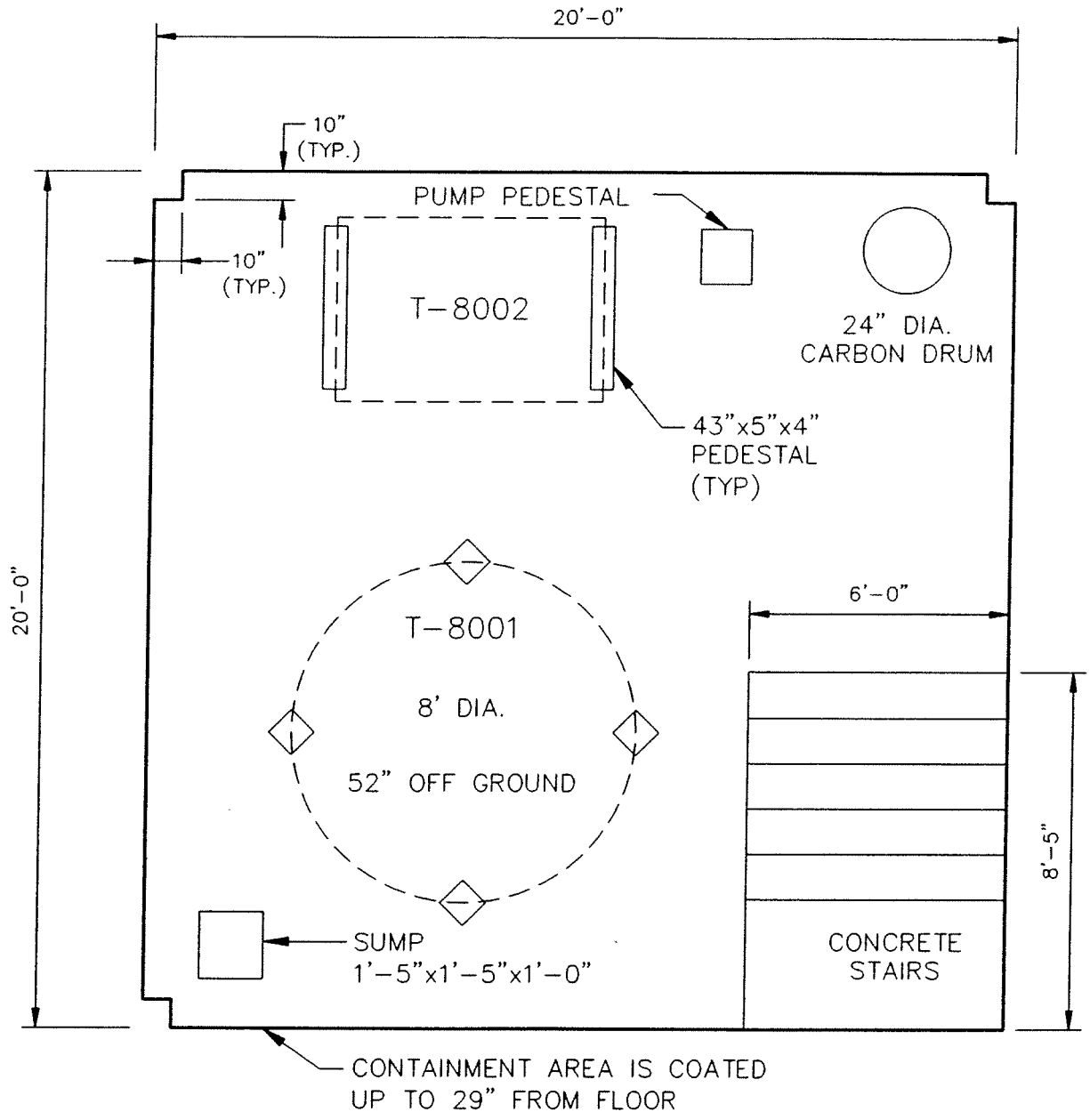
TANK T-130

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-26

TANKS T-8001 AND T-8002



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANKS T-8001 & T-8002

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
D-26

X: 05052X00.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-SDL DJP SDL ROC-54-SLM
05052080/05052G18.DWG

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

CALCULATION SHEET

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANKS T-8001 AND T-8002

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

20.0′ x 20.0′ x 2.4′ = 960.0 CF

Sumps:

1.4′ x 1.4′ x 1.0′ = 2.0 CF

Subtractions:

:

Additional volume displacements such as steel tank supports, piping, pumps and carbon cans will only account for a very small volume and will not be included in the net containment volume.

Stairway:

0.5(6.0′ x 3.5′ x 2.4′) + (6.0′ x 4.9′ x 2.4′) = 95.8 CF

Corner Columns (3):

3(0.8′ x 0.8′ x 2.4′) = 4.6 CF

Total Available Volume:

960.0 CF + 2.0 CF - 95.8 CF - 4.6 CF = 861.6 CF = (861.6 CF x 7.48 gal/CF) = 6,444.8 gallons

Required Volume:

Volume of Largest Tank:

