Environmental Functional Area

Environmental Support and Programmatic Outreach

LLNL-TR-719501

Site 300 Spill Prevention, Control and Countermeasures (SPCC) Plan

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Lawrence Livermore National Laboratory

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Management Approval (40 CFR 112.7)

The Site 300 SPCC Plan has been prepared in accordance with good engineering practice and has the full approval of management at a level with authority to commit the necessary resources to fully implement the Plan (40 CFR 112.7). The responsibility for implementing this SPCC Plan rests with each Program Manager who is responsible for facilities with spill potential at the LLNL Site 300.

Frances Alston

Frances Alston, Ph.D.
Director
Environment, Safety, & Health

1/26/17

Date

Professional Engineer Certification (40 CFR 112.3(d))

The undersigned Registered Professional Engineer (P.E.) is familiar with the requirements of 40 CFR Part 112 and has visited and examined the facility, or has supervised examination of the facility by appropriately qualified personnel. The undersigned Registered Professional Engineer attests that this Spill Prevention, Control, and Countermeasure Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and the requirements of 40 CFR Part 112; that the procedures for required inspections and testing have been established; and that the Plan is adequate for the facility. As Site 300 is large and complex and due to security access restrictions, the inspection of Site 300 was limited only to oil storage containers and areas identified by the appropriate LLNL Program personnel. In preparing this Plan, the P.E. has relied upon this information and certification is valid only to the extent that the inventory information provided at the time of certification was complete and accurate.

This certification in no way relieves the owner or operator of the facility of his/her duty to prepare and fully implement this SPCC Plan in accordance with the requirements of 40 CFR Part 112. Nor does this certification in any way relieve the owner or operator of the facility from compliance with other Federal, State, or local laws. This Plan is valid only to the extent that the facility owner or operator maintains, tests, installs, and inspects equipment, containment, and other devices as prescribed in this Plan.

William W. Moore

Name of Certifying Professional Engineer (signed)

William W. Moore

Name of Certifying Professional Engineer (printed)

Dec, 6, 2016

Date

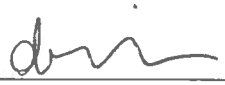
Spill Prevention, Control, and Countermeasure Plan Certification and Review Log (40 CFR 112.3 and 112.5)

In accordance with 40 CFR 112.5, LLNL will conduct the following:

- Amend the Spill Prevention, Control, and Countermeasure (SPCC) Plan when there is a change in the facility design, construction, operation, or maintenance that materially affects its potential for a discharge.
- Review and evaluate this SPCC Plan at least once every five years.
- Implement any amendments no later than six months following the preparation of the amendment.

In accordance with 40 CFR 112.5(c) and 112.3(d), any technical amendment to the SPCC Plan shall be certified by a Registered Professional Engineer. Administrative changes such as changes to phone numbers or names do not require certification by a Registered Professional Engineer.

In accordance with 40 CFR 112.5(b), I, Diane Griffin, have completed a review and evaluation of the SPCC Plan for LLNL's Site 300 and will amend the Plan as a result.



Signature of Reviewer

11/4/16

Date

Record of Review

Review Date	Reviewer	Is an Amendment Necessary?
November 4, 2016	DIANE GRIFFIN	☐ No / ☒ Yes
		☐ No / ☐ Yes
		☐ No / ☐ Yes
		☐ No / ☐ Yes

SPCC Plan Amendment Log

Record of Amendments

Update Number	Document Name	Date	Comments	PE Certification Necessary?
0	Spill Prevention, Control, and Countermeasure Plan	May 4, 2016	Create a single SPCC Plan for Site 300	☐ No / ☒ Yes
1	Spill Prevention, Control, and Countermeasure Plan	December, 2016	Update inventory and map; add additional information in Section 1.1 to clarify the material and containers subject to regulation; update Section 1.5 for corrections to deficiences noted in previous Plan; clarification to Section 3.7 and added correct training course number; Updated inspection forms.	☐ No / ☒ Yes
				☐ No / ☐ Yes
				☐ No / ☐ Yes
				☐ No / ☐ Yes
				☐ No / ☐ Yes

Lawrence Livermore National Laboratory, Experimental Test Site, Site 300 Spill Prevention, Control, and Countermeasure (SPCC) Plan

1.0 INTRODUCTION

This Spill Prevention, Control, and Countermeasure (SPCC) Plan describes the measures that are taken at Lawrence Livermore National Laboratory's (LLNL) Experimental Test Site (Site 300) near Tracy, California, to prevent, control, and handle potential spills from aboveground containers that can contain 55 gallons or more of oil. This SPCC Plan complies with the Oil Pollution Prevention regulation in Title 40 of the Code of Federal Regulations, Part 112 (40 CFR 112) and with 40 CFR 761.65(b) and (c), which regulates the temporary storage of polychlorinated biphenyls (PCBs). This Plan has also been prepared in accordance with Division 20, Chapter 6.67 of the California Health and Safety Code (HSC 6.67) requirements for oil pollution prevention (referred to as the Aboveground Petroleum Storage Act [APSA]), and the United States Department of Energy (DOE) Order No. 436.1. This SPCC Plan establishes procedures, methods, equipment, and other requirements to prevent the discharge of oil into or upon the navigable waters of the United States or adjoining shorelines for aboveground oil storage and use at Site 300. This SPCC Plan has been prepared for the entire Site 300 facility and replaces the three previous plans prepared for Site 300: LLNL SPCC for Electrical Substations Near Buildings 846 and 865 (LLNL 2015), LLNL SPCC for Building 883 (LLNL 2015), and LLNL SPCC for Building 801 (LLNL 2014).

The SPCC Plan is intended for distribution to all LLNL personnel who operate, maintain, and are responsible for containers of oil (oil-handlers). The updated Plan is available online at: https://esh-int.llnl.gov/spcc/spcc-hp.html.

1.1 Applicability

To comply with 40 CFR 112.2, oil means "oil of any kind or in any form, including, but not limited to: fats, oils, or greases of animal, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil." APSA defines petroleum as crude oil, or a fraction thereof, that is liquid at 60 degrees Fahrenheit temperature and 14.7 pounds per square inch absolute pressure which includes, but is not limited to: crude oil, petroleum fuels (not 100% biodiesel), heating oils, lamp oils, petroleum solvents, petroleum spirits, hydrocarbon liquids, olefins, alkanes, alkylates, and aromatics. For the purposes of this SPCC Plan, "oil" is used to refer to substances regulated under 40 CFR 112 or APSA.

Only containers with an oil capacity of 55-gallons or greater are considered when calculating site-wide capacity. The types of containers that may contain oil include: bulk storage containers used for the purpose of storing oil; manufacturing equipment (flow-through process); and oil-filled operational equipment. Examples of bulk storage containers include, but are not limited to, above-ground fuel storage tanks, belly tanks associated with emergency generators, 55-gallon drums, and portable tank trucks. Examples of oil-filled operational equipment include, but are not limited to, hydraulic systems, lubricating systems (*e.g.*, those for pumps, compressors and other rotating equipment, including pumpjack lubrication systems), gear boxes, machining coolant systems, heat transfer systems, transformers, circuit breakers, electrical switches, and other systems containing oil solely to enable the operation of the device.

The federal SPCC rule excludes from the regulation:

- Containers less than 55-gallons in capacity
- A container that is "permanently closed" defined in 40 CFR 112.2 as "any container or facility for which: (1) all liquid and sludge has been removed from each container and connecting line; and (2) all connecting lines and piping have been disconnected from the container and blanked off, all valves (except for ventilation valves) have been closed and locked, and conspicuous signs have been posted on each container stating that it is a permanently closed container and noting the date of closure."
- Motive power containers defined as any onboard storage containers used primarily to power the movement of a motor vehicle. The motive power container exclusion also applies to the ancillary on-board oil-filled equipment on that vehicle or self-propelled equipment (e.g., the hydraulic system reservoir tank on a self-propelled crane).
- Hot-mix asphalt or any hot-mix asphalt container.
- Pesticide application equipment and related mix containers.
- Any milk and milk product container and associated piping and appurtenances.

Site 300 is considered to be a non-transportation-related facility according to the EPA. Non-transportation facilities are required to prepare SPCC Plans if they meet the following criteria:

- An aggregate aboveground storage capacity of more than 1,320 gallons, or
- A total underground storage capacity of 42,000 gallons; and
- Could reasonably be expected to discharge oil in harmful quantities into navigable waters of the United States.

Site 300 has an aggregate aboveground storage capacity greater than 1,320 gallons of oil. In addition, because of its location, oil spills at the Site 300 could reasonably be expected to discharge oil into, or upon, the navigable waters of the United States or adjoining shorelines. This determination was based solely on geographic and location aspects of Site 300 (such as its proximity to navigable waters, adjoining shorelines, land contours, drainage, etc.), and excludes consideration of man-made features, such as dikes, equipment, or other structures that serve to prevent an oil discharge from reaching navigable waters of the United States or adjoining shorelines. Consequently, Site 300 is required to develop, implement, and maintain an SPCC Plan under 40 CFR 112.

Site 300 is subject to the general SPCC requirements as they apply. It is not an onshore or offshore oil production facility and non-petroleum oils, animal fats and vegetable oil are not used at this location and therefore those regulations that apply to those facilities do not apply to this facility (40 CFR 112.9 through 112.15).

A crosswalk of the requirements and their location in this SPCC Plan is included in Appendix A as required by 40 CFR 112.7.

1.2 Location of SPCC Plan – 40 CFR 112.3(e)

An electronic copy of the SPCC Plan is maintained on LLNL's servers. The SPCC Plan is one of the implementing documents described in LLNL's Procedure *Management of Spill Prevention, Control, and Countermeasure Aboveground Storage Tanks and Containers (PRO 2672)),* where a link is provided to download the most current SPCC Plan. After each review and update, an email notification that the SPCC Plan is available online is sent to appropriate personnel at Site 300, including the Site 300 Manager, the Environment, Safety and Health (ES&H) Team Leader, the Site 300 Team Environmental Analyst (EA), onsite emergency responders in LLNL's Radioactive and Hazardous Waste Management (RHWM)

Department; the Fire Department; personnel who handle oil and their supervisors and/or facility managers; and Environmental Support and Programmatic Outreach (ESPO) analysts. The website address is also included in the EP3045-R refresher training, which is administered annually to personnel who operate or maintain containers of oil that are 55 gallons or more. A hard copy is maintained in the Site 300 Manager's Office and the Environmental Functional Area (EFA) Tank Subject Matter Expert's (SME's) office. Additional hard copies can also be requested from the EFA Tank SME or the Site 300 ES&H Team EA.

1.3 Plan Review and Amendments – 40 CFR 112.3 and 112.5

The following sections describe the general administrative requirements pertaining to maintenance of this SPCC Plan.

1.3.1 Changes in Facility Configuration – 40 CFR 112.5(a)

As set forth in 40 CFR 112.5(a), Site 300 operations are reviewed and evaluated every six months for any change in facility design, construction, operation, or maintenance that materially affects the facility's potential for an oil discharge, including, but not limited to:

- Commissioning or decommissioning of containers;
- Reconstruction, replacement, or movement of containers;
- Reconstruction, replacement, or installation of piping systems;
- Construction or demolition that might alter secondary containment structures;
- Changes of product or service; or
- Revisions to standard operation, modification to testing/inspection procedures, and use of new or modified industry standards or maintenance procedures.

Facility changes of the nature identified above require amendments to the SPCC Plan and are referred to as technical amendments. Technical amendments must be certified by a PE. Non-technical amendments include the following:

- Change in the name or contact information (i.e., telephone numbers) of individuals responsible for implementation of this Plan; or
- Change in the name or contact information of spill response or cleanup contractors.

Non-technical amendments do not require PE re-certification of the Plan.

When required, amendments to the SPCC Plan should be made as soon as possible, but no later than six months after the change occurs.

The amended SPCC Plan should be implemented at Site 300 as soon as possible following any technical amendment, but *no later than six months* from the date of the amendment. EFA is responsible for initiating and coordinating revisions to the SPCC Plan.

1.3.2 Scheduled SPCC Plan Review – 40 CFR 112.5(b)

In accordance with 40 CFR 112.5(b), a scheduled review and evaluation of the SPCC Plan is required and completed at least once every 5 years even if no facility modifications or administrative changes have been identified as part of the periodic reviews. As a result of the 5-year review and evaluation, the SPCC Plan is amended as needed to include more effective prevention and control technology. Any time a facility modification or review and evaluation requires SPCC Plan technical amendments as described in the previous section, the SPCC Plan is re-certified by a Professional Engineer in accordance with 40 CFR 112.3(d).

Unless a technical or administrative change prompts an earlier review of the Plan, the next scheduled review of this Plan must occur before December 2021.

1.3.3 Plan Amendments Requested by Regional Administrator – 40 CFR 112.5(d)

In accordance with 40 CFR 112.5(d), the Plan may be amended and re-certified whenever required or requested by the EPA Regional Administrator (RA) or other regulatory agencies and whenever applicable regulations are revised. If the RA requests an amendment, LLNL will respond within 30 days of receipt of the notice; this SPCC Plan must be amended within 30 days of the RA's response.

1.3.4 SPCC Plan Amendment Documentation

Scheduled reviews and periodic reviews requiring amendment(s) to the Plan are recorded in the Record of Review Log. Information provided includes the date of review and the name of the person(s) completing the review. This log should be completed even if no amendment is made to the Plan as a result of the scheduled five-year review and the "No" box checked for "Is An Amendment Necessary?" If an amendment to the SPCC Plan is necessary as a result of either the scheduled or periodic review, the "Yes" box is checked and the amendment should be logged in the "Record of Amendments." The "PE Certification Necessary" box should be checked "Yes" or "No", depending on the nature of the amendment. Administrative changes do not require recertification of the SPCC Plan. When an amendment is necessary, the date and a summary of the amendment and the identification of the Plan sections(s) affected are included in the log.

1.4 Certification of Substantial Harm Determination Form

The Oil Pollution Prevention regulations of 1990, originally promulgated under the Clean Water Act, direct facilities that could cause substantial harm to the environment by discharging oil into navigable waters of the United States to prepare and submit a Facility Response Plan for responding to a worst-case discharge of oil, and to a substantial threat of such a discharge. Under 40 CFR 112 Appendix C, facilities that do not meet the substantial harm criteria are not required to prepare and submit a Facility Response Plan; however, they must document and maintain their determination as part of their SPCC Plan. Site 300 does not meet the substantial harm criteria; therefore, it is not required to prepare and submit a Facility Response Plan. A Substantial Harm Determination Form for Site 300 is provided in Appendix B.

1.5 Facilities, Procedures, Methods, or Equipment Not Yet Fully Operational - 40 CFR 112.7

Most containers at Site 300 were not inspected under the SPCC program prior to the sitewide SPCC Plan in May 2016. Since the plan was developed, implementation has occurred with the following exceptions or deficiencies noted by inspectors. Section 3.6 of this Plan describes the inspection program implemented at Site 300. Inspections of SPCC equipment are currently being conducted in accordance with the plan.

During preparation of this SPCC Plan, several deficiencies were noted that need to be corrected as soon as possible, but no later than 6-months from the operative date of this Plan in order for Site 300 to comply with the regulations. These deficiencies and the recommended actions, as they relate to the SPCC Plan are noted below. In addition, deficiencies identified in the previous SPCC Plan are included here along with the actions taken to address the deficiencies.

Previously Identified Deficiencies:

Deficiency	**Equipment ID**	**Regulation Requirement**	**Corrective Action Completed**
Several portable containers were noted with insufficiently sized secondary containment	• Used oil drum inside B875 hibay • Used oil drum inside B879 • Polycontainer outside B801 (See Table C-1)	112.8(c)(11)	Purchase and place secondary containment pallets adequately sized to contain a minimum of 55-gallons for the drums and 330 gallons for the tote plus 2-inches rain if the tote remains unprotected from rain Secondary containment pallets were purchased and installed for B875 and B879. The polycontainer outside B801 was replaced with a double-walled UL-listed poly container.
Two tanks in B875 Hibay are lacking gauges	B875 Hibay	112.8(c)(8)(iv)	Tank gauges to prevent overfilling were installed on both tanks.
The bulk storage container at Building 801 has a penetration	801-T1A3	112.8(c)(11)	Appropriately qualified personnel designed a solution whereby piping is refigured and penetrations are secondarily

Deficiency	Equipment ID	Regulation Requirement	Corrective Action Completed
through the double wall below the normal liquid operating level			contained.
Consolidate spill response materials into designated storage locations and ensure the minimum quantities of materials are kept stocked through routine inspections	B875; B879; B801 Room 125	112.7(e)	Spill kits have been purchased and installed.
Ensure mobile refuelers with single-walled tanks have spill kit materials to contain leaks from fuel containers and during refueling activities	• G7116825 • G710221K (See Table C-1)	112.7(c)	Spill kits for mobile refuelers have been purchased and installed.
Transformer T331 has a drain next to it that leads to the adjacent drainage course	T331	112.7(c)	This drain was grouted shut to prevent a direct conduit to the drainage course from the transformer in the event of a leak
Leaking Transformers	Electrical Corp Yard	112.7(c)	Leaking transformers in the Electrical Corp Yard were drained and removed.

Current SPCC Deficiencies and the Recommended Action:

Deficiency	Equipment ID	Regulation Requirement	Recommended Action
The bulk storage container at Building 801 has a penetration through the double wall below the normal liquid operating level	801ATFO03	112.8(c)(11)	Appropriately qualified personnel designed a solution whereby piping is refigured and penetrations are secondarily contained. This design should be implemented as soon as possible.
Repair secondary containment walls and leak detection sensors for the two day tanks at Building 882.	882TFAD01 882TFAD02	112.7(c)	The secondary containment walls of the tanks are corroded and are not water tight from the outside. Also, the leak detection sensor in interstitial space between secondary containment and primary does not work. Replace or repair the tanks as soon as possible.
875 generator temporary secondary containment	875TFBD04	112.7(c)	The generator has been provided with temporary secondary containment. Provide permanent secondary containment for the fuel tank associated with the generator.
Ensure the minimum quantities of spill kits materials are kept stocked through routine inspections	B875 Hibay; B879; B801 Room 125; Mobile refuelers (B875)	112.7(e)	Refer to Appendix G for spill kit materials. Ensure all spill kits are inspected at least quarterly and minimum contents maintained.

2.0 FACILITY INFORMATION

This SPCC Plan was completed for the following facility:

Facility Name	Lawrence Livermore National Laboratory, Site 300
Type of Facility	On-shore research and development facility
Address of Facility	Corral Hollow Road near Tracy, California
Facility Phone	(925) 423-5245 (Site Manager's Office)
Name and Address of Owner	U.S. Department of Energy (DOE), National Nuclear Security Administration (NNSA) 7000 East Avenue Livermore, California

Name and Address of Operator	Lawrence Livermore National Security, LLC 7000 East Avenue Livermore, California
Designated Person Accountable for Discharge Prevention at the Facility	John Scott, Site 300 Manager (925) 423-5026

2.1 Facility Description - 40 CFR 112.7(a)(3)

2.1.1 Facility Operations and Location

LLNL is an on-shore research and development laboratory that is part of the NNSA within the DOE. As a national security laboratory, LLNL is responsible for ensuring that the nation's nuclear weapons remain safe, secure, and reliable. The Laboratory also meets other pressing national security needs, including countering the proliferation of weapons of mass destruction and strengthening homeland security, and conducts major research in atmospheric, earth, and energy sciences; bioscience and biotechnology; and engineering, basic science, and advanced technology.

Site 300 was established as part of LLNL to provide a remote site to conduct outdoor tests of explosives in 1955. Core research programs at Site 300 include weapons technologies, energy, environment, and basic science. At Site 300, LLNL conducts explosives and nondestructive testing of weapons components to ensure that the nation's stockpile weapons are safe, secure and reliable. Facilities at Site 300 are sited in seven functional areas, which include the East and West Firing Areas; the Pistol Range Area; the Chemistry Area; the Process Area; the Physical, Environmental, and Dynamic Test Area; and the General Services Area.

The normal business hours of Site 300 are Monday through Thursday from 7:00 a.m. to 5:30 p.m. The site is closed Friday, Saturday, and Sunday, although essential personnel (such as security, emergency, and S300 maintenance mechanics) are present 24-hours a day.

Site 300 is comprised of approximately 7,000 acres in the foothills north of Corral Hollow Road. It is located approximately 15 miles southeast of the Lawrence Livermore National Laboratory in Livermore and approximately 6.5 miles southwest of downtown Tracy. The majority of Site 300's boundaries fall within San Joaquin County. A relatively small western portion of the site is located in Alameda County. The Site 300 Vicinity (Map C-1) in Appendix C shows the location of Site 300 relative to LLNL's Livermore site and regional points of reference. The Facility Diagram (Map C-2) shows the location and contents of bulk storage equipment, electrical equipment, operating equipment, underground storage tanks, spill kit locations, buildings, and paved roads.

Site 300 is mostly undeveloped. The most intensely developed section of the site is the General Services Area (GSA) located in the southeast corner of the site along Corral Hollow Road. It contains an administration building, buildings for support organizations, paved areas for equipment storage, roadways, and parking lots. The remaining buildings are widely scattered throughout the 7,000-acre site. Less than five percent of the total site area has impervious surfaces, including buildings, parking lots, and roadways.

The Site 300 topography consists of moderate to steep hills and deep ravines. Slopes range from 8 degrees to greater than 45 degrees in canyons. The maximum elevations on-site are found in the northwest

portions and range from 450 meters (1,476 feet) to 525 meters (1,722 feet) above sea level. The lowest elevation on-site is at the southern boundary and is approximately 152 meters (500 feet) above sea level.

2.1.2 Facility Organization and Responsibilities

Each LLNL Directorate owning and operating containers of oil capable of holding 55 gallons or more is responsible for maintaining their SPCC oil container inventory and implementing SPCC Plan requirements, including routine inspections, and operation and maintenance for its own programmatic equipment. Within the Operations & Business Directorate (O&B), the Facilities and Infrastructure (F&I) Group is responsible for institutionally owned aboveground oil storage containers and electrical equipment at Site 300. Aboveground oil storage containers associated with programmatic equipment associated with experiments at Site 300 are the responsibility of the Weapons and Complex Integration Directorate (WCI). The Radioactive and Hazardous Waste Management (RHWM) Program Office is responsible for the handling, storage, and/or disposition of all regulated hazardous and radioactive waste generated at LLNL.

Within the Environment, Safety, and Health Directorate, ESPO Group within EFA is responsible for preparing, reviewing, and updating the SPCC Plan and providing technical assistance with its implementation. ESPO relies on information regarding container inventory provided by the LLNL directorates with equipment subject to SPCC-requirements.

Document 22.1 in the LLNL *ES&H Manual* describes LLNL's Environmental Emergency Preparedness and Response actions and responsibilities. Workers can clean up a non-emergency spill (as defined in Document 22.1), using spill cleanup materials if it is safe to do so. If the spill becomes an emergency, workers are to contact the Fire Department either by dialing 911 from a landline or contacting the Central Alarm Station (CAS) operator by using the trunked radio system. Cellular telephones typically do not receive a signal at Site 300; however, if a signal is available, dial (925) 447-6880 to reach the Fire Department. Fire protection services including coordination and oversight of all emergency calls at Site 300 are provided under contract with the Alameda County Fire Department, which operates Station 21 at Site 300.

Pursuant to 40 CFR 112.5, LLNL must review and evaluate the SPCC Plan at least every 5 years, or whenever there is a change in the facility design, construction, operation, or maintenance that materially affects the Laboratory's potential for discharge. ESPO is responsible for reviewing the SPCC Plan and ensuring that amendments to the Plan are made within 6 months of the review. Organizations in LLNL affected by the amendments have no later than 6 months following preparation of the amendment to implement the changes. A log of SPCC Plan reviews and record of amendments is included at the beginning of this document. A Professional Engineer certifies technical amendments that result from Plan review.

2.1.3 Facility Drainage

Surface drainage flows via natural and manmade channels and ravines that flow into Corral Hollow Creek (see Facility Diagram, Map C-2 of Appendix C). Corral Hollow Creek flows easterly along the south side of the Site from its source in the foothills and ends in the floodplain of the San Joaquin River. An intermittent stream, Corral Hollow Creek contains water only during the rainy season. Ephemeral drainage channels, flowing from the north to the southeast across the Site, drain the areas associated with the facility and flow into Corral Hollow Creek during rain events. A surface drainage divide separates flow in the northern 10% of the Site from that in the southern 90% of the Site. Site topography ranges

from 500 to 1,750 feet above mean sea level (MSL) on the south side of the divide and from 900 to 1,500 feet above MSL on the north side of the divide.

Because Site 300 is situated in typically foothill-type terrain, it does not have an extensively constructed storm drainage system. Storm water is directed away from areas of development (run-on/runoff controls) via roadway ditches (both lined and unlined) and culverts under roadways into natural ravines and swales. The ravines and swales for most of Site 300 drain into unlined "V" ditches and flow easterly along the northern side of Corral Hollow Road into Corral Hollow Creek. The remainder of the extreme northern and eastern undeveloped portions of Site 300 drains into natural ravines and swales and discharges offsite into agricultural foothill type terrain.

Storm water discharges from industrial areas on site are monitored in accordance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activities (Order No. CAS000001).

2.1.4 Description of Oil Sources – 40 CFR 112.7(a)(3)(i)

Site 300 has the capacity to store approximately the number of gallons of oil listed in Tables C-1, C-2, and C-3 of Appendix C. Containers applicable to the SPCC Plan range in size from 55-gallon drums to 4,000 gallons. The predominant types of SPCC-regulated oil sources at Site 300 are No. 2 low-sulfur diesel fuel, mineral oil, gasoline, and various other oils. A SPCC container inventory is maintained, which contains a list of oil containers and the following information, as applicable:

- Container identification,
- Type of oil stored,
- Shell capacity for container (design liquid volume),
- Type of potential failure (e.g., overflow, leak, rupture),
- Rate of flow (e.g., filling rate, pumping rate, instantaneous loss of container),
- Direction of flow, and
- Discharge or drainage controls (e.g., secondary containment).

For the purposes of this SPCC Plan, oil storage containers at Site 300 are divided into four categories: (1) bulk storage containers used to store oil; (2) underground storage tanks (USTs); (3) oil-filled electrical equipment; and (4) oil-filled operating equipment associated with programmatic activities. Each category is discussed further in the sections below.

The SPCC Plan inventory in Appendix C does not include containers with a capacity less than 55-gallons or permanently closed containers.

2.1.4.1 Bulk Storage Containers

"Bulk storage container" means any container used to store oil. According to 40 CFR 112.2, bulk storage containers are "used for purposes including, but not limited to, the storage of oil prior to use, while being used, or prior to further distribution in commerce. Oil-filled electrical, operating, or manufacturing equipment is not a bulk storage container." Portable storage containers are defined as bulk storage containers under SPCC. Portable storage containers include 55-gallon drums, portable tanks, and totes. With the exception of mobile refuelers, bulk storage containers are required to have secondary containment sized to contain the entire capacity of the largest single container, plus sufficient freeboard to

contain precipitation as described in 40 CFR 112.8(c). Mobile refuelers are not subject to the sized secondary containment requirements under 40 CFR 112.8(c), however they are subject to general spill containment requirements and are required to have appropriate containment and/or diversionary structures or equipment to prevent a discharge, as described in 40 CFR 112.7(c). Furthermore, since mobile refuelers are a subset of bulk storage containers, the other provisions of 40 CFR 112.8(c) and 112.12(c) also still apply.

Many of the bulk storage containers at Site 300 contain diesel fuel and are used for standby emergency generators that provide power to various buildings on site during power outages. Some generators have fuel provided by a belly tank (also called a sub-base tank) whereas others are piped to a separate supply tank. Two generator day tanks are located adjacent to B882 that are fed from the UST located adjacent to this building. The largest generator tank at Site 300 is 250 gallons. The generators and tanks are placed on concrete pads or asphalt surfaces.

Four bulk storage containers (two inside the Building 875 Hibay and two outside of Building 879) contain unused motor oil and transmission fluid used for maintaining the heavy equipment at Site 300. These bulk storage containers are used to fill smaller containers (less than 55-gallons) for use as-needed when maintaining equipment.

Portable storage containers are defined as bulk storage containers under SPCC. At Site 300 these include 55-gallon drums, portable tanks/totes, and portable generators. New oil product in 55-gallon drums is stored in designated storage locations established throughout the Site based on program requirements. Several 55-gallon drums and portable totes are used to contain used oil or other oily-wastewater. Designated used-oil storage locations are established throughout the Site to temporarily accumulate used oil based on program requirements. Portable generators are stored in the parking lot east of B875 and are used at various locations at Site 300 as needed. Although portable pieces of equipment are subject to move on occasion, they are still subject to the sized secondary containment requirements under 40 CFR 112.8(c). If portable equipment is moved to another location for extended periods of time (defined as 6-months or greater for the purposes of this SPCC Plan), then the inventory should be changed and the SPCC Plan amended. This type of amendment would be considered a technical amendment.

Building 883 (B883) is a facility established to manage hazardous waste generated by various research operations conducted at Site 300. B883 is comprised of two separate storage areas: a 90-day waste accumulation area (WAA) located in the north end of the building with a storage capacity of 5,400 gallons; and a Resource Conservation and Recovery Act (RCRA) permitted container storage area (CSA) located in the south end of the building with a storage capacity of 5,400 gallons. Used oil is managed in RCRA-approved containers including 55-gal drums. Wastewater with some residual oil may also be stored in larger portable totes. The number of drums and/or totes may vary depending on the wastes generated at the time, but are stored such that the total quantity of liquid wastes stored does not exceed the designated capacity of the storage area.

Two mobile refuelers are operated at Site 300. The mobile refuelers have onboard bulk storage containers used to distribute fuel to equipment at Site 300.

The bulk storage containers at Site 300 are identified in Table C-1 and shown on the Facility Diagram in Appendix C. For portable containers, the locations identified on the table and map(s) are those where the portable containers are normally stored. For mobile refuelers, the locations identified on the table and map(s) are those where the mobile refuelers are normally parked.

2.1.4.2 Underground Storage Tanks

There are three USTs (two at B879 and one at B882) at Site 300, with a total maximum storage capacity of 21,500 gallons. Diesel fuel and gasoline are stored in these tanks. All of these buried storage tanks are constructed of fiberglass-wrapped steel. The associated primary underground piping is steel and is secondarily contained by fiberglass pipe. Underground storage tanks regulated under 40 CFR part 280 or a state program approved under 40 CFR part 281 are exempt from SPCC requirements in accordance with 40 CFR 112.1(d)(2)(i). The USTs at Site 300 are subject to H&SC Chapter 6.7 and 23 CCR, Division 3, Chapter 16, Article 4 and are therefore exempt.

Although these USTs are exempt from the SPCC regulations, the locations of USTs at Site 300 are shown on the Facility Diagram in Appendix C as required by 40 CFR 112.7(a)(3).

2.1.4.3 Oil-Filled Electrical Equipment

Institutional oil-filled electrical equipment at Site 300 consists of transformers. Transformers vary in storage capacity, with a maximum of 4,425 gallons. The majority of the transformers are located on concrete pads, although some are located within bermed enclosures, or are pole-mounted. Mineral oil, synthetic oil, and other similar fluids are typically used in oil-filled electrical equipment. Although oil-filled electrical equipment is not considered a bulk storage container and is therefore not subject to the sized secondary containment requirements under 40 CFR 112.8(c), oil-filled electrical equipment that contain 55 gallons or more of oil are subject to general spill containment requirements and are required to have appropriate containment and/or diversionary structures or equipment to prevent a discharge, as described in 40 CFR 112.7(c). For qualified oil-filled electrical equipment, the facility may instead implement an inspection and monitoring program, develop an oil spill contingency plan, and provide a written commitment of resources to control and remove discharged oil in accordance with 40 CFR 112.7(k). The majority of the transformers at Site 300 have been designated qualified oil-filled electrical equipment.

The oil-filled electrical equipment at Site 300 are identified in Table C-2 and shown on the Facility Diagram in Appendix C.

2.1.4.4 Oil-Filled Operating Equipment (Oil Containers used in Programmatic Activities)

Oil containers used in programmatic activities at Site 300 are generally associated with equipment used in experiments. The oil-filled operating equipment are not considered a bulk storage container and, therefore are subject to general spill containment requirements and are required to have appropriate containment and/or diversionary structures or equipment to prevent a discharge, as described in 40 CFR 112.7(c).

Within Room 125 of Building 801A, there is oil-filled operating equipment consisting of a flash x-ray (FXR) accelerator, designed to accelerate charged particles and generate x-rays. The accelerator consists of the following oil-containing components: a series of accelerator cells each containing less than 55 gallons of insulating oil; fifteen Marx tanks containing a bank of capacitors immersed in 720 gallons of insulating oil; and four electrical TMAGs each containing 60 gallons of insulating oil. Room 125 of Building 801A was designed to hold the FXR. Within the room runs a concrete trench (partially covered with steel plates) that drains to a tank located in a vault outside of B801 (801ATFO04). This vaulted system was designed primarily to hold the water that is often released during operation or maintenance of the FXR (water is released when the system is purged to remove entrained air bubbles trapped in the lines). However, occasionally the water in the trench contains trace amounts of the insulating oil used in the FXR system either due to cross contamination in the lines or due to small leaks that develop at fittings

around the Marx tanks that drip oil into the trench system. Oil leaks from the FXR are contained inside the building and drip pans are used to collect the insulating oil for reuse in the FXR. In addition, a spill kit is located within Room 125 to address leaks as they develop. The FXR is generally taken down for routine maintenance and repair approximately once per year, as project schedules allow.

Other operating equipment within the Building 801 Complex includes a large high-speed camera system with a hydraulic lift system located in Room 102 that contains 500 gallons of hydraulic oil. Another hydraulic lift system containing 70 gallons of hydraulic oil is located upstairs in Room 3001 and is used to operate the large, metal doors of Building 801A. A floor drain inside Room 3001 leads to a 4,000 gallon retention tank.

A hydraulically-lifted camera system is also found inside Room 122 of Building 851A. Building 851 is equipped for the radiography of explosives devices during intentional detonation testing. The hydraulic lift system at B851A contains 400 gallons of hydraulic oil.

The majority of the oil-filled operating equipment is stored indoors. Because programmatic activities are continually changing, the SPCC inventory includes experimental equipment as the equipment is identified, and information about the equipment is incorporated into the SPCC Plan no later than 6 months after the change and the SPCC Plan is amended.

The oil-filled operating equipment at Site 300 are identified in Table C-3 and shown on the Facility Diagram in Appendix C.

2.1.4.6 Partially Buried Metallic Tanks

Site 300 does not have any partially buried metallic tanks at the facility; therefore, 40 CFR 112.8(c)(5) does not apply.

2.1.4.7 Internal Heating Coils

Site 300 does not have any tanks with internal heating coils at the facility; therefore, 40 CFR 112.8(c)(7) does not apply.

2.2 Spill History – 40 CFR 112.4(a)

No spills or discharges of oil, as defined in 40 CFR 112.4(a), have occurred at Site 300, and no oil spill events fitting this definition have occurred within 12 months prior to the effective date of this SPCC Plan.

3.0 DISCHARGE PREVENTION – GENERAL SPCC PROVISIONS

This section discusses regulatory requirements and measures in use at Site 300 to prevent oil discharges during the handling, use, or transfer of oil products at the facility.

3.1 Compliance with Applicable Requirements - 40 CFR 112.7(a)(2)

Site 300 uses a variety of means to prevent the discharge of oil from the facility. Secondary containment is provided for many of the tanks, equipment and containers either through berms and other secondary containment structures or through double-walled construction of the tank. The double-walled tanks at Site 300 that are not equipped with overfill prevention measures (including both an overfill alarm and an automatic flow restrictor or flow shut-off) are equipped with active secondary containment methods to

address the typical failure mode and the most likely quantity of oil that would be discharged from the tank during transfer operations. Fuel transfer activities are always manned, and spill response kits are situated at various locations or on refueling trucks for quick access in the event of a spill during transfer. Maintenance areas and vehicles are equipped with spill response kits. Qualified oil-filled operating and electrical equipment are inspected monthly and an Oil Spill Contingency Plan has been prepared (Appendix F).

As discussed in Section 1.5, several non-conformances were noted at the time this plan was prepared. These issues must be addressed to comply with relevant parts of 40 CFR 112 identified in Section 1.5.

3.2 Potential Discharge Volumes and Direction of Flow - 40 CFR 112.7(b)

Tables C-1, C-2, and C-3 present expected volume, discharge rate, general direction of flow in the event of equipment failure, and means of containment for different parts of the facility where oil is stored, used, or handled. The maximum discharge volume is based on professional judgment, operational or equipment design, and industry/operator experience. Maximum discharge volume is based on reasonable potential for equipment failure, not entire capacity of equipment. Accordingly, the maximum discharge volume is much smaller than the actual capacity of the container. For tanks that are of double-walled construction, the likelihood of simultaneous failure of the primary tank and secondary containment is low. The highest risk for discharges is usually during filling tanks or equipment; however, the discharge amount is usually relatively small, compared to the actual container size. Containers that frequently get filled are normally considered to be at a higher risk than equipment that is not refilled or is sealed (such as transformers, for instance). In general, the maximum discharge volume due to tank rupture is estimated at 10% of tank capacity. Drums and totes are estimated at container size. For ruptures, flow rates range from instantaneous to gradual. Max flow rates are estimated at 100% of maximum discharge volume, unless otherwise indicated.