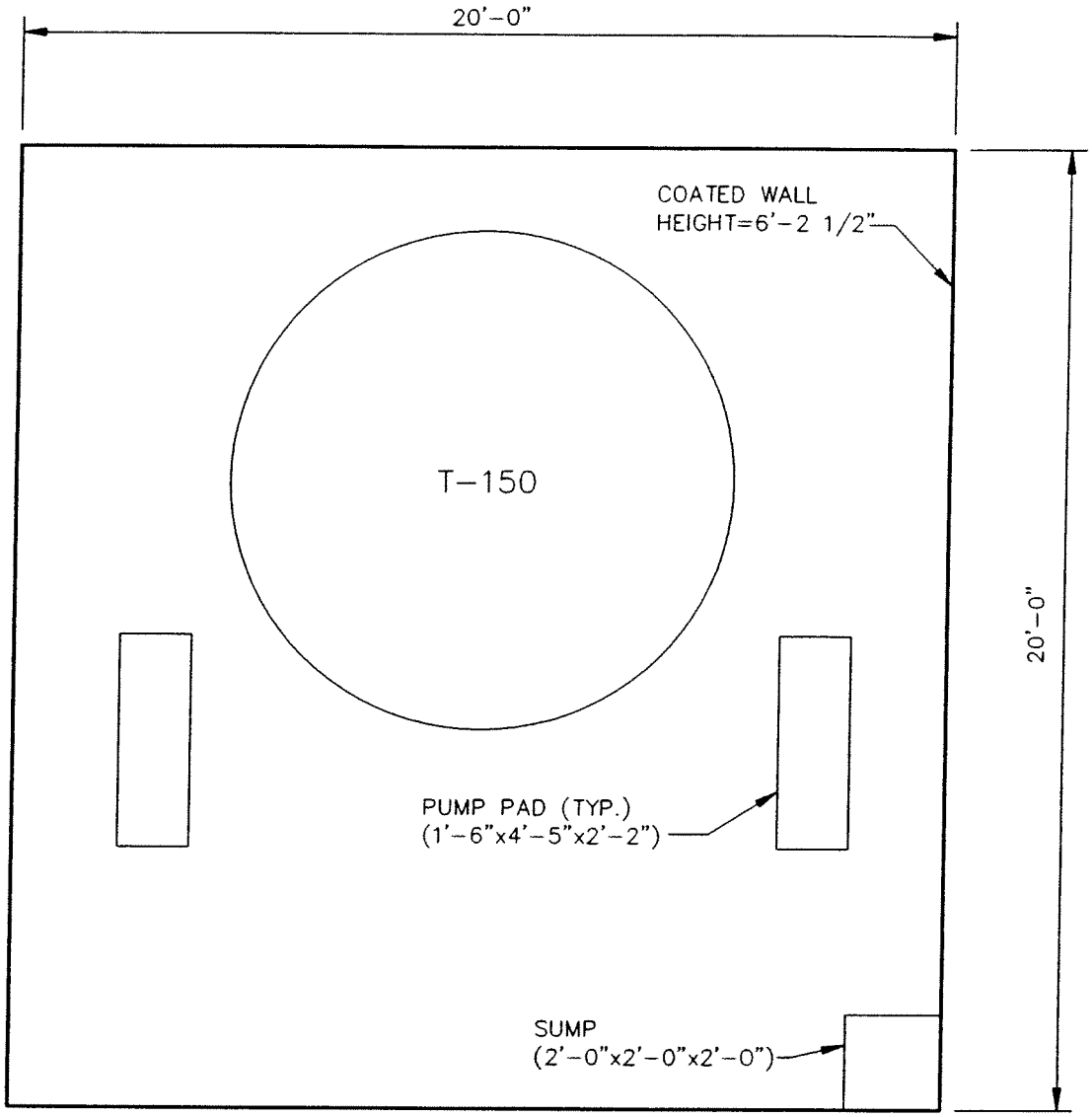
Tank T-8001 = 5,000 gallons

CONCLUSIONS:

ilable volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-27

TANK T-150



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-150

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
D-27

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-HSB DJP SDL ROC-54-SLM
05052080/05052G02.DWG

TANK T-150

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

20.0′ x 20.0′ x 6.2′ = 2,480.0 CF

Sump:

2.0′ x 2.0′ x 2.0′ = 8.0 CF

Subtractions:

Additional volume displacements such as steel tank supports, FRP stairway, piping and pumps will only account for a very small volume and will not be included in the net containment volume.

Pump bases (2):

2 (1.5′ x 4.5′ x 2.2′) = 29.7 CF

Total Available Volume:

2,480.0 CF + 8.0 CF - 29.7 CF = 2,458.3 CF = (2,458.3 CF x 7.48 gal/CF) = 18,388.1 gallons

Required Volume:

Volume of Largest Tank:

Tank T-150 = 8,000 gallons

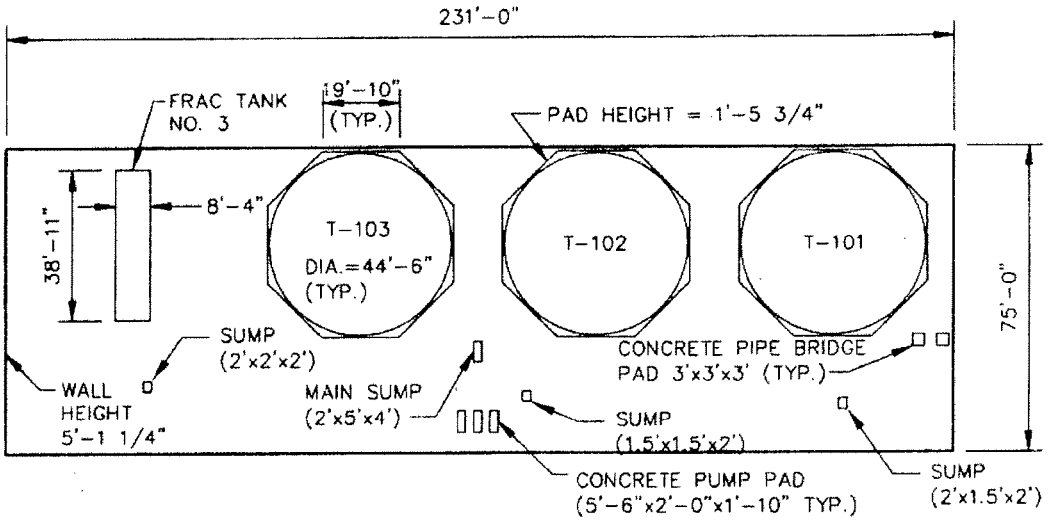
CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-29

LEACHATE TANK FARM

TANKS T-101, T-102, T-103 AND FRAC TANK 3



PLAN

NOT TO SCALE

NOTES:

1. ORIGINAL BASEMAP TAKEN FROM BBL DRAWING 05052G03 DATED 3/14/2001.

LEACHATE TANK FARM
6NYCRR PART 373 PERMIT

CWM CHEMICAL SERVICES LLC
TOWN OF PORTER, STATE OF NEW YORK

EnSol, Inc.
Environmental Solutions
661 MAIN STREET
NIAGARA FALLS, NY 14301
PHONE (716) 285-3929
FAX (716) 285-3928