For fuel transfer overflows, the fuel transfer pumps on the mobile refuelers operate at a maximum rate of 20 gallons per minute. Since fuel transfer operations are continuously manned, it was assumed the response time by the operator to turn off the fuel pump would be quick, conservatively assumed within 10 seconds. Therefore, the most reasonable maximum discharge volume would be limited to approximately 3 gallons for overfill during fuel transfer operations.

For leaks from piping connecting the emergency generators and associated tanks, leaks would only occur while the generators are operating. The generators only operate during periodic required reliability-related testing or when called to service during a power outage. The testing runtime averages approximately 15 minutes a month. Leaks in the pipe or a fitting would result in a small amount of fuel leaking during transfer pump operation. In this case, the maximum discharge volume is estimated at 10% of the expected volume of oil that would be transferred during the 15 minutes average monthly operation. Max flow rates are estimated at the generator transfer pump rate at maximum design demand.

For transformers and oil-filled operational equipment, the most reasonable failure mode is considered slow leaks from fittings, connections, and bushings. The maximum discharge volume is estimated at 10% of equipment capacity for transformers. Other operating equipment at Site 300 would be significantly less.

3.3 Containment and Diversionary Structures - 40 CFR 112.7(c)

Secondary containment can be sized or general. Sized secondary containment, required for bulk storage containers, must be designed to hold the entire contents of the largest container plus sufficient freeboard General secondary containment may be either active or passive in design. Active secondary containment

measures (such as deploying booms or sorbent materials) are acceptable provided they can be implemented in time to prevent the spilled oil from reaching navigable waters. Active measures are not necessarily appropriate for equipment that is not often manned. At a minimum, one of the following prevention systems or its equivalent is acceptable to meet the secondary containment requirements:

- Double-walled construction
- Dikes, berms, or retaining walls sufficiently impervious to contain oil;
- Curbing or drip pans;
- Sumps and collection systems;
- Culverting, gutters, or other drainage systems;
- Weirs, booms, or other barriers;
- Spill diversion ponds;
- Retention ponds; or
- Sorbent materials.

Whatever containment method is used, it must be capable of containing oil and must be designed so that any discharge from a container will not escape the containment before cleanup occurs. In determining the method, design, and capacity, only the typical failure mode and the most likely quantity of oil that would be discharged are addressed.

Methods of secondary containment at Site 300 include a combination of structures (passive) and sorbent materials (active) to prevent oil from reaching navigable water and adjoining shorelines. The type of spill containment at each outdoor oil container is described in Appendix C (e.g., constructed secondary containment such as double-wall construction, or active secondary containment such as spill kits and sorbents). Note that some of the elements required by 40 CFR 112.7(c) are superseded by the requirements for bulk storage containers outlined in 40 CFR 112.8(c). Section 40 CFR 112.8(c) states that enough constructed secondary containment must exist for bulk storage containers to contain the entire capacity of the largest single container plus sufficient freeboard for precipitation. The bulk storage requirements are further described in Section 4.2. Oil-filled electrical equipment and oil-filled operating equipment are not required to meet the constructed secondary containment requirements for bulk storage containers under 40 CFR 112.8(c), although they are still required to have general spill prevention, control, and containment practices, except as discussed in Section 3.4.

The following presents an overview of the general secondary containment types in use at Site 300.

3.3.1 Concrete Containment Berms

Concrete containment berms have been constructed at the B883 WAA, B883 CSA, and several transformer locations. Tables C-1 and C-2 identify the containers for which concrete containment berms are used as the secondary containment method. Tables C-1 and C-2 also identify the total secondary containment capacity of the concrete berm (less displacement volumes). Secondary containment calculations for bulk storage containers are provided in Appendix D. The storm water collected in the secondary containment is discharged following the procedures documented in Appendix E.

3.3.2 Concrete Trenches

Several of the pad-mounted transformers at Site 300 have concrete trenches surrounding the edge of the pad. The transformers where these structures are located, as well as the containment capacities are indicated in Table C-2. Secondary containment calculations are provided in Appendix D. The storm water collected in the secondary containment is discharged following the procedures documented in Appendix E.

3.3.3 Sorbent Materials

Sorbent materials are located strategically throughout the Site both at dedicated locations in buildings or storage areas and inside the maintenance vehicles used at Site 300. For the purposes of this SPCC Plan, a collection of sorbent materials at dedicated locations that could be used for spill response is referred to as a "spill kit." The spill kits identified in this section are intended for use of containment of the most reasonably expected discharge volume identified as a result of the analysis in Section 3.2. The purpose is to contain the oil discharge upon discovery *before* it reaches navigable waters or adjoining shorelines. Therefore, the spill kit locations are intended to be easily accessed by personnel for quickly responding to relatively small releases. A response trailer containing bulk quantities of equipment is maintained at the Building 883 Facility to support the Fire Department in the event of a large release incident at Site 300, as described in the Oil Contingency Plan in Appendix F.[1]

Designated spill kit locations identified for spill control at Site 300 are indicated on the Facility Diagram. Additional spill kits are found in the maintenance vehicles used at Site 300. The spill kit materials vary, but at a minimum are sized to contain the most reasonably expected volume of oil that would be discharged.

An inventory of designated spill kits for spill control at Site 300 is included in Appendix G. Other spill equipment, including absorbent materials, is typically stored in other areas of Site 300, although it is not inventoried for SPCC purposes. Spill kit equipment is maintained by each responsible department. When equipment is used, it is replaced by department personnel.

3.3.4 Pre-Fabricated Storage Units

Pre-fabricated storage units, such as Chemstor units, are modular, enclosed storage units with constructed secondary containment as part of the cabinet's design. The storage cabinet at Site 300 used for oil storage is manufactured by Chemstor and is used to store up to thirty 55-gallon drums of oil products. The unit has an integrated secondary containment capacity greater than 55-gallons. Secondary containment

[1] Note that active containment measures such as sorbent materials are used to meet *secondary containment requirements*, and contingency plans are used to meet *the requirement in §112.7(d) when an impracticability determination is made or to meet the requirements in 112.7(h) for qualified oil-filled equipment*. Active containment measures (as opposed to passive containment measures – i.e., permanent structures) require deployment or other action; they are put in place prior to or immediately upon discovery of an oil discharge. The purpose of active containment measures is to contain an oil discharge *before* it reaches navigable waters or adjoining shorelines. These measures should be designed to prevent discharges from leaving the facility boundaries.

A contingency plan, for SPCC purposes, is a detailed oil spill response plan developed when any form of secondary containment is determined to be impracticable. It addresses controlling, containing, and recovering an oil discharge in quantities that may be harmful to navigable waters or adjoining shorelines. The purpose of a contingency plan should be both to outline response capability or countermeasures to limit the quantity of a discharge reaching navigable waters or adjoining shorelines (if possible) and to address *response to a discharge of oil that has reached navigable waters or adjoining shorelines*. Thus, active containment measures can be part of a contingency plan and every effort should be made to control the oil discharge before it reaches navigable waters or adjoining shorelines.

capacity is based upon information available from the manufacturer. Secondary containment calculations have not been completed.

3.3.5 Spill Pallets

Spill pallets at Site 300 are placed under 55-gallon drums and totes. The pallets are generally used inside buildings where drums are protected from rain accumulation. The pallets are designed with a secondary containment reservoir sized to contain a minimum of the entire capacity of the largest container being stored (a minimum of 55-gallon sump). Drums that are stored outdoors on secondary containment pallets are constructed with roll tops to prevent accumulation of precipitation, or the pallet reservoirs are routinely drained if not protected from rain.

3.3.6 Double-Walled Tank Construction

Many bulk storage containers at Site 300 are shop-fabricated (a welded carbon or stainless steel AST fabricated in a manufacturing facility, or an AST not otherwise identified as field-erected with a volume less than or equal to 50,000 U.S. gallons), double-walled containers. In general, a shop-fabricated double-walled AST will meet secondary containment requirements if fittings or openings are not located below the liquid level of the container and required protective measures are installed. The protective measures include overfill prevention measures with both an overfill alarm and an automatic flow restrictor or flow shut-off. As an alternative to the overfill prevention measure, the container may be equipped with either active or passive secondary containment methods to address the typical failure mode and the most likely quantity of oil that would be discharged from the tank vents during transfer operations (see Section 3.2). Product transfers are continuously monitored during filling activities. Double-walled tanks with fittings or openings located below the liquid level of the container may require additional secondary containment to conform with industry standards and/or local codes. The bulk storage requirements are further discussed in Section 4.2.

3.3.7 Secondary Containment Provided by Building/Room

To the extent that an existing building structure meets the SPCC performance criteria for secondary containment (i.e., appropriately sized, sufficiently impervious to oil, etc.), such a building is considered as an appropriate containment structure. The storage area must not be equipped with open floor drains or an automated sump pump unless the drainage system has been purposefully equipped to treat any discharge (e.g., by use of an adequately sized, designed and maintained oil-water separator). Additionally, any doorways, windows, or other openings that would permit a discharge to flow out of the building must also be taken into consideration. In cases where the building walls are used for secondary containment, the calculation of the capacity of the secondary containment structure considers the displacement by other containers, equipment, and items sharing the containment structure.

Tables C-1 and C-3 identify the containers for which buildings are used as the secondary containment method. For any indoor oil container, depending on the type and amount of oil stored, LLNL uses curbing, floor drain plugging (where present), pads/mats at floor drains, or similar measures to prevent discharge through floor drains.

3.4 Qualified Oil-Filled Operational Equipment - 40 CFR 112.7(k)

For oil filled operational equipment where installing secondary containment structures may be impractical or unsafe, the oil spill regulations provide an alternative to providing secondary containment structures. The facility may instead implement an inspection and monitoring program, develop an oil spill contingency plan, and provide a written commitment of resources to control and remove discharged oil.

Oil filled electrical and operational equipment is eligible for this provision if during the past three years, releases from the equipment during any twelve-month period, meet the following criteria: (1) no releases that reach navigable waters of more than 1,000 gallons in a single discharge or (2) no more than two discharges exceeding 42 gallons that reach navigable waters. Site 300 has not had any releases of oil meeting the criteria. Based on this release history, Site 300 has the option to develop an oil spill contingency plan to address oil-filled operational equipment.

Tables C-2 and C-3 identify qualified oil-filled electrical and operational equipment and where inspection procedures are implemented. Section 3.6 discusses the applicable inspection procedures. An Oil Spill Contingency Plan has been prepared for Site 300 and is included in Appendix F and includes a written commitment to manpower, equipment and materials.

3.5 Practicability of Secondary Containment - 40 CFR 112.7(d)

In general, secondary containment is practicable at Site 300. Additional evaluation is required however for tank 801ATFO03 located at Building 801. Because the tank's double-walled construction has been modified, there currently is not adequately sized secondary containment. An engineering design review was completed in November, 2016. The design includes reconfiguring the piping and sealing the penetrations below the liquid level. When this design is implemented, the double-walled integrity of the tank will be restored. In the interim, this tank will be subjected to inspections and leak testing requirements describe in Section 4.2.6.

3.6 Inspections, Tests, and Records – 40 CFR 112.7(e)

Various Site 300 personnel perform inspections and tests, and maintain records of these activities. For all equipment, the inspections include visual checks for container integrity; for leaks and spills from the containers; as well as checks of piping, valves and appurtenances; and (if present) inspection of secondary containment structures for deterioration, accumulation of debris, discharges, and accumulated oil. Qualified F&I personnel are responsible for inspecting institutionally owned aboveground oil storage containers and electrical equipment at Site 300. Aboveground oil storage containers associated with programmatic equipment associated with experiments at Site 300 are inspected by programmatic personnel familiar with the equipment. RHWM personnel are responsible for inspecting containers related to regulated hazardous and radioactive waste generated at LLNL. The required inspections and tests are described in the following subsections. Inspections are also performed when a container undergoes a repair, alteration or change in service that might affect the risk of discharge or failure.

3.6.1 Inspections of Containers in RCRA-Permitted Container Storage Areas

Inspections of the portable containers within the RCRA-Permitted B883 CSA areas are conducted by appropriately trained RHWM personnel in compliance with requirements of 22 CCR 66264, Article 10 and the procedures established in LLNL's RCRA permit. Inspection logs are maintained by RHWM for at least 3 years from the date of the inspection in accordance with 22 CCR 66264.15(d).

3.6.2 Monthly Inspections of non-RCRA Bulk Storage Containers

Appendix H discusses the inspection procedures at Site 300. The checklist provided in Appendix H.1 is used for monthly SPCC inspections by facility personnel for bulk storage containers at the site subject to the SPCC requirements in 40CFR112. The checklist provided in Appendix H.2 is used for monthly SPCC inspections by facility personnel for portable bulk storage container storage areas at Site 300. Inspection records for portable containers such as drums and totes are conducted based on designated storage area (i.e., a separate inspection list is not prepared for each individual drum or tote). The personnel performing

these inspections must be knowledgeable about storage facility operations, the type of AST and its associated components, and characteristics of the liquid stored. The personnel performing these inspections must also be familiar with pumping, piping and valve operations of the bulk storage system, as appropriate. The bulk storage containers are also subject to integrity testing which is discussed in Section 4.2.6 of this Plan.

Upon completion of the appropriate inspections, copies of all signed inspection records are submitted to the Site 300 Manager. In general, inspection records are maintained for at least 3 years. The exception is formal inspection and leak testing records which should be kept for the life of the tank (see Section 4.2.6.2). Records of inspections and tests are kept under usual and customary business practices.

3.6.3 Inspections of Qualified Oil-Filled Electrical and Operational Equipment

The checklist provided in Appendix H.3 is used for monthly SPCC inspections by facility personnel for all qualified oil filled electrical and operational equipment at the site subject to the SPCC requirements in 40CFR112. These inspection records include the name and signature of the inspector responsible for the inspections. The monthly inspections cover the following key elements:

- Observing the exterior of equipment for signs of deterioration or leaks
- Checking for other conditions that should be addressed for continued safe operation of the equipment.

The personnel performing these inspections must be knowledgeable about the equipment operations and its associated components, and characteristics of the liquid stored. Issues regarding leaks, piping, or containment are immediately reported to the Site 300 Manager. Visible oil leaks from components must be addressed as soon as possible to prevent a larger spill or a discharge.

Upon completion of the appropriate inspections, copies of all signed inspection records are submitted to the Site 300 Manager. Inspection records are maintained for at least 3 years. Records of inspections and tests are kept under usual and customary business practices.

3.6.4 Inspections of Oil-Filled Operational Equipment

Inspections and maintenance of oil-filled operational equipment at Site 300 are conducted in accordance with the recommendations for the specific piece of equipment by appropriately trained personnel. For the purposes of the SPCC program, inspections of the specified oil-filled operational equipment are recorded monthly on the form provided in Appendix H.3. Upon completion of the appropriate inspections, copies of all signed inspection records are submitted to the Site 300 Manager. Inspection records are maintained for at least 3 years.

3.6.5 Annual Inspections of non-RCRA Bulk Storage Containers

Facility personnel perform a more thorough inspection of stationary bulk storage containers on an annual basis. This annual inspection complements the monthly inspection described above and is performed each year using the checklist provided in Appendix H.4 of this Plan. These inspection records include the name and signature of the inspector and/or equipment custodian responsible for the inspections. The annual inspection has been developed following the Steel Tank Institute (STI) *Standard for the Inspection of Aboveground Storage Tanks*, SP-001, 2011 5th edition, as described in Section 4.2.6 of this Plan. The personnel performing these inspections must be knowledgeable about storage facility operations, the type of AST and its associated components, and characteristics of the liquid stored. The personnel performing

these inspections must also be familiar with pumping, piping and valve operations of the bulk storage system, as appropriate.

Upon completion of the appropriate inspections, copies of all signed inspection records are submitted to the Site 300 Manager. In general, inspection records are maintained for at least 3 years. Records of inspections and tests are kept under usual and customary business practices.

3.7 Personnel Training – 40 CFR 112.7(f)(1),(3)

LLNL provides initial instruction to oil-handling facility personnel in the operation and maintenance of oil pollution prevention equipment, discharge procedure protocols, applicable pollution control laws, rules and regulations, general facility operations, and the content of this SPCC Plan through the initial Spill Prevention, Control, and Countermeasure training course (EP3045-W). All new employees fill out a Training Questionnaire, which determines what training they must complete. Each Directorate has a training administrator who appoints contacts to enter employee information and help employees use the institutional training system. Existing employees review their training questionnaire annually with their supervisor. Employees who handle oil are also identified during the site-wide surveys for oil containers associated with experiments. Any new facility personnel with oil-handling responsibilities are provided with this same training prior to being involved in oil handling.

Annual discharge prevention briefings and SPCC training are provided through the annual Spill Prevention, Control, and Countermeasure Annual Discharge Prevention Briefing (EP3045-R) for all facility personnel who operate or maintain aboveground oil-filled containers, including oil filled equipment, capable of containing 55 gallons or more of oil. The annual briefing is performed by the oil-handler and signed by the first-line supervisor. The annual briefing for oil-handling personnel is designed to assure adequate understanding of the SPCC Plan. The briefings highlight and describe known discharges or failures, malfunctioning components, and any recently developed precautionary measures. Training records are kept through the institutional training management system and are retained for a minimum of 3 years.

3.8 Security Design Features – 40 CFR 112.7(g)

3.8.1 Fencing – 40 CFR 112.7(g)(1)

Site 300 is a high security facility. Access to the site is granted only to employees and escorted visitors who have official business at the site. Access by unauthorized personnel is prohibited by law. All long-term visitors undergo a security background investigation. The entire facility is fenced, and access is granted only through a secure gate, where all vehicles and personnel are subject to search. In addition, the facility has dedicated security and fire departments. The onsite Protective Force Officers patrol and monitor the site 24 hours per day, seven days a week, 52 weeks per year. Access to the Facility is administratively controlled.

3.8.2 Flow Valves, Starter Controls, and Fill Piping Connections – 40 CFR 112.7(g)(2),(3),(4)

Valves and pumps are not locked except in areas of high security. Vehicle refueling is allowed only with a controlled vehicle identification card. When a pump is in a non-operating status, the starter controls are locked. LLNL also uses employee training and a system of limited controlled access to prevent operation of such appurtenances by unauthorized personnel. Starter controls are usually located inside buildings that are either occupied or locked. Pipelines are capped or removed when taken out of service.

3.8.3 Facility Lighting – 40 CFR 112.7(g)(5)

As described in Section 3.8.1, Site 300 is a high security facility and is entirely fenced and patrolled by security personnel, prohibiting unauthorized access to the Site with respect to acts of vandalism.

Tank transfer operations, such as re-supplying diesel to emergency generators, can take place during power outages. Therefore, all fuel truck service vehicles involved in fuel transfers are equipped with emergency lights that provide a minimum intensity of 5 foot-candles at transfer connections. (A foot-candle is a measure of light intensity.) If adequate fuel is present in the emergency generators being refueled, lighting may be powered by the emergency generator. Currently, fuel deliveries after dark are made from a service vehicle equipped with two floodlights that exceed the 5-foot-candle lighting requirement. In no instance does refueling occur under conditions of inadequate lighting.

Work areas that are not transfer connection points are provided with a minimum light intensity of 1 foot-candle. This level of lighting allows for visibility of spills by facility personnel or security personnel during rounds. Non-authorized personnel cannot access Site 300.

3.9 Loading Area Design – 40 CFR 112.7(h)

Site 300 does not maintain a tank car and tank truck loading/unloading rack; therefore, the engineering design requirement in 40 CFR 112.7(h) does not apply.

Diesel and gasoline deliveries at Site 300 are conducted by outside vendors. The operators of commercial tankers that make these deliveries follow strict U.S. Department of Transportation (DOT) procedures (49 CFR 177 subpart B) during the unloading of these fuels. Before the operators fill the underground tanks with diesel or gasoline, an LLNL representative inspects the spill buckets and is present during the fuel delivery process. When fuel delivery is completed, the LLNL representative inspects the spill buckets for any fuel. Automatic interlocking systems installed in these trucks prevent vehicular departure before the transfer lines are properly disconnected. Before the tanker leaves the site, the operator inspects drains and outlets in accordance with the same DOT procedures.

3.10 Brittle Fracture Evaluation - 40 CFR 112.7(i)

There are no field-constructed tanks at Site 300. The tanks are shop-built. Therefore, an evaluation of the containers for risk of discharge or failure due to brittle fracture or other catastrophe is not required.

3.11 Conformance with State and Local Applicable Requirements - 40 CFR 112.7(j)

The locations and quantities of hazardous materials containers and equipment (including those subject to SPCC requirements) are submitted to the San Joaquin County Environmental Health Department as part of the Hazardous Material Business Plan (HMBP) program. The facility is also subject to the California Aboveground Petroleum Storage Tank Act.
Storm water discharges from industrial areas on site are monitored in accordance with the NPDES General Permit for Storm Water Discharges Associated with Industrial Activities (Order No. CAS000001).

3.12 Temporary and Long-Term Storage of Polychlorinated Biphenyls (PCBs) for Disposal – 40 CFR 761.65(c)

Some of the oil-filled electrical equipment at Site 300 may contain oil with a PCB concentration of 50 ppm or greater. When PCB items with a PCB concentration of 50 ppm or greater are taken out of service, they are regulated in accordance with 40 CFR 761.65(c)(1), which states that the items can be stored temporarily (up to 30 days) at the site if the following conditions are met:

- The PCB item or article is marked or tagged, indicating the date the item was removed from service.
- The PCB item or article is not leaking. If it is leaking, then the PCB item or article is placed in a non-leaking container with absorbent.

This temporary storage allows for sampling and analysis during the time that waste disposal administrative procedures are being completed. The waste is then scheduled for pickup and transported to a LLNL Radioactive and Hazardous Waste Management facility that meets Toxic Substances Control Act (TSCA) requirements or is shipped directly from the WAA to a permitted disposal facility.

In accordance with 40 CFR 761.65(b), a WAA that stores PCBs or PCB items for longer than 30 days (but less than 1 year) must have secondary containment dikes or containment pallets. The containment must either have adequate roof and walls to prevent rainwater from reaching the stored PCBs and PCB items, or adequate floor that has continuous 6-inch minimum height curbing that provides a containment volume equal to at least two times the internal volume of the largest PCB article or PCB container or 25% of the total internal volume of all PCB articles and PCB containers, whichever is greater.

As a best management practice, PCB wastes are shipped out for disposal within 9 months of the date when the item was removed from service. Spill cleanup kits are available at the B883 WAA in the event that there is an accidental spill. The B883 WAA has a roof and walls to prevent rainwater from reaching PCB-contaminated oils or items. The floors are also impervious to PCBs and have a continuous curb at least 6 inches high. There are no floor drains, drain valves, expansion joints, sewer hookups, or other openings that could allow liquid to flow from the curbed area.

Containers used for storage of liquid PCBs comply with the Shipping Container Specifications of the Department of Transportation (DOT) Hazardous Materials Regulations (49 CFR Subchapter C). Liquid PCBs must be stored within covered secondary containment or on spill pallets and are handled by authorized personnel trained in handling liquid PCBs.

4.0 DISCHARGE PREVENTION – SPCC PROVISIONS FOR ONSHORE FACILITIES (EXCLUDING PRODUCTION FACILITIES)

4.1 Drainage Design - 40 CFR 112.8(b)

Site 300 encompasses nearly 7,000 acres and it is not practical to dike the entire site or direct discharge from individual buildings or facilities to some form of catchment basin. LLNL provides equivalent environmental protection by using double-walled bulk storage containers, diking (installing berms around) the immediate area where single-walled bulk storage containers are stored, using secondary containment buildings or secondary containment pallets for single-walled drums. For undiked areas with a potential for a discharge (such as where piping is located outside containment walls), secondary containment is provided by means of impervious surfaces and sorbent materials. Mobile/portable

containers are positioned to effectively prevent discharges. Secondary containment for these containers is provided by means of spill pallets, impervious surfaces, sorbent materials, or other means.

Due to relatively low precipitation at Site 300, storm water in small amounts within the bermed areas is allowed to evaporate unless the water is in contact with the equipment inside the berm in which case the storm water is released. Should a storm water release be necessary, it would be done through non-flapper-type valves, with the discharge monitored for compliance with the discharge limits in 40 CFR 110.3. 40 CFR 110.3 prohibits discharges of oil that violate applicable water quality standards or cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines. The procedure for addressing these releases is contained in Appendix E.

4.2 Bulk Storage Containers and Secondary Containment – 40 CFR 112.8(c)

Table C-1 identifies the construction, volume, and content of the bulk storage containers located at Site 300.

4.2.1 Tank Compatibility – 40 CFR 112.8(c)(1)

The material and construction of bulk storage containers at Site 300 are compatible with both the types of oil and the conditions of oil storage as required by 40 CFR 112.8(c)(1). The LLNL Program used for obtaining new oil storage containers includes a review of manufacturer information to ensure construction compatibility. For aboveground storage tanks (ASTs), both carbon steel and fiberglass are compatible with petroleum fuels and oils. The primary tank walls of electrical equipment are made of carbon steel. The primary walls of tanks containing wastewater with some residual oil are made of carbon steel or oil-compatible plastic materials, such as cross-linked polyethylene or fiberglass-reinforced plastic. New tanks and installations are designed in accordance with current state and federal regulations, manufacturers' specifications, and best management practices.

4.2.2 Secondary Containment Volume for Bulk Storage Containers – 40 CFR 112.8 (c)(2)

With the exception of mobile refuelers and other non-transportation-related tank trucks, the bulk storage containers identified in Table C-1 are subject to the requirements of 40 CFR 112.8(c), which states that constructed secondary means of containment must be provided and able to contain the entire capacity of the largest single container, plus sufficient freeboard to contain precipitation. A shop-fabricated double-walled AST will meet secondary containment requirements if required protective measures are installed. These provisions require overfill prevention measures that include both an overfill alarm and an automatic flow restrictor or flow shut-off. As an alternative to the overfill prevention measures, the container may be equipped with either active or passive secondary containment methods to address the typical failure mode and the most likely quantity of oil that would be discharged from the tank during transfer operations (see Section 3.2). However, double-walled tanks with fittings or openings located below the liquid level of the container may require additional secondary containment to conform with industry standards and/or local codes. ASTs that are double-walled and ASTs that are in protected bermed areas are constructed not to accumulate precipitation; therefore, these ASTs are not subject to the freeboard requirement. Bulk storage containers located inside a building may be considered to be secondarily contained provided that there is no potential for discharge outside of the secondary containment system (for example, a floor drain or a sloped doorway).

The methods of secondary containment for the bulk storage containers are identified in Table C-1. For containers that are not double-walled, the existing bulk storage containers are within bermed areas that are

sized to contain the capacity of the largest single container stored at the location plus sufficient freeboard to contain precipitation from a 24-hour, 25-year storm event (equates to 2-inches; see Appendix I).

The 55-gallon drums and totes not located within a secondary containment berm or constructed storage unit with secondary containment capacity are placed on spill pallets which are adequately sized to provide suitable containment implicit in their design and specifications. Portable containers may be moved temporarily to other locations at Site 300 for use, but the secondary containment requirements are still applicable.

Newly installed ASTs are provided with a secondary means of containment and have overspill protection, overfill cutoff protection, leak detection, and a remote leak alarm. Where double-walled construction is not practical, berms, dikes, or sumps sufficiently impervious to oil are constructed and designed to contain the capacity of the largest container plus sufficient freeboard to contain precipitation from a 24-hour, 25-year storm event (2 inches of freeboard; C.G. Campbell 2005; see Appendix I). When secondary containment pallets are used for 55-gallon drums, the containment pallets must be sufficiently sized to contain the contents of the largest container (55-gallons) plus sufficient freeboard to contain precipitation from a 24-hour, 25-year storm event. Alternatively, the containers and associated containment pallets are placed in protected areas to avoid accumulating precipitation.

4.2.3 Diked Area, Inspection and Drainage of Rainwater – 40 CFR 112.8(c)(3)

Where bypass valves are located, the bypass valves are kept sealed closed except when conducting a discharge of accumulated rainwater. Procedures for discharge of rainwater accumulated in diked areas are described in Appendix E. All bulk oil storage areas are inspected at the frequency described in Sections 3.6 and 4.2.6. The organization that conducts the inspection submits copies of inspection records to the Site 300 Manager and records are maintained for a minimum of 3 years.

4.2.4 Corrosion Protection for Buried Metallic Tanks – 40 CFR 112.8(c)(4)

The USTs at Site 300 are protected from corrosion by coatings compatible with local soil conditions or cathodic protection. USTs are fiberglass or fiberglass-coated steel. F&I ensures that leak detection and monitoring equipment for underground storage tanks are maintained and tested in accordance with their UST permits.

4.2.5 Corrosion Protection of Partially Buried Metallic Tanks – 40 CFR 112.8(c)(5)

There are no partially buried metallic tanks at Site 300.

4.2.6 Bulk Storage Containers Periodic Integrity Testing – 40 CFR 112.8(c)(6)

Integrity testing for bulk storage containers is conducted by appropriate personnel according to the procedures described in this SPCC Plan. The inspection program has been established in general accordance with the procedures described in the Steel Tank Institute (STI), SP001, "Standard for the Inspection of Aboveground Storage Tanks" for in-service, shop-fabricated tanks. As described in 40 CFR 112.8(c)(6), examples of integrity tests include, but are not limited to: visual inspection, hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or other systems of non-destructive testing.

4.2.6.1 Periodic Inspections

Based on the SP001 standard, the appropriate minimum level of integrity testing for all of the bulk storage tanks at Site 300 are periodic visual inspections conducted by a LLNL-trained inspector a minimum of monthly or when material repairs are made. In addition, a comprehensive annual inspection is also completed for each non-portable bulk storage container every year. Portable storage containers are inspected monthly. The personnel performing these inspections must be knowledgeable about storage facility operations, the type of storage container and its associated components, and characteristics of the liquid stored. The personnel performing these inspections must also be familiar with pumping, piping and valve operations of the bulk storage system, as appropriate.

The inspections include the relevant items provided in the "Bulk Storage Container Monthly Inspection Checklist" (Appendix H.1), the "Portable Container Storage Area Monthly Inspection Checklist" (Appendix H.2), and the "Bulk Storage Container Annual Inspection Checklist" (Appendix H.4). The checklists provided in Appendix H have been developed using the SP001 guidance. The checklists are general and some items identified on the checklist may not apply to every bulk storage container at Site 300. When new equipment is brought to the Site (which would require a technical amendment), the inspection checklists and the SP001 standard should be reviewed by the PE certifying the technical amendment to ensure that relevant items from the SP001 standard are included on the checklists and update the checklists/inspection procedure if needed. Copies of the completed inspection checklists are signed by the inspector and provided to the Site 300 Manager upon completion. The Site 300 Manager maintains copies of these inspection records in his files for a minimum of 3 years.

If any of the conditions inspected during the monthly or annual inspections are designated as a non-conformance status as indicated on the checklist, additional action is required to address the problem. If a leak is discovered at any time by an inspector or other container operator, the storage container must be repaired as soon as possible or else replaced or closed and removed from service. Non-conformance items designated on the checklist should be reported to the Site 300 Manager upon completion of the inspection activity and the appropriate follow-up activities scheduled (for instance, removing debris observed in secondary containment). Non-conforming items identified during inspections that are important to storage container or containment integrity (e.g., major cracks, tank or containment deformation, etc.) require evaluation by an engineer experienced in AST design, a certified inspector, or a tank manufacturer to determine the appropriate corrective action. A certified inspector shall be certified by one or both of the following: American Petroleum Institute (API) Standard 653 *Authorized Inspector Certification with STI SP001 Adjunct Certification*; STI *Certified SP001 AST Tank System Inspector*.

In addition, a tank subjected to damage caused by the following conditions requires evaluation by an engineer experienced in AST design, a certified inspector, or a tank manufacturer who will jointly with the owner determine if an immediate Formal External or Internal Inspection by a Certified Inspector is required:

- Fire - AST exposed to fire or flame impingement
- Natural disaster - AST exposed to flooding, hurricane force winds, etc. and has been lifted or damaged
- Excessive settlement - AST that has experienced excessive settlement
- Overpressure - AST exposed to excessive internal pressure caused by overfill or failure of venting devices or other reason

- Damage from cracking - AST with evidence of cracking of welds or of an AST surface

4.2.6.2 Formal Inspections and Leak Testing

With the exception of Tank 801ATFO03 which is discussed in greater detail below, the bulk storage containers at Site 300 are sized and configured as Category 1 or Category 2 containers using the SP001 Standard. Formal inspections by an STI-Certified Inspector and leak testing are not routinely required unless experience, container damage, or other indications suggest that further inspection by a certified inspector and/or physical testing is necessary. The stainless steel single-walled fuel containers on the mobile refuelers should be replaced after 17 years in accordance with the SP001 standard.

One tank, 801ATFO03, is 4,000 gallons and has had the secondary double-walled construction altered by an outlet through the double-wall below the normal liquid operating level. Because of this modification, this tank is subjected to additional inspection requirements beyond the periodic visual inspections conducted by a LLNL-trained inspector described in Section 4.2.6.1. This tank must also be subjected to the following additional inspections:

- Formal external inspections conducted by a Certified Inspector and Leak Testing by LLNL (or LLNL's designee) every 5-years
- Formal internal inspections conducted by a Certified Inspector every 10-years

  Note: A design review for redesigning the tank was completed in November, 2016. If the design is implemented within six-months of issuance of this plan, no additional formal inspections will be required.

Formal internal and external inspections must be conducted by a Certified Inspector. A certified inspector shall be certified by one or both of the following: API Standard 653 *Authorized Inspector Certification with STI SP001 Adjunct Certification*; STI *Certified SP001 AST Tank System Inspector*. The formal inspections should be conducted in general accordance with the guidelines established in the SP001 Standard. The external inspection includes ultrasonic testing of the shell, as specified in the standard, or if recommended by the Certified Inspector to assess the integrity of the tank for continued oil storage. Leak testing should be conducted in consultation with the Steel Tank Institute Recommended Practice R912, *Installation Instructions for Shop Fabricated Stationary Aboveground Storage Tanks for Flammable, Combustible Liquids.* Air shall not be used for a pressure test and an inert gas shall be used instead. The introduction of a gas containing oxygen (such as air) to a tank that has previously held petroleum liquid can pose an explosion hazard.

Records of all certified inspection reports and leak testing should be kept for the life of the tank.

4.2.7 Control Leakage through Internal Heating Coils – 40 CFR 112.8(c)(7)

This section is not applicable because there are no bulk storage containers that are equipped with internal heating coils included in this SPCC Plan for Site 300.

4.2.8 Overfill Prevention Systems – 40 CFR 112.8(c)(8)

Non-portable bulk storage containers at Site 300 are provided (or must be retro-fitted) with at least one of the following devices:

i. High liquid level alarms with an audible or visual signal.

ii. High liquid level pump cutoff devices set to stop flow at a predetermined container content level.
iii. Direct audible or code signal communication between the container gauger and the pumping station. Because the majority of the bulk storage containers at Site 300 are relatively small, refueling vehicles are positioned immediately adjacent to tanks during container refilling. The position of the refueling vehicles allows the operator to observe the bulk storage container from the refueling vehicle pump controls. When tank configuration does not allow for positioning to maintain a line-of-sight, a two-man system is employed: one to man the pump truck and one to man the dispenser.
iv. A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. In some cases, containers are designed such that the liquid level is easily determined by visual inspection. A person is present to monitor gauges and the overall filling of bulk storage containers. During filling operations, the operator checks the gauge level to confirm the anticipated fill amount, which reduces the risk of overfilling. Tanks are filled until the gauge level reads ¾ to 7/8 full. For tanks without a level gauge, a dipstick method is used. The tank is filled slowly and repeatedly checked until the tank is ¾-7/8 full.

Liquid level sensing devices are tested as part of the annual inspection (Section 4.2.6) to ensure proper operation. Fuel dispensing operations are continuously manned. Unattended fueling operations are not permitted. In the event of a hose rupture or an overfill, the operator can respond quickly to shut off the refueling pump. Furthermore, spill kits are maintained on the fuel trucks to immediately address small spills. In addition, some of the ASTs are equipped with a spill box.
Portable containers at Site 300 are carefully filled. Some of the containers allow visual observation of the level of product in these containers and since these tanks are relatively small, the operator can readily determine when the capacity of the container is reached. Prior to filling portable containers, the container is visually inspected to confirm adequate capacity exists. Three-inches of freeboard are maintained in portable storage containers. Unattended transfer operations are not permitted.

Oil storage product drums are not refilled, and therefore overfill prevention systems do not apply. Used oil, if placed in drums, is managed carefully to avoid overfills by conducting filling operations over secondary containment pallets.

4.2.9 Observation of Effluent Discharge – 40 CFR 112.8(c)(9)

Site 300 has a storm water permit that requires storm water discharges to be visually monitored and sampled in accordance with the Industrial General Permit (SWRCB 2014). An annual report is submitted electronically to the State Water Quality Control Board by July 15 of each year. There are no discharges from Site 300 to a publicly owned treatment works. Wastewater discharges, including effluent water from cooling towers, at Site 300 are regulated under waste discharge requirements (WDR-R5-2008-0148) or the most recent permit revision, for discharges to the LLNL Site 300 septic tank systems, percolation pits, and the sanitary sewer oxidation pond.

4.2.10 Visible Leak Correction – 40 CFR 112.8(c)(10)

Visible oil leaks of bulk storage containers are identified by the personnel responsible for their routine inspections. Visible oil leaks from bulk storage container seams, gaskets, rivets, and bolts sufficiently large to cause oil to accumulate around oil-containing containers or equipment are promptly contained, cleaned up, and corrected, as appropriate. Oil is disposed of according to the waste disposal method described in Part 5 of this Plan.

4.2.11 Mobile and Portable Containers – 40 CFR 112.8(c)(11)

Small portable oil storage containers, such as 55-gallon drums and totes, are stored on containment pallets, inside storage cabinets (e.g., Chemstor units), or inside designated storage areas with constructed secondary containment (e.g., Building 883 WAA and CSA). To prevent accumulation of rainwater in the secondary containment pallets, the pallets are placed under cover whenever possible or else rainwater is removed if it accumulates. Portable containers are positioned to prevent a discharge by not locating them adjacent to storm water drains. Drums or totes temporarily moved to areas other than the normal dedicated storage area are placed on adequately sized spill containment pallets, or provided with other means for spill control while in use. When portable containers are actively being moved, it may not be possible to provide secondary containment. During movement of the containers, the containers are checked to ensure container integrity and that they are properly closed prior to transport. Containers are moved using proper safe handling procedures. The operating tanks on mobile generators at Site 300 are of double-walled construction. Single-walled mobile generators are being removed from service.

Currently, Site 300 has two dedicated mobile refueling vehicles. Mobile refuelers are not subject to the sized secondary containment requirements under 40 CFR 112.8(c), however they are subject to general spill containment requirements and are required to have appropriate containment and/or diversionary structures or equipment to prevent a discharge, as described in 40 CFR 112.7(c). One truck has two 100-gallon, single-walled storage tanks that contain diesel fuel and one 100-gallon, double-walled, storage tank that contains gasoline. The other truck has one 100-gallon single-walled storage tank that contains diesel fuel. The mobile refueling vehicles are properly equipped with spill response equipment and the tanks are regularly inspected to verify their integrity. Storage of the mobile refueling vehicles is in the parking area east of Building 875. Occasionally, mobile refueling vehicles from LLNL's Livermore Site may be used to fuel generator tanks at Site 300. The mobile refueling vehicles originating from the Livermore Site are properly equipped with spill response equipment. Storage, inspection and maintenance of these vehicles are conducted under the Livermore Site SPCC Plan requirements.

4.3 Transfer Operations, Pumping, and In-Plant Processes – 40 CFR 112.8(d)

Transfer operations at Site 300 include the filling or removing liquids from the bulk storage containers of the tanks, the fueling of equipment by facility personnel, and transfer of small amounts of products into equipment during servicing. Used oil is removed by RHWM either via drum pickup or by vacuum truck extraction. Care is taken during these processes to guard against spills and releases, and spill equipment is available on-site or in shop trucks in event of a release.

4.3.1 Underground Piping – 40 CFR 112.8(d)(1)

Underground piping associated with permitted USTs at Site 300 is double contained and corrosion resistant, or has cathodic protection, where appropriate, and has leak monitoring and leak detection that is in accordance with the UST permit conditions. There is no other substantial amount of buried piping at this facility that contains oil on a routine basis.

No buried piping exists that was installed after 2002. Buried piping that will be installed or replaced is provided with a protective wrapping and coating. In addition, buried piping installations at Site 300 will be cathodically protected or otherwise protected from corrosion to satisfy the corrosion protection standards for piping. If a section of buried line is exposed for any reason, it is carefully inspected for deterioration. If corrosion damage is discovered, additional examination and corrective actions are required based on the magnitude of the damage.

4.3.2 Provisions for Piping not in Service – 40 CFR 112.8(d)(2)

Since 1982, whenever underground permitted tanks were taken out of service, LLNL removed aboveground piping or capped abandoned aboveground piping or blank-flanged the piping when removal was not practical. Underground and aboveground piping have been removed or abandoned in accordance with a San Joaquin County-approved closure plan. In the event that facility transfer operations are suspended or not in service or in standby service for an extended time, the terminal connections on piping shall be capped or blank flanged.

4.3.3 Aboveground Piping Support – 40 CFR 112.8(d)(3)

Aboveground piping is properly supported. Pipe supports are designed to minimize abrasion and corrosion and to allow for expansion and contraction. If and when aboveground piping is discovered to have inadequate support, it is upgraded. Design for all new tanks or other systems with aboveground piping includes adequate piping supports.

4.3.4 Inspecting Aboveground Piping Support – 40 CFR 112.8(d)(4)

To prevent the release of oil from aboveground piping, operating personnel examine aboveground valves, pipes, and hoses as part of monthly inspections. Observations are noted on the monthly inspection checklists, as appropriate.

If buried piping is installed or otherwise modified at Site 300, integrity and leak testing of the buried piping must be conducted at the time of installation, modification, construction, relocation, or replacement.

4.3.5 Warning Signs – 40 CFR 112.8(d)(5)

No aboveground piping is exposed to vehicular traffic. Bollards are placed where needed to prevent vehicular collisions with other equipment. Warning signs or barriers will be provided if aboveground piping could be exposed to vehicular traffic in the future.

5.0 DISCHARGE RESPONSE

This section of the Plan discusses contingency and response protocols in the event of an oil spill at Site 300. The uncontrolled discharge of oil to groundwater, surface water, or soil is prohibited by state and federal laws. Immediate action must be taken to control, contain, and recover discharged product. This information is presented in a summary-level format. More specific information on emergency response and spill cleanup is included in the Oil Spill Contingency Plan, which is incorporated into this SPCC Plan by reference as Appendix F. LLNL policy is also contained in the *ES&H Manual*, Document 22.1, "Emergency Preparedness and Response" which discusses response procedures for all potential emergencies at LLNL.

5.1 Spill Response – 112.7(5)

5.1.1 Release Identification

The first line of response starts with the observer of any spill or accident resulting in a visible sheen or accumulation of oil. For oil spills potentially occurring at Site 300, this person will most likely be a facility employee. If the facility employee is not trained in oil-handling or emergency response, LLNL

general employee training (required of all LLNL-employees) dictates that the employee should contact their supervisor, the facility manager, or the Fire Department at 911 or from a cellular phone, 1-(925) 447-6880. If the facility employee is a trained oil-handler, response begins here.

Events are classified as either “non-emergency” or “emergency” as identified in Table 5-1. If an employee is uncertain if the incident is a non-emergency or an emergency, the employee is required to call the Fire Department at 911 from a lab phone or from a cellular phone, 1-(925) 447-6880.

Table 5-1. Emergency response for "emergency" and "non-emergency" events.

Category	Characteristics	Emergency Response
Non-Emergency	Any unplanned event or abnormal condition that can be controlled and managed at the time of the event by workers in the immediate area is not considered to be an emergency. Likewise, unplanned events or abnormal conditions where there are no potential safety or health hazards, or security conditions, are not considered to be an emergency. When in doubt if the unplanned event or abnormal condition is an emergency or non-emergency, dial 911 from a Laboratory phone or 1-925-447-6880 from a cell phone.	Follow the Ten-Step Approach (see Section 5.1.2)
Emergency	Emergencies are defined as unplanned, significant events, or abnormal conditions that require time-urgent response from outside the immediate area of the incident and that are causing or have the potential to cause serious impact to the safety, health, or security of personnel, facilities, or the environment. If any one of the three conditions listed below is applicable, the unplanned event or abnormal condition is considered to be an emergency. • The nature and potential hazards of the unplanned event or abnormal condition are unknown; • The unplanned event or abnormal condition presents an actual or potential threat to human health, the environment, or property, or • The unplanned event or abnormal condition results in an injury or illness requiring definitive medical treatment (an injury or illness more serious than one requiring basic first aid).	Get away from the spill and immediately call the Fire Department (911 or 2-7595); from a cellular phone, call 1-(925) 447-6880.

All events under this SPCC Plan (non-emergency or emergency) should be reported to the appropriate Environmental Safety & Health (ES&H) Environmental Analyst (EA) during working hours or the Environmental Duty Officer (EDO) during off-hours. The EDO may also be contacted through the Fire Department Dispatcher.

5.1.2 Response Procedures for Small Incidents

Non-emergency events are defined in the *ES&H Manual*, Document 22.1. Non-emergency events can be managed by properly trained facility personnel following the ten-step approach identified below. Spill response equipment is identified in Appendices F and G.

1. Identify the spill
2. If safe, shut off the source

3. Eliminate ignition sources
4. Cordon off the area
5. Contact your supervisor and ES&H Team Field EA or EDO, as appropriate. When informing the EA, EDO or fire department of the incident, the following information should be provided:
   - the location, type, and approximate volume of oil released;
   - whether the oil has the potential to reach a waterway or storm drain;
   - whether any injuries have occurred; and
   - whether cleanup assistance is needed.

6. Contain if possible: Contain the spill by surrounding it with absorbent socks or by diking the perimeter with scoops of loose absorbent material compatible with the substance spilled. Begin at the side(s) where release flows toward drains or other conduits to the environment.
7. Absorb and neutralize - Next, cover the spill with loose, compatible absorbent material, working from the perimeter inward toward the center. Use sufficient quantities to completely cover the liquid. Carefully stir the absorbent-covered spill with a non-sparking shovel. Very small spills may be contained and absorbed solely with an absorbent sock. Seal contaminated clothing and absorbent material in a vapor-tight container.
8. Clean up - Use a non-sparking shovel to scoop up the loose absorbent. A chemically resistant broom and dustpan may be used to sweep up absorbent residue. Use wetted absorbent towels or pads to clean surface.
9. Properly dispose of spent cleanup materials such as absorbents and rags. Spent materials should be placed in in impervious bags, drums, or buckets. The Site 300 EA should coordinate proper characterization of the wastes for proper disposal.
10. Decontaminate equipment and PPE and restock spill supplies.

Normal operations can be resumed after the ES&H EA or EFA Tank SME, Facility Manager, and the H&S Technician inspect the area. The appropriate EFA SME or EDO will take care of regulatory agency notifications, if any are required.

5.1.3 Response Procedures for Emergency Events

Emergency events are defined in *ES&H Manual,* Document 22.1. For an emergency, the facility employee identifying the incident should conduct the following:

- **From a safe place, dial 911 from a Laboratory phone or contact the Central Alarm Station (CAS) operator by using the trunked radio system. Cellular telephones typically do not receive a signal at Site 300; however, if a signal is available, dial (925) 447-6880 to reach the Fire Department.**

- **Evacuate facility personnel from the immediate area if necessary.**

- Await the arrival of the Fire Department/Security Organization.

The on-Site fire department has primary responsibility for providing LLNL with emergency response services for fire, technical rescue, hazardous materials, and emergency medical incidents. The on-site fire department is operated and staffed by the Alameda County Fire Department under contract to LLNS.

5.1.4 Responsibilities During an Emergency

The senior fire officer serves as the Incident Commander (IC) during most incidents, including fire, medical, hazardous material, and rescue emergencies. The IC reports directly to the Emergency Coordinator/Laboratory Emergency Duty Officer (LEDO) and the LLNL Site 300 Manager. Select members of LLNL's Laboratory Emergency Duty Officer (LEDO) program fulfill the responsibilities of Emergency Coordinator as required by State and Federal regulations. The Emergency Coordinator/LEDO (Table 1) is authorized to commit LLNL resources necessary to respond to an incident. The Emergency Coordinator/LEDO has access to information on LLNL's facility and operations. The Emergency Coordinator/LEDO is on call for 24-hours per day on a weekly basis. The Alameda County Regional Emergency Communications Center maintains a copy of the emergency call list of Emergency Coordinators/LEDOs. The Emergency Coordinator/LEDO has the authority to commit all LLNL resources and the capability to obtain outside resources needed to implement this Contingency Plan.

TABLE 1 – Emergency Coordinator Call List

Name and Title	L-Code	Work Phone	Work Address	24-Hour Phone
Joel Bowers Emergency Coordinator Primary/ Laboratory Emergency Duty Officer	L-447	(925) 423-6877 (925) 423-7705, pager #02601	7000 East Ave. Livermore, CA 94551	(925) 447-6880
Mark Sueksdorf Emergency Coordinator Alternate/ Laboratory Emergency Duty Officer	L-654	(925) 423-8449 (925) 423-7705, pager #06761	7000 East Ave. Livermore, CA 94551	(925) 447-6880

If an emergency escalates to an event that requires additional personnel, the *LLNL Emergency Plan* (UCRL-AM-218588) is implemented in conjunction with the Oil Spill Contingency Plan (Appendix F). The LLNL Onsite Emergency Response Organization becomes operational when the *LLNL Emergency Plan* is implemented. The Incident Command System (ICS) will be established relative to the needs for response resources (e.g., the ES&H Team, EFA, Plant Engineering). The respective Department

Operations Center(s) [DOC(s)] or Health Services and Environmental Information Center(s) [HSEIC(s)] may need to be activated, as well as the Emergency Operations Center (EOC). The ES&H Team EA or EDO will follow the regulatory requirements for reporting the incident.

Roles and responsibilities in case of a large incident are further detailed in the *Lawrence Livermore National Laboratory Emergency Plan* (LLNL 2014). The Emergency Plan documents the procedures for preparedness and response to Operational Emergencies. The Emergency Plan provides an overview of roles, responsibilities, and lines of authority for the Site 300 emergency response organizations. Site 300 emergency response organizations maintain the capability to respond to and mitigate the effects of hazards associated with emergencies; to direct protective actions for site personnel; to notify offsite agencies and provide protective action recommendations for the public; to recover from an emergency while limiting damage to facilities and equipment, minimizing impact to onsite operations and security; and to limiting adverse impacts to the environment.

5.2 Waste Disposal – 112.7(a)(3)(v)

Wastes resulting from cleanup of a non-emergency event are containerized in impervious bags, drums, or buckets. The Site 300 EA coordinates proper characterization of the wastes for proper disposal. Wastes from operations are managed by RHWM in the Nuclear Operations Directorate and the Site 300 Weapons and Complex Integration (WCI) Directorate in accordance with the LLNL *Environment, Safety and Health (ES&H) Manual*.

5.3 Spill Notification and Reporting Requirements – 112.7(a)(3)(vi) and 112.7(4)

LLNL's Environmental Functional Area is notified of all Site 300 environmental emergencies, including oil spills. The Site 300 EA is notified of environmental emergencies that occur at Site 300 during working hours and notifies a trained Environmental Duty Officer (EDO). EDOs are on duty 24 hours a day, 7 days a week and coordinate emergency response with other first responders and environmental specialists. All reportable oil spills at Site 300 are reported to the appropriate regulatory agencies as described in the *Environmental Incident Notification and Reporting Procedure* (latest revision). This technical manual includes information and procedures that enable the LLNL staff reporting a discharge to be able to provide the following information:

- Exact address or location and phone number of the facility,
- Owner/operator name
- Date and time of discharge,
- Type of material discharged,
- Estimate of the total quantity discharged,
- Description of source and all affected media,
- Cause of the discharge, including a failure analysis if the discharge reached navigable waters
- Any damages or injuries caused by the discharge,
- Actions (corrective actions and countermeasures) being used to stop, remove, and mitigate the effects of the discharge,
- Whether an evacuation may be needed, and
- Names or individuals and/or organizations that have been contacted.

- Maximum storage/handling capacity of the facility and normal daily throughput
- Weather conditions at the incident location
- Adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary
- Additional preventive measures taken or planned to take to minimize discharge reoccurrence
- Other information to help emergency personnel respond to the incident

Federal oil discharge reporting requirements are found in two EPA regulations –Title 40 of the *Code of Federal Regulations* (CFR) Part 110 and 40 CFR Part 112. Under Title 40 CFR Part 110, a harmful quantity of oil discharge that reaches navigable waters must be reported to the National Response Center (NRC) at 1-800-424-8802 immediately after knowledge of the discharge. A harmful quantity is any quantity of discharged oil that violates state water quality standards, causes a film or sheen on the water's surface, or leaves sludge or emulsion beneath the surface.

In addition to reporting to NRC, Title 40 CFR Part 112.4 stipulates that a spill shall be reported to the Environmental Protection Agency (EPA) and other local agencies and a report prepared if more than 1,000 gallons of oil are discharged into or upon navigable waters in a single event. The same CFR section mandates preparation of a spill report whenever two spill events (more than 42 gallons each) occur within any 12-month period resulting in "harmful quantities" of oil being discharged into or upon navigable waters." The Region 9 EPA Administrator and the Regional Water Quality Control Board, Central Valley Region, shall receive written notification within 60 days of the event.

Section 25270.8 of the *California Health and Safety Code* (HSC 6.67) requires verbal notification (immediate) and written notification (within 5 working days) to San Joaquin County Environmental Health Department (the Certified Unified Program Agency [CUPA]) and California Governor's Office of Emergency Services for release of one barrel (42 gallons) or more of oil.

The following table provides a summary of internal and regulatory notifications.

Discharge Condition [1]	**When to Notify**	**Who to Notify**	**Contact Name/Number**
Internal Notification Requirements			
Non-Emergency	When control of spill/leak is obtained and it is safe	Site 300 Team EA	Site 300 Environmental Analyst: Shari Brigdon 925-423-7665 (working hours) Environmental Duty Officer (rotating position) 04097 If unsure of EDO, contact Fire Department who maintains current EDO information

Emergency	As soon as possible (from safe location)	Fire Department	**911 from a Laboratory phone or 1-925-447-6880 from a cell phone or used trunked radio**
Response Contractor	If additional response aide is required	Clean Harbors	(707) 747-1528
Regulatory Notification Requirements			
Harmful quantity of oil discharge that reaches navigable waters	Verbal notification immediately after discovery of the discharge	NRC	1-800-424-8802
More than 1,000 gallons of oil are discharged into or upon navigable waters in a single event. – OR – Whenever two spill events (more than 42 gallons each) occur within any 12-month period resulting in "harmful quantities" of oil being discharged into or upon navigable waters.	Written notification within 60 days of the event.	EPA Region 9	75 Hawthorn Street San Francisco, CA 94105
		RWQCB – Central Valley	11020 Sun Center Drive, Suite 200 Rancho Cordova, CA 95670 Phone: 916-464-4678
42 gallons or more of oil by direct discharge to a receiving water	Verbal notification immediately after discovery of the discharge	California Office of Emergency Services San Joaquin Environmental Health Department (CUPA)	1-800-852-7550 209-468-3420

[1] A harmful quantity is any quantity of discharged oil that violates state water quality standards, causes a film or sheen on the water's surface, or leaves sludge or emulsion beneath the surface.

5.4 Cleanup Personnel and Equipment

A response trailer containing bulk quantities of equipment is maintained by RHWM at the Building 883 CSA Facility to support the Fire Department in the event of an emergency event at Site 300, as described in the Oil Contingency Plan in Appendix F.

6.0 REFERENCES

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7.0 GLOSSARY AND ACRONYMS

API	American Petroleum Institute
AST	Aboveground Storage Tank
Bulk storage container	Any container used to store oil. According to 40 CFR 112.2, bulk storage containers are "used for purposes including, but not limited to, the storage of oil prior to use, while being used, or prior to further distribution in commerce. Oil-filled electrical, operating, or manufacturing equipment is not a bulk storage container."
CAS	Central Alarm Station
CFR	Code of Federal Regulations
CSA	Container Storage Area
CUPA	Certified Unified Program Agency
DES	Description Document
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EA	Environmental Analyst
EDO	Environmental Duty Officer
EOC	Emergency Operations Center
EPA	United States Environmental Protection Agency
EFA	Environmental Functional Area
ES&H	Environment, Safety, and Health
ESPO	Environmental Support and Programmatic Outreach
Event	A problem or emergency that must be mitigated. Events are classified as either "non-emergency" or "emergency."
F&I	Facilities and Infrastructure
FXR	Flash x-ray
GSA	General Services Area
HSC	Health and Safety Code
HMBP	Hazardous Material Business Plan
ICS	Incident Command System
LEDO	Laboratory Emergency Duty Officer
LLC	Limited Liability Company
LLNL	Lawrence Livermore National Laboratory
Minor spill	Spill of oil products that can be handled routinely by program personnel with little outside support.
MSL	mean sea level
MSD	Maintenance and Services Department
N/A	Not Applicable
NNSA	National Nuclear Security Administration

NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
O&B	Operations and Business
Oil	Oil is defined by 40 CFR 112 regulation as being "oil of any kind or in any form, including, but not limited to: fats, oils, or greases of animal, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil." 20 HSC 6.67 further defines "crude oil or its fractions" to be crude petroleum or all products in liquid form derived from petroleum.
Oil-handling personnel	Employees who are engaged in the operation and maintenance of oil storage containers, such as oil transfers and inspections
PCB	Polychlorinated biphenyl
P.E.	Professional Engineer
PPE	Personal Protection Equipment
Reportable quantities (Federal Regulations)	"…More than 1,000 U.S. gallons of oil into or upon the navigable waters of the United States or adjoining shorelines in a single spill event, or discharged oil in harmful quantities," as defined in 40 CFR 110.3, a & b, "that violate applicable water quality standards, or cause a film or sheen upon or discoloration of the surface of the water or upon adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines," in two spill events within any 12-month period.
RA	Regional Administrator
RCRA	Resource Conservation and Recovery Act
RHWM	Radioactive and Hazardous Waste Management
SME	Subject Matter Expert
SPCC	Spill Prevention, Control, and Countermeasure
Spill event	A discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities, as defined in 40 CFR 110, which includes "discharges of oil that violate applicable water quality standards, or cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines."
STI	Steel Tank Institute
TSCA	Toxic Substances Control Act
UST	Underground Storage Tank
WAA	Waste Accumulation Area
WCI	Weapons and Complex Integration Directorate
WDR	Waste Discharge Requirement

Appendix A

SPCC Plan Requirements as Specified in 40 CFR 112 and Their Location in This SPCC Plan

December 2016

Appendix A. SPCC Plan Requirements as Specified in 40 CFR 112 and Their Location in This SPCC Plan

40 CFR SECTION	DESCRIPTION	LOCATION IN THIS SPCC PLAN
Subpart A—Applicability, Definitions, and General Requirements for All Facilities and All Types of Oils		
112.1 through 112.6		
112.3(a) - (c)	Requirements for preparation and implementation of SPCC Plans in accordance with 40 CFR 112.7 and any other applicable section of 40 CFR 112.	Section 1
112.3(d)	Obtain Professional Engineer's review and certification. P.E. certifies the SPCC Plan was prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of the SPCC rule.	Page iv
112.3(e)	Maintain copy of SPCC Plan on-site if the facility is normally attended at least 4 hours per day; otherwise, maintain it at nearest field office. Also, make Plan available to EPA Regional Administrator or other local agency inspector for on-site review during normal working hours.	Section 1.2
112.4(a) - (c)	When discharge >1,000 gallons of oil in a single discharge as described in 40 CFR 112.1(b), or (2) discharge more than 42 U.S. gallons of oil as described in 40 CFR 112.1(b), in each of two discharges within any 12-month period, submit, within 60 days, a report to regional EPA and to the state agency in charge of oil pollution control activities, and to the State Water Board.	Section 5.3
112.4(d) & (e)	If requested by the EPA RA, respond to request for an amendment within 30 days of the first notice and amend SPCC Plan within 30 days of EPA's final notification following facility's responses.	Section 1.3.3
112.5(a)	Amend SPCC Plan, within 6 months, whenever there is change in facility design, construction, operation or maintenance, which materially affects facility's potential for discharge as described in 40 CFR 112.1(b).	Section 1.3.1
112.5(b)	Perform a review and evaluation of SPCC Plan at least once every five years. The owner/operator must document completion of the review and evaluation, and must sign a statement as to whether he will amend the SPCC Plan. The following will suffice: "I have completed review and evaluation of the SPCC Plan for (name of facility) on (date), and will (will not) amend the Plan as a result."	Section 1.3.2
112.5(c)	Obtain Professional Engineer's certification for any technical amendments in accordance with 40 CFR 112.3(d).	Section 1.3.1, 1.3.2, 1.3.4
112.7 General requirements for Spill Prevention, Control, and Countermeasure Plans		
112.7	The SPCC Plan shall be a carefully thought-out plan, prepared in accordance with good engineering practices. The complete SPCC Plan shall follow the sequence outlined according to 40 CFR 112.7. Obtain full approval of management at a level with authority to commit the necessary resources to fully implement the Plan.	The entire SPCC Plan; see P.E.'s Certification on page iv Page iii
112.7	Cross-Reference of Plan Sections to the Requirements of 40 CFR	Appendix A (this table)

40 CFR SECTION	DESCRIPTION	LOCATION IN THIS SPCC PLAN
112.7(a)(1)	Include a discussion of your facility's conformance with the requirements listed in 40 CFR 112.7.	Section 1.5; Section 3.1
112.7(a)(2)	Comply with all applicable requirements listed in 40 CFR 112.7. Your SPCC Plan may deviate with the exception of the secondary containment requirements. Describe any deviations.	Section 1.5; Section 3.1
112.7(a)(3)	Describe the physical layout of the facility and include a facility diagram, which must mark the location and contents of each container. The facility diagram must include completely buried tanks that are otherwise exempted from the requirements of this part under 40 CFR 112.1(d)(4).	Section 2 and Appendix C
112.7(a)(4)	Unless you have submitted a response plan under 40 CFR 112.20, provide information and procedures in your SPCC Plan to enable a person reporting a discharge to relate information on the exact address or location and phone number of the facility.	Section 2.0; Section 5.3
112.7(a)(5)	Unless you have submitted a response plan under 40 CFR 112.20, organize portions of the SPCC Plan describing procedures you will use when a discharge occurs in a way that will make them readily usable in an emergency, and include appropriate supporting material as appendices.	Section 5.0; Appendix G
112.7(b)	Describe a prediction of the direction, rate of flow, and total quantity of oil, which could be discharged from the facility as a result of each type of major equipment failure.	Section 3.2; Appendix C
112.7(c) General Prevention Standards (for onshore facilities)		
112.7(c)(1)	Provide appropriate containment and/or diversionary structures or equipment to prevent discharged oil from reaching navigable water course. The entire containment system, including walls and floor, must be capable of containing oil and must be constructed so that any discharge from a primary containment system, such as a tank or pipe, will not escape the containment system before cleanup occurs. At a minimum, include one of following preventive systems for onshore facilities: (i) Dikes, berms or retaining walls sufficiently impervious to contain oil; (ii) Curbing; (iii) Culverts, gutters or other drainage systems; (iv) Weirs, booms or other barriers; (v) Spill diversion ponds; (vi) Retention ponds; or, (vii) Sorbent materials.	Section 3.3; Appendix C
112.7(d)	When installation of structures or equipment, as outlined in 40 CFR 112.7(c) and (h)(1) and 40 CFR 112.8(c)(2), (c)(11), 112.9(c)(2), 112.10(c), 112.12(c)(2), 112.12(c)(11), 112.13(c)(2) and 112.14(c) is not practicable to prevent discharge as described in 40 CFR 112.b, clearly explain why such measures are not practicable; for bulk storage containers, conduct both periodic integrity testing of the containers and periodic integrity and leak testing of the valves and piping, unless you have submitted a response plan under 40 CFR 112.20 provide the following in your SPCC Plan:	Section 3.5

40 CFR SECTION	DESCRIPTION	LOCATION IN THIS SPCC PLAN
112.7(e) Inspections, tests, and records		
	Conduct inspections and tests required by this part in accordance with written procedures that you or the certifying engineer develop for the facility. You must keep these written procedures and a record of the inspections and tests, signed by the appropriate supervisor or inspector, with the SPCC Plan for a period of three years. Records of inspections and tests kept under usual and customary business practices will suffice for purposes of this paragraph.	Section 3.6
112.7(f) Personnel, training, and discharge prevention procedures		
112.7(f)(1)	At a minimum, train your oil-handling personnel in the operation and maintenance of equipment to prevent discharges; discharge procedure protocols; applicable pollution control laws, rules, and regulations; general facility operations; and, the contents of the facility SPCC Plan.	Section 3.7
112.7(f)(2)	Designate a person at each applicable facility who is accountable for discharge prevention and who reports to facility management.	Section 2.0
112.7(f)(3)	Schedule and conduct discharge prevention briefings for your oil-handling personnel at least once a year to assure adequate understanding of the SPCC Plan for that facility. Such briefings must highlight and describe known discharges as described in 40 CFR 112.1(b) or failures, malfunctioning components, and any recently developed precautionary measures.	Section 3.7
112.7(g) Security (excluding oil production facilities)		
112.7(g)(1)	Fully fence each facility handling, processing, or storing oil, and lock and/or guard entrance gates when the facility is not in production or is unattended.	Section 3.8.1
112.7(g)(2)	Ensure that the master flow and drain valves and any other valves permitting direct outward flow of the container's contents to the surface have adequate security measures so that they remain in the closed position when in non-operating or non-standby status.	Section 3.8.2
112.7(g)(3)	Lock the starter control on each oil pump in the ''off'' position and locate it at a site accessible only to authorized personnel when the pump is in a non-operating or non-standby status.	Section 3.8.2
112.7(g)(4)	Securely cap or blank-flange the loading/unloading connections of oil pipelines or facility piping when not in service or when in standby service for an extended time. This security practice also applies to piping that is emptied of liquid content either by draining or by inert gas pressure.	Section 3.8.2
112.7(g)(5)	Provide facility lighting commensurate with the type and location of the facility that will assist in the: (i) Discovery of discharges occurring during hours of darkness, both by operating personnel, if present, and by non-operating personnel (the general public, local police, etc.); and (ii) Prevention of discharges occurring through acts of vandalism.	Section 3.8.3
112.7(h) Facility tank car and tank truck loading/unloading rack (excluding offshore facilities)		

40 CFR SECTION	DESCRIPTION	LOCATION IN THIS SPCC PLAN
112.7(h)(1)	Where loading/unloading area drainage does not flow into a catchment basin or treatment facility designed to handle discharges, use a quick drainage system for tank car or tank truck loading and unloading areas. You must design any containment system to hold at least the maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the facility.	Section 3.9
112.7(h)(2)	Provide an interlocked warning light or physical barrier system, warning signs, wheel chocks, or vehicle break interlock system in loading/unloading areas to prevent vehicles from departing before complete disconnection of flexible or fixed oil transfer lines.	Section 3.9,N/A
112.7(h)(3)	Prior to filling and departure of any tank car or tank truck, closely inspect for discharges the lowermost drain and all outlets of such vehicles, and if necessary, ensure that they are tightened, adjusted, or replaced to prevent liquid discharge while in transit.	Section 3.9, N/A
112.7(i)	If a field-constructed aboveground container undergoes a repair, alteration, reconstruction, or a change in service that might affect the risk of a discharge or failure due to brittle fracture or other catastrophe, or has discharged oil or failed due to brittle fracture failure or other catastrophe, evaluate the container for risk of discharge or failure due to brittle fracture or other catastrophe, and as necessary, take appropriate action.	Section 3.10, N/A
112.7(j)	In addition to the minimal prevention standards listed under this section, include in your Plan a complete discussion of conformance with the applicable requirements and other effective discharge prevention and containment procedures listed in this part or any applicable more stringent State rules, regulations, and guidelines.	Section 3.11 and Seciton 3.12
112.7(k)	Qualification Criteria for Oil Filled Operational Equipment for alternative secondary containment requirements	Section 3.4
Subpart B—Requirements for Petroleum Oils and Non-Petroleum Oils, Except Animal Fats and Oils and Greases, and Fish and Marine Mammal Oils; and Vegetable Oils (Including Oils from Seeds, Nuts, Fruits, and Kernels)		
112.8 Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities).		
112.8(a)	Meet the general requirements for the Plan listed under 40 CFR 112.7, and the specific discharge prevention and containment procedures listed in this section (40 CFR 112.8).	The entire SPCC Plan
112.8(b) Facility Drainage		
112.8(b)	Facility Drainage Design and Control	Section 4.1
112.8(c) Bulk Storage Containers		
112.8(c)(1)	Do not use a container for the storage of oil unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature.	Section 4.2.1

40 CFR SECTION	DESCRIPTION	LOCATION IN THIS SPCC PLAN
112.8(c)(2)	Construct all bulk storage container installations so that you provide a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. You must ensure that diked areas are sufficiently impervious to contain discharged oil. Dikes, containment curbs, and pits are commonly employed for this purpose. You may also use an alternative system consisting of a drainage trench enclosure that must be arranged so that any discharge will terminate and be safely confined in a facility catchment basin or holding pond.	Section 4.2.2
112.8(c)(3)	Do not allow drainage of uncontaminated rainwater from the diked area into a storm drain or discharge of an effluent into an open watercourse, lake, or pond, bypassing the facility treatment system unless you: (i) Normally keep the bypass valve sealed closed. (ii) Inspect the retained rainwater to ensure that its presence will not cause a discharge as described in 40 CFR 112.1(b). (iii) Open the bypass valve and reseal it following drainage under responsible supervision; and (iv) Keep adequate records of such events, for example, any records required under permits issued in accordance with 40 CFR 122.41(j)(2) and 122.41(m)(3).	Section 4.2.3 and Appendix E
112.8(c)(4)	Protect any completely buried metallic storage tank installed on or after January 10, 1974 from corrosion by coatings or cathodic protection compatible with local soil conditions. You must regularly leak test such completely buried metallic storage tanks.	Section 4.2.4
112.8(c)(5)	Do not use partially buried or bunkered metallic tanks for the storage of oil, unless you protect the buried section of the tank from corrosion. You must protect partially buried and bunkered tanks from corrosion by coatings or cathodic protection compatible with local soil conditions.	Section 4.2.5
112.8(c)(6)	Test each aboveground container for integrity on a regular schedule, and whenever you make material repairs. The frequency of and type of testing must take into account container size and design (such as floating roof, skid-mounted, elevated, or partially buried). You must combine visual inspection with another testing technique such as hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or another system of nondestructive shell testing. You must keep comparison records and you must also inspect the container's supports and foundations. In addition, you must frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. Records of inspections and tests kept under usual and customary business practices will suffice for purposes of this paragraph.	Section 4.2.6
112.8(c)(7)	Control leakage through defective internal heating coils by monitoring the steam return and exhaust lines for contamination from internal heating coils that discharge into an open watercourse, or pass the steam return or exhaust lines through a settling tank, skimmer, or other separation or retention system.	Section 4.2.7

40 CFR SECTION	DESCRIPTION	LOCATION IN THIS SPCC PLAN
112.8(c)(8)	Engineer or update each container installation in accordance with good engineering practice to avoid discharges. You must provide at least one of the following devices: (i) High liquid level alarms with an audible or visual signal at a constantly attended operation or surveillance station. In smaller facilities an audible air vent may suffice. (ii) High liquid level pump cutoff devices set to stop flow at a predetermined container content level. (iii) Direct audible or code signal communication between the container gauger and the pumping station. (iv) Fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. If you use this alternative, a person must be present to monitor gauges and the overall filling of bulk storage containers. (v) You must regularly test liquid level sensing devices to ensure proper operation.	Section 4.2.8
112.8(c)(9)	Observe effluent treatment facilities frequently enough to detect possible system upsets that could cause a discharge as described in 40 CFR 112.1(b).	Section 4.2.9
112.8(c)(10)	Promptly correct visible discharges which result in a loss of oil from the container, including but not limited to seams, gaskets, piping, pumps, valves, rivets, and bolts. You must promptly remove any accumulations of oil in diked areas.	Section 4.2.10
112.8(c)(11)	Position or locate mobile or portable oil storage containers to prevent a discharge as described in 40 CFR 112.1(b). You must furnish a secondary means of containment, such as a dike or catchment basin, sufficient to contain the capacity of the largest single compartment or container with sufficient freeboard to contain precipitation.	Section 4.2.11
112.8(d) Facility Transfer Operations, Pumping, and Facility Process		
112.8(d)(1)	Provide buried piping that is installed or replaced on or after August 16, 2002, with a protective wrapping and coating. You must also cathodically protect such buried piping installations or otherwise satisfy the corrosion protection standards for piping in part 280 of this chapter or a State program approved under part 281 of this chapter. If a section of buried line is exposed for any reason, you must carefully inspect it for deterioration. If you find corrosion damage, you must undertake additional examination and corrective action as indicated by the magnitude of the damage.	Section 4.3.1
112.8(d)(2)	Cap or blank-flange the terminal connection at the transfer point and mark it as to origin when piping is not in service or is in standby service for an extended time.	Section 4.3.2
112.8(d)(3)	Properly design pipe supports to minimize abrasion and corrosion and allow for expansion and contraction.	Section 4.3.3
112.8(d)(4)	Regularly inspect all aboveground valves, piping, and appurtenances. During the inspection you must assess the general condition of items, such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces. You must also conduct integrity and leak testing of buried piping at the time of installation, modification, construction, relocation, or replacement.	Section 4.3.4 and Appendix H

40 CFR SECTION	DESCRIPTION	LOCATION IN THIS SPCC PLAN
112.8(d)(5)	Warn all vehicles entering the facility to be sure that no vehicle will endanger aboveground piping or other oil transfer operations.	Section 4.3.5
112.9	Requirements for Onshore Oil Production Facilities	NA
112.10	Requirements for Onshore Oil Drilling and Workover Facilities	NA
112.11	Requirements for Offshore Oil Drilling, Production, and Workover Facilities	NA
Subpart C— Requirements for Animal Fats and Oils and Greases, and Fish and Marine Mammal Oils; and for Vegetable Oils, including Oils from Seeds, Nuts, Fruits, and Kernels		
112.12	Subpart C - Requirements for Animal Fats and Oils and Greases, and Fish and Marine Mammal Oils; and for Vegetable Oils, including Oils from Seeds, Nuts, Fruits, and Kernels	NA
Subpart D— Response Requirements		
112.20-112.21	Subpart D – Response Requirements	NA
Appendix C to Part 112		
Appendix C to Part 112	Substantial Harm Criteria	Appendix B

Appendix B

Certification of Substantial Harm Determination Form

Appendix B. Certification of Substantial Harm Determination Form

FACILITY NAME: Lawrence Livermore National Laboratory, Site 300

FACILITY ADDRESS: 7000 East Avenue, Livermore, California

U.S. Environmental Protection Agency (EPA) Criterion

1. Does the facility have a total oil storage capacity greater than or equal to 42,000 gallons and do the operations include over water transfers of oil to or from vessels?