FIGURE D-29

8/31/2010 | PN: 10-7017

Modified: 3/11

CALCULATION SHEET

EnSol, Inc.
Environmental Solutions

PROJECT NO.: 10-7017

CLIENT: CWM Chem. Svcs. PROJECT: Leachate Tank Farm Prepared By: TAS Date: 8/31/2010
SUBJECT: Secondary Containment Calculations Reviewed By: BDS Date: 8/31/2010

LEACHATE TANK FARM

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

75.0′ x 231.0′ x 5.1′ = 88,357.5 CF (at lowest wall height)

Sumps:

(2.0′ x 5.0′ x 4.0′) + (2.0′ x 2.0′ x 2.0′) + (2.0′ x 1.5′ x 2.0′) + (1.5′ x 1.5′ x 2.0′) = 58.5 CF

Subtractions:

Note:
Additional volume displacements such as steel tank supports, FRP stairway, piping, pumps and carbon can will only account for a very small volume and will not be included in the net containment volume.

Tanks (2):

$\pi/4 \times d^2 \times h = \pi/4 \times 44.5'^2 \times (5.1'$ (wall height) - 1.5′ (tank pad height)) = 5,599.0 CF = 11,198.0 CF

Tank Foundations (3):

(48.0′ x 19.9′ x 1.48′) + 2((0.5(19.9′ + 48.0′) 14.1′) 1.48) = 1,411.9 CF + 1,416.4 CF = 2,828.3 CF = 8,484.9 CF

Frac Tank #3:

8.3′ x 38.9′ x 5.12′ = 1,646.6 CF (at lowest wall height)

Concrete Pump Pads (3):

5.5′ x 2.0′ x 1.8′ = 19.8 CF = 59.4 CF

Concrete Pipe Bridge (2):

3.0′ x 3.0′ x 3.0′ = 27.0 CF = 54.0 CF

Total Available Volume:

88,357.5 CF + 58.5 CF - 11,198.0 CF - 8,484.9 CF - 1,646.6 CF - 59.4 CF - 54.0 CF = 66,973.1 CF

CALCULATION SHEET

EnSol, Inc.
Environmental Solutions

PROJECT NO.: 10-7017

CLIENT: CWM Chem. Svcs. PROJECT: Leachate Tank Farm Prepared By: TAS Date: 8/31/2010
SUBJECT: Secondary Containment Calculations Reviewed By: BDS Date: 8/31/2010

= 66,973.1 CF x 7.48 gal/CF = 500,958.8 gallons

LEACHATE TANK FARM (continued)

Required Volume:

Volume of Largest Tank:

Tank T-101 = 350,000 gallons

25 Year, 24 Hour Precipitation Event:

75.0′ x 231.0′ x .33′ = 5,717.3 CF = 5,717.3 CF x 7.48 gal/CF = 42,765.0 gallons
0.333 feet is equivalent to 4.0 inches of precipitation (i.e., rain)
This assumes that the rain gutters for tank fail.

Required Volume:

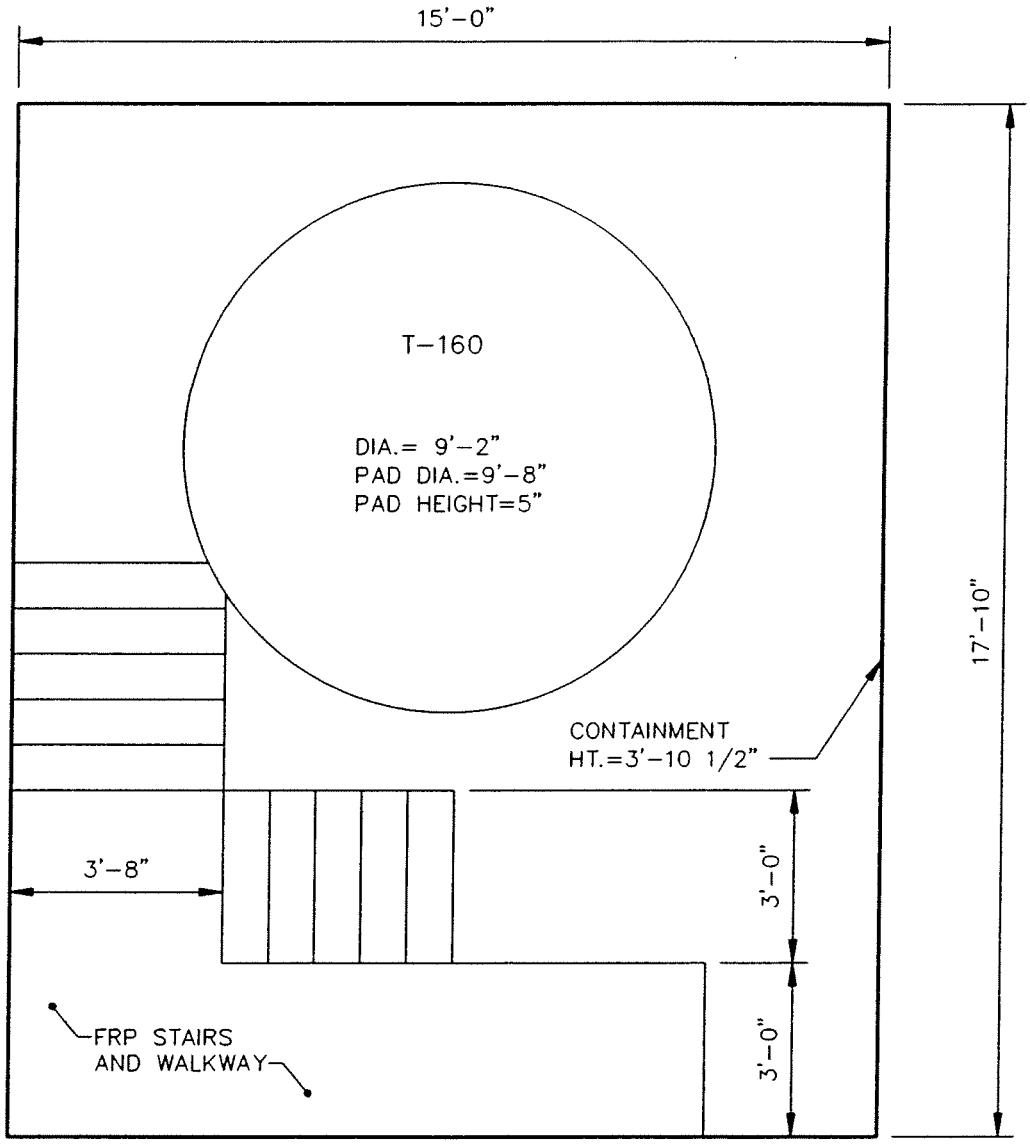
350,000 gallons + 42,765.0 gallons = 392,765.0 gallons

CONCLUSIONS:

vailable volume exceeds required volume; therefore, containment volume is acceptable.
Calculations are based on eliminating the tank's interconnections.

FIGURE D-30

TANK T-160



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-160

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE **D-30**

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-HSB DJP SDL ROC-54-SLM
05052080/05052G04.DWG

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

CALCULATION SHEET

NYSDEC OHMS Document No. 201469232-00022

PROJECT NO.: 05052.030

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001

SUBJECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-160

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

15.0′ x 17.8′ x 3.9′ = 1,041.3 CF

Subtractions:

Note:
Additional volume displacements such as steel tank supports, FRP stairway, piping and pumps will only account for a very small volume and will not be included in the net containment volume.

Tank Foundation:

$\pi \times 4.9'^2 \times 0.4' = 30.2$ CF

Total Available Volume:

1,041.3 CF - 30.2 CF = 1,011.1 CF = 1,011.1 CF x 7.48 gal/CF = 7,563.0 gallons

Required Volume:

Volume of Largest Tank:

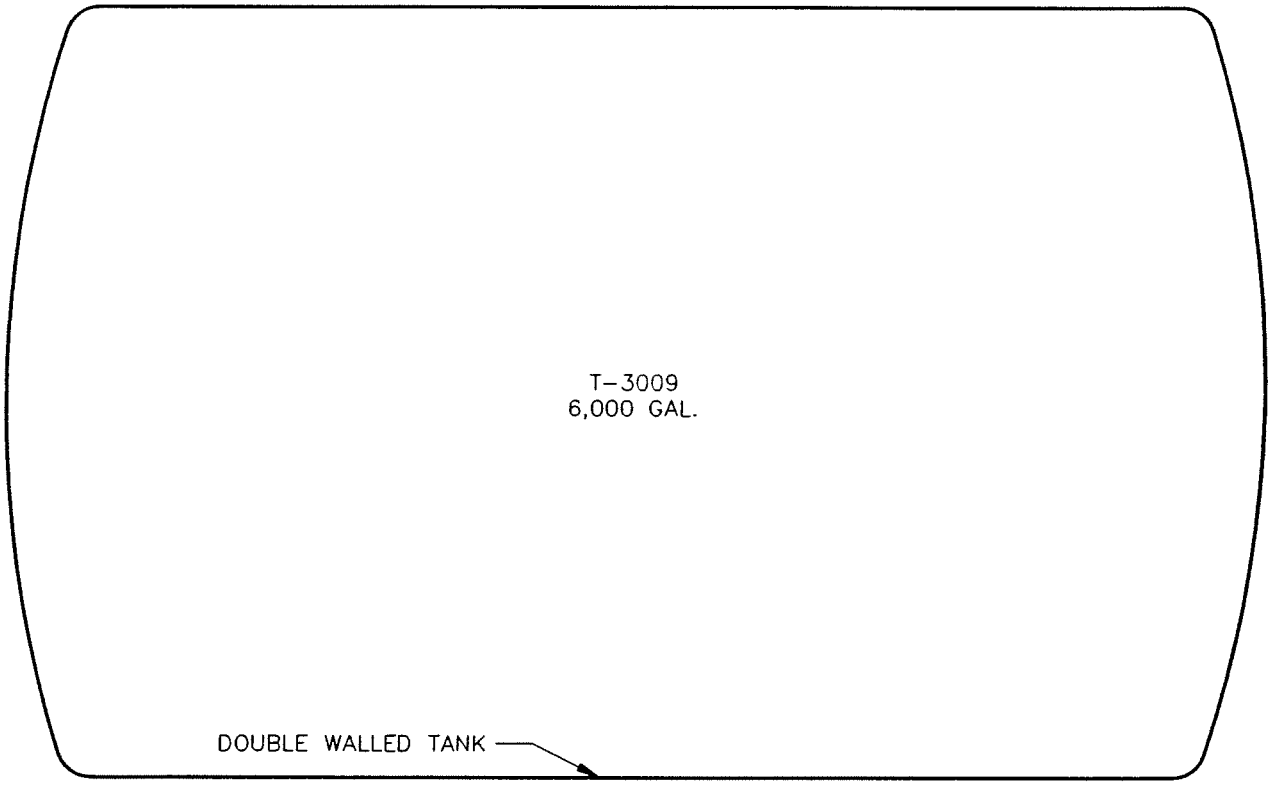
Tank T-160 = 3,000 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-31