   YES _____ NO _____X_____

2. Does the facility have a total oil storage capacity greater than or equal to one million (1,000,000) gallons and is the facility without secondary containment for each aboveground storage area sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within the storage area?

   YES _____ NO _____X_____

3. Does the facility have a total oil storage capacity greater than or equal to one million (1,000,000) gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III of the 40 CFR 112 Appendix C, or an alternative formula considered acceptable by the EPA RA), such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?

   YES _____ NO _____X_____

4. Does the facility have a total oil storage capacity greater than or equal to one million (1,000,000) gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III of 40 CFR 112 Appendix C, or an alternative formula considered acceptable by the EPA RA), such that a discharge from the facility would shut down a public drinking water intake?

   YES _____ NO _____X_____

5. Does the facility have a total oil storage capacity greater than or equal to one million (1,000,000) gallons and within the past five years, has the facility experienced a reportable spill in an amount greater than or equal to 10,000 gallons?

   YES _____ NO _____X_____

If the answer to each of the above questions is "NO", then this facility is not required to prepare and submit a Facility Response Plan to the EPA RA.

CERTIFICATION

I certify, under penalty of law, that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Signature: _____ Date: 1/23/17

John Scott
Site 300 Manager

Appendix C

Oil Products Inventory and Storage Locations

December 2016

Table C-1 S300 SPCC Inventory -- Bulk Storage Containers

Equipment ID (Associated Generator ID)	Building	Room	Inside/ Outside	Equipment Type	Storage Type	Container Contents	Largest Container Capacity (gal)	Total Capacity (gal)	Secondary Containment Type	Secondary Containment Capacity (gal)	Organization ID	Program Contact	Installation Date	Material	Single-Walled/ Double-Walled	Potential Failure Type	Reasonably Expected Maximum Release (gal)	Release Rate (gal/min)	Flow Direction	Containment	UL Listing	Insrumentation Controls Alarms	Overfill Prevention Method	Liquid Level Sensing Devices	STI Category	Monthly Inspection	Annual Inspection
TANKS ASSOCIATED WITH GENERATORS																											
801ATFAD01	801A	N/A	Outside	Tank	Aboveground Storage Tank	Diesel	150	150	Double Wall	150	F&I	Phyllis Cox	1990	Steel	Double Wall	Piping or valve failure	7.5	0.3	South	Inspections; Spill kit	UL142	High level alarm; low level alarm	5 gallon spill bucket; Procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; 5-gallon spill bucket; rolling spill kit							
																Tank rupture	15	0-15		Double Walled Construction							
810ATFAD01	810A	N/A	Outside	Tank	Aboveground Storage Tank	Diesel	250	250	Double Wall	250	F&I	Phyllis Cox	1994	Steel	Double Wall	Piping or valve failure	12.5	0.5	East	Inspections; Spill kit	SWRI	High level alarm	10 gallon spill bucket; procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; 10-gallon spill bucket; rolling spill kit							
																Tank rupture	25	0-25		Double Walled Construction							
827ATFAD01	827A	N/A	Outside	Tank	Aboveground Storage Tank	Diesel	250	250	Double Wall	250	F&I	Phyllis Cox	1996	Steel	Double Wall	Piping or valve failure	12.5	0.5	Southeast	Inspections; Spill kit	SWRI	High level alarm	10 gallon spill bucket; procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; 10-gallon spill bucket; rolling spill kit							
																Tank rupture	25	0-25		Double Walled Construction							
834ATFAD01	834A	N/A	Outside	Tank	Aboveground Storage Tank	Diesel	250	250	Double Wall	250	F&I	Phyllis Cox	1994	Steel	Double Wall	Piping or valve failure	12.5	0.5	Southwest	Inspections; Spill kit	UL2085	High level alarm	5 gallon spill bucket; procedure	Dipstick	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; 5-gallon spill bucket; rolling spill kit							
																Tank rupture	25	0-25		Double Walled Construction							
U842TFBD01 (842-GDE-01)	842	N/A	Outside	Generator	Belly Tank	Diesel	56	56	Double Wall	56	F&I	Phyllis Cox	1990	Steel	Double Wall	Piping or valve failure	2.8	0.1	Northeast	Inspections; Spill kit	UL142	High level alarm	Procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; rolling spill kit							
																Tank rupture	5.6	0-5.6		Double Walled Construction							
U849BTFBD01 (849-GDE-01)	849	N/A	Outside	Generator	Belly Tank	Diesel	125	125	Double Wall	125	F&I	Phyllis Cox	1996	Steel	Double Wall	Piping or valve failure	6.25	0.3	South-southeast	Inspections; Spill kit	UL142	None	Procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; rolling spill kit							
																Tank rupture	12.5	0-12.5		Double Walled Construction							
U866TFBD01 (866-GDE-01)	866	N/A	Outside	Generator	Belly Tank	Diesel	56	56	Double Wall	56	F&I	Phyllis Cox	Unknown	Steel	Double Wall	Piping or valve failure	2.8	0.1	South	Inspections; Spill kit	UL142	None	Procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; rolling spill kit							
																Tank rupture	5.6	0-5.6		Double Walled Construction							
873TFBD01 (873-GDE-01)	873	N/A	Outside	Generator	Belly Tank	Diesel	70	70	Double Wall	70	F&I	Phyllis Cox	Unknown	Steel	Double Wall	Piping or valve failure	3.5	0.1	South	Inspections; Spill kit	UL142	High Level alarm	Procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; rolling spill kit							
																Tank rupture	7	0-7		Double Walled Construction							
882TFAD01 (882-GDE-01)	882	N/A	Outside	Tank	Day Tank	Diesel	75	150	Double Wall	75	F&I	Phyllis Cox	Unknown	Steel	Double Wall	Piping or valve failure	3.75	0.2	Southwest	Inspections; Spill kit	UL 142	High level alarm	Electronic	Electronic	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; rolling spill kit							
																Tank rupture	7.5	0-7.5		Double Walled Construction							
882TFAD02 (882-GDE-02)	882	N/A	Outside	Tank	Day Tank	Diesel	75	150	Double Wall	75	F&I	Phyllis Cox	Unknown	Steel	Double Wall	Piping or valve failure	3.75	0.2	Southwest	Inspections; Spill kit	UL 142	High level alarm	Electronic	Electronic	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; rolling spill kit							
																Tank rupture	7.5	0-7.5		Double Walled Construction							
879TFBD01 (879-GDE-01)	879	N/A	Outside	Generator	Belly Tank	Diesel	250	250	Double Wall	250	F&I	Phyllis Cox	2002	Steel	Double Wall	Piping or valve failure	12.5	0.5	West	Inspections; Spill kit	UL142	None	Procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; rolling spill kit							
																Tank rupture	25	0-25		Double Walled Construction							

Table C-1 S300 SPCC Inventory -- Bulk Storage Containers

Equipment ID (Associated Generator ID)	Building	Room	Inside/ Outside	Equipment Type	Storage Type	Container Contents	Largest Container Capacity (gal)	Total Capacity (gal)	Secondary Containment Type	Secondary Containment Capacity (gal)	Organization ID	Program Contact	Installation Date	Material	Single-Walled/ Double-Walled	Potential Failure Type	Reasonably Expected Maximum Release (gal)	Release Rate (gal/min)	Flow Direction	Containment	UL Listing	Insrumentation Controls Alarms	Overfill Prevention Method	Liquid Level Sensing Devices	STI Category	Monthly Inspection	Annual Inspection
TANKS ASSOCIATED WITH GENERATORS																											
OS898TFBD01 (898-GDE-01)	898	N/A	Outside	Generator	Belly Tank	Diesel	125	125	Double Wall	125	F&I	Phyllis Cox	2003	Steel	Double Wall	Piping or valve failure	6.25	0.3	South	Inspections; Spill kit	UL142	None	Procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; rolling spill kit							
																Tank rupture	12.5	0-12.5		Double Walled Construction							
892TFBD01 (892-GDE-01)	892	N/A	Outside	Generator	Belly Tank	Diesel	236	236	Double Wall	236	F&I	Phyllis Cox	1994	Steel	Double Wall	Piping or valve failure	11.8	0.5	South	Inspections; Spill kit	UL142	High level alarm	Procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; rolling spill kit							
																Tank rupture	23.6	0-23.6		Double Walled Construction							
870TFAD01	870	N/A	Outside	Tank	Aboveground Storage Tank	Diesel	245	245	Double Wall	245	F&I	Phyllis Cox	1995	Steel	Double Wall	Piping or valve failure	12.25	0.5	North	Inspections; Spill kit	UL2085	High level alarm	5 gallon spill bucket; procedure	Gauge	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; 5-gallon spill bucket; rolling spill kit							
																Tank rupture	24.5	0-24.5		Double Walled Construction							
TANKS ASSOCIATED WITH PORTABLE GENERATORS																											
875TFBD04 (875-GD-04)	875	N/A	Outside	Generator (portable)	Belly Tank	Diesel	100	100	Portable Berm	2333	F&I	Phyllis Cox	Unknown	Steel	Single Wall	Transfer overflow	3	20	South-southeast	Procedure; rolling spill kit	ND	None	Procedure	Gauge	Portable (Category 1)	Required (Form H.1)	N/A
																Tank rupture	10	0-10		Portable Berm							
875TFBD07 (875-GD-07)	875	N/A	Outside	Generator (portable)	Belly Tank	Diesel	400	400	Double Wall	400	F&I	Phyllis Cox	1999	Steel	Double Wall	Transfer overflow	3	20	South-southeast	Procedure; rolling spill kit	UL142	None	Procedure	Gauge	Portable (Category 1)	Required (Form H.1)	N/A
																Tank rupture	40	0-40		Double Walled Construction							
02TFBD54 (02EGU54)	875	N/A	Outside	Generator (portable)	Belly Tank	Diesel	248	248	Double Wall	248	F&I	Phyllis Cox	2013	Steel	Double Wall	Transfer overflow	3	20	South-southeast	1-gallon spill bucket; procedure; rolling spill kit	ND	High level alarm	1 gallon spill bucket; procedure	Electronic	Portable (Category 1)	Required (Form H.1)	N/A
																Tank rupture	24.8	0-24.8		Double Walled Construction							
02TFBD53 (02EGU53)	875	N/A	Outside	Generator (portable)	Belly Tank	Diesel	248	248	Double Wall	248	F&I	Phyllis Cox	2013	Steel	Double Wall	Transfer overflow	3	20	South-southeast	1-gallon spill bucket; procedure; rolling spill kit	ND	High level alarm	1 gallon spill bucket; procedure	Electronic	Portable (Category 1)	Required (Form H.1)	N/A
																Tank rupture	24.8	0-24.8		Double Walled Construction							
OIL STORAGE TANKS																											
801ATFO03	801A	N/A	Outside	Tank	Aboveground Storage Tank	Insulating Oil	4000	4000	None	N/A	WCI	Tom McWilliams	1996	Steel	Double Wall	Piping or valve failure	400	0-400	East	None	UL142	High level alarm	Procedure	Gauge	Category 3	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	N/A	N/A		Procedure; spill kit							
																Tank rupture	400	0-400		Double-wall							
801ATFO04	801A	N/A	Outside	Tank	Aboveground Storage Tank	Oily Wastewater	275	275	Vault	1699	WCI	Tom McWilliams	1990	Steel	Single Wall	Piping or valve failure	13.75	0-13.75	Within vault	Vault	ND	High level alarm	5-gallon spill bucket; procedure	Electronic	Category 1	Required (Form H.1)	Required (Form H.4)
																Tank rupture	27.5	0-27.5	Within vault	Vault							
875TFO02	875	Hibay	Inside	Tank	Aboveground Storage Tank	Motor Oil	360	360	Double Wall	360	F&I	JD Smith	2014	Steel	Double Wall	Piping or valve failure	18	0-18	South	Inspection; Spill kit	UL142	None	Procedure	Visual	Category 2	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; spill kit							
																Tank rupture	36	0-36		Double Walled Construction							
875TFO03	875	Hibay	Inside	Tank	Aboveground Storage Tank	Transmission Oil	120	120	Double Wall	120	F&I	JD Smith	2014	Steel	Double Wall	Piping or valve failure	6	0-6	South	Inspection; Spill kit	UL142	None	Procedure	Visual	Category 2	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; spill kit							
																Tank rupture	12	0-12		Double Walled Construction							
879TFO02	879	NW Corner	Outside	Tank	Aboveground Storage Tank	Motor Oil	240	240	Double Wall	240	F&I	JD Smith	1988	Steel	Double Wall	Piping or valve failure	12	0-12	South	Spill kit	UL142	None	Procedure	Dipstick	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; spill kit							
																Tank rupture	24	0-24		Double Walled Construction							
879TFO01	879	NW Corner	Outside	Tank	Aboveground Storage Tank	Transmission Oil	170	170	Double Wall	170	F&I	JD Smith	1988	Steel	Double Wall	Piping or valve failure	8.5	0-8.5	South	Spill kit	UL142	None	Procedure	Dipstick	Category 1	Required (Form H.1)	Required (Form H.4)
																Transfer overflow	3	20		Procedure; spill kit							

Table C-1 S300 SPCC Inventory -- Bulk Storage Containers

Equipment ID (Associated Generator ID)	Building	Room	Inside/ Outside	Equipment Type	Storage Type	Container Contents	Largest Container Capacity (gal)	Total Capacity (gal)	Secondary Containment Type	Secondary Containment Capacity (gal)	Organization ID	Program Contact	Installation Date	Material	Single-Walled/ Double-Walled	Potential Failure Type	Reasonably Expected Maximum Release (gal)	Release Rate (gal/min)	Flow Direction	Containment	UL Listing	Insrumentation Controls Alarms	Overfill Prevention Method	Liquid Level Sensing Devices	STI Category	Monthly Inspection	Annual Inspection
																Tank rupture	17	0-17		Double Walled Construction							
PORTABLE OIL STORAGE AREAS (DRUMS AND TOTES)																											
875/Hibay Drum Storage Area																											
Drum	875	Hibay	Inside	Portable Bulk Storage	Drum	Used Oil	55	55	Containment Pallet	>55	F&I	JD Smith	N/A	Steel	Single-walled drums	Rupture, leak	55	0-55	Within containment	Containment Pallet	N/A	None	Filling conducted over containment Pallet	Visual	Portable (Category 1)	Required (Form H.2)	N/A
																Transfer overflow	5	0-5		Containment Pallet; spill kit							
875 Chemstor Drum Storage Area																											
Up to thirty 55-gallon drums	875	Corp Yard	Outside, Chemstor	Portable Bulk Storage	Drum	Motor Oil, hydraulic oil, transmission oil, Lubricating oil, compressor oil	55	1650	Chemstor Unit	Integrated into unit >55 gallon	F&I	JD Smith	N/A	Steel	Single-walled drums	Rupture, leak	55	0-55	Within containment	Rupture, leak	0-55	Within containment	Drums are not refilled	N/A	Portable (Category 1)	Required (Form H.2)	N/A
879/R1000 Drum Storage Area																											
Drum	879	1000	Inside	Portable Bulk Storage	Drum	Used Oil	55	55	Containment Pallet	>55	F&I	JD Smith	N/A	Steel	Single-walled drums	Rupture, leak	55	0-55	Within containment	Containment Pallet	N/A	None	Filling conducted over containment pallet	N/A	Portable (Category 1)	Required (Form H.2)	N/A
																Transfer overflow	5	0-5		Containment Pallet; spill kit							
801/R125 Drum Storage Area																											
Drum	801A	125	Inside	Portable Bulk Storage	Drum	Insulating Oil	55	55	Building Trench	Building	WCI	Tom McWilliams	N/A	Steel	Single-walled drums	Rupture, leak	55	0-55	Within building	Inside building	N/A	None	Drums are not refilled	N/A	Portable (Category 1)	Required (Form H.2)	N/A
Drum	801A	125	Inside	Portable Bulk Storage	Drum	Used Oil	55	55	Building Trench	Building	WCI	Tom McWilliams	N/A	Steel	Single-walled drums	Rupture, leak	55	0-55	Within building	Filling conducted inside building	N/A	None	Filling conducted inside; Spill kit	Visual	Portable (Category 1)	Required (Form H.2)	N/A
801 Drum Storage Area																											
RTCU-1 (Up to four 55-gallon drums)	801A	N/A	Outside	Portable Bulk Storage	Drum	Insulating Oil	55	220	Covered containment pallet	66	WCI	Tom McWilliams	N/A	Steel	Single-walled drums	Rupture, leak	55	0-55	Within containment	Containment pallet sump	N/A	None	Drums are not refilled	N/A	Portable (Category 1)	Required (Form H.2)	N/A
RTCU-2 (Up to four 55-gallon drums)	801A	N/A	Outside	Portable Bulk Storage	Drum	Insulating Oil	55	220	Covered containment pallet	66	WCI	Tom McWilliams	N/A	Steel	Single-walled drums	Rupture, leak	55	0-55	Within containment	Containment pallet sump	N/A	None	Drums are not refilled	N/A	Portable (Category 1)	Required (Form H.2)	N/A
RTCU-3 (up to four 55-gallon drums)	801A	N/A	Outside	Portable Bulk Storage	Drum	Insulating Oil	55	220	Covered containment pallet	66	WCI	Tom McWilliams	N/A	Steel	Single-walled drums	Rupture, leak	55	0-55	Within containment	Containment pallet sump	N/A	None	Drums are not refilled	N/A	Portable (Category 1)	Required (Form H.2)	N/A
RTCU-4 (up to four 55-gallon drums)	801A	N/A	Outside	Portable Bulk Storage	Drum	Insulating Oil	55	220	Covered containment pallet	66	WCI	Tom McWilliams	N/A	Steel	Single-walled drums	Rupture, leak	55	0-55	Within containment	Containment pallet sump	N/A	None	Drums are not refilled	N/A	Portable (Category 1)	Required (Form H.2)	N/A
Polycontainer	801A	N/A	Outside	Portable Bulk Sotrage	Polycontainer	Oily Wastewater	500	500	Portable Containment	500	WCI	Kenny Newman	N/A	Polyethylene	Double-walled container	Rupture, leak	500	0-500	Within containment	Double Walled Construction	N/A	None	Procedure	N/A	Portable (Category 1)	Required (Form H.2)	N/A
883																											
B883WAA	883	N/A	Outside	Portable Bulk Storage	55-gal drums; 330-gal totes;660-gal totes	Used Oil; Oily Wastewater	660	5400	Berm	912	RHWM	Kenny Newman	N/A	Steel; Poly ethylene	Single-wall drums; Polyethylene containers	Transfer overflow, rupture, leak	660	0-660	Toward interior sump	Berm and sump	N/A	None	Transfers within secondary containment area	N/A	Portable (Category 1)	Required (Form H.2)	N/A
B883CSA	883	N/A	Outside	Portable Bulk Storage	55-gal drums; 330-gal totes;660-gal totes	Used Oil; Oily Wastewater	660	5400	Berm	5585	RHWM	Kenny Newman	N/A	Steel; Poly ethylene	Single-wall drums; Polyethylene containers	Rupture, leak	660	0-660	Toward interior sump	Berm and sump	N/A	None	Transfers not conducted in CSA	N/A	Portable (Category 1)	Required (Form H.2)	N/A
MOBILE REFUELERS																											
G632510H	875	Parking Area	Outside	Fuel Truck	Mobile Fuel Tank	Diesel	57	57	General	None	F&I	JD Smtih	Unknown	Stainless Steel	Single Wall	Leak	5.7	0-10	South	Spill Kit on Truck	None	None	Procedure; rolling spill kit	Visual	Portable (Category 3)	Required (Form H.2)	N/A

gal Gallons
UL Underwriter's Laboratory
ND Not Determined
N/A Not Applicable

Table C-2 S300 SPCC Inventory -- Electrical Equipment

Equipment ID	Building	Room	Inside/ Outside	Equipment Type	Storage Type	Container Contents	Largest Container Capacity (gal)	Total Capacity (gal)	Secondary Containment Type	Secondary Containment Capacity (gal)	Organization ID	Program Contact	Installation Date	Material	Single-Walled/ Double-Walled	Potential Failure Type	Reasonably Expected Maximum Release (gal)	Release Rate (gal/min)	Flow Direction	Containment	Monthly Inspection
883 Electrical Corp Yard	883 Electrical Corp Yard	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	580	2000	None	N/A	F&I	Bruce Court	NA	Steel	Single Wall	Leak	58	0-58	West	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T443	P5096/888	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	58	58	None	N/A	F&I	Bruce Court	2005	Steel	Single Wall	Leak	5.8	0-5.8	North	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T639	P5115	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	79	79	None	N/A	F&I	Bruce Court	2011	Steel	Single Wall	Leak	7.9	0-7.9	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T351	851A	119	Outside	Transformer	Electrical Equipment	Insulating Oil	253	253	Berm	784	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	25.3	0-25.3	Within secondary containment	Secondary containment berm	Required (Form H.3)
T574	892	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	142	142	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	14.2	0-14.2	North	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T577	801A	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	454	454	Berm	691	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	45.4	0-45.4	Within secondary containment	Secondary containment berm	Required (Form H.3)
T578	801A	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	245	245	Berm	691	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	24.5	0-24.5	Within secondary containment	Secondary containment berm	Required (Form H.3)
T566	827A	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	198	198	None	N/A	F&I	Bruce Court	2015	Steel	Single Wall	Leak	19.8	0-19.8	North East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T505	827A	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	190	190	None	N/A	F&I	Bruce Court	2015	Steel	Single Wall	Leak	19	0-19	East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T312	812	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	179	179	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	17.9	0-17.9	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T323	P1027/804	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	90	90	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	9	0-9	East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T323 (*)	804	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	84	84	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	8.4	0-8.4	East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T350 (*)	850	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	169	169	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	16.9	0-16.9	East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T354	854	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	235	235	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	23.5	0-23.5	West	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T345 (*)	854	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	195	195	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	19.5	0-19.5	West	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T355	P4087/855	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	90	90	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	9	0-9	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T358	P4097/858	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	90	90	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	9	0-9	West	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T331	825	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	234	234	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	23.4	0-23.4	North East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T305	805	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	226	226	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	22.6	0-22.6	North	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T570	816	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	126	126	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	12.6	0-12.6	East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T306	806A	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	177	177	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	17.7	0-17.7	All directions towards trench	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T316	806B	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	171	171	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	17.1	0-17.1	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T319	819	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	112	112	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	11.2	0-11.2	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T309	809	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	150	150	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	15	0-15	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T309 (*)	873	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	287	287	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	28.7	0-28.7	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T317	817A	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	178	178	Berm	425	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	17.8	0-17.8	Within secondary containment	Secondary containment berm	Required (Form H.3)
T315	815	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	90	90	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	9	0-9	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T552	882	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	215	215	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	21.5	0-21.5	South West	Inspection; Oil Spill Contingency Plan	Required (Form H.3)

Table C-2 S300 SPCC Inventory -- Electrical Equipment

Equipment ID	Building	Room	Inside/ Outside	Equipment Type	Storage Type	Container Contents	Largest Container Capacity (gal)	Total Capacity (gal)	Secondary Containment Type	Secondary Containment Capacity (gal)	Organization ID	Program Contact	Installation Date	Material	Single-Walled/ Double-Walled	Potential Failure Type	Reasonably Expected Maximum Release (gal)	Release Rate (gal/min)	Flow Direction	Containment	Monthly Inspection
T318	P5077/823A	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	58	58	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	5.8	0-5.8	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T334	834	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	316	316	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	31.6	0-31.6	West	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T332	832C	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	127	127	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	12.7	0-12.7	North	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T597	P8093/832	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	90	90	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	9	0-9	North	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T513	836	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	580	580	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	58	0-58	North	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T569	P8072	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	241	241	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	24.1	0-24.1	East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T467	P8079/PTU7	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	195	195	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	19.5	0-19.5	East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T376	873	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	163	163	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	16.3	0-16.3	All directions towards trench	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T375	P8077/875	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	90	90	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	9	0-9	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T374	874	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	121	121	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	12.1	0-12.1	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T366(*)	P8089/871	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	169	169	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	16.9	0-16.9	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T366	P8085	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	90	90	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	9	0-9	South	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T568	889	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	129	129	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	12.9	0-12.9	South East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T529	865	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	271	271	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	27.1	0-27.1	All directions	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T528	865	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	271	271	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	27.1	0-27.1	All directions	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T598	889	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	195	195	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	19.5	0-19.5	East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T436	P5080/813	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	90	90	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	9	0-9	East	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T330	P8048/835	N/A	Outside	Transformer (Pole Mount)	Electrical Equipment	Insulating Oil	90	90	None	N/A	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	9	0-9	West	Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T301	846	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	4425	4425	Berm	3351	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	442.5	0-442.5	All directions within berm	Concrete berm; Inspection; Oil Spill Contingency Plan	Required (Form H.3)
T525	865	N/A	Outside	Transformer	Electrical Equipment	Insulating Oil	4360	4360	Berm	6115	F&I	Bruce Court	Unknown	Steel	Single Wall	Leak	436	0-436	Within secondary containment	Secondary containment berm	Required (Form H.3)

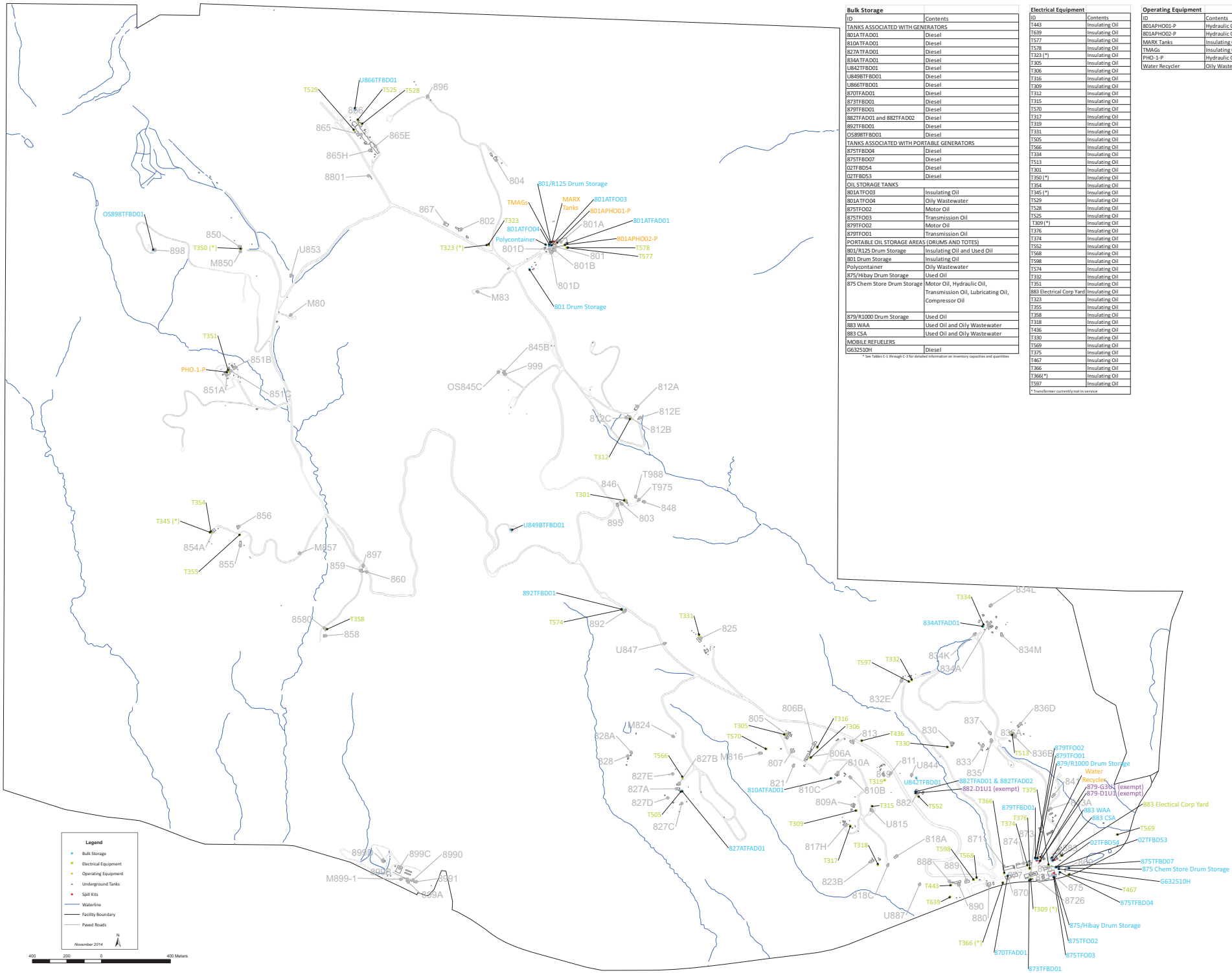
* Transformers currently out of service

gal Gallons

Table C-3 S300 SPCC Inventory -- Operating Equipment

Equipment ID	Building	Room	Inside/ Outside	Equipment Type	Storage Type	Container Contents	Largest Container Capacity (gal)	Total Capacity (gal)	Secondary Containment Type	Secondary Containment Capacity (gal)	Organization ID	Program Contact	Installation Date	Material	Single-Walled/ Double-Walled	Potential Failure Type	Reasonably Expected Maximum Release (gal)	Release Rate (gal/min)	Flow Direction	Containment	Monthly Inspection
PHO-1-P	851A	122	Inside	Operating/Camera Hoist Reservoir	Operating Equipment	Hydraulic Oil	400	400	Building	>5	WCI	Mike Gase	Unknown	Steel	Single Wall	Leak	<5	Slow drips (1 ounce per hour)	Contained inside room	Contained inside room	Required (Form H.3)
801APHO01-P	801A	102	Inside	Operating/Camera Hoist Reservoir	Operating Equipment	Hydraulic Oil	500	500	Building	>5	WCI	Tom McWilliams	Unknown	Steel	Single Wall	Leak	<5	Slow drips (1 ounce per hour)	Contained inside room/trench	Contained inside room/trench	Required (Form H.3)
801APHO02-P	801A	3001	Inside	Hydraulic Door Reservoir	Operating Equipment	Hydraulic Oil	70	70	Retention Tank	4000	WCI	Tom McWilliams	1980s	Steel	Single Wall	Leak	<5	Slow drips (1 ounce per hour)	Contained inside room/trench	Contained inside room/trench	Required (Form H.3)
MARX Tanks	801A	125	Inside	Electrical/MARX Tanks (15)	Operating Equipment	Insulating Oil	720	10800	Building	>5	WCI	Tom McWilliams	1980s	Steel	Single Wall	Leak	<5	Slow drips (1 ounce per hour)	Contained inside room/trench	Contained inside room/trench	Required (Form H.3)
TMAGs	801A	125	Inside	Electrical/TMAGs (4)	Operating Equipment	Insulating Oil	60	240	Building	>5	WCI	Tom McWilliams	Two in 1980s, Two in 2016	Steel	Single Wall	Leak	<5	Slow drips (1 ounce per hour)	Contained inside room/trench	Contained inside room/trench	Required (Form H.3)
Water Recycler	879	N/A	Outside	Water Recycler	Operating Equipment	Oily Wastewater	600	600	Berm	879	F&I	Jon Ness	Unknown	Steel; Poly ethylene	Single Wall	Piping or valve failure, rupture	Water Recycler	0-600 gpm	Southwest toward sump	Within containment berm	Required (Form H.3)

gal Gallons



Bulk Storage

ID	Contents
TANKS ASSOCIATED WITH GENERATORS	
801ATFAD01	Diesel
810ATFAD01	Diesel
827ATFAD01	Diesel
834ATFAD01	Diesel
U842TFBD01	Diesel
U849BTFBD01	Diesel
U866TFBD01	Diesel
870TFAD01	Diesel
873TFBD01	Diesel
879TFBD01	Diesel
882TFAD01 and 882TFAD02	Diesel
892TFBD01	Diesel
OS898TFBD01	Diesel
TANKS ASSOCIATED WITH PORTABLE GENERATORS	
875TFBD04	Diesel
875TFBD07	Diesel
02TFBD54	Diesel
02TFBD53	Diesel
OIL STORAGE TANKS	
801ATFO03	Insulating Oil
801ATFO04	Oily Wastewater
875TFO02	Motor Oil
875TFO03	Transmission Oil
879TFO02	Motor Oil
879TFO01	Transmission Oil
PORTABLE OIL STORAGE AREAS (DRUMS AND TOTES)	
801/R125 Drum Storage	Insulating Oil and Used Oil
801 Drum Storage	Insulating Oil
Polycontainer	Oily Wastewater
875/Hibay Drum Storage	Used Oil
875 Chem Store Drum Storage	Motor Oil, Hydraulic Oil, Transmission Oil, Lubricating Oil, Compressor Oil
879/R1000 Drum Storage	Used Oil
883 WAA	Used Oil and Oily Wastewater
883 CSA	Used Oil and Oily Wastewater
MOBILE REFUELERS	
G632510H	Diesel

* See Tables C-1 through C-3 for detailed information on inventory capacities and quantities

Electrical Equipment

ID	Contents
T443	Insulating Oil
T639	Insulating Oil
T577	Insulating Oil
T578	Insulating Oil
T323 (*)	Insulating Oil
T305	Insulating Oil
T306	Insulating Oil
T316	Insulating Oil
T309	Insulating Oil
T312	Insulating Oil
T315	Insulating Oil
T570	Insulating Oil
T317	Insulating Oil
T319	Insulating Oil
T331	Insulating Oil
T505	Insulating Oil
T566	Insulating Oil
T334	Insulating Oil
T513	Insulating Oil
T301	Insulating Oil
T350 (*)	Insulating Oil
T354	Insulating Oil
T345 (*)	Insulating Oil
T529	Insulating Oil
T528	Insulating Oil
T525	Insulating Oil
T309 (*)	Insulating Oil
T376	Insulating Oil
T374	Insulating Oil
T552	Insulating Oil
T568	Insulating Oil
T598	Insulating Oil
T574	Insulating Oil
T332	Insulating Oil
T351	Insulating Oil
883 Electrical Corp Yard	Insulating Oil
T323	Insulating Oil
T355	Insulating Oil
T358	Insulating Oil
T318	Insulating Oil
T436	Insulating Oil
T330	Insulating Oil
T569	Insulating Oil
T375	Insulating Oil
T467	Insulating Oil
T366	Insulating Oil
T366(*)	Insulating Oil
T597	Insulating Oil

* Transformer currently not in service

Operating Equipment

ID	Contents
801APHO01-P	Hydraulic Oil
801APHO02-P	Hydraulic Oil
MARX Tanks	Insulating Oil
TMAGs	Insulating Oil
PHO-1-P	Hydraulic Oil
Water Recycler	Oily Wastewater

Underground Tanks

ID	Contents
879-D1U1	Diesel
879-G3U1	Gasoline
882-D1U1	Diesel

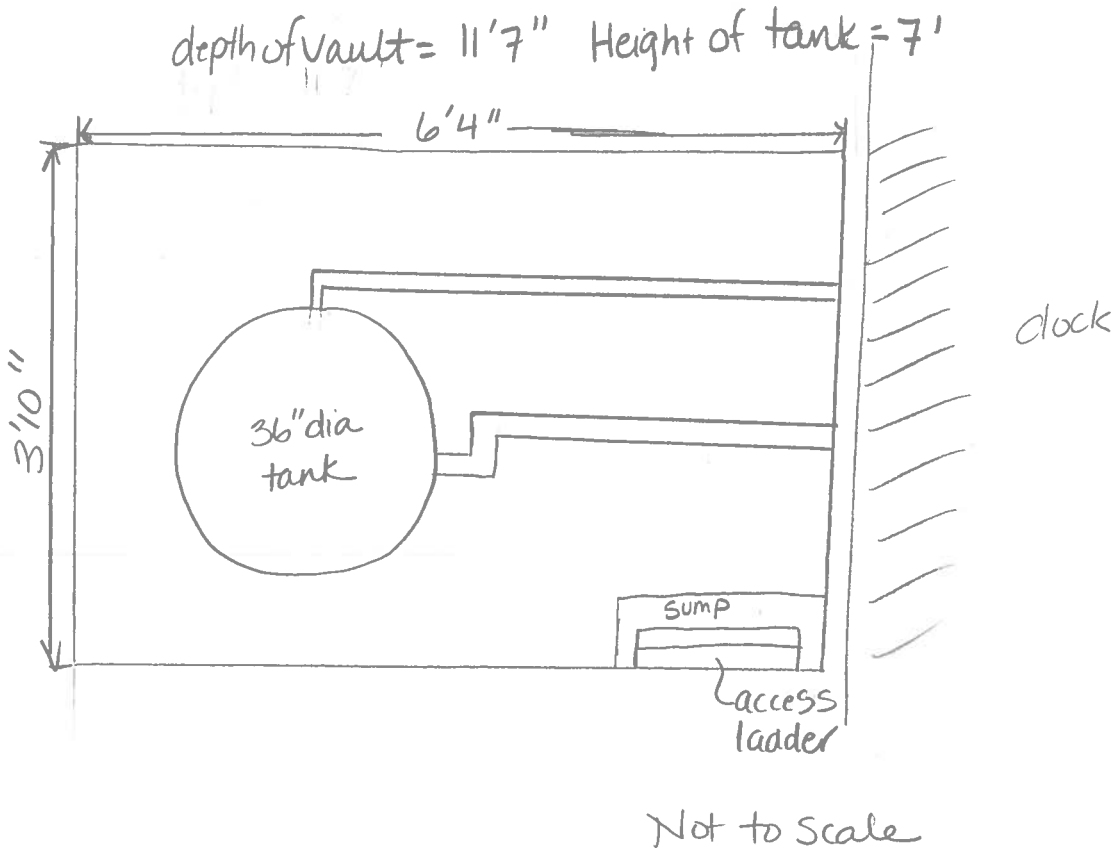
Lawrence Livermore National Laboratory

Appendix D

Secondary Containment Calculations

December 2016

Tank 801-R2U2 Secondary Containment Calculations



Not to Scale

Vault is in ground w/ steel cover.

Tank 801-R2U2 Secondary Containment Calculations

A. Calculation of Total Containment (V_T)

For calculations, the secondary containment is rectangular area with depth of 11 feet 7-inches (11.58-feet):

V_T = 3'10"*6'4"*11.58' = 3.83ft*6.33ft*11.58ft = 280.74 ft^3

B. Calculation of Displacement from Equipment and Pads (V_{DT})

The entire 36-inch (3-ft) diameter tank is within the containment area plus associated piping. The tank is 7-feet tall.

$V_{DT} = PI*r^2*H = PI*(3ft/2)^2*7ft$ = 49.45 ft^3

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

D = 25-year, 24-hour storm event = 2-inches (0.167 ft)

Total surface area of secondary containment (divided into three rectangles for calculations similar to V_T calculation)

A = 3'10"*6'4" = 3.83 ft*6.33 ft = 24.24 ft^2

$V_P = A*D$ = 24.24 ft^2 *0.167 ft = 4.05 ft^3

D. Net Total Secondary Spill Containment Capacity (V_N)

$V_N = V_T - V_{DT} - V_{PT}$ = 280.74 ft^3 – 49.45 ft^3 – 4.05 ft^3 = 227.24 ft^3

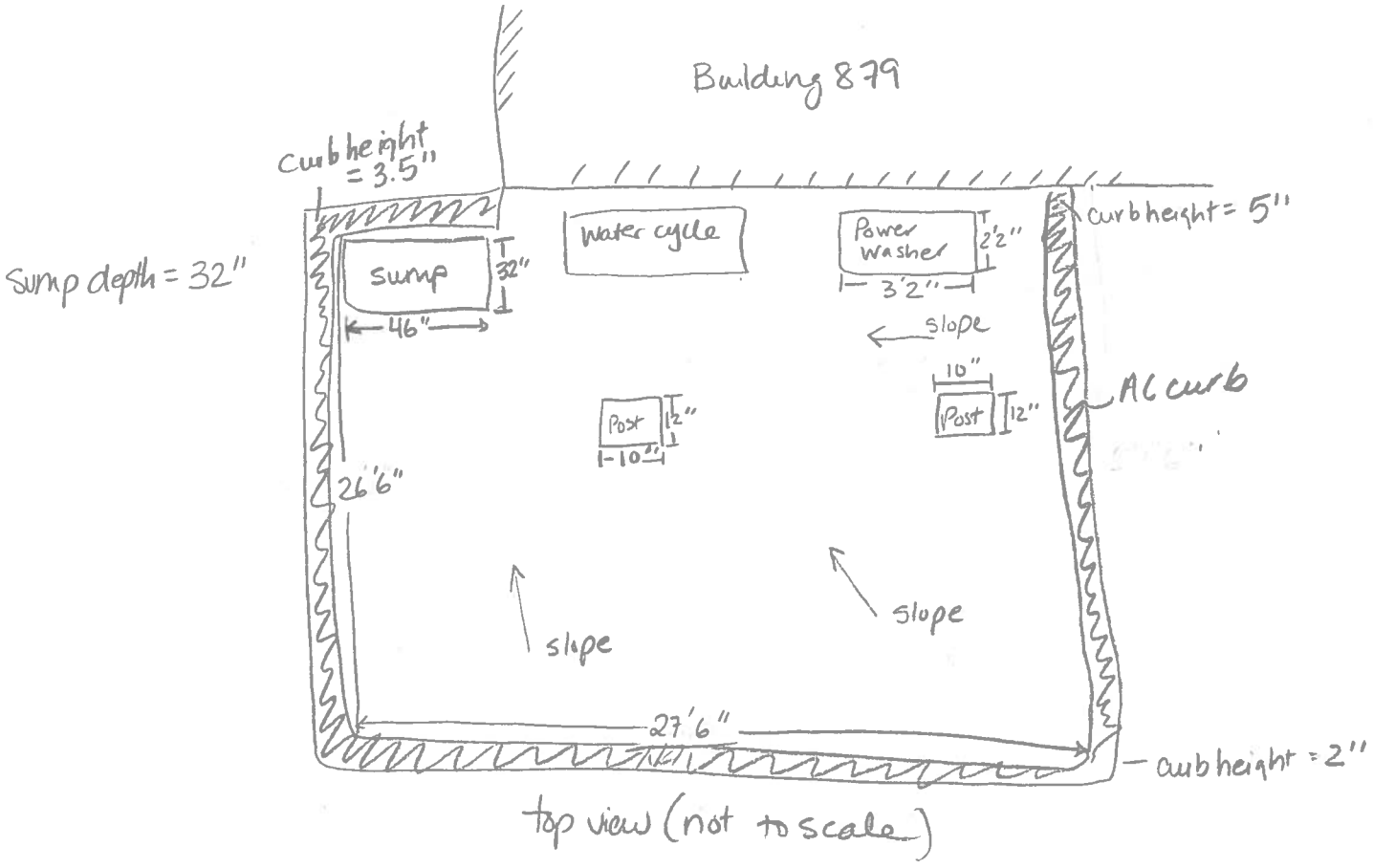
1 ft^3 = 7.48 gallons, therefore:

V_N = 227.24 ft^3* 7.48 gal/ft^3 = 1699.76 gallons

The largest volume of oil contained in equipment at this location is 275 gallons. Therefore, the net containment capacity of the secondary containment system at this location is sufficiently sized to contain the contents of the largest container plus freeboard to contain precipitation from a 24-hour, 25-year storm event.

Water Recycler at B879 Secondary Containment Calculations

The Water Recycler is a piece of operating equipment that may contain oily water. The water recycler is within a covered, asphalt area. An asphalt curb surrounds an area approximately 27'x27' on three sides (the fourth side is contained by B879). Trucks and equipment are driven/placed inside the curbed asphalt area and are washed down using a pressure-washer. The asphalt is sloped towards a sump (32" by 46" by 32" deep) located in the northwestern corner to collect the wash water runoff. The wash water is pumped from the sump and run through the water recycler to remove oils and other debris. The filtered water is reused. The recycled water is periodically pumped out and disposed of in accordance with state regulations and new potable water used.



Water Recycler at B879 Secondary Containment Calculations

A. Calculation of Total Containment (V_T)

V_T = 27'6"*26'6"*2" = 27.5ft*26.5ft*0.17ft = 121.46 ft^3

B. Calculation of Displacement from Equipment and Pad (V_{DT})

The displacement is due to two rectangular pieces of equipment and two rectangular posts within the bermed area:

V_{DT} = (4'8"*3'*2")+(3'2"*2'2"*2")+(2*(10"*12"*2") = (4.67ft*3ft*.17ft) + (3.17ft*2.17ft*.17ft) + 2*(0.83ft*1ft*.17ft) = 2.38 ft^3 + 1.17 ft^3 + 0.282 ft^3 = 3.83 ft^3

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

There is a roof overhang that extends from B879 and covers the bermed area. Therefore,

V_P = 0 ft^3

D. Net Total Secondary Spill Containment Capacity (V_N)

$V_N = V_T - V_{DT} - V_P$ = 121.46 ft^3 – 3.83 ft^3 – 0 ft^3 = 117.63 ft^3

1 ft^3 = 7.48 gallons, therefore:

V_N = 117.63 ft^3* 7.48 gal/ft^3 = 879.87 gallons

The largest volume of oil contained in equipment at this location is 600 gallons. Therefore, the net containment capacity of the secondary containment system at this location is sufficiently sized to contain the contents of the largest container (no freeboard necessary since storage area is protected from rainfall).

Abri Environmental Engineering, Inc.

Environmental Management and Compliance Consultants

Secondary Containment Report for Building 883 Container Storage Area Lawrence Livermore National Laboratory, Site 300

June 2005

Lawrence Livermore National Laboratory, Site 300
University of California, San Joaquin County, California

Certification Statement for Building 883 Container Storage Area Secondary Containment

I have reviewed the secondary containment capacity calculations for and inspected Building 883 Container Storage Area (CSA) located at Lawrence Livermore National Laboratory, Site 300 to determine compliance with requirements of title 22 California Code of Regulations Section 66264.175. To the best of my knowledge and belief, the following are true regarding the CSA:

1. The base underlying the containers is free of cracks and gaps, except for the sealed joints where PVC stops have been installed. All surfaces that have the potential to come in contact with liquids, including the base and berm walls have been sealed using 100% solids epoxy, which is sufficiently impervious to contain leaks and spills until the collected materials are removed.
2. The base of the secondary containment slopes toward a sump where the accumulated liquids can be removed. The containers are also elevated on pallets.
3. The secondary containment area has more than sufficient capacity to hold 10% of aggregate permitted capacity, 5500 gallons, or 100% of the volume of the largest container, 660 gallons. Accumulation of precipitation is prevented through a 10 feet high fence that is provided with slats and at least a five feet roof overhang on all sides.
4. Run-on into the containment area is prevented through a berm that is a minimum of 5.75" in height that surrounds the containment area.

Based on the information provided in the following report, the secondary containment system for B883 CSA meets the requirements of 22 CCR Section 66264.175 (b)(1) through (4).

William W. Moore, Professional Engineer
California Registered Number

6/8/2005
Date

I. Introduction and Scope

LLNL Site 300, located off of Corral Hollow Road near Tracy, California, operates Building 883 Container Storage Area (B883 CSA) to store hazardous, mixed, radioactive and non-hazardous liquid and solid wastes. As a part of renewing the hazardous waste permit, LLNL is increasing the permitted capacity of B883 CSA and, therefore, is required to submit a secondary containment report certified by an independent certified engineer. This report has been prepared in accordance with the requirements of title 22 CCR Section 66264.175 and 66270.15.

The container storage area consists of a covered and bermed concrete slab floor measuring 48 feet 11 inches by 33 feet 11 inches.

The scope of this report is to evaluate the B883 secondary containment based on the requirements of title 22 CCR Section 66264.175. The scope of this report does not include the steel structure and cover associated with the CSA.

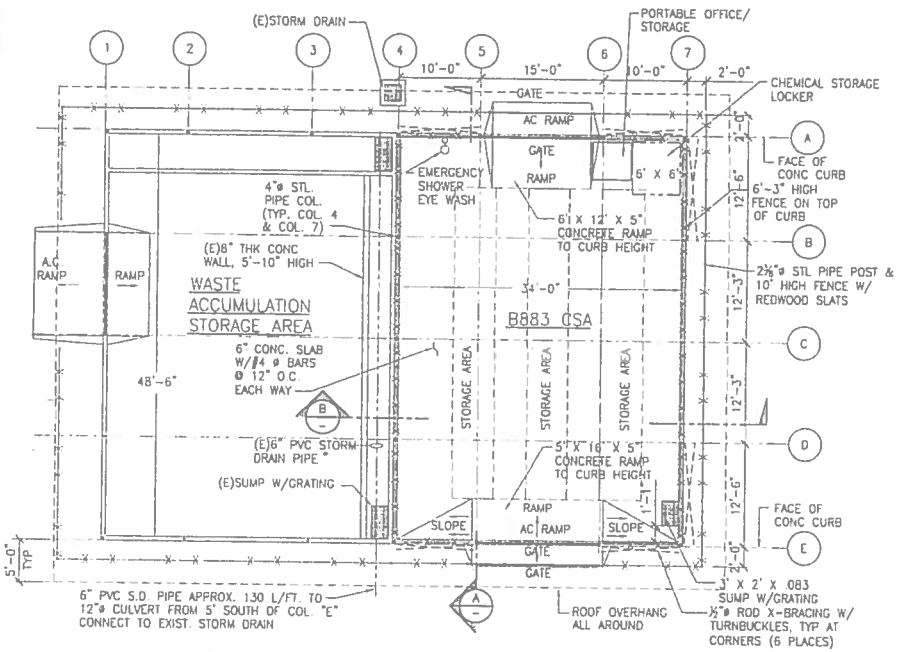
II. Containment System Design

B883 CSA consists of a covered concrete pad with floor area of 1,658 square feet. The floor slopes towards the southwest direction to a sump measuring 36 inches by 25.75 inches by 10 inch deep. A drainpipe penetrates through the sump wall to the outside. The drainpipe is provided with a valve that is locked in the closed position.

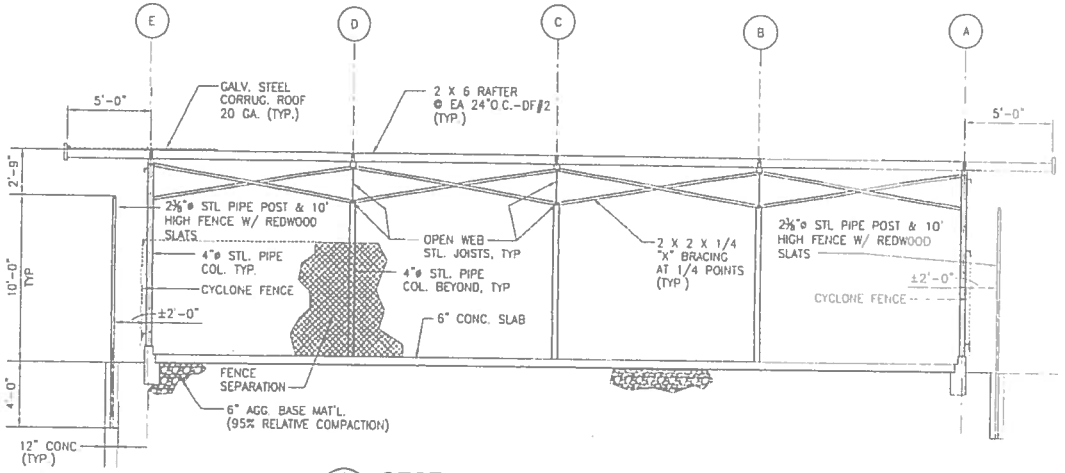
The area is covered using a steel structure and galvanized sheet metal roof. The area is surrounded by concrete curb measuring in height 5.75 inches on the east side, 10.5 inches at the northwest corner and 13.5 inches at the southwest corner. The berm is 6 inches wide and has been poured integrally with the floor slab and there are no seams between the berm and the CSA floor.

The CSA includes two ramps, an asphalt ramp at the east end, and a concrete ramp at the west end. The east ramp measures 12 feet 2 inches long by 6 feet wide and the west ramp measure 15 feet 9 inches long by 5 feet wide. The west ramp slopes to the northwest and southwest corners of the CSA. See **Figure 1**.

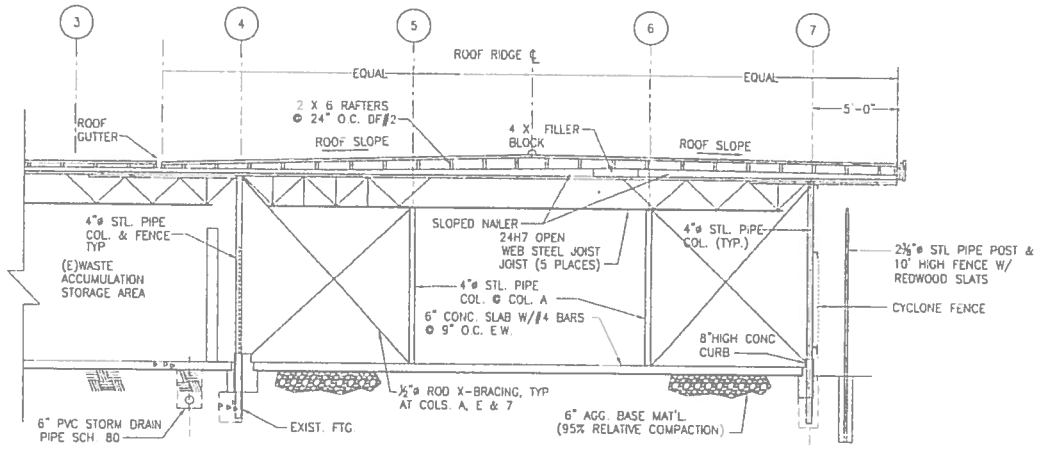
According to LLNL, the floor slab of the area consists of two slabs, the lower slab is 6 inches thick and is poured continuously, and the upper slab is 6 inches thick and is in two sections. The lower slab cannot be viewed; the sections of the upper slab are joined by a PVC water stop. The PVC water stop is a dumbbell type to accommodate for possible expansion and contraction in the concrete floor.



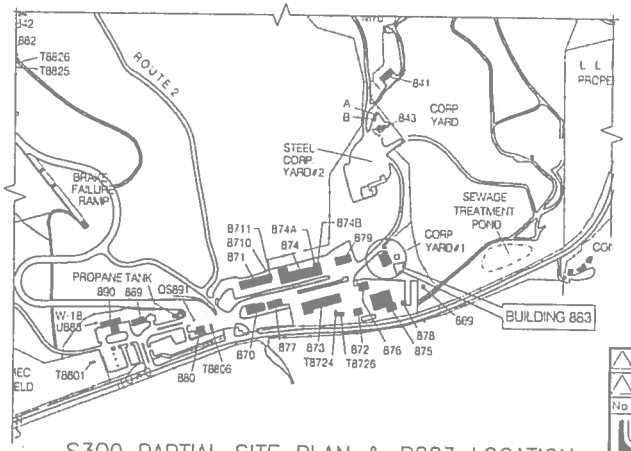
FLOOR PLAN–CONTAINER STORAGE AREA
SCALE: 1/8" = 1'-0"



A SECTION- CONTAINER STORAGE AREA
SCALE: 1/4" = 1'-0"



B SECTION- CONTAINER STORAGE AREA
SCALE: 1/4" = 1'-0"



S300 PARTIAL SITE PLAN & B883 LOCATION
NOT TO SCALE

NOT FOR CONSTRUCT

No	Date	Revision	Dwn	Chk	D

Lawrence Livermore National La
Plant Engineering, Livermore, C.

BUILDING 883
CONTAINER STORAGE ARE
FIELD VERIFIED PLAN & SECTI

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A85-883-001DB, Building 883 Container Storage Area Floor Plan, Foundation Plan and Sections

III. Materials Compatibility and Release Prevention

The material of construction for the floor is reinforced concrete. The concrete surfaces that could potentially come in contact with wastes are epoxy coated. The coatings are solids epoxy, which are resistant to mechanical and chemical deterioration such as forklift traffic and waste spills respectively.

Waste incompatibility problems with the containment construction material are not expected considering the epoxy coated concrete and the daily inspections. Any spill would be detected and removed within a short period of time.

IV. Run-on and Precipitation

The entire containment floor is surrounded by minimum of 5.75" high berm, which would prevent any run-on onto the CSA. Participation blow-in is unlikely considering the 10' high chain link fence that is provided with slats, 5' roof overhang on three sides and the roof of the adjacent covered area.

V. Retention Capacity

Below are the calculations to determine the retention capacity of the B883 CSA. Liquid material capacity is calculated based on the volume of void space available. No allowance for fire sprinkler water will be considered, since there are no automatic fire sprinkler systems in B883 CSA, and no run-on and precipitation allowance, as described above. The available volume is calculated by subtracting the volume displaced by objects within the CSA from the total available volume provided by the floor area and the berm surrounding it. Objects within B883 CSA include pallets, containers, a portable office and a chemical storage cabinet. There is also an eye wash/shower within the CSA, however, it is mounted on a 2-inch pipe and its displacement is negligible. See **Figure 2**.

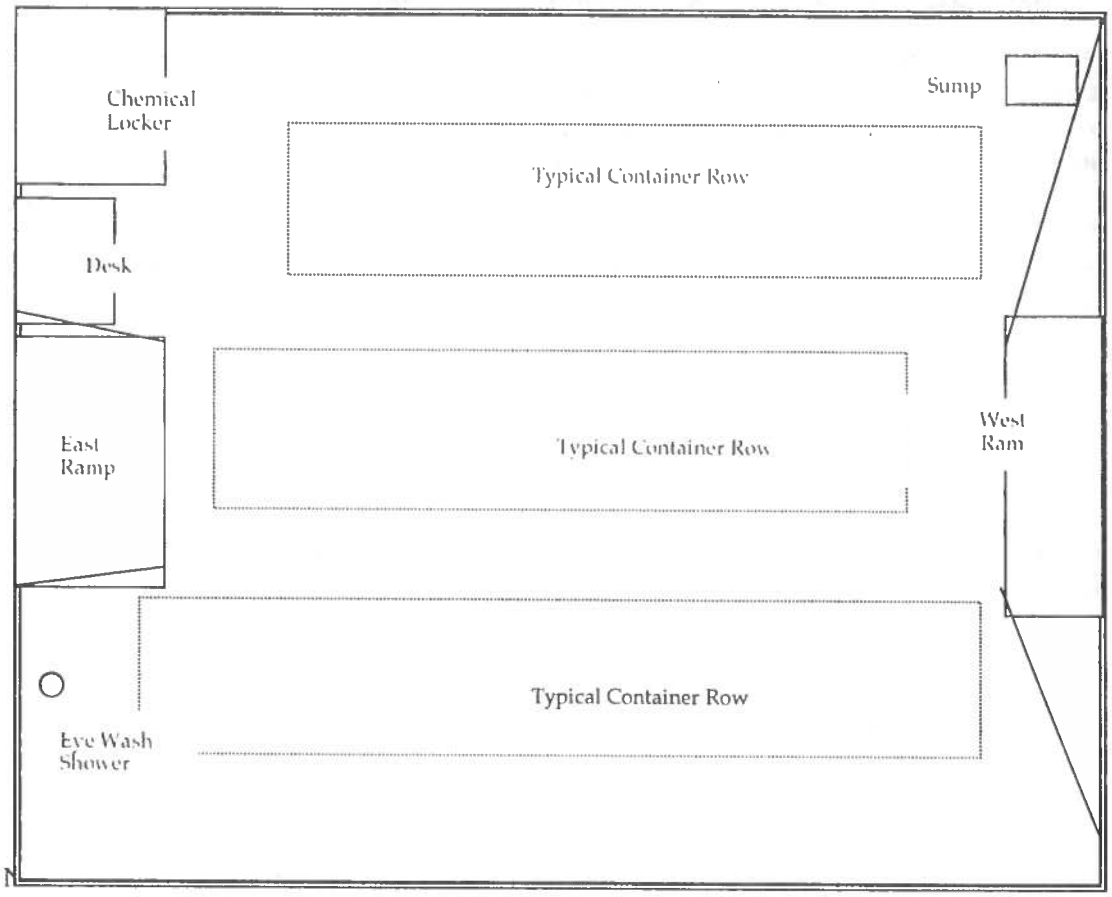


Figure 2: Building 883 Container Storage Area Schematic

VI. Total Secondary Containment Volume

The total secondary containment volume for B883 is calculated by adding the volume of a rectangular prism, a triangular prism (to account for the slope in the floor) and the sump.

Following formulas were used to calculate the volumes:

V rectangular prism = Length (L) X Width (W) X Height (H)
V triangular prism = .5 [L X W X H]

Rectangular Prism
The floor of B883 CSA measures 48' 11" by 33' 11" and the berm height surrounding the area measures at 5.75" at the east side (this is the shallowest part of the CSA).

V rectangular prism = 48.9 X 33.9 X 5.75/12 = 794.3 cubic feet

Triangular Prism

The floor of B883 slopes towards the sump at the southwest corner of the unit. The berm height at the northwest and the southwest corners measure 10.5" and 13.5" respectively. The average berm height on the west side is 12". To calculate the volume of the triangular prism an average berm height of 6.25" is used.

V triangle = .5(48.9 X 6.25/12 X 33.9) = 431 cubic feet

Sump

The floor slopes to a sump on the southwest corner, which measures 36" by 25.75" and 10" deep.

V sump = 36/12 X 25.75/12 X 10/12 = 5.4 cubic feet

TV total secondary containment volume = 794.3 + 431 + 5.4 = 1,232 cubic feet

Using a factor of 7.48 gallons per cubic feet

TV= 1,232 (7.48) = 9,206 gallons

VII. Obstruction Displacement Volume

The obstruction displacement volume is the displacement from objects located within the secondary containment area. The following objects are located within the secondary containment area:

- Maximum of 22 secondary containment drum pallets used to elevate and segregate waste containers,
- Containers including portable tanks,
- A concrete ramp located at the west end of the CSA,
- An asphalt ramp located at the east end of the CSA,
- A portable office located at the east end of the CSA,
- A chemical storage locker located at the east end of the CSA.

Drum Pallets and Containers

Different types of drum pallets are used at B883 CSA, however, the most commonly used pallets include 55 gallon drum pallets measuring 4' 7" X 4' 7" X 10" high and 4' X 4' X 6" high. The larger drum pallets have containment capacity of 80 gallons and the smaller pallets can provide 12 gallons of containment. Each drum pallet can hold 4 drums. The pallets also provide void spaces for forklift forks for moving the pallets and the drums.

LLNL also stores portable tanks in the CSA. The portable tanks are supported on a steel frame and the portable tanks are supported by the frame at 12" of the

ground. Worst cases for displacement for these devices are 55-gallon drums stored on larger pallets. Using a typical container arrangement (shown in figure 1) 22 pallets can be placed on the floor. The number of the pallets is based on 8 pallets in the north side row and 7 pallets in the center and the south side rows. The center and south side rows hold fewer numbers of pallets because of the ramps and the chemical storage locker respectively. Considering the floor slope of the CSA, the curb height and the height of the pallets, few of the pallets could be submerged if the CSA is full of liquids. On average up to 2" of the submerged containers could displace liquid.

For conservatism, an assumption that all pallets will have maximum displacement will be made. No credit will be taken for the containment capacity and the void space under the pallets for forks of the forklifts. Also, the displacement for the containers will not be considered since the drum pallets have more than enough capacity to compensate.

D drum pallet = 4.6 X 4.6 X 10/12 (22) = 388 cubic feet
D drum pallet = 388 (7.48) = 2,902 gallons

East Ramp

The ramp at the east end of the CSA measures 12' 2" X 6'. For volume calculations, the entire ramp will be considered a wedge and the formula for the triangular prism is used.

D east ramp = (12.2 X 6 X 5.75/12) .5 = 17.5 cubic feet
D east ramp = 17.5 (7.48) = 131.2 gallons

West Ramp

The ramp on the west side of the CSA measures 15' 9" X 5'. The sides of the ramp slope and extend to the northwest and northeast corners. Since the west side of the CSA slopes towards south and the curb height increases from 10.5" on the north side to 13.5" on the south side, an average curb height of 12" will be used. Three sections of this ramp are considered for displacement calculation as follows.

D middle section = (15.75 X 5 X 1) .5 = 39.4 cubic feet
D sloped sections = [(9 X 5 X 1) .5] .5 = 11.3 (2) = 22.6 cubic feet
D west ramp = 39.4 + 22.6 = 62 cubic feet
D west ramp = 62 (7.48) = 463.8 gallons

Portable Office

A portable office, measuring 58.5" X 42", is located on the east side of the CSA. The portable office is elevated 3.5" off the floor and is supported by three legs measuring 5" X 42". The displacement for this item will consist of the volume occupied by the legs and the part of the portable office that is below the top of the berm.

D legs = 5/12 X 3.5/12 X 42/12 = .43(3) = 1.3 cubic feet
D cabinet = 2.5/12 X 58.5/12 X 42/12 = 3.6 cubic feet
D portable office = 1.3 + 3.6 = 4.9 cubic feet
D portable office = 4.9(7.48) = 36.7 gallons

Chemical Storage Locker

A chemical storage locker is located in the east end of the CSA measuring 6' 6" X 6' 7". The storage locker is elevated 3" off the floor and is supported on two 2" X 2" L shaped legs. The chemical storage locker has its own secondary containment of 122 gallons. For conservatism, the secondary containment capacity of the storage cabinet will be ignored. The displacement of the storage locker will consist of the displacement of the legs and the part of the locker that is below the top of the berm. For conservatism, the legs will be considered as 2" X 2" solid metal bar.

D legs = (2/12 X 2/12 X 6.6) 3 = .6 cubic feet
D cabinet = (3/12 X 6.6 X 6.7) = 11.1 cubic feet
D storage locker = 11.1 + .6 = 11.7 cubic feet
D storage locker = 11.7 (7.48) = 87.5 gallons

DV total displacement volume = 2,902 + 131.2 + 463.8 + 36.7 + 87.5 = 3,621 gallons

VIII. Secondary Containment Capacity

The secondary containment capacity is the difference between the total secondary containment volume and total displacement volume.

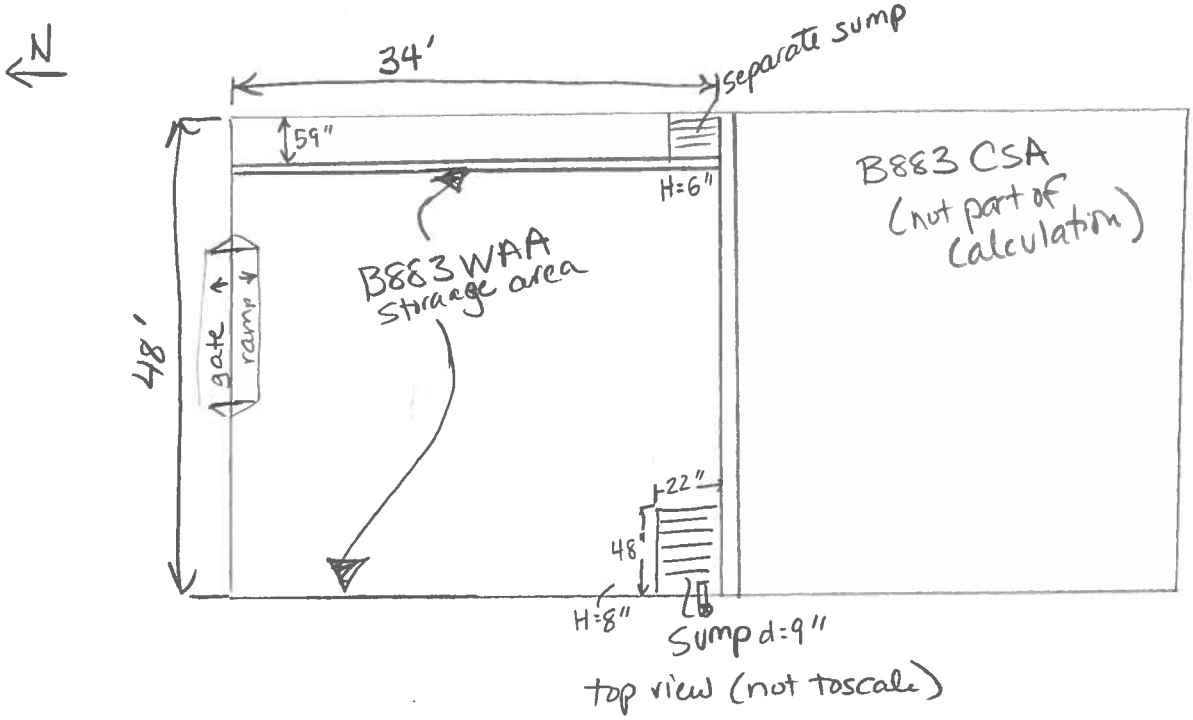
TV – DV = 9,206 – 3,621 = 5,585 gallons

IX. Conclusion

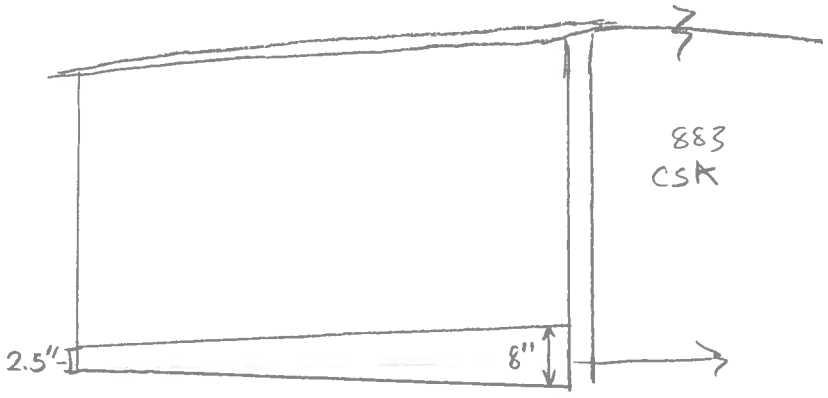
Title 22 CCR section 66264.175(b)(3) states, "the containment systems shall have sufficient capacity to contain precipitation from at least a 24-hour, 25-year storm plus 10% of the aggregate volume of all containers of the volume of the largest container, whichever is greater." Given the secondary containment capacity of 5,585 gallons for the B883 CSA, the containment capacity is more than sufficient to for permitted capacity of 5,500 gallons.

B883 WAA Secondary Containment Calculations

The B883 WAA is a covered area approximately 48x34 feet, surrounded by a locked chain link fence. The WAA is constructed with an epoxy coated concrete floor and a berm. The floor is sloped to the southwest towards a sump measuring 22-inches by 48-inches and 9-inches deep. A drainpipe penetrates through the sump wall to the outside. The drainpipe is provided with a valve that is kept in the closed position. Access to the WAA is through a locked gate with ramp on the north side of the WAA. The access ramp is sloped into the WAA to prevent liquid from leaving the secondarily contained area in the event of a spill. Waste containers are stored in main area of the WAA. A smaller storage area with a separate berm (approximately 59-inches wide total) and storage sump are located along the northern side of the WAA, but is only used for tools and equipment storage.



top view (not to scale)



Side view (not to scale)

B883 WAA Secondary Containment Calculations

A. Calculation of Total Containment (V_T)

The total secondary containment volume for the B883 WAA is calculated by adding the volume of a rectangular prism (V_{RP}), a triangular prism to account for the slope in the floor (V_{TP}), and the sump (V_S).

The shallowest part of the WAA is 2.5-inches deep (0.21-ft)

V_{RP} = (48'-4'11")*34'*0.21' = 43.08ft*34ft*0.21ft = 307.59 ft^3

The floor of the WAA slopes towards the sump at the southwest corner. The berm height at the northeast and southwest corners measures 6-inches and 8-inches (total), respectively. Less the 2.5-inches accounted for in the rectangular prism, an average berm height of 4.5-inches (0.375 ft) is used.

V_{TP} = 0.5*((48'-4'11")*34'*0.375 = 0.5*(43.08ft*34ft*0.375ft) = 274.64 ft^3

Volume of the sump:

V_S = 22"*48"*9" = 1.83ft*4'*0.75ft = 5.49 ft^3

$V_T = V_{RP} + V_{TP} + V_S =$ <u>587.72 ft^3</u>

B. Calculation of Displacement from Equipment and Pad (V_{DT})

The number and types of waste containers can vary at any given time depending on the types of wastes being stored and the configuration of the containers. However, for safety and access issues, a minimum 4-feet wide aisle space must always be maintained between rows of storage containers. For the purposes of this calculation, it is assumed that 80% of the floor-space could be covered under maximum storage conditions (as a worst-case scenario).