TANK T-3009



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-3009

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

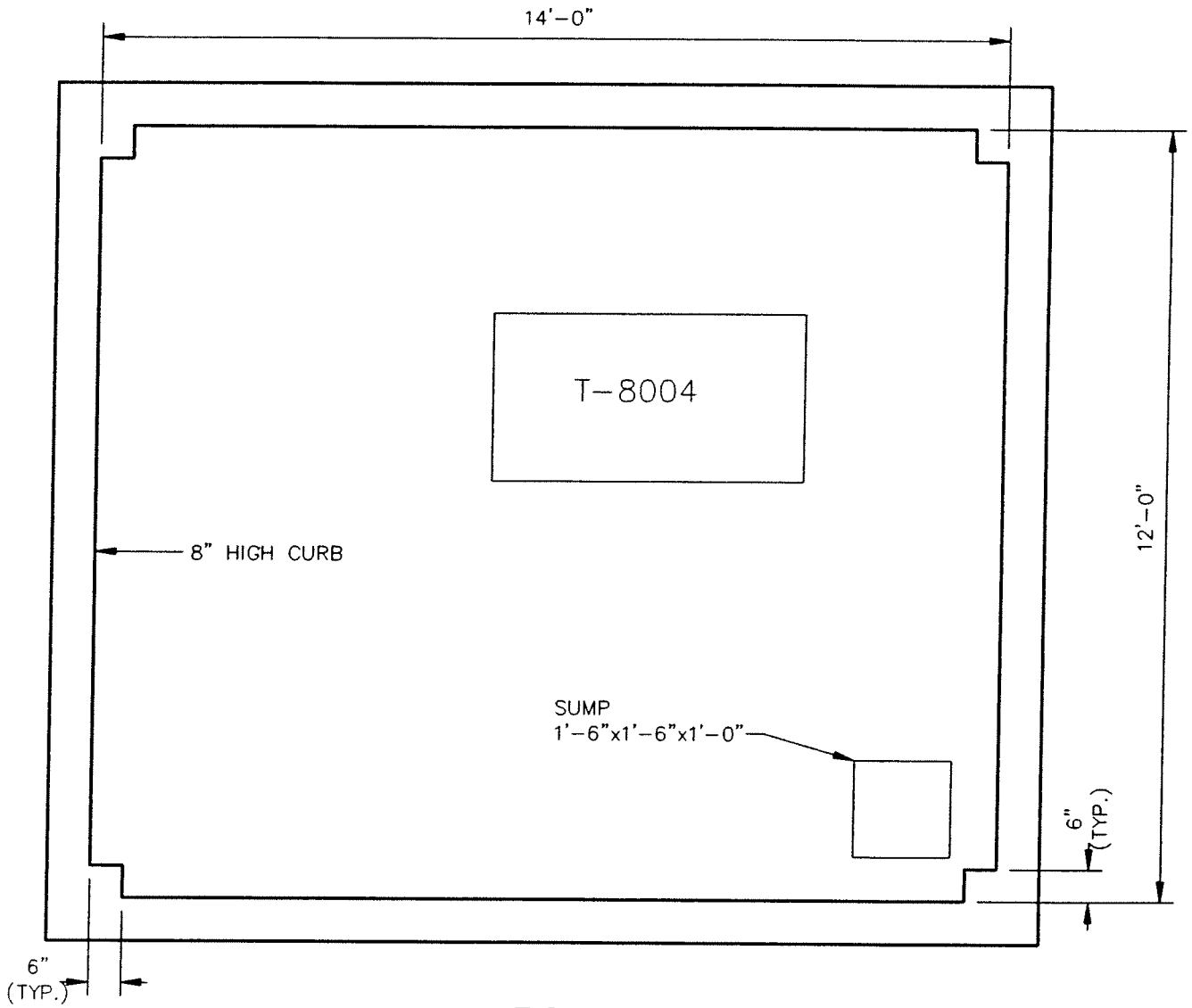
FIGURE **D-31**

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
4/2/01 SYR-54-DJP SDL ROC-54-SLM
05052080/05052G28.DWG

DOUBLE WALLED ABOVEGROUND STORAGE TANK.

FIGURE D-32

TANK T-8004



PLAN

NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-8004

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
D-32

X: 05052X00
L: ON=*, OFF=*REF*
P: STD-PCP/AP
3/14/01 SYR-54-HSB DJP ROC-54-SLM
05052080/05052G08.DWG

CLIENT: CWM PROJECT: Permit Renewal Prepared By: PJC Date: 02/15/2001
JECT: Secondary Containment Calculations Reviewed By: CBT Date: 02/19/2001

TANK T-8004

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

14.0′ x 12.0′ x 0.7′ = 117.6 CF

Sumps:

1.5′ x 1.5′ x 1.0′ = 2.3 CF

Subtractions:

s:
ditional volume displacements such as tank supports, piping, pumps and carbon cans will only account for a very small volume and will not be included in the net containment volume.

Corner Columns (4):

4(0.5' x 0.5' x 0.7') = 0.7 CF

Total Available Volume:

117.6 CF + 2.3 CF – 0.7 CF = 119.2 CF = (119.2 CF x 7.48 gal/CF) = 891.6 gallons

Required Volume:

Volume of Largest Tank:

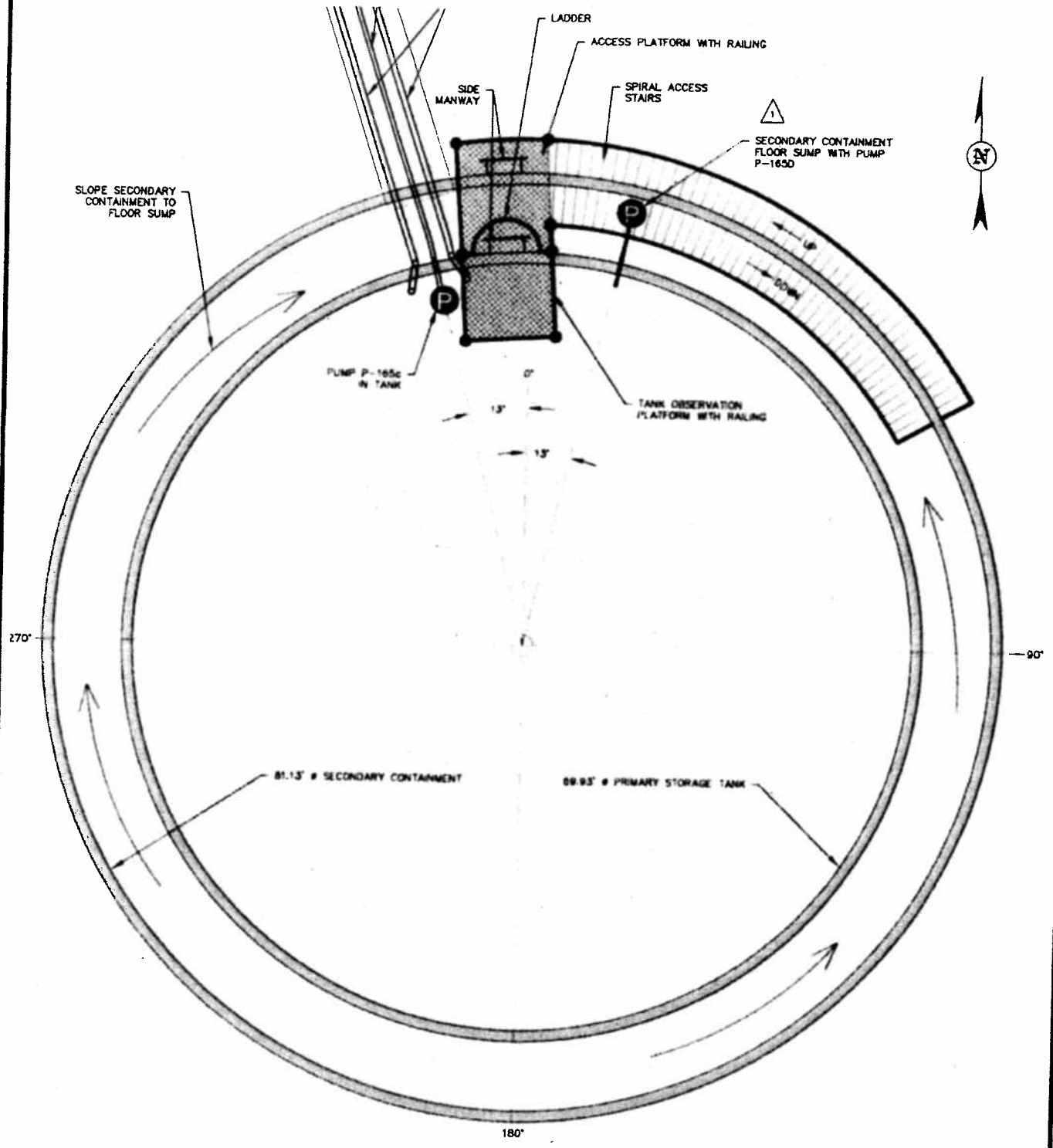
Tank T-8004 = 550 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-33

TANK T-165



PLAN
NOT TO SCALE

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
6NYCRR PART 373 PERMIT APPLICATION

TANK T-165

EnSol, Inc.
Environmental Solutions
661 MAIN STREET
NIAGARA FALLS, NY 14301
PHONE (716) 285-3920
FAX (716) 285-3928

FIGURE
D-33

Modified: 06/10

X:\AA\pj\CWM\09-7024_Tank T-165 Design Assessment (Task 9)\Calculations\Secondary Containment\Sec Cont Calc Figure.dwg, 3/24/2010 8:46:29 AM, Justin Darling

CALCULATION SHEET

EnSol, Inc.
Environmental Solutions

PROJECT NO.: 09-7024

CLIENT: CWM Chem. Svcs. PROJECT: Tank T-165 Design Assessment Prepared By: AMW Date: 5/20/2010
SUBJECT: Secondary Containment Calculations Reviewed By: BDS Date: 5/20/2010

TANK T-165

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Gross Available Volume:

Containment Area:
$\pi \times (40.565')^2 \times 24' = 124{,}069.23$ CF

Subtractions:

Primary Tank Concrete Footer:
$\pi \times (35.59')^2 \times 0.5' = 1{,}989.65$ CF

Note:
Additional minor volume displacements such as steel tank supports, stairway, floor sump, and piping will only account for a very small volume and will not be included in the net containment volume.

Total Available Volume:

124,069.23 CF - 1,989.65 CF = 122,079.58 CF = (122,079.58 CF x 7.48 gal/CF) = **913,155.26 gallons**

Required Volume:

Volume of Tank T-165:

$\pi \times (34.97')^2 \times 30.51' = 117{,}215.04$ CF = 117,215.04 CF x 7.48 gal/CF = 876,768.51 gallons

25 Year, 24 Hour Precipitation Event:
$\pi \times (40.565')^2 \times 0.33' = 1705.95$ CF = 1705.95 CF x 7.48 gal/CF = 12,760.52 gallons
0.33 feet is equivalent to 4.0 inches of precipitation (i.e., rain).