$V_{DT} = .8*V_T = .8*(307.59+274.64) =$ <u>465.78 ft^3</u>

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

There is a roof with a 5-foot overhang on three sides (and the roof of the adjacent 883 CSA) plus a 10-feet high chain-link fence provided with slats surrounding the WAA making precipitation accumulation in the WAA unlikely. Therefore,

$V_P =$ <u>0 ft^3</u>

D. Net Total Secondary Spill Containment Capacity (V_N)

$V_N = V_T - V_{DT} - V_P$ = 587.72 ft^3 – 0 ft^3 – 465.78 ft^3 = 121.94 ft^3

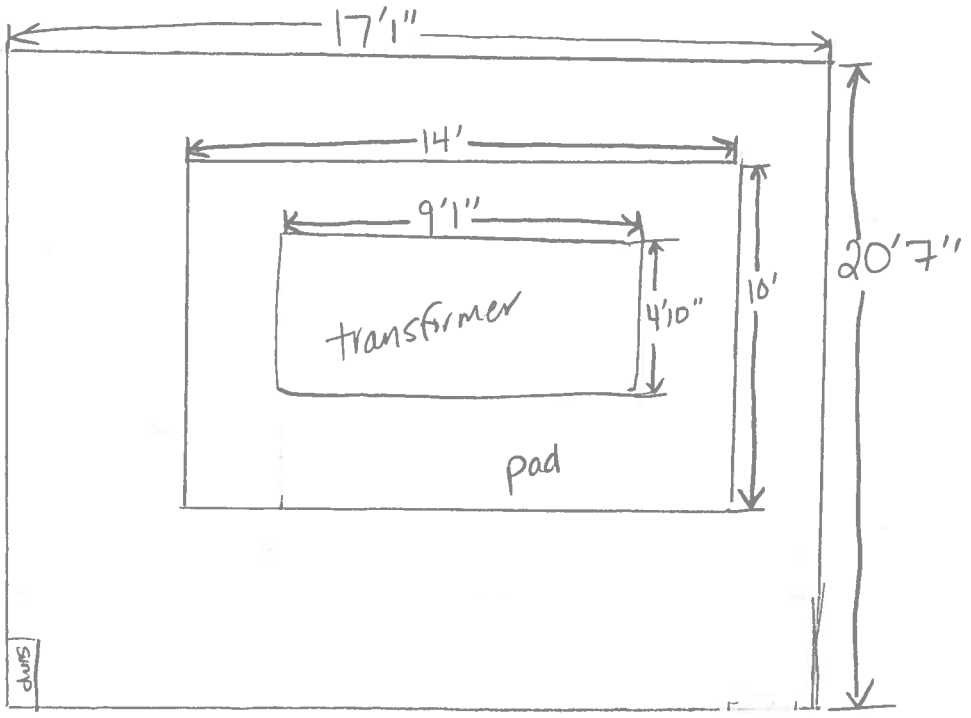
B883 WAA Secondary Containment Calculations

1 ft^3 = 7.48 gallons, therefore:

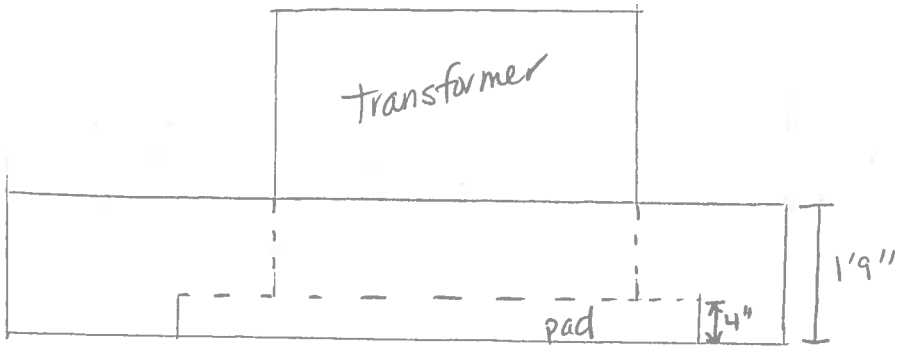
V_N = 121.94 ft^3* 7.48 gal/ft^3 = 912.48 gallons

The largest volume of oil contained in equipment at this location is 660 gallons. Therefore, the net containment capacity of the secondary containment system at this location is sufficiently sized to contain the contents of the largest container (no freeboard necessary since storage area is protected from rainfall).

T301 Secondary Containment Calculations (at B846)



Top View (Not to scale)



Side View (Not to scale)

T301 Secondary Containment Calculations (at B846)

A. Calculation of Total Containment (V_T)

Total volume of rectangle (height of curb is 1 ft 9-inches = 1.75 ft)

V_T = 17'1"*20'7"*1.75' = 17.08ft*20.58ft*1.75ft = 615.14 ft^3

B. Calculation of Displacement from Equipment and Pad (V_{DT})

One equipment pad inside bermed area with height of 4-inches (0.33ft) plus the height of equipment to remainder of curb height (1'5" = 1.42')

V_{DT} = (10'*14'*.33ft) + (4'10"*9'1"*1.42') = (10ft*14ft*.33ft) + (4.83ft*9.08ft*1.42ft) = 46.20 ft^3 + 62.28 ft^3= 108.48 ft^3

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

d = 25-year, 24-hour storm event = 2-inches (0.167 ft)

Total surface area of secondary containment

A = 17'1"*20'7" = 17.08ft*20.58ft= 351.51 ft^2

V_P = A*d = (351.51 ft^2)*0.167 ft = 58.70 ft^3

D. Net Total Secondary Spill Containment Capacity (V_N)

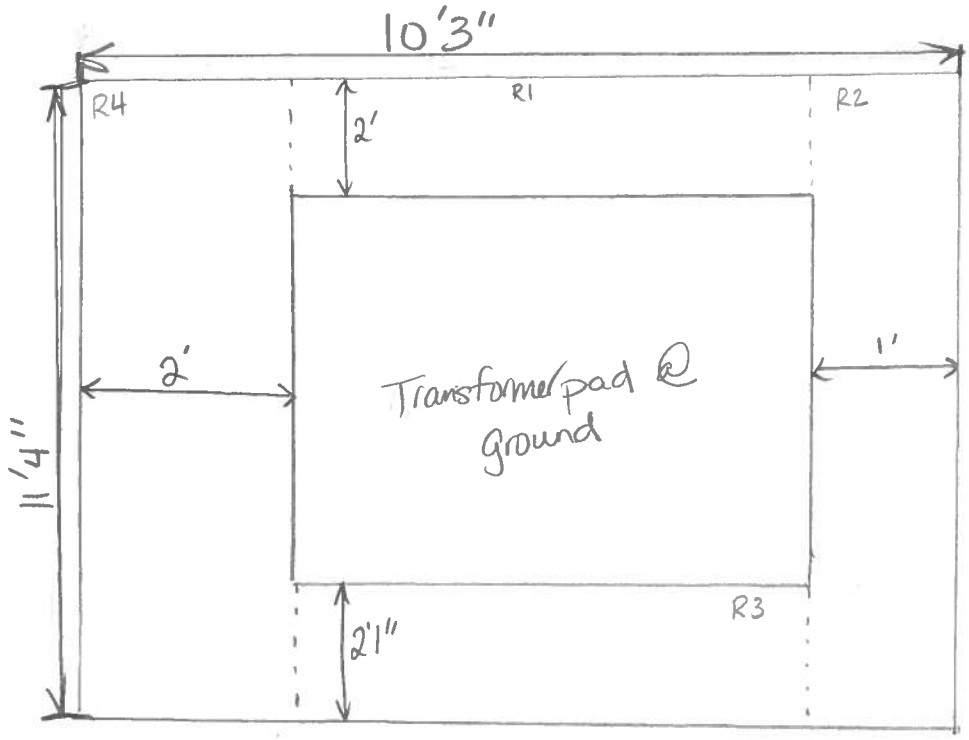
$V_N = V_T - V_{DT} - V_P$ = 615.14 ft^3 – 108.48 ft^3 – 58.70 ft^3 = 447.96 ft^3

1 ft^3 = 7.48 gallons, therefore:

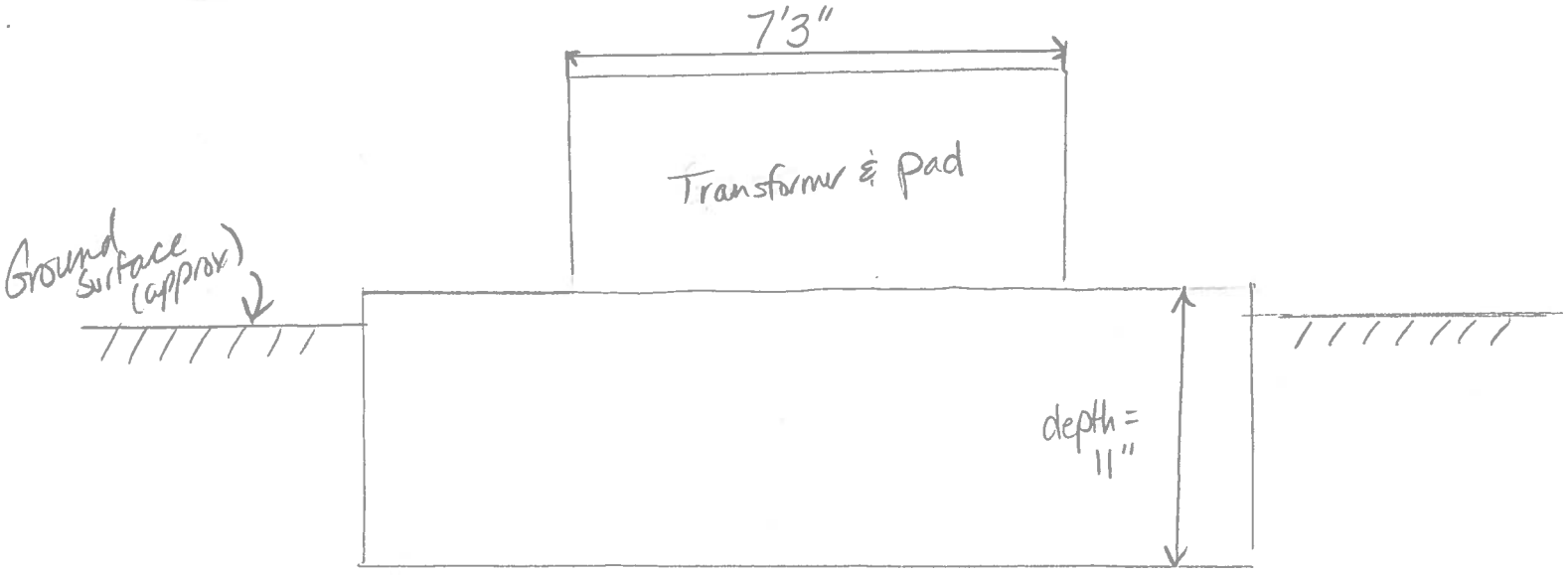
V_N = 447.96 ft^3* 7.48 gal/ft^3 = 3350.74 gallons

The transformer at this location contains 4,425 gallons of mineral oil. The most reasonable amount of oil to be released at this location is approximately 10% of the transformer volume, approximately 442 gallons of oil. Therefore, this secondary containment is sized to contain the most reasonably expected discharge plus freeboard for precipitation.

T306 Secondary Containment Calculations (at B806)



Top View (Not to scale)



Side View (Not to scale)

T306 Secondary Containment Calculations (at B806)

A. Calculation of Total Containment (V_T)

Secondary containment consists of a concrete-lined trench surrounding the transformer on all four sides. Depth of trench is 11-inches (0.92 ft). For purpose of calculations, divided trench into four rectangles.

V_{R1} = 7'3"*2'*.92' = 7.25ft*2ft*.92ft = 13.34 ft^3

V_{R2} = 11'4"*1'*.92' = 11.33ft*1ft*.92ft = 10.42 ft^3

V_{R3} = 7'3"*2'1"*.92' = 7.25ft*2.08ft*.92ft = 13.87 ft^3

V_{R4} = 11'4"*2'*.92' = 11.33ft*2ft*.92ft = 20.85 ft^3

$V_T = V_{R1} + V_{R2} + V_{R3} + V_{R4} = =$ <u>58.48 ft^3</u>

B. Calculation of Displacement from Equipment and Pad (V_{DT})

No equipment is located inside of trench.

V_{DT} = <u>0 ft^3</u>

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

d = 25-year, 24-hour storm event = 2-inches (0.167 ft)

Total surface area of secondary containment

A = 11'4"*10'3" = 11.33ft*10.25ft= 116.13 ft^2

$V_P = A*d$ = (116.13 ft^2)*0.167 ft = <u>19.39 ft^3</u>

D. Net Total Secondary Spill Containment Capacity (V_N)

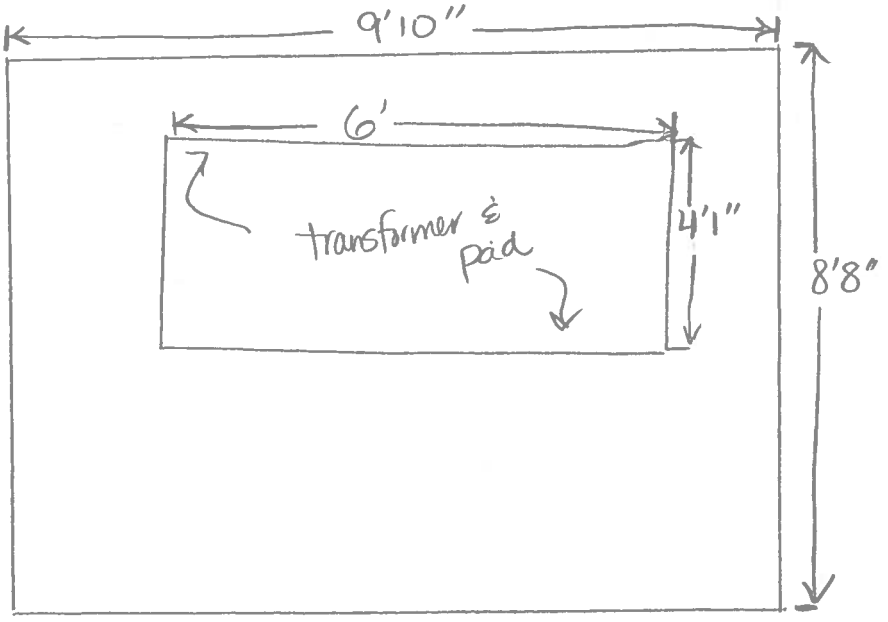
$V_N = V_T - V_{DT} - V_P$ = 58.48 ft^3 – 0 ft^3 – 19.39 ft^3 = 39.09 ft^3

1 ft^3 = 7.48 gallons, therefore:

V_N = 39.09 ft^3* 7.48 gal/ft^3 = <u>292.39 gallons</u>

The largest volume of oil contained in equipment at this location is <u>177 gallons.</u> Therefore, the net containment capacity of the secondary containment system at this location is sufficiently sized to contain the contents of the largest container plus freeboard to contain precipitation from a 24-hour, 25-year storm event.

T317 Transformers Secondary Containment Calculations



Top view (Not to scale)

Side view
(NOT TO SCALE)

T317 Transformers Secondary Containment Calculations

A. Calculation of Total Containment (V_T)

For calculations, the secondary containment is rectangular area with berm height of 14-inches (1.17-feet):

V_T = 9'10"*8'8"*1.17' = 9.83ft*8.67ft*1.17ft = 99.71 ft^3

B. Calculation of Displacement from Equipment and Pads (V_{DT})

One equipment pad located inside the containment area displacing volumes as high as containment wall (14 inches = 1.17 ft)

V_{DT} = 6'*4'1"*1.17' = 6ft*4.083ft*1.17ft = 28.66 ft^3

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

D = 25-year, 24-hour storm event = 2-inches (0.167 ft)

Total surface area of secondary containment (divided into three rectangles for calculations similar to V_T calculation)

A = 9'10"*8'8" = 9.83 ft*8.67 ft = 85.23 ft^2

V_P = A*D = 85.23 ft^2 *0.167 ft = 14.23 ft^3

D. Net Total Secondary Spill Containment Capacity (V_N)

$V_N = V_T - V_{DT} - V_{PT}$ = 99.71 ft^3 – 28.66 ft^3 – 14.23 ft^3 = 56.82 ft^3

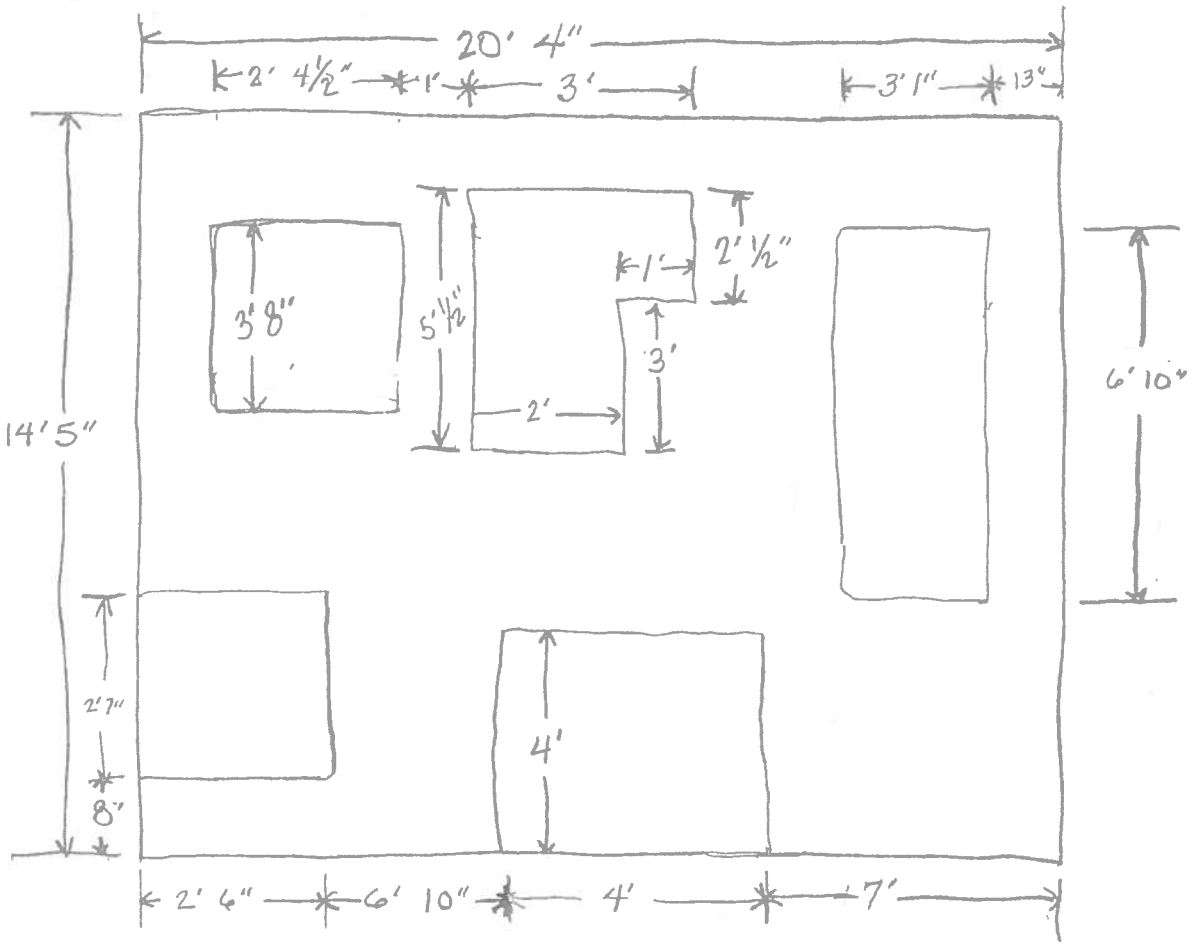
1 ft^3 = 7.48 gallons, therefore:

V_N = 56.82 ft^3* 7.48 gal/ft^3 = 425.01 gallons

The largest volume of oil contained in equipment at this location is 178 gallons. Therefore, the net containment capacity of the secondary containment system at this location is sufficiently sized to contain the contents of the largest container plus freeboard to contain precipitation from a 24-hour, 25-year storm event.

T351 Secondary Containment Calculations

851 T351 oil Containment Not to Scale



Curb is 5½" high

T351 Secondary Containment Calculations

A. Calculation of Total Containment (V_T)

Total volume of rectangle (height of curb is 5.5 inches = .458 ft)

V_T = 14'5"x20'4"'x.458' = 14.42 ft*20.33 ft*.458 ft = 134.26 ft^3

B. Calculation of Displacement from Equipment and Pads (V_{DT})

Five different equipment pads located inside the containment areas displacing volumes as high as containment wall (5.5 inches = .458 ft)

V_{D1} = 2'7"*2'6"*.458'=2.58 ft*2.5 ft*.458ft = 2.96 ft^3
V_{D2} = 3'8"*2'4.5"*.458' = 3.67ft*2.38ft*.458ft = 3.99 ft^3
V_{D3} = 4'*4'*.458'= 7.33 ft^3
V_{D4} = (5'.5"*2'*.458')+(2'.5"*1'*.458')= (5.042ft*2ft*.458ft)+(2.042ft*1ft*.458ft) = 4.618 ft^3+.935 ft^3 = 5.55 ft^3
V_{D5} = 6'10"*3'1"*.458'=6.833 ft*3.083 ft*.458ft = 9.65 ft^3

$V_{DT} = V_{D1} + V_{D2} + V_{D3} + V_{D4} + V_{D5}$ = 2.96 ft^3 +3.99 ft^3 + 7.33 ft^3 + 5.55 ft^3 + 9.65 ft^3 = <u>29.48 ft^3</u>

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

Transformer is under cover, no rainfall accumulation.

D. Net Total Secondary Spill Containment Capacity (V_N)

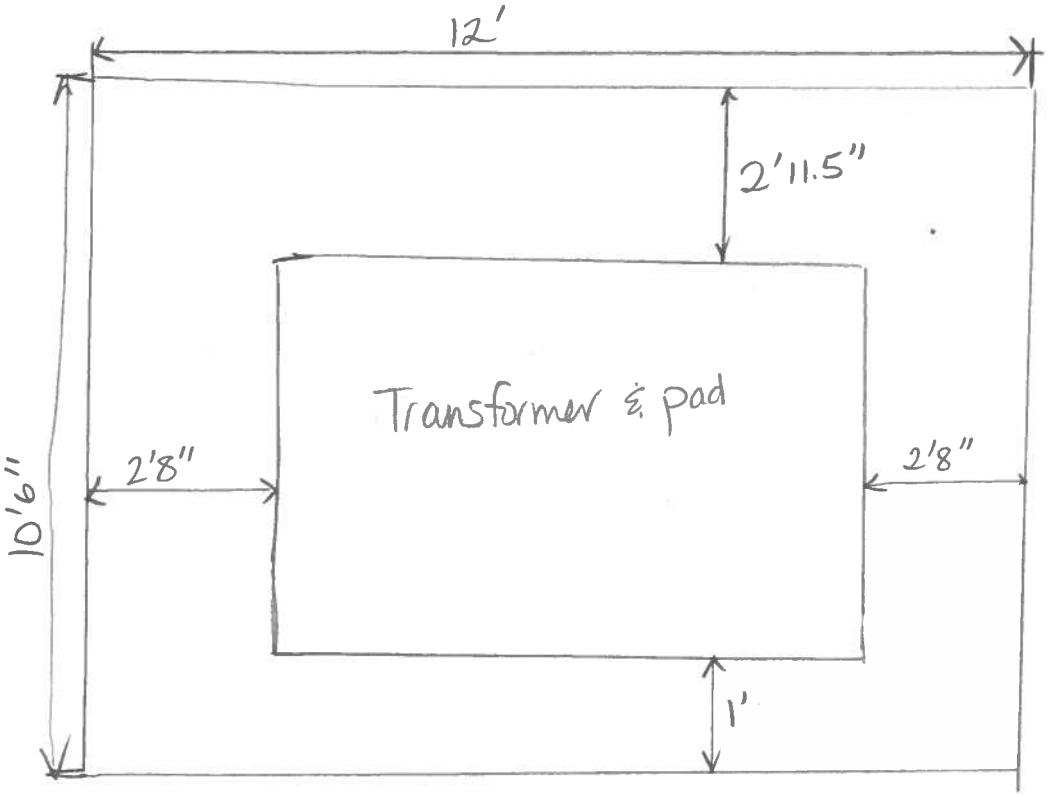
$V_N = V_T - V_{DT} - V_P$ = 134.26 ft^3 – 29.48 ft^3 - 0 ft^3 = 104.78 ft^3

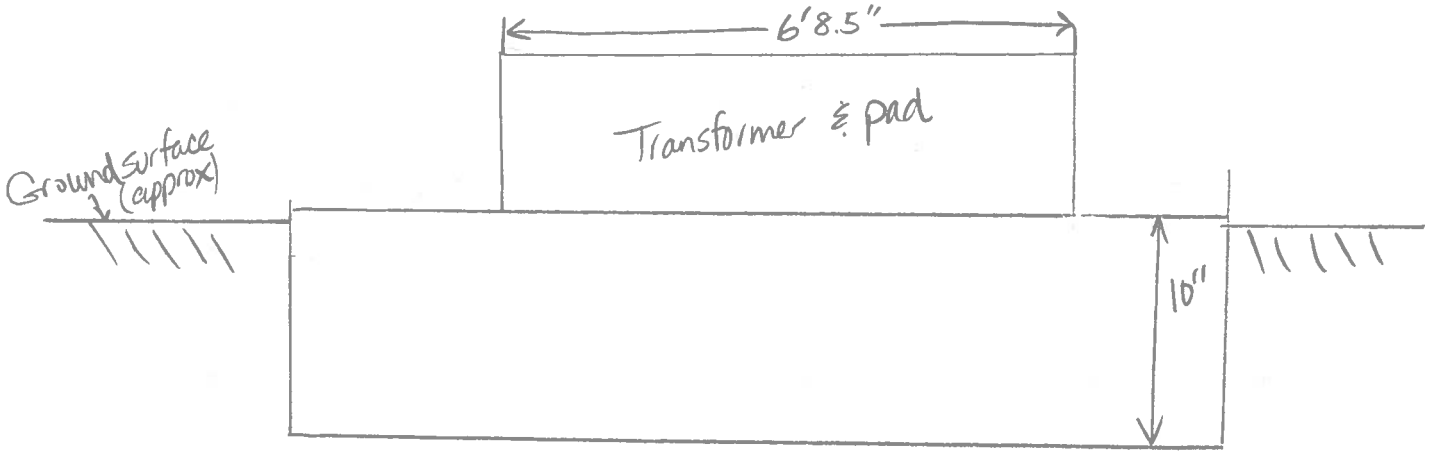
1 ft^3 = 7.48 gallons, therefore:

V_N = 104.78 ft^3* 7.48 gal/ft^3 = <u>783.75 gallons</u>

The largest volume of oil contained in equipment at this location is <u>253 gallons.</u> Therefore, the net containment capacity of the secondary containment system at this location is sufficiently sized to contain the contents of the largest container (no freeboard necessary since not exposed to precipitation).

T376 Secondary Containment Calculations (at B873)





Side view (Not to scale)

T376 Secondary Containment Calculations (at B873)

A. Calculation of Total Containment (V_T)

Secondary containment consists of a concrete-lined trench surrounding the transformer on all four sides. Depth of trench is 10-inches (0.83 ft). For purpose of calculations, divided trench into four rectangles.

V_{R1} = 6'8"*2'11.5"*.83' = 6.67ft*2.96ft*.83ft = 16.39 ft^3

V_{R2} = 10'6"*2'8"'*.83' = 10.5ft*2.67ft*.83ft = 23.27 ft^3

V_{R3} = 6'8"*1'*.83' = 6.67ft*1ft*.83ft = 5.54 ft^3

V_{R4} = 10'6"*2'8"*.83'` = 10.5ft*2.67ft*.83ft = 23.27 ft^3

$V_T = V_{R1} + V_{R2} + V_{R3} + V_{R4} =$ = 68.47 ft^3

B. Calculation of Displacement from Equipment and Pad (V_{DT})

No equipment is located inside of trench.

V_{DT} = 0 ft^3

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

d = 25-year, 24-hour storm event = 2-inches (0.167 ft)

Total surface area of secondary containment

A =12'*10'6"" = 12ft*10.5ft= 126 ft^2

$V_P = A*d$ = (126 ft^2)*0.167 ft = 21.04 ft^3

D. Net Total Secondary Spill Containment Capacity (V_N)

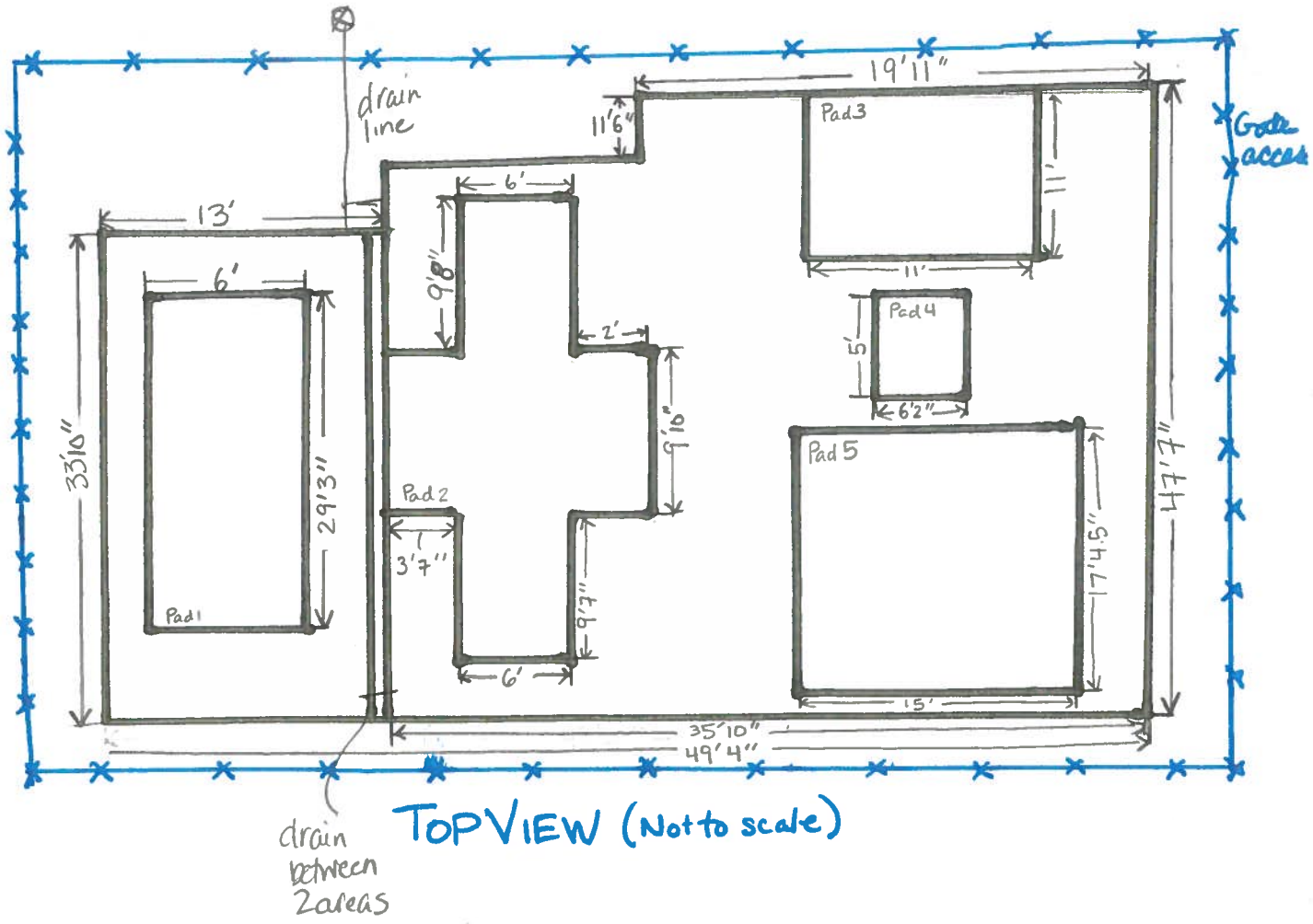
$V_N = V_T - V_{DT} - V_P$ = 68.47 ft^3 – 0 ft^3 – 21.04 ft^3 = 47.43 ft^3

1 ft^3 = 7.48 gallons, therefore:

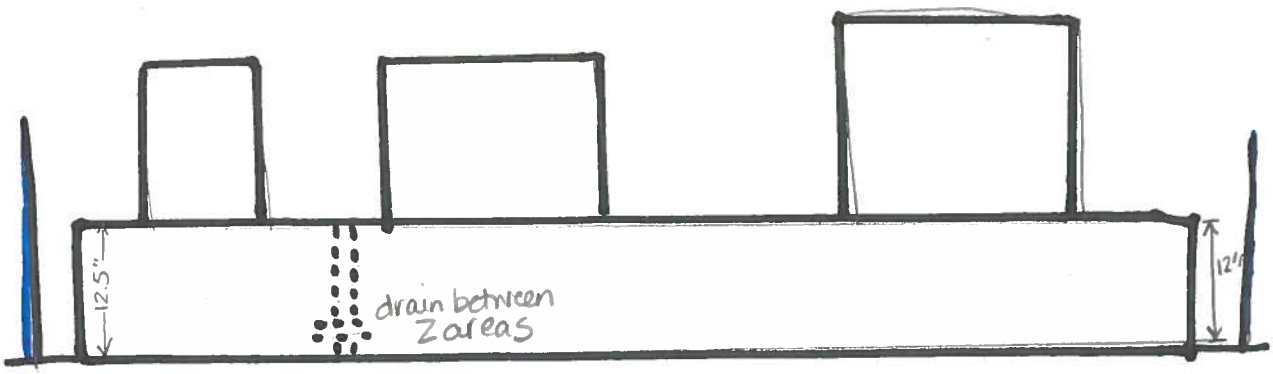
V_N = 47.43 ft^3* 7.48 gal/ft^3 = 354.78 gallons

The largest volume of oil contained in equipment at this location is 163 gallons. Therefore, the net containment capacity of the secondary containment system at this location is sufficiently sized to contain the contents of the largest container plus freeboard to contain precipitation from a 24-hour, 25-year storm event.

T525 (@B865) Transformers Secondary Containment Calculations



TOPVIEW (Not to scale)



SIDE VIEW (Not to scale)

T525 (@B865) Transformers Secondary Containment Calculations

A. Calculation of Total Containment (V_T)

For calculations, the secondary containment is divided into three rectangular areas all with height of 12-inches (1-foot) since the areas are all connected:

V_a = 33'10"x13'x1' = 33.833 ft*13 ft*1 ft = 439.83 ft^3

V_b = 36'1"x15'11"x1' = 36.083ft*15.917ft*1ft = 574.33 ft^3

V_c = 19'11"x47'7"x1' = 19.917ft*47.583ft*1ft = 947.7 ft^3

$V_T = V_a + V_b + V_c$ = 439.83ft^3+574.33 ft^3+947.7 ft^3 = <u>1961.9 ft^3</u>

B. Calculation of Displacement from Equipment and Pads (V_{DT})

Five different equipment pads located inside the containment areas displacing volumes as high as containment wall (12 inches = 1 ft)

V_{D1} = 6'*29'3"*1'=6 ft*29.25 ft*1ft = 175.5 ft^3
V_{D2} = (3'7"*9'10"*1')+(9'8"*6'*1')+(2'*9'10"*1')+(6'*9'7"*1')+(6'*9'10"*1') = (3.583 ft*9.833ft*1ft)+(9.667ft*6ft*1ft)+(2ft*9.833ft*1ft)+(6ft*9.583ft*1ft)+(6ft*9.833ft*1ft) = 229.4 ft^3
V_{D3} = 11'*11'*1'= 121 ft^3
V_{D4} = 5'*6'2"*1'=5 ft*6.167 ft*1ft = 30.83 ft^3
V_{D5} = 15'*17'4.5"*1'=15 ft*17.375 ft*1ft = 260.62 ft^3

$V_{DT} = V_{D1} + V_{D2} + V_{D3} + V_{D4} + V_{D5}$ = 175.5 ft^3 +229.4 ft^3 + 121 ft^3 + 30.83 ft^3 + 260.62 ft^3 = <u>817.4 ft^3</u>

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

D = 25-year, 24-hour storm event = 2-inches (0.167 ft)

Total surface area of secondary containment (divided into three rectangles for calculations similar to V_T calculation)

A_a = 33'10"x13' = 33.833 ft*13 ft = 439.83 ft^2

A_b = 36'1"x15'11" = 36.083ft*15.917ft = 574.33 ft^2

A_c = 19'11"x47'7" = 19.917ft*47.583ft = 947.7 ft^2

$V_P = (A_a + A_b + A_c)*D$ = (439.83ft^2+574.33 ft^2+947.7 ft^2)*0.167 ft = <u>326.98 ft^3</u>

T525 (@B865) Transformers Secondary Containment Calculations

D. Net Total Secondary Spill Containment Capacity (V_N)

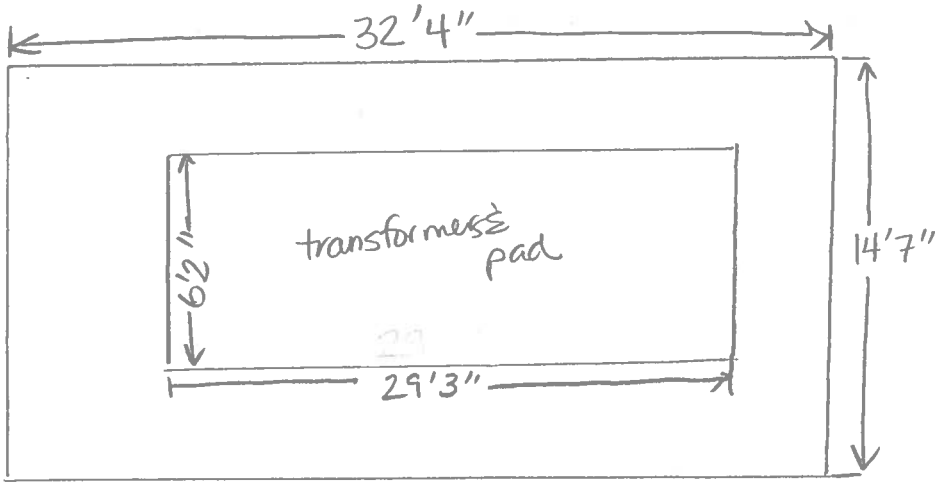
$V_N = V_T - V_{DT} - V_{PT} = 1961.9\ ft^3 - 817.4\ ft^3 - 326.98\ ft^3 = 817.5\ ft^3$

$1\ ft^3 = 7.48$ gallons, therefore:

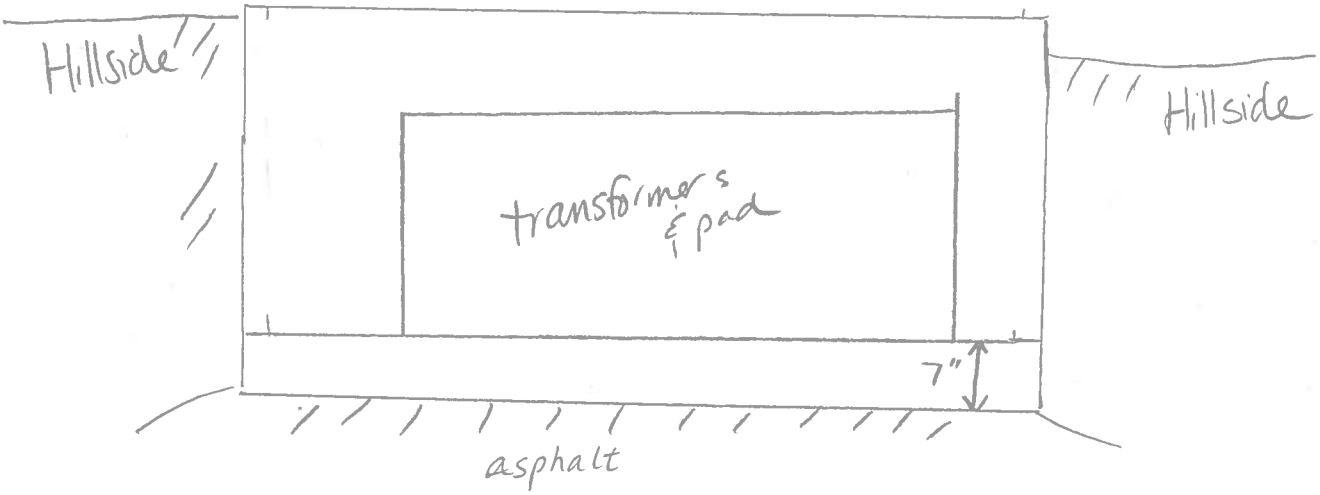
$V_N = 817.5\ ft^3 * 7.48\ gal/ft^3 =$ 6115.1 gallons

The largest volume of oil contained in equipment at this location is 4,360 gallons. Therefore, the net containment capacity of the secondary containment system at this location is sufficiently sized to contain the contents of the largest container plus freeboard to contain precipitation from a 24-hour, 25-year storm event.

T577 and T578 Secondary Containment Calculations (at B801A)



top view (not to scale)



Side view (not to scale)

T577 and T578 Secondary Containment Calculations (at B801A)

A. Calculation of Total Containment (V_T)

Total volume of rectangle (height of curb is 7 inches = .583 ft) plus volume of 8-inch deep sump

V_T = (14'7"x32'4"'x0.583') + (1'6"*1'6"*0.667')= (14.58 ft*32.33 ft*0.583 ft) + (1.5ft*1.5ft*.667ft) = 274.81 ft^3 + 1.50 ft^3 = 276.31 ft^3

B. Calculation of Displacement from Equipment Pad (V_{DT})

One equipment pad inside bermed area displacing volumes as high as containment wall (7 inches = 0.583 ft)

V_{DT} = 6'2"*29'3"*.583' = 6.17ft * 29.25ft * .583ft = 105.22 ft^3

C. Precipitation Volume (25 year, 24 hour storm event; V_P)

d = 25-year, 24-hour storm event = 2-inches (0.167 ft)

Total surface area of secondary containment

A = 14'7"*32'4" = 14.58 ft*32.33 ft = 471.37 ft^2

V_P = A*d = (471.37 ft^2)*0.167 ft = 78.72 ft^3

D. Net Total Secondary Spill Containment Capacity (V_N)

$V_N = V_T - V_{DT} - V_P$ = 276.31 ft^3 – 105.22 ft^3 – 78.72 ft^3 = 92.37 ft^3

1 ft^3 = 7.48 gallons, therefore:

V_N = 92.37 ft^3* 7.48 gal/ft^3 = 690.93 gallons

The largest volume of oil contained in equipment at this location is 454 gallons. Therefore, the net containment capacity of the secondary containment system at this location is sufficiently sized to contain the contents of the largest container plus freeboard to contain precipitation from a 24-hour, 25-year storm event.

Appendix E

Procedure for Handling Rainwater in Secondary Containment and Rainwater Release Form

December 2016

Appendix E. Procedure for Handling Rainwater in Secondary Containment and Rainwater Release Form

After a rainstorm, if it is desirable to release the collected water in the secondary containment, follow the steps outlined on the sample form titled "Aboveground Oil Storage Secondary Containment Rainwater Release Form". A copy of this sample form can be found at the end of this appendix.

During periods of rainfall, LLNL Programs shall monitor their secondary containments to ensure that they have enough capacity to contain a maximum spill from the primary container. If there is not enough secondary containment capacity, the Program shall arrange for appropriate disposition of the accumulated rainwater.

E.1 Method

The sample "Aboveground Oil Storage Secondary Containment Rainwater Release Form" is used to document releases of rainwater. Alternatively, the release may be documented on a customized form as long as it contains the same information as that provided on the sample form. Fill out the form completely. If certain items do not apply, mark N/A on the appropriate line under "Comments."

E.2 Record Retention and Distribution

The records generated must be maintained by the Program for a minimum of 3 years and shall be available for review whenever EFA or regulatory personnel request them. Copies of the records must be sent to the Site 300 Manager. Copies of the records are sent to EFA only if a spill is detected.

During periods of rainfall, the Programs shall monitor the secondary containment of tanks or oil-containing equipment to prevent accidental discharges. This monitoring must include the following:

- Ensure that secondary containment has enough capacity to contain a maximum spill of the largest container. If there is not enough capacity, the Program shall arrange for appropriate disposition of the accumulated rainwater.
- The secondary containment release valve(s) shall normally be sealed closed. The valve(s) shall be resealed following planned drainage of the secondary containment.

E.3 Procedure for Handling Rainwater in Aboveground Oil Storage Secondary Containments other than Waste Accumulation Areas

If release of the collected rainwater in the secondary containment is required, actions shall be taken as outlined on the sample "Aboveground Oil Storage Secondary Containment Rainwater Release Form" located at the end of this appendix. Proper handling of the water requires testing prior to disposal.

E.4 Procedure for Handling Rainwater in Waste Accumulation Areas

If release of the collected rainwater in the secondary containment is required, actions shall be taken as outlined in the *Contingency Plan for Waste Accumulation Areas at Site 300* (current revision).

E.5 Procedure for Handling Rainwater in Underground Electrical Utility Vaults and Secondary Containments

In some cases, the volume of rainwater in an electrical utility vault system exceeds the storage capacity of the available container. The Radioactive and Hazardous Waste Management (RHWM) Division should be contacted to see if it can provide the support required to safely pump and contain rainwater from the utility vaults. The ES&H EA is also available to assist in these cases.

If there is an imminent risk to health and safety or of severe damage to facilities requiring immediate access to the utility vault, there may be no time to pump or arrange for pumping of the rainwater to a container. Though a discharge of contaminated rainwater from an electrical utility vault does not comply with the prohibitions in the National Pollutant Discharge Elimination System Permit, health and safety are the highest priority. In this case, when no other option is available, the rainwater should be pumped out to the extent possible to the available containment. The remaining rainwater should be pumped to the nearest landscaped area to prevent direct discharge to the storm drainage system.

A sample of the discharged rainwater shall be collected and submitted for analysis, and have a Wastewater Discharge Authorization Record completed as a follow-up to the discharge.

The EDO should be immediately notified of the discharge.

The time, date, and reason(s) for the discharge shall be recorded, along with identifying changes in procedure, to prevent further occurrences. If the rainwater is contaminated, this information will be included in a report to the San Francisco Bay Regional Water Quality Control Board.

E.6 Record Retention and Distribution

The records generated and submitted to the Site 300 Manager. Records must be maintained by the Site 300 Manager for a minimum of 3 years and shall be available for review whenever EFA or regulatory personnel request them. Copies of the records must be sent to EFA only if a spill is detected.

Aboveground Oil Storage Secondary Containment Rainwater Release Form

Instructions: Complete Part A for all rain-water releases. Complete Part B if a spill is not visible in the secondary containment structure. Complete Part C if a spill is visible within the secondary containment structure. Provide descriptions and comments if necessary. Verify that each checklist item is completed and then initial the item. This record is to be maintained by the Site 300 Manager for a minimum of 3 years and made available by request of EFA or regulatory personnel.

Note: A spill is defined as a film or sheen upon or discoloration of the surface of the water, or sludge or emulsion deposited beneath the surface of the water.

Part A - To be completed for all releases of storm water.

Date_____ Operator's Name_____

Tank number_____

Tank contents_____

Location_____

Part B - To be completed if a spill <u>is not visible</u> in the secondary containment structure.

Initial:		Action:	Comments:
_____	1.	Inform supervisor.	_____
_____	2.	Release rainwater from the secondary containment.	_____
_____	3.	Close valve.	_____

Supervisor's signature_____
Date_____

Part C - To be completed if a spill <u>is visible</u> in the secondary containment structure.

Initial:		Action:	Comments:
_____	1.	Do not release rainwater. Contact the EFA EA assigned to the program for guidance on proper disposition of water.	_____
_____	2.	Check leak-monitoring equipment, overfill-protection devices, and spill-prevention devices for signs of system malfunctions.	_____
_____	3.	Check level of tank(s) for unexplained level changes or exceptionally high levels.	_____
_____	4.	Check tank(s), piping, pump(s), valve(s), and joints for signs of leakage (e.g., drips, stains, wet spots, cracks, or bulges).	_____
_____	5.	Inform the responsible tank owner of the contaminated rainwater in the secondary containment so that the cause can be verified and repairs can be made as necessary.	_____
_____		Send a completed copy of this form to EFA/SPCC, L-627	_____

Wastewater Discharge Authorization Record (WDAR) Number: _____

Supervisor's signature_____ Date_____

Environmental Analyst's signature_____ Date_____

Appendix F

Site 300 Oil Spill Contingency Plan

December 2016

LLNL Site 300 Oil Spill Contingency Plan

December 2016

Lawrence Livermore National Laboratory

Livermore, California 94551

LLNL SITE 300 OIL SPILL CONTINGENCY PLAN

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1.0 INTRODUCTION

1.1 Purpose

This Oil Spill Contingency Plan was prepared as an appendix to the Site 300 Spill Prevention, Control, and Countermeasure (SPCC) Plan to address areas of the facility where inadequate secondary containment has been identified or to provide additional resources for other conditions as specified in the SPCC regulations where a contingency plan is to be relied upon for supplemental response actions, or to comply with qualified equipment requirements, as documented in the Plan in accordance with 40 CFR 112.7(d). A signed written commitment of resources statement is provided in Attachment 1.

This Oil Spill Contingency Plan was prepared to minimize negative impacts to human health and the environment from spill events (defined in the Plan) from SPCC equipment that holds oil in capacity of 55-gallons or greater (also defined in the Plan). This Plan defines procedures and tactics for responding to discharges of oil into navigable waters and adjoining shorelines of the United States from releases that could potentially occur from the Site 300.

Hereafter, the LLNL employees who have functional responsibility for the operation of the Site 300 Facility will hereafter be referred to as the "Facility Managers" or "Representatives."

This Oil Spill Contingency Plan reflects LLNL's ordered, consistent response to unplanned events so that the response actions required, the resources used, and the lists of contacts are much the same for all of the Site 300 emergency plans.

In most cases, the Site 300 emergency service elements are capable of managing operational emergencies at the Site. However, this plan may be used in conjunction with the *LLNL Site 300 Contingency Plan* and the *LLNL Emergency Plan.* The *LLNL Site 300 Contingency Plan* addresses emergencies such as fires, explosions, or releases of hazardous waste. The *LLNL Emergency Plan* is a Laboratory-wide Plan that provides procedures for response to major accidents and disasters, including fires, explosions, hazardous or toxic material and waste releases, and other emergencies that are mitigated by the LLNL Onsite Emergency Response Organization.

Guidance for emergency roles, responsibilities, and actions to be taken during a Facility incident are provided in other documents, including the current edition of the following documents:

- LLNL Emergency Plan (LLNL, latest revision, UCRL-AM-218588).
- *LLNL Site 300 Contingency Plan* (LLNL, latest revision)
- Self-help Plan, Radioactive and Hazardous Waste Management (LLNL, latest revision).
- *LLNL Implementation Procedure for Reporting Occurrences to DOE* (LLNL, latest revision, UCRL-MA-133867).
- LLNL Emergency Management Division, Policies and Procedures Manual, *Procedure 1612 Hazardous Materials Response Plan.*

1.2 Scope of the Plan

This Contingency Plan identifies personnel responsibilities, emergency equipment, and required actions necessary to mitigate oil spills at the Site 300. It is intended to instruct and prepare the Site 300 and Facility

personnel for potential emergencies. This plan should be updated in conjunction with other plans to ensure consistency.

This section defines the types of emergencies that must be responded to by the Alameda County Fire Department (hereafter referred to as the Fire Department) and those that may be remedied by Site 300 Facility personnel per established protocol.

The Fire Department uses a classification system that designates incidents as Level 1, Level 2, or Level 3. The designations are as follows:

- Level 1: An incident that can be handled by the first alarm companies or can be contained within single jurisdiction without the need for mutual-aid assistance.
- Level 2: An incident that requires more resources than those which responded to the first alarm. These additional resources are readily available through the Twin Valley Mutual Aid and are expected to be adequate to handle the emergency.
- Level 3: An incident that requires more resources than those that can be readily obtained by local mutual aid.

1.3 Implementation of the Oil Spill Contingency Plan

This Contingency Plan is designed to minimize hazards to human health or the environment from any unplanned sudden or non-sudden release of oil to soil and/or surface water. These can occur from fires, explosions, or equipment failures as described in the SPCC Plan.

1.4 Maintenance of the Plan

This Contingency Plan will be amended, as necessary, to ensure that it is current and reflects actual Facility response practices. It is reviewed by Site 300 management and appropriate program personnel on an annual basis in conjunction with the LLNL Site 300 Contingency Plan. It is immediately amended whenever:

- The LLNL Resource Conservation and Recovery Act (RCRA) Part B Permit Application is revised or the issued permit is significantly modified and impacts this Contingency Plan.
- Applicable federal or state regulations are revised.
- The plan fails in an emergency.
- A Facility changes its design, construction, operation, maintenance, or other circumstances in such a way that the potential is increased for fires, explosions, or releases of hazardous or toxic waste, or in such a way that a change in the emergency response is necessary.
- The list of emergency coordinators changes.
- The list of emergency equipment changes.

2.0 FACILITY DESCRIPTIONS

2.1 General Information

Site Operators:	1. Lawrence Livermore National Security, LLC (LLNS) 2. U.S. Department of Energy (DOE) Mailing
Address:	Lawrence Livermore National Laboratory P.O. Box 808 Livermore, CA 94550
Location:	LLNL, Alameda County and San Joaquin County Corral Hollow Road (7 miles west of Tracy) Tracy, CA 95376
Owner:	U.S. Department of Energy
Address:	National Nuclear Security Administration (NNSA) Livermore Field Office P.O. Box 808 (L-293) Livermore, CA 94551
NNSA/LFO Contact:	N. Nicole Nelson-Jean, Manager Livermore Field Office National Nuclear Security Administration (NNSA) P.O. Box 808 (L-293) Livermore, CA 94551 (925) 422-6265

2.2 Resources at Risk

Surface drainage flows via natural and manmade channels and ravines that flow into Corral Hollow Creek. Corral Hollow Creek flows easterly along the south side of the Site from its source in the foothills and ends in the floodplain of the San Joaquin River. An intermittent stream, Corral Hollow Creek contains water only during the rainy season. Ephemeral drainage channels, flowing from the north to the southeast across the Site, drain the areas associated with the facility and flow into Corral Hollow Creek during rain events. A surface drainage divide separates flow in the northern 10% of the Site from that in the southern 90% of the Site. Site topography ranges from 500 to 1,750 feet above mean sea level (MSL) on the south side of the divide and from 900 to 1,500 feet above MSL on the north side of the divide.

Because Site 300 is situated in typically foothill-type terrain, it does not have an extensively constructed storm drainage system. Storm water is directed away from areas of development (run-on/runoff controls) via roadway ditches (both lined and unlined) and culverts under roadways into natural ravines and swales. The ravines and swales for most of Site 300 drain into unlined "V" ditches and flow easterly along the northern side of Corral Hollow Road into Corral Hollow Creek. The remainder of the extreme northern and eastern undeveloped portions of Site 300 drains into natural ravines and swales and discharges offsite into agricultural foothill type terrain.

Storm water discharges from industrial areas on site are monitored in accordance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activities (Order No. CAS000001).

Figure F-1 shows these surface water features at Site 300.

2.2.1 Critical Waterways for Sensitive Habitat

Several drainage courses at the Site 300, as well as Corral Hollow Creek are considered potential habitat for several special status species. A map of the sensitive areas that are located at the Site 300 is included as Figure F-3. Additional information about the sensitive receptors, including endangered and threatened species and potential cultural resources, is available from subject matter experts (SMEs) in the EFA.

2.2.2 Order of Priority of Protection of Water Uses

A spill scenario that involved protecting more than one water use is not likely. Every effort should be made to prevent oil from entering any of these water systems. In the unlikely event of a spill scenario that involved more than one critical water use, the order of protection should be protection of the discharges that contain critical waterways for sensitive species.

2.2.3 Risk Assessment

As identified in the SPCC Plan, certain oil filled operating equipment at the site is considered "qualified' as an alternative to providing secondary containment structures. The Facility meets these requirements through implementing an inspection and monitoring program, preparing this oil spill contingency plan, and providing a written commitment of resources to control and remove discharged oil. Table C-2 in the SPCC Plan presents this information, and Section 3.6 of the plan describes the inspection procedures.

For planning purposes, the largest estimated most probable release for oil filled equipment where insufficient containment is provided for the facility is approximately 58 gallons.

2.2.4 Response Strategy

Onsite personnel, along with subcontracted on-site resources (such as the Alameda County Fire Department) are equipped and trained to respond to certain minor discharges that may be confined to the Site 300. Minor discharges are those considered to be small quantity discharges that can easily be stopped and controlled. These discharges include those where releases would not be likely to reach groundwater, or reach surface water or adjoining shorelines. Actions to be taken for discharges of this type are described in the SPCC Plan and also in this document. More detailed information about the implementation of the Emergency Plan for the Site 300 is also provided in other documents referenced in this Plan.

This Contingency Plan addresses all discharge incidents involving petroleum releases from the Facility, including those that may affect navigable waters or incidents where oil cannot be safely controlled by facility personnel and confined within the boundaries of the site. These types of releases may require the use of outside contractors or other responders to prevent imminent impacts to navigable waters and other receptors.

3.0 PREPAREDNESS AND PREVENTION

3.1 Facility Design

The Site 300 has been located, designed, and constructed to minimize the risk of hazardous waste incidents, including oil spills. A vicinity map (Figure C-1) and the facility diagram (Figure C-2) are included in the SPCC Plan.

3.2 Procedural Controls

Operations at the Facilities are conducted using approved written procedures and within the framework of the Facility permits. The written procedures are used as training tools for Facility operations and are easily accessible to Facility personnel. Each procedure contains:

- A description of an anticipated activity and its hazards and risks.
- The name of the individual responsible for ensuring compliance with the Integration Work Sheet (IWS) or Facility Safety Plan (FSP).
- Instructions to be followed to implement the controls that will reduce the risks to an acceptable level.
- Information concerning any special conditions that may be present.

3.3 Evaluations and Audits

Any new potentially hazardous operation must be thoroughly evaluated by the LLNL Environment, Safety, and Heath (ES&H) Team prior to commencement. In addition, all Facilities are subject to audits and evaluations by various subject matter experts in the fields of environment, safety, and health. Results of these audits are forwarded to the appropriate Facility Manager so that any deficiencies can be corrected.

3.4 Personal Protective Equipment

Personal protective equipment (PPE), including gloves, goggles, coveralls, and other protective clothing, are available for use during emergency situations. Each Facility maintains PPE appropriate for the material managed at the Facility. PPE and emergency equipment and guidelines for PPE use are included in Site 300 Contingency Plan.

3.5 Engineering Controls

Forklifts may be used to move hazardous materials and hazardous waste (including product and waste oil) loaded on pallets or skids. Drum dollies are used to move individual drums. The paving in loading and unloading areas has been constructed to facilitate the ease and safe access of equipment transporting waste containers to the storage units and to minimize accidents during loading and unloading operations.

3.6 Aisle Space

Aisle space is always maintained in the Facilities to allow unobstructed access to hazardous waste containers.

3.7 Self-help Program

LLNL maintains a Self-help Program for incidents when onsite emergency response resources needed. Whenever a major emergency event occurs and LLNL's Onsite Emergency Response Organization is needed, Self-help Plans are implemented. Each department/division is required to prepare and keep its own employee emergency response plan. The Plans are designed to collect and safeguard personnel and visitors during site-wide emergencies.

LLNL Site 300 has designated Assembly Points, where Assembly Point Leaders control the local emergencies while awaiting direction or assistance from the Onsite Emergency Response Organization. Personnel are instructed to meet at this Assembly Point if an evacuation were necessary.

4.0 RESPONSIBILITIES DURING AN EMERGENCY

In most cases, the Site 300 emergency service elements are capable of managing operational emergencies at the Site. The senior fire officer serves as the Incident Commander (IC) during most incidents, including fire, medical, hazardous material, and rescue emergencies. The senior Protective Forces officer serves as IC during security incidents. The IC reports directly to the Emergency Coordinator/Laboratory Emergency Duty Officer (LEDO) and the LLNL Site 300 Manager. During an emergency at Site 300, the Site 300 Manager may also serve as the Site 300 DOC Commander.

If an oil spill emergency escalates to an event that requires additional personnel, the *LLNL Emergency Plan* is implemented in conjunction with the LLNL Site 300 Contingency Plan and this Oil Spill Contingency Plan. The LLNL Onsite Emergency Response Organization becomes operational when the *LLNL Emergency Plan* is implemented.

The personnel available at both the Livermore site and Site 300 who are trained to respond during an incident at LLNL Site 300 are numerous. The positions described below are those most likely to respond to a Facility incident, depending on the size and character of the incident. Additional positions and responsibilities are described in the *LLNL Emergency Plan.*

4.1 Emergency Coordinator

Select members of LLNL's Laboratory Emergency Duty Officer (LEDO) program fulfill the responsibilities of Emergency Coordinator as required by State and Federal regulations.

The Emergency Coordinator/LEDO (Table 1) is authorized to commit LLNL resources necessary to respond to an incident. The Emergency Coordinator/LEDO has access to information on LLNL's facility and operations. The Emergency Coordinator/LEDO is on call for 24-hours per day on a weekly basis. The Alameda County

Regional Emergency Communications Center maintains a copy of the emergency call list of Emergency Coordinators/LEDOs.

The Emergency Coordinator/LEDO has the authority to commit all LLNL resources and the capability to obtain outside resources needed to implement this Contingency Plan.

Table F-1 Emergency Coordinator Call List

Name and Title	L-Code	Work Phone	Work Address	24 Hour Phone	Home Address
Joel Bowers Emergency Coordinator Primary/ Laboratory Emergency Duty Officer	L- 113	(925) 423-6877 (925) 423-7705, pager #02601	7000 East Ave. Livermore, CA 94551	(925) 447-6880	2256 Rhone Drive Livermore, CA 94550
Mark Sueksdorf Emergency Coordinator Alternate/ Laboratory Emergency Duty Officer	L- 654	(925) 423-8449 (925) 423-7705, pager #06761	7000 East Ave. Livermore, CA 94551	(925) 447-6880	726 Everett Drive Danville, CA 94506

In an emergency, immediately notify the Alameda County Regional Emergency Communications Center at extension 911 or dial (925) 447-6880 if calling from offsite, cellular phone, or pay phone. If paging from offsite, cellular phone, or pay phone, dial (925) 423-7705 and pager number. If using a handheld radio, use the call sign "MIKE" to contact the CAS Operator.

The Emergency Coordinator works with the Fire Department Incident Commander (IC) to coordinate emergency response activities. The Emergency Coordinator shall:

- Assess the emergency conditions and initiate onsite response activities.
- Identify the character, exact source, amount, and extent of released material with assistance from the ES&H Team Environmental Analyst during normal working hours or the EDO during off-hours.
- Assess possible hazards to human health with assistance from the ES&H Team Industrial Hygienist and/or Health Physicist. Assess possible hazards to the environment with assistance from the ES&H Team Environmental Analyst during normal working hours or the EDO during off-hours. If assessment indicates that evacuation of local areas may be advisable, the Incident Commander shall immediately notify appropriate local authorities and shall be available to help appropriate officials decide whether local areas should be evacuated.
- Ensure that all required notifications to outside agencies take place. Authority is delegated to the ES&H Team Environmental Analyst during normal working hours or the EDO during off-hours to make notifications for environmental emergencies.
- Activate the Emergency Paging System to notify personnel in selected areas of LLNL Site 300 or the entire LLNL Site 300 population, if necessary. Initiate evacuation of personnel, if appropriate.

- Notify appropriate state or local agencies with designated response roles if their help is needed, or if material is released offsite.

- Provide on-scene operational control for life safety, rescue, fire control and extinction, spill control and containment, and property conservation and salvage.
- Stop all waste or material-handling processes and operations in the area to prevent the occurrence, recurrence, and spread of fires, explosions, and releases.
- Ensure that monitoring is performed for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment.
- Ensure that recovered wastes, contaminated soil, or run-off water (from firefighting, sprinkler systems, broken water lines, etc.) are treated, stored, or disposed of in accordance with all applicable regulations.
- Ensure that waste that is incompatible with the released waste is not handled in the area of the release until cleanup is complete. Authority may be delegated to the ES&H Team Environmental Analyst during normal working hours or the EDO during off-hours.
- Ensure that all emergency equipment is cleaned and restocked before operations are resumed.

4.3 Site 300 Manager/Site 300 DOC Commander

The Site 300 Manager or his alternate **(Table 2)** is to be informed of any large incident. This is done immediately after the emergency takes place so that the appropriate interfaces, lines of communication, and reporting criteria between Site 300 and the Livermore Site can be determined. The Site 300 Manager establishes communications with the IC (i.e., Fire Chief) and the LEDO as quickly as possible.

During operational emergencies at Site 300, the Site 300 Manager or designated alternate serves as the Site 300 DOC Commander for the Site. At the request of the LEDO, or in conjunction with the IC, the Site 300 DOC Commander may coordinate the emergency activities of Site personnel and equipment and keep the DOC Commander appraised at all times. The Site 300 DOC Commander is responsible for contacting the Facility Manager, Representative, or alternate when this plan is activated.

Table 2 gives the names and telephone numbers for the Site 300 Manager/Site 300 DOC Commander.

Table 2 Site 300 Manager/Site 300 DOC Commander

	Primary Contact	Alternate
Name	John E. Scott	Valerie Dibley
Office	LLNL/Site 300, L-871 (925) 423-5026	LLNL/Site 300, L-871 (925) 422-9777

4.4 Fire Department

The Fire Department should be contacted if one or more of the following conditions occur:

- Fire or explosion, or

- An incident is regarded by personnel as unsafe to manage without the aid of the Fire Department, or
- Release of hazardous, radioactive, or mixed waste with hazards unfamiliar to personnel, or
- Release of hazardous, radioactive, or mixed waste that cannot be identified, or
- Injuries result that require medical treatment other than simple first aid as directed by Health Services, or
- Incident requires evacuation of a building or facility, or
- Oil migrates into a storm drain or sanitary sewer drain.

The Fire Department provides the first response and is responsible for invoking the incident command system. The Fire Department has the responsibility and authority as legally required to be in charge of site management for incidents, and to delegate authority to mitigate emergency situations. The Fire Department shall ensure the appropriate measures are taken to:

- Contain and control waste to protect personnel, the environment, and property from its effects.
- Provide technical and operational coordination to return the site of the incident to stable.

4.5 Site 300 Emergency Management Team

The Site 300 Emergency Management Team, which is part of the Site 300 Department Operations Center, is activated when an emergency may involve, but is not limited to, the following: natural disasters, terrorist attacks, accidental release of toxic materials, a major hazardous material incident, civil disturbance, and site evacuation. The Team's functions are to maintain security, minimize property damage, protect the health and safety of LLNL employees and the public, and prevent or minimize degradation of the environment. The LLNL Fire Dispatch maintains a list of the Site 300 Emergency Management Team members and their home phone numbers.

4.6 LLNL Site 300 Department Operations Center

During operational emergencies, the Site 300 Manager coordinates the activities of the LLNL Site 300 Department Operations Center and reports those results to the Emergency Management Team. The senior ES&H Team, Security Organization, and Maintenance & Utilities Services Department (MUSD) representatives at Site 300 serve in the Department Operations Center. The Department Operations Center is located in Building 871.

4.7 Support Organizations

There are numerous resources and expertise available at LLNL that can be drawn upon in the event of a Facility emergency. The following are descriptions of those support functions that may be called upon at a Site 300 Facility emergency.

4.7.1 Security

Security Organization personnel respond to all emergencies at LLNL Site 300. In non-security incidents, Security provides personnel and vehicular control, building access control, and protection of classified matter.

4.7.2 Maintenance & Utilities Services Department

The Maintenance & Utilities Services Department (MUSD) has an organizational structure that includes maintenance and crafts personnel for emergency response.

4.7.3 Environment, Safety, and Health Team

The ES&H Team has overall responsibility for the initial response and control of most emergency situations at LLNL. The Fire Department assumes IC responsibility for most non- security emergencies at the Site. A senior member of ES&H Team usually serves as one of the ES&H Team Department Operations Center representatives.

ES&H Team members provide response and teams for environmental, fire safety, explosive safety, health physics, industrial hygiene, and industrial safety.

During an incident requiring Fire Department action, the ES&H Team Leader provides the IC with information concerning the incident, safety precautions, and control measures in dealing with the hazardous material. The ES&H Team Leader also assists the IC in assessing contamination control zones and coordinates team member responses in their respective disciplines.

Depending upon the nature of the incident, the ES&H Team members may include an industrial hygienist, fire safety engineer, environmental analyst, health physicist, explosives safety engineer, criticality safety representative, and an industrial safety engineer.

4.7.4 Environmental Functional Area

The EFA representative (i.e., the EFA Environmental Analyst) ensures that environmental regulatory issues are addressed by:

- Assisting in the determination of the actual or potential environmental impacts.
- Conducting sample collection or determining needs and assessment of release area.
- Determining regulatory reporting requirements and preparing the reports.

The EFA representative also provides the IC with EFA personnel and resources as needed during the incident, prepares the EFA Environmental Incident Report, and notifies LLNL management of the incident. Environmental Analysts are members of EFA, who act as Subject-Matter- Experts for spill clean-up and reporting, and on the ES&H Team, as secondary responders who support immediate responders at the scene of the incident.

4.7.5 ES&H Team/EFA Environmental Duty Officer

The EDO, who is the on-call EFA or ES&H Team Environmental Analyst, responds to emergencies and is responsible for carrying out emergency notification requirements. The EDO will notify the agencies identified in Table F-3 based upon the incident conditions. The notification includes the information described in Section 11, Recordkeeping and Notification Requirements. The EDO reports directly to the IC.

4.7.6 Public Affairs Office

The Public Affairs representative receives situation updates from the IC and provides news releases, following the normal policies and procedures of LLNL.

4.7.7 Radioactive and Hazardous Waste Management

RHWM has personnel and equipment available to support the ES&H Team Field EA or EDO with incident mitigation. RHWM may:

- Assist in sampling and cleanup operations.
- Assist in preparing the waste for offsite disposal.
- Provide spill response equipment as described in **Section 10.4**.
- Assist in control, containment, and decontamination. The Emergency Coordinator may delegate this responsibility to RHWM, and supervise the control, containment, and decontamination work.

4.7.8 Site 300 Medical Service

The Site 300 medical facility and personnel decontamination unit is located in Building 663. It is typically staffed during normal operating hours, Monday through Friday. The medical facility number is extension 3-5250. For emergency assistance, workers call 911 (from an onsite LLNL phone) or (925) 447-6880 (cell phone or offsite phone).

Personnel at the Fire Department at the Site 300 are also emergency medical service (EMS) first-responders. In the event the medical facility is closed, emergency aid can be provided by the Fire Dept. at B325.

4.8 Facility Manager, Representative, or Designated Alternate

The Facility Manager or Representative manages small incidents at their respective Facilities. The Facility Manager coordinates all incident response measures and has the authority to commit resources needed to mitigate small incidents as described in this Contingency Plan.

During large incidents, the Facility Manager, Representative, or alternate provides information regarding wastes stored at the Facility to the IC when requested. The information provided by waste records includes identification of wastes involved, quantities, and Facility status. The Facility Manager or Representative shall also develop and implement, in conjunction with the EFA, actions needed to meet environmental requirements related to the incident.

The Facility Manager or Representative has the following specific responsibilities during Facility incidents:

- Evaluate the immediate scope of the incident.
- Initiate evacuation of personnel, if necessary.
- Notify the Fire Department.
- Take appropriate action to safeguard Facility personnel.
- Ensure that the ES&H Team Environmental Analyst, Assurance Office, and the Health and Safety Technician have been notified.
- As temporary IC, direct area personnel in accordance with the Facility Safety Plans (FSP) and Contingency Plan until the Fire Department and the official IC arrive.
- Ensure that all normal waste handling operations cease in areas within and bordering the incident until cleanup and/or control procedures are completed.

- Assist the IC and provide appropriate direction to Facility personnel who are lending support.
- Ensure personnel and equipment are properly decontaminated.
- Ensure that all Facility emergency equipment listed in the Contingency Plan is cleaned and fit for its intended use before operations are resumed.

4.9 Facility Personnel

Facility personnel have the following responsibilities during a large emergency incident:

- Maintain personal safety.
- Notify the Facility Manager, Representative, or alternate; and, in the event of an extremely hazardous, life-threatening situation, immediately notify Facility personnel to begin evacuation of the area.
- If safe, follow the first five steps of the Ten-step Plan for hazardous waste releases (described in Section 8) while awaiting the arrival of the LLNL Fire Department.
- Observe the two-person rule—never work alone.
- Follow instructions and provide assistance to the IC, as requested, for release cleanup or hazard control.
- Ensure that hazardous residues and contaminated disposable clothing and equipment are managed appropriately.
- Ensure that all incidents are properly documented in daily inspection logs.

5.0 ARRANGEMENTS WITH LOCAL AUTHORITIES

LLNL has mutual aid agreements with several local authorities to provide assistance in the event of an emergency that cannot be handled by LLNL internal response measures. Through LLNL's participation in mutual aid agreements, virtually all emergency response organizations in the local region can be accessed. Primary local authorities that provide assistance through the San Joaquin and Alameda County Mutual Aid Agreements are as follows. Note: Site 300 lies within both San Joaquin and Alameda County administrations.

- San Joaquin and Alameda County Sheriff's Office;
- California Highway Patrol;
- Alameda County Fire Department (includes support entities such as CalFire);
- South County Fire Authority (Tracy City/Tracy Rural Fire Districts);
- Sutter Tracy Hospital.

The Fire Department provides emergency medical care during emergencies and transports the ill or injured either directly off-site or to the LLNL Health Services facility for further medical evaluation and care. LLNL operates under the ALCO- EMS Emergency Medical Plan protocols. Under ALCO-EMS protocol, patients may be transported to the closest and most suited receiving facility which could include Valley Care Medical Center or Eden Medical Center in Alameda County, for instance.