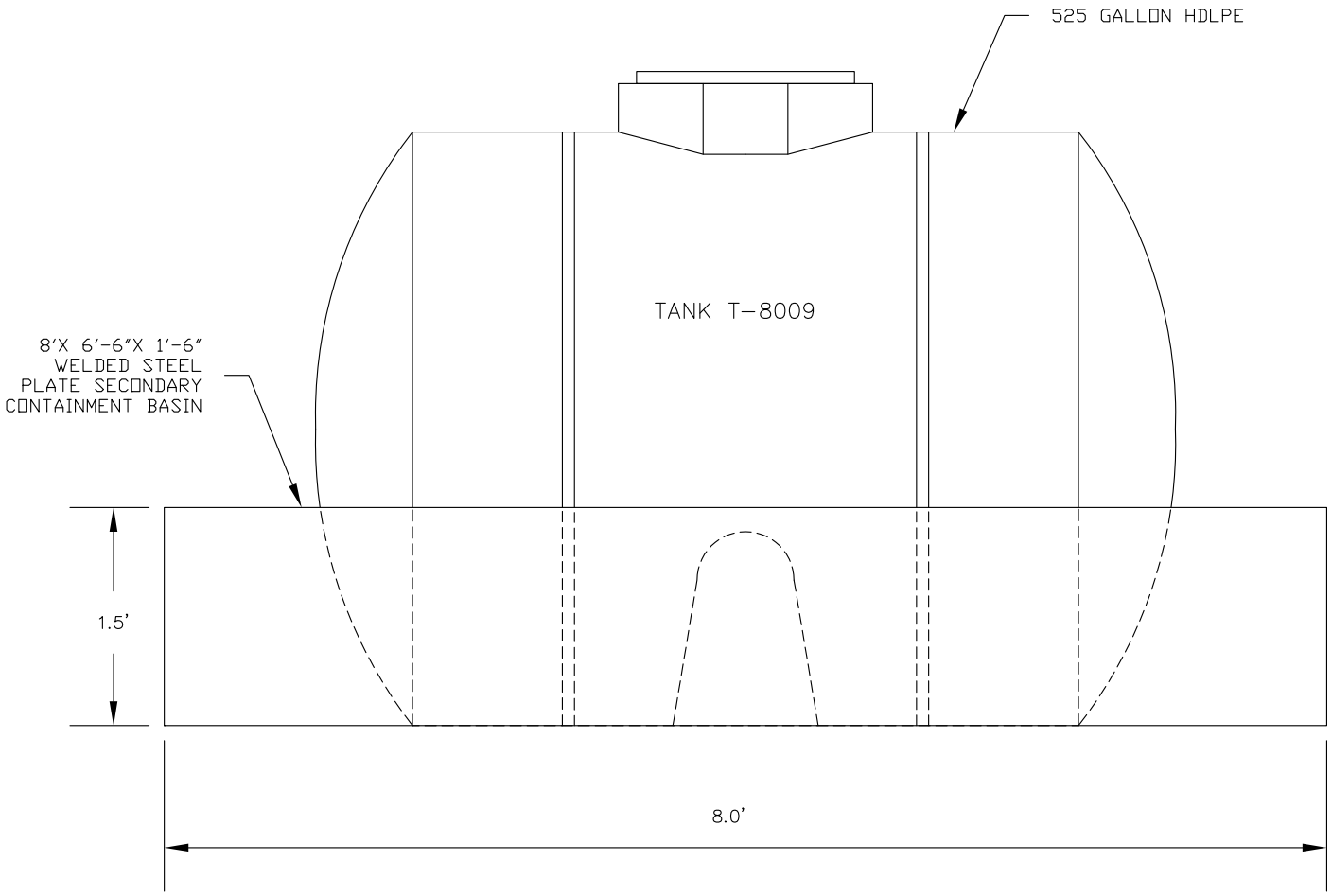
Required Volume:
876,768.51 gallons + 12,760.52 gallons = **889,529.03 gallons**

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-34

TANK T-8009



ELEVATION

NOT TO SCALE

PROCESS AREA IV TANK T-8009

6NYCRR PART 373 PERMIT

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FAX (716) 285-3928

FIGURE D-34

3/30/2012 | PN: 12-7009

EnSol, Inc.
Environmental Solutions

PROJECT NO.: 12-7009

CLIENT: CWM Chemical Services **PROJECT: Site wide Permit** **Prepared By: CAC** **Date: 3/30/2012**
SUBJECT: Secondary Containment Calculations **Reviewed By: BDS** **Date: 3/30/2012**

PROCESS AREA IV TANK T-8009

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

8.0′ x 6.5′ x 1.5′ = 78 CF

Subtractions:

Note:
Additional minor volume displacements such as tank supports, FRP grating, piping etc., will only account for a very small volume and will not be included in the net containment volume.

Total Available Volume:

78 CF x 7.48 gal/CF = 583 gallons

Required Volume:

Volume of Largest Tank:

Tank T-8009 = 525 gallons

Net Difference

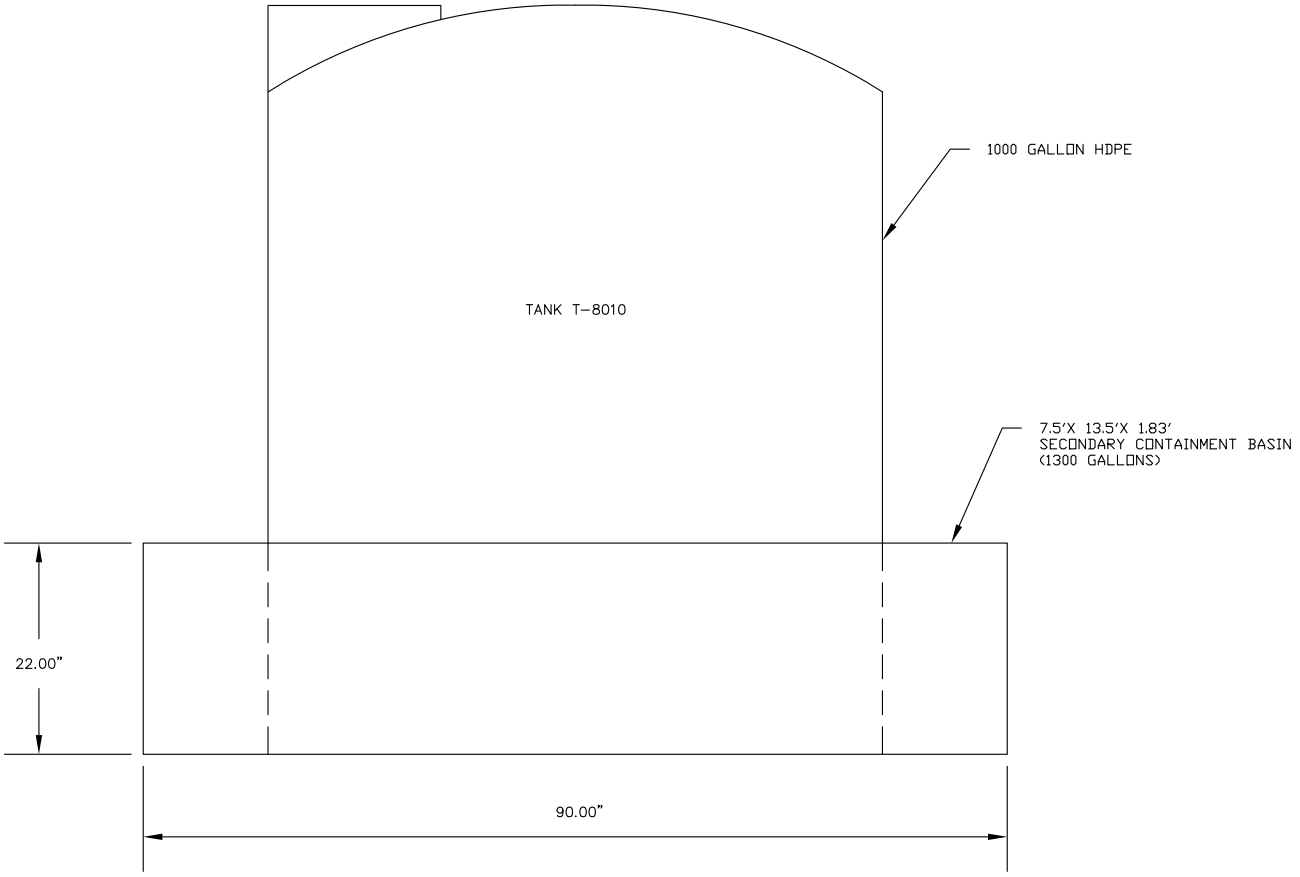
Tank T-8009 = 525 gallons
Secondary Containment = 583 gallons
Difference = +58 gallons

CONCLUSIONS:

Available volume exceeds required volume; therefore, containment volume is acceptable.

FIGURE D-35

TANK T-8010



ELEVATION

NOT TO SCALE

PROCESS AREA III TANK T-8010

6NYCRR PART 373 PERMIT

CWM CHEMICAL SERVICES LLC

TOWN OF PORTER, STATE OF NEW YORK

EnSol, Inc.
Environmental Solutions
661 MAIN STREET
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PHONE (716) 285-3920
FAX (716) 285-3928

FIGURE D-35

3/30/2012 | PN: 12-7009

EnSol, Inc.
Environmental Solutions

PROJECT NO.: 12-7009

CLIENT: CWM Chemical Services **PROJECT: Site wide Permit** **Prepared By: CAC** **Date: 3/30/2012**
SUBJECT: Secondary Containment Calculations **Reviewed By: BDS** **Date: 3/30/2012**

PROCESS AREA III TANK T-8010

TASK:

Calculate the total volume within the secondary containment area.

CALCULATIONS:

Available Volume:

Containment Area:

7.5′ x 13.5′ x 1.8′ = 182.2 CF

Subtractions:

-8.45 CF for baffles within the secondary containment structure.

Note:
Additional minor volume displacements such as tank supports, FRP grating, piping etc., will only account for a very small volume and will not be included in the net containment volume.

Total Available Volume:

173.8 CF x 7.48 gal/CF = 1300 gallons

Required Volume:

Volume of Largest Tank:

Tank T-8010 = 1000 gallons

Net Difference

Tank T-8010 = 1000 gallons
Secondary Containment = 1300 gallons
Difference = +300 gallons

CONCLUSIONS:

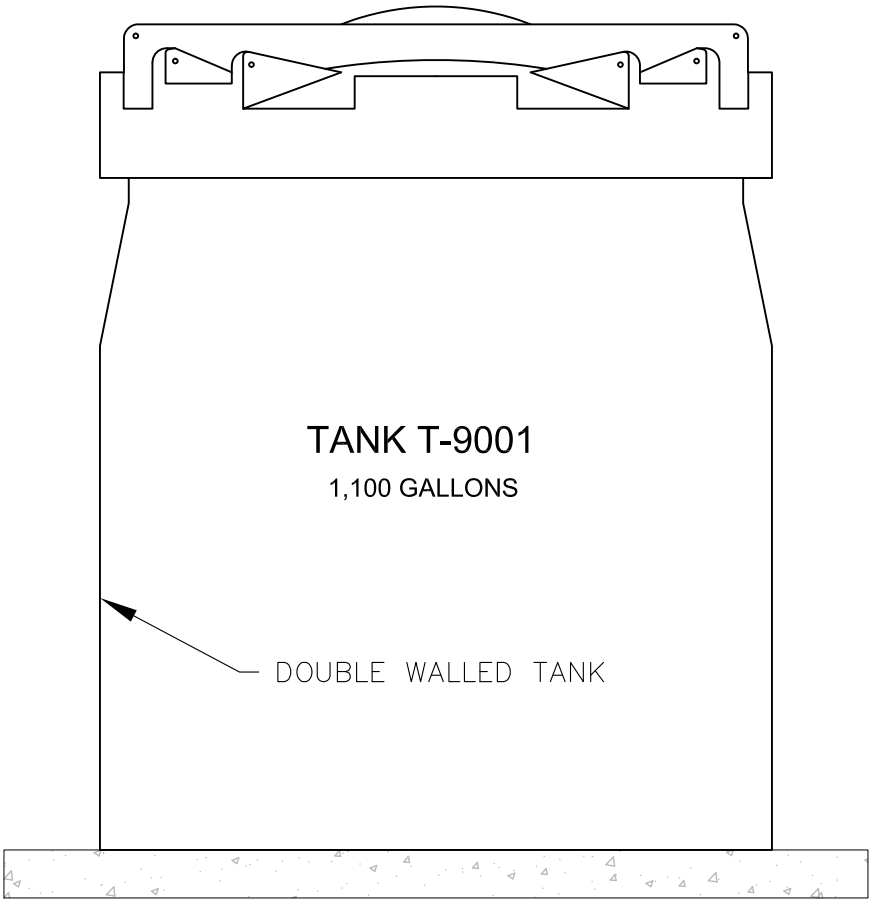
Available volume exceeds required volume; therefore, containment volume is acceptable.

NOTE: Figure to be added.

FIGURE D-36

TANK T-9001

NOTE: Figure to be added.



PROFILE

SCALE: 1' 0' 1' 2'

FAC POND 5 TANK T-9001

6NYCRR PART 373 PERMIT

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10/28/13 | PN: 13-7028

FIGURE D-36