The ALCO-EMS plan will be activated if medical service needs resulting from an incident will overwhelm the resources of a single ALCO-EMS zone. Each base hospital will coordinate emergency response within its zone and between other zones. An emergency dispatch system [Alameda County Central Medical Emergency Dispatch (ALCO-CMED)] is in place to alert all hospitals in the plan. The Fire Department and Health Services Department have radio links with ALCO-CMED. ALCO-CMED will send ambulances to the disaster site and maintain receiving hospital bed count status. Air transportation via helicopter may be used if the overall time for transport to a hospital is at least 20 minutes less than ground transportation.

Other hospitals will cancel routine services to prepare to receive patients.

In the event of an emergency, requests for outside assistance will be channeled through the LLNL Emergency Notification System, and outside authorities will be contacted via telephone or radio.

Copies of all agreements are filed in the LLNL Emergency Management Division Office.

6.0 EMERGENCY COMMUNICATIONS PROCEDURES

6.1 Internal Emergency Communication

In the event of a large oil spill, the observer is to move immediately to a safe telephone and notify the Emergency Dispatcher by dialing 911. (For cellular phone calls to the Dispatcher, the emergency number is [925] 447-6880.) The dispatcher may also be notified by radio. The caller remains in contact to verify that the dispatcher has the correct information and to receive instructions.

Once notified, the Emergency Dispatcher promptly relays the information to the immediate response groups. Next, the Dispatcher uses the best available method—usually a dial page—to notify other, requested key personnel. During off-shift hours, key personnel are notified by telephone or dial page. Response personnel are available on a 24-hours-a-day basis.

If the incident escalates to the point that the Site 300 Department Operations Center is activated, the Department Operations Center is updated on all pertinent information. Assembly Point Leaders, or Program and Support Group Representatives contact the Emergency Dispatcher to report Assembly Point Status to the Department Operations Center or the Fire Department. The Fire Department uses a 400-mHZ radio system and utilizes talk groups to coordinate communication.

6.2 External Emergency Communication

Offsite emergency support agencies are communicated with according to the emergency classification or the need for support. The Emergency Dispatcher, under the direction of the IC, makes the initial notifications. The DOE NNSA/Livermore Field Office and appropriate state agencies are notified and kept informed throughout the emergency. Additionally, if an alert involves a security threat, the Federal Bureau of Investigation is notified.

If the IC or designee determines that the release, fire, or explosion could threaten human health or the environment or otherwise cause the implementation of this Contingency Plan, the incident is reported as discussed in Section 11.

7.0 EMERGENCY CONTROL PROCEDURES

Response to an emergency at the Facility is designed to be appropriate to the incident. The transition from one level of emergency to another must be automatic and keyed to well-defined criteria. The Fire Department emergency action levels are defined according to the event (see Section 1.2) and the potential hazard to onsite personnel and offsite persons. Trained Operations and Facility personnel may respond to small incidents. The Fire Department is notified and responds to all others.

The Fire Department is familiar with the layout of the Facilities, the location of entrances and exits, and work locations of Facility personnel. Both the Fire Department and the LLNL Health Services Department are familiar with the types of injuries or illnesses that could result from releases from the Facilities.

7.1 Release Response for Hazardous Materials and Waste

7.1.1 Fire Department Response

Releases from Level 1, 2 or 3 incidents must be stabilized by the Fire Department, which has established event scenarios and consequences (Run Cards) that are used for responding to hazardous material emergencies. These response guidelines describe possible scenarios, time to consequence, evacuation protection zones, and recommended actions among other information.

In the event of a Level 1, 2 or 3 incident at a Site 300 Facility, Facility personnel can provide technical expertise for the material(s) involved in the incident, support for hazardous material release cleanup, and resolution of explosive waste incidents.

7.1.2 Container-failure Response

If a container being used to manage hazardous waste or material releases its contents to the environment, and if there is no immediate threat to personnel safety, Facility personnel cease waste handling operations and take immediate action to contain the release using the procedure described in **Section 8**.

7.2 Equipment Failure

Procedures have been developed to manage situations in which equipment failure may cause a release of hazardous or toxic waste or materials. Equipment failure includes forklift failure during transfer operations, container failure, and equipment failure. Malfunctions are addressed in the Facility safety procedure.

8.0 TEN-STEP GUIDANCE PLAN FOR CHEMICAL-WASTE RELEASE RESPONSE

Leaks and releases of materials are managed according to the following ten-step approach (Note: If it is not considered safe to perform any one of Steps 1-5, then personnel immediately call the LLNL Emergency Dispatcher at 911.)

The ten-step approach is illustrated below:

If the release is manageable, personnel continue with Steps 6–10. If not, they call the Emergency Dispatcher at 911.

9.0 DECONTAMINATION

The Fire Department manages all decontamination efforts associated with emergency incidents. The Fire Department's decontamination procedures are discussed in detail in the LLNL Emergency Management Division, Policies and Procedures Manual, *Procedure 1612, Hazardous Materials Response Plan.*

9.1 Decontamination Activities

Proper decontamination procedures and equipment requirements need to be established before cleanup activities begin. The decontamination area will be located upwind of the contaminated area where it will not become threatened by the release during the incident.

9.2 Personnel

If a release occurs and personnel come into direct contact with a hazardous material or waste and if they are capable of helping themselves, they immediately:

- Use eyewash or shower to flush eyes or skin.
- Remove contaminated clothing.

- Use soap and water to scrub off contaminant.

When an immediate rescue is initiated, designate a decontamination corridor, and accomplish decontamination in the emergency decontamination area.

9.3 Equipment and Material

At every incident in which an entry will be made into a chemical spill area and there is the possibility of contact with the product, Fire Department personnel are to lay out a charged hose line.

- Tarps and/or pools are used to collect runoff from decontamination activities.
- Non-disposable items are decontaminated.
- Disposable items are handled as hazardous waste unless analysis indicates otherwise.
- Rinse water generated from decontamination operations is managed as hazardous waste, pending analysis.
- Analytical results from swipes and rinse water are used to determine the presence of hazardous material residue and to verify whether decontamination procedures are complete.
- Spill kits and PPE are restocked.

10.0 EMERGENCY EQUIPMENT

This section briefly describes the emergency equipment located at Site 300 and equipment that is available to be deployed. This equipment includes communication systems, spill response equipment, emergency response and release control equipment, Safety Data Sheets (SDSs), emergency lighting systems, and decontamination equipment. Spill kit inventory is presented in the SPCC Plan.

10.1 Communication Systems

The Site 300 Emergency Communications System consists of telephone, radios, an administrative paging system, manual and automatic alarm systems, and messengers. Telephones are located throughout buildings at Site 300.

Dialing 911 from any site telephone connects to the Emergency Dispatcher, who notifies the Fire Department of a Site 300 incident. The Emergency Dispatchers, located in Building 313 at the Livermore Site, also coordinate response with the Protective Force Dispatcher.

The Dispatcher may also be contacted by radio.

Automatic alarms and radio calls are received directly by the Protective Force Dispatcher. Radio announcements are monitored at the Site 300 Fire Station, Building 890, and Medical, Building 889.

Additional Fire Department apparatus and staff are automatically dispatched from the Livermore Site on every Fire Department response. If additional response personnel are needed from the Livermore Site, communication is by telephone or radio.

After-hours emergency calls received are handled by the Emergency Dispatcher who, in turn, contacts the LEDO. If the incident or emergency involves Site 300, notification is made to the Fire Dispatcher. After an initial emergency classification has been made, the Site 300 Senior Protective Force Duty Officer calls the assigned

Site 300 Security/Protective Force Representative and the Site 300 Manager, who will determine whether further notifications are necessary.

If additional calls are deemed necessary, the Site 300 Protective Force Central Alarm Station operator has access to lists of knowledgeable personnel.

10.2 Spill Response Equipment

The Fire Department maintains or has access to a mobile supply of equipment required to mitigate diverse emergencies that can be used in the event of an incident. In addition, RHWM maintains a response trailer containing bulk quantities of equipment at the Building 883 CSA Facility. The equipment is available to support the Fire Department in the event of an emergency release at Site 300 and has capabilities up to 58 gallons. In addition, a spill response contractor is on call to provide additional resources for a more complex or involved release scenario. The capabilities are described in the following sections.

10.2.1 Spill Response Trailer

A spill response trailer is stocked with a variety of items to be used in the event of a spill. The spill response capability of the spill trailer includes the following:

Drain Blockers-Drain Covers: These are flexible mats or covers that can be deployed to cover storm drain inlets, catch basins, and similar features to prevent oil from entering storm drain system.

Gutter and Grate Guards: These devices are similarly used to isolate and protect inlets

Pneumatic Pipe Plugs: These are inflatable plugs that can be used to contain or isolate sections of storm drain systems, and range from 4” to 16” diameters

Absorbents; Pads, Socks, and Bulk: A variety of absorbent pads and similar absorbents are used to contain and collect oil from surfaces.

Spill Berms: These are used to isolate, collect, and recover oil and to contain and prevent further migration of oil from spill sources.

Spill Containment Systems: These are collapsible containers that can provide portable containment areas for temporary use.

Other Equipment: Barricades, emergency medical response equipment, light stands, and other equipment is stored in the emergency response trailer for additional capability in a release.

The complete inventory list for the emergency response trailer is included in Table F-2.

Table F-2. Emergency Response Trailer Inventory

Unit	Quantity	Item Name & Description
Each	3	Tyvek Coveralls (Chemically Resistant)
Each	3	Face Shields w/ Clear Window (Polycarbonate)
Each	3	Goggles, clear (Chemically Resistant, Polycarbonate)
Pair	8	Gloves, (case hardened latex neoprene)
Pair	8	Gloves, (polylaminate, Silver Shield®, Safety 4-H or eqv.)
Pair	6	Booties, clear plastic, impervious (polyethylene, disposable)
Each	6	Absorbent Socks (polyester sock filled with polyethylene absorbent)
Bag	2	Absorbent, 25 lb (Floor Dry or calcined inert diatomaceous earth)
Package	2	Acid neutralizer (magnesium oxide, sodium bicarbonate, Neutrasorb)
Package	2	Caustic neutralizer (Spill-x-c, Neutracit, Kolor-Safe base, or eqv.)
Each	1	Drum-uprighting tool (drum upender, steel construction w/ 1.5" hook)
Each	1	Drum repair kit (Lab Safety Supply Series "D" or equivalent)
Each	1	Shovel, plastic, short handle (chemically resistant, nonsparking, polypropylene)
Each	1	Broom handle for push broom
Each	1	Broom head, push (chemically resistant polyethylene head w/ polypropylene bristles)
Each	2	Broom, shop, rattail (chemically resistant polyethylene head w/ polypropylene bristles)
Each	2	Dust pan (chemically resistant, polyethylene)
Each	1	Ratchet, 1/2" drive with 15/16" socket
Each	1	Wrench, bung, non sparking
Roll	1	Tape, caution: "Caution Do Not Enter" (heavy-duty polyethylene)
Each	6	Bag, poly, 3ft X 5ft (heavy-duty 6mil polyethylene bags)
Each	1	Marker, paint tip, black
Package	1	Paper, pH (general purpose 0-13)
Box	2	Wipes (Kimwipes, Kaydry or eqv.)
Each	1	Flashlights with batteries (test for brightness, check / replace batteries quarterly)
Roll	1	2" tape (duct or vinyl)

10.2.2 Vacuum Trucks

A vacuum truck trailer, with 1,000 gal capacity, permanently resides at Site 300 for emergency response.

10.2.3 Spill Response Contractor

To assist in spill response, a contract has been established with a local spill response contractor. The contract includes providing 24-hour secondary spill response services. Contractor personnel must arrive to the Site within 2 hours of notification by LLNL. The spill response contractor is prepared to provide two vacuum trucks with drivers, four trained emergency response personnel with appropriate PPE, equipment and supplies necessary to effectively handle liquid spills.

10.3 Site 300 Fire and Rescue Equipment

In case of a fire, explosion, or release of waste, fire-fighting equipment, containment, and emergency equipment are available for use. The major Site 300 fire response equipment includes the following:

- All Fire Department vehicles are equipped with radios on LLNL channels, the Alameda County Mutual Aid channels, and State Mutual Aid channel as well as the CALCORD Channel.
- Fire Truck.
- Fire Truck, Heavy Grass Rig, 4x4
- Ambulance.
- Service Utility with Cab, 4x4.

The Fire Department can respond within five minutes to a medical emergency with an ambulance. Patients can be taken to the LLNL Health Services in B-663, which is located near the LLNL Livermore Site east gate. For severe accidents, patients are taken to Valley Care Medical Center in Pleasanton or Eden Medical Center in Castro Valley.

10.4 Response Vehicles and Heavy Equipment

A variety of heavy equipment is available from the Maintenance Services Division within the Facilities & Infrastructure Department during an emergency. This equipment includes, but is not limited to, compressors, cranes, cutting torches, forklifts, generators, pumps, and bulldozers.

All LLNL emergency equipment is maintained on a regular basis to ensure that it is operational at all times. The water trucks are kept full of fuel and water. Based on the recommended factory schedule, preventative maintenance checks are performed by the Fleet Management maintenance crew.

10.5 Site Safety Equipment

Eyewash stations, showers, and fire extinguishers are located throughout the Facility. Mobile/portable equipment for deployment at spill response locations is typically available on the spill response trailers, emergency vehicles, Fire Department response trucks, and through the spill response contractor.

10.6 Personal Protective Equipment

The level of PPE assigned to a Facility is based upon the activity at the Facility. Workers must wear solid-toe safety shoes at all times when working in waste management operational areas or around heavy equipment or machinery. Operators handling waste or oil containers must wear coveralls or their equivalent at all times. Leather, acid, base, or solvent-resistant gloves are worn as appropriate for the waste handling activity. When handling hazardous waste, workers must wear face shields, goggles, safety glasses, or other facial and eye protection as needed in accordance with the FSPs and IWSs.

PPE for responding to hazardous (chemical) waste releases is located in the emergency spill kits.

10.7 Emergency Assembly Point Kit (Self-help Kit)

Protective and emergency equipment are stored in the Self-help Kit located at the designated Site 300 evacuation assembly points. The kits are maintained for major emergencies that require the evacuation of Facility and other Site 300 personnel. Kits contain a first-aid kit, blankets, stretcher, flashlights, safety

glasses, gloves (plastic, leather, and cotton), and hard hats among other items. Kits are inspected on a routine basis, and items are replaced when necessary.

10.8 Safety Data Sheets

Safety Data Sheets (SDSs) list the characteristics and hazards of a chemical. An SDS can be obtained from the CHEMTRACK SDS Hotline (extension 4-4404) or online at the ChemTrack home page.

10.9 Run Cards (Emergency Response Drawings)

Run cards containing information pertinent to Facility emergency response are maintained at the Site 300 Fire Station. They include:

- Special Information Sheets that provide a list of hazardous materials, special hazards, and their physical locations within the building and surrounding area.
- Building Plans that provide plot plans of the buildings and surrounding areas, room numbers, and locations of shut-off valves and fire alarm panels.

10.10 Emergency Lighting

All fuel truck service vehicles involved in fuel transfers are equipped with emergency lights that provide a minimum intensity of 5 foot-candles at transfer connections. Work areas that are not transfer connection points are provided with a minimum light intensity of 1 foot-candle. This level of lighting allows for visibility of spills by facility personnel or security personnel during rounds.

10.11 Decontamination Equipment

RHWM maintains equipment that is available to decontaminate areas that may potentially be contaminated by a hazardous material release. This includes containment booms, mops, brooms, shovels, and a pressure washer. The equipment is inspected on a quarterly basis.

10.12 LLNL Site 300 Equipment

Additional emergency response equipment is also readily available from the LLNL Site 300, including release response equipment, response vehicles and heavy equipment, site safety equipment, PPE, emergency assembly point kits, and SDSs.

RHWM also maintains a response trailer containing bulk quantities of spill response equipment to support the Fire Department when necessary.

10.13 Access to Receiving Waterbodies

Vehicle and equipment access to the south perimeter Discharge Points (noted on Map C-2) into Corral Hollow Creek are served by Corral Hollow Road, a county road that parallels the Site 300 boundary. An internal fire trail system may be used to provide additional access to perimeter areas and the Discharge Points. Coordination with LLNL's Central Alarms Station Operator is needed to access the fire trails (these areas are identified as restricted travel zones). The above locations provide suitable points for the deployment of boom, absorbents, and other spill response measures.

Corral Hollow Creek (downstream of Site 300) may be accessed via private or state-owned property (the latter, California Fish and Wildlife Ecoreserve) with entry points from Corral Hollow Road. The Corral Hollow Creek eventually turns eastward and disappears subsurface where the drainage intersects Highway 580. Coordination with local police and fire agencies will be needed to stage equipment down gradient of the Site 300 property.

Access to the Site 300 ephemeral drainage systems noted on Map C-2 can be managed by a network of Site 300 paved roads and roughly 85 miles of the internal fire trail system. The security program controls a network of perimeter gates that offer access to the fire trail system along the property boundary. The fire trail system is maintained annually to ensure Alameda County Fire Department can respond to any location onsite in the event of a wildfire.

11.0 INCIDENT REPORTING

11.1 Internal Reporting

Employees shall notify the Facility Manager or Representative of all release incidents and the Fire Department of all Level 1, 2, or 3 incident releases, fires, or other emergencies. The Facility Manager or Representative gathers preliminary information and then immediately notifies upper management, the ES&H Team, the Assurance Office, and the Environmental Analyst. The Environmental Analyst, in consultation with appropriate subject matter experts and biologists, evaluates the incident to determine what was released and if the incident is reportable to a local, state, or federal agency, or to DOE.

Following a major accident or a high-risk incident at a Facility, Facility management must ensure that an incident analysis occurs in order to provide information about the unidentified hazards or issues that led to the incident. Recommendations for corrective measures are included in the report, and copies shall be distributed to management, the ES&H Team, and others who benefit from the information contained in the report. The ES&H Team maintains a central file of all incident analysis reports and provides follow-up information. Summary reports are prepared by ES&H Team personnel and are freely distributed within LLNL.

All Facility-related incident reports (both reportable and recordable) are maintained in the Hazardous Waste Facility Operating Record.

11.2 Notification to DOE and/or Regulatory Agencies

Releases must be reported to a variety of regulatory agencies under different circumstances. In all instances when the Contingency Plan is implemented, both verbal and written notification is required.

EFA responds to all reports of releases or other environmental occurrences through a well- established reporting process. The EDO determines the reporting requirements and works with Environmental Analysts, biologists, and Laboratory management on the process of notifying federal, state, and local regulatory agencies and DOE. The LEDO responds to occurrences throughout LLNL. The EDO will also assist the program/department in determining whether the DOE must be notified. If the incident is reportable to DOE under the occurrence reporting requirements set forth in DOE Order 232.1, program/department personnel must verbally notify the LLNL Occurrence Reporting Office of the incident and write the required occurrence reports. The ES&H Team Field EA or EDO may assist the program/department with compiling occurrence report information.

In addition, emergencies requiring activation of the Emergency Management Center will be subject to the reporting requirements of the *LLNL Emergency Plan (*UCRL-AM-218588). The procedures for reporting are described in the *LLNL Environmental Incident Notification and Reporting Procedure LLNL TM 617312.*

When a release occurs, ES&H Directorate personnel (the ES&H Team Field EA during normal working hours or the EDO during off-hours) must be notified immediately. The EDO will inform the Laboratory Emergency Duty Officer (LEDO), LLNL Occurrence Reporting Office, and the appropriate program/department of required reporting to federal, state, and local agencies. EFA personnel or the EDO will then notify environmental regulatory agencies as necessary following EFA's Environmental Incident Notification and Reporting Procedure.

Table F-3 Emergency Notifications

Discharge Condition	When to Notify	Who to Notify	Contact Information
Harmful quantity of oil discharge that reaches navigable waters [1]	Verbal notification immediately after discovery of the discharge	National Response Center (NRC)	1-800-424-8802
In addition to the notification above, if the discharge also meets the following criteria, you should perform the following additional notifications:			
42 gallons or more of oil by direct discharge to a receiving water	Verbal notification immediately after discovery of the discharge	California Office of Emergency Services (OES)	1-800-852-7550
		San Joaquin Environmental Health Department (CUPA)	209-468-3420
More than 1,000 gallons of oil are discharged into or upon navigable waters in a single event. – OR – Whenever two spill events (more than 42 gallons each) occur within any 12-month period resulting in "harmful quantities" of oil being discharged into or upon navigable waters.	Written notification within 60 days of the event.	EPA Region 9	Phone: (415) 744-2000 Address: 75 Hawthorn Street San Francisco, CA 94105
		Regional Water Quality Control Board – Central Valley Region	11020 Sun Center Drive, Suite 200 Rancho Cordova, CA 95670 Phone: 916-464-4678
An oil spill that posed a hazard or potential hazard to human health, property, or the environment.	Written notification within 15 days of the event	Department of Toxic Substances Control, Region 2	Phone: (510) 540-3739 Address: California EPA, Department of Toxic Substances Control 700 Heinz Avenue, Suite 200 Berkeley, CA 94710

[1] A harmful quantity is any quantity of discharged oil that violates state water quality standards, causes a film or sheen on the water's surface, or leaves sludge or emulsion beneath the surface.

All reportable oil spills at the Site 300 are reported to the appropriate regulatory agencies as described in the *Environmental Incident Notification and Reporting Procedure* (latest revision). This technical manual includes information and procedures that enable the LLNL staff reporting a discharge to be able to provide the following information:

- Exact address or location and phone number of the facility,
- Owner/operator name
- Date and time of discharge,
- Type of material discharged,
- Estimate of the total quantity discharged,
- Description of source and all affected media,
- Cause of the discharge, including a failure analysis if the discharge reached navigable waters
- Any damages or injuries caused by the discharge,
- Actions (corrective actions and countermeasures) being used to stop, remove, and mitigate the effects of the discharge,
- Whether an evacuation may be needed, and
- Names or individuals and/or organizations that have been contacted.
- Maximum storage/handling capacity of the facility and normal daily throughput
- Weather conditions at the incident location
- Adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary
- Additional preventive measures taken or planned to take to minimize discharge reoccurrence
- Other information to help emergency personnel respond to the incident

All written reports will include the following:

- Name, address, and telephone number of the owner or operator (LLNL or LLNS).
- Date, time, and type of incident (e.g., release, fire, or explosion).
- Name and quantity of material(s) involved.
- Extent of injuries, if any.
- Assessment of actual or potential hazards to human health or the environment, when this is applicable.
- Estimated quantity and disposition of recovered material that resulted from the incident.

All written reports will be reviewed and forwarded to the appropriate regulatory agency by the EFA Manager.

12.0 ACRONYMS

AGOV	Acids gases/organic vapors
APL	Assembly Point Leader
ARAC	Atmospheric Release Advisory Capability
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSA	Container Storage Area
CWA	Clean Water Act
DOE	U.S. Department of Energy
DTSC	Department of Toxic Substances Control
EDO EFA	Environmental Duty Officer Environmental Functional Area
EMS	Emergency medical service
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right—to-Know Act (Section 313 of SARA)
ES&H	Environment, Safety, and Health
EWSF	Explosives Waste Storage Facility
EWTF	Explosives Waste Treatment Facility
FSP	Facility Safety Plan
HEPA	High-efficiency particulate air (filter)
IC	Incident Commander
IWS	Integration Work Sheet
LEDO	Laboratory Emergency Duty Officer
LLNL	Lawrence Livermore National Laboratory
LLNS	Lawrence Livermore National Security, LLC (LLNS)
LFO	Laboratory Field Office
SDSs	Safety Data Sheets
NNSA	National Nuclear Security Administration
NIOSH	National Institute of Occupational Safety and Health
PCB	Polychlorinated biphenyl
PLS	Physical and Life Sciences
PPE	Personal protective equipment
PVC	Polyvinyl chloride

RCRA	Resource Conservation and Recovery Act
RQ	Reportable quantity
RHWM	Radioactive and Hazardous Waste Management
SCBA	Self-contained breathing apparatus
SARA	Superfund Amendments and Reauthorization Act of 1986

13.0 WRITTEN COMMITMENT OF RESOURCES CERTIFICATION

I commit all necessary manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful. To that end, I certify that this SPCC and/or contingency plan:

- Identifies and inventories applicable equipment, materials, and supplies that are available locally and regionally;
- Estimates the equipment, materials, and supplies that would be required to remove the maximum oil discharge to be anticipated;
- Develops agreements and arrangements in advance of an oil discharge for the acquisition of equipment, materials, and supplies to be used in responding to such a discharge;
- Provides for well-defined and specific actions to be taken after discovery and notification of an oil discharge, including commitment of trained, prepared, and available operating personnel;
- Pre-designates properly qualified individuals who are charged with the responsibility and delegated commensurate authority for directing and coordinating response operations and who know how to request assistance from federal authorities operating under current national and regional contingency plans;
- Designates a preplanned location for response operations and a reliable communications system for directing the coordinated overall response actions;
- Provides for varying degrees of response effort depending on the severity of the oil discharge; and
- Specifies the order of priority in which the various water uses are to be protected where more than one water use may be adversely affected as a result of an oil discharge and where response operations may not be adequate to protect all uses.

Signature:

_____ _____

John Scott
Site 300 Manager

Date

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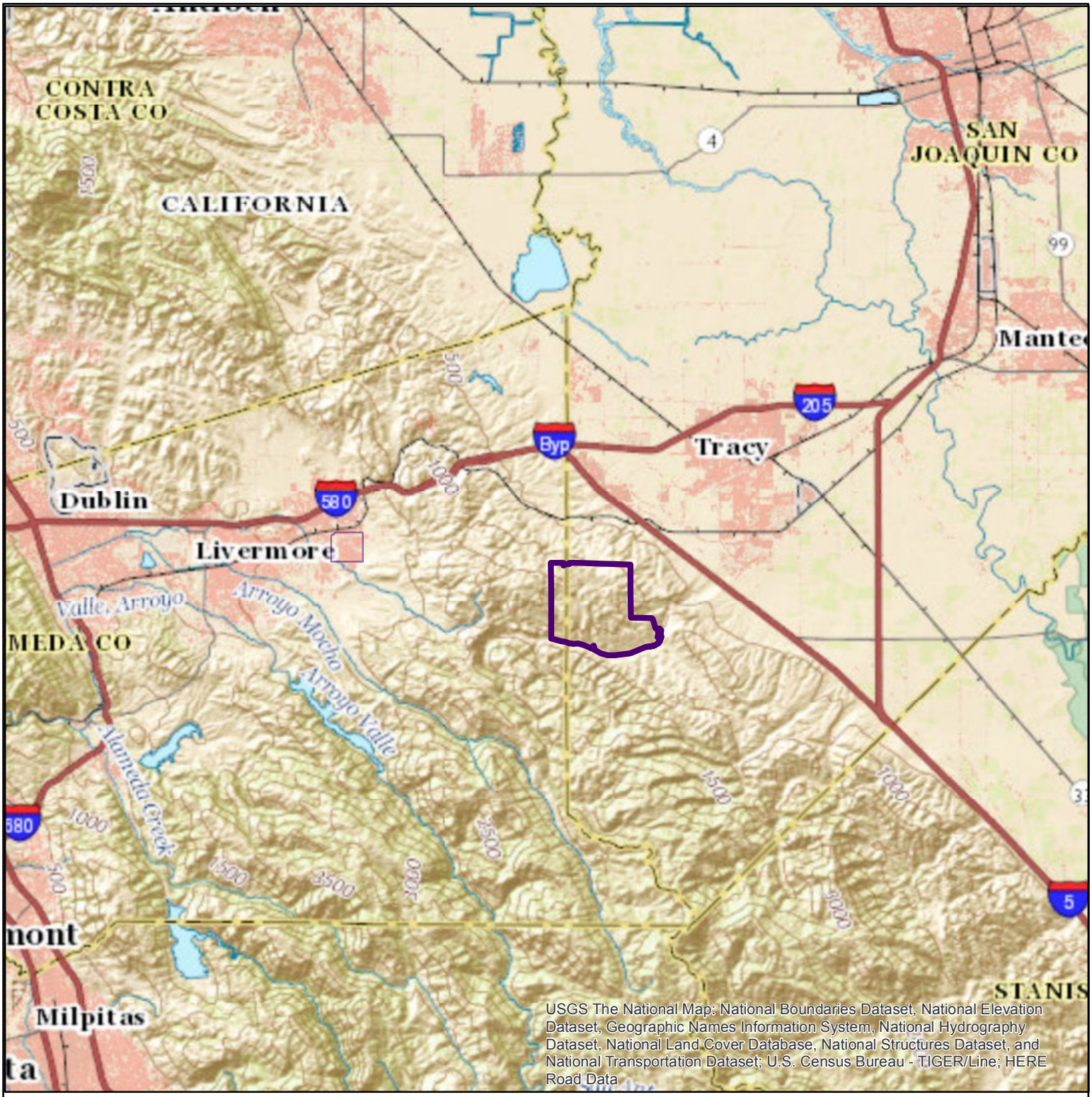
Figure F-1

Vicinity Map

December 2016



Legend

S300_Boundary

Livermore Site Boundary

0 1.5 3 6 Miles

N

Lawrence Livermore National Laboratory

Figure F-1
Site 300 Vicinity Map

Figure F-2

Drainage Features Map of Site 300

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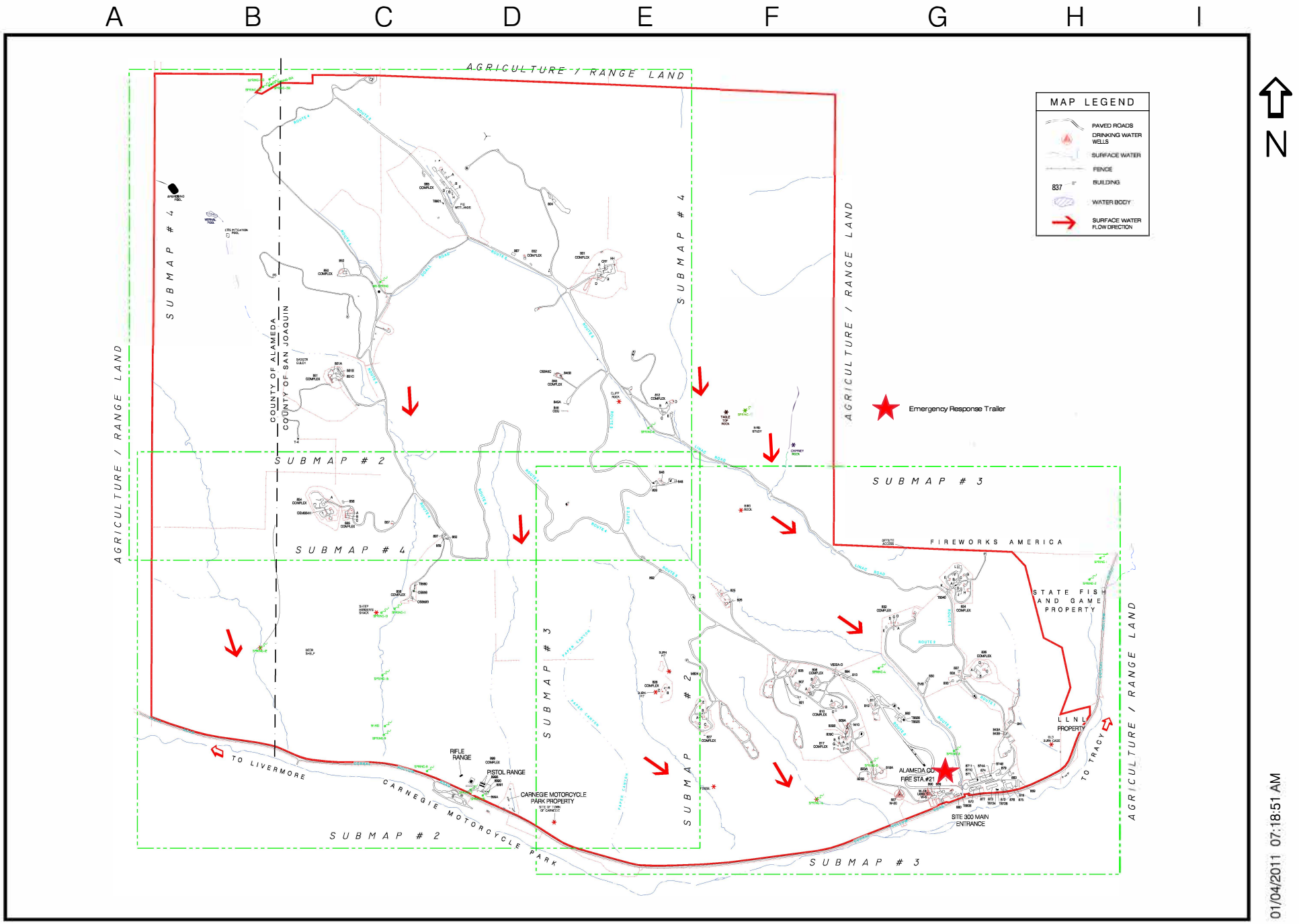
MAP #1	SJC PRIMARY SITE MAP	BUS NAME: LAWRENCE LIVERMORE NATIONAL LABORATORY - SITE 300	SCALE: 1" = 3000 FT.

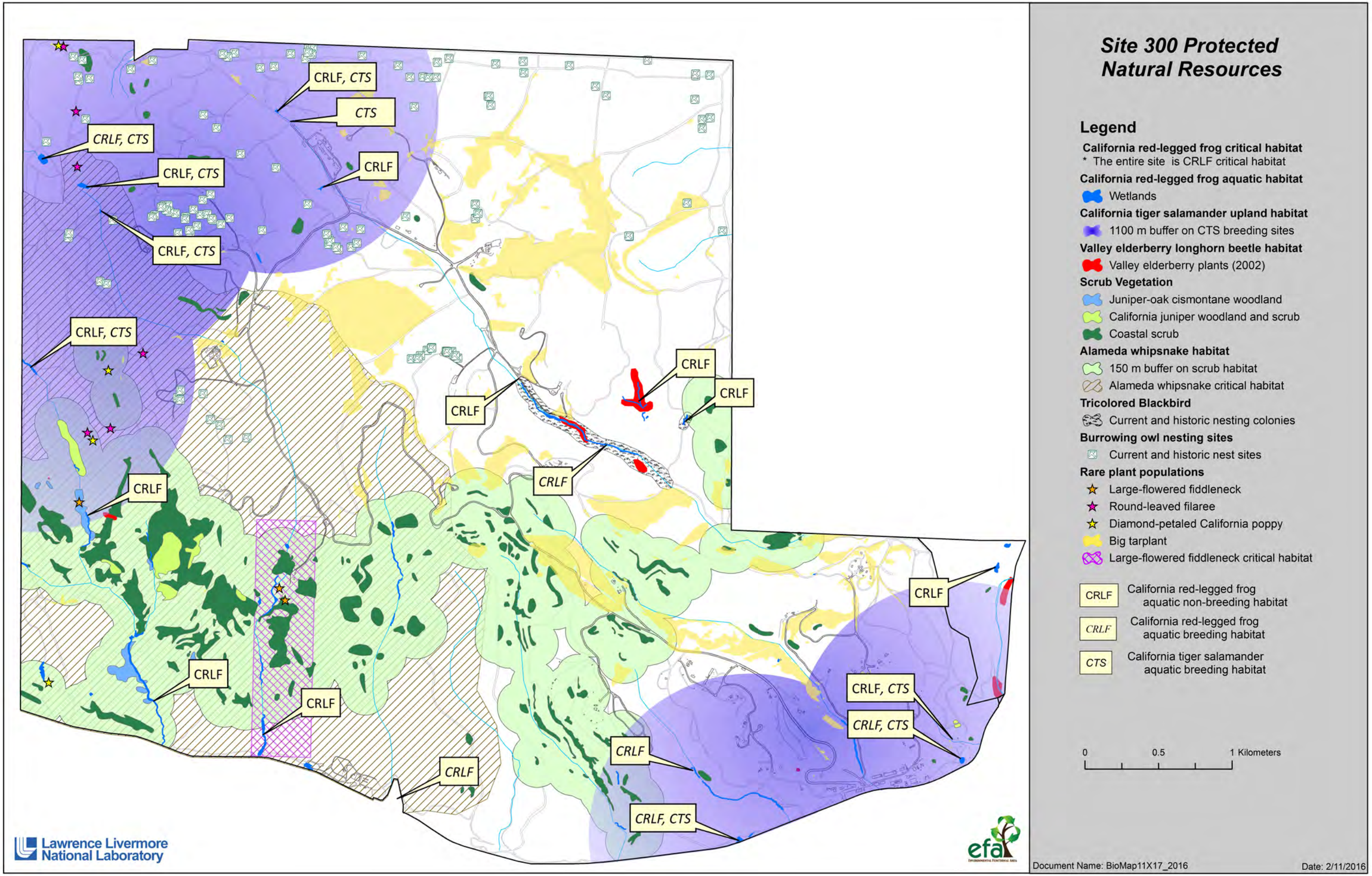


01/04/2011 07:18:51 AM

Figure F-3

Sensitive Receptors at Site 300

Figure 3. Site 300 Protected Natural Resources



Appendix G

Spill Kit Inventory

December 2016

Appendix G. Spill Kit Inventory

Location	Contents
B801A, Room 125	• 1 absorbent roll (200-feet x 24-inches) • 16 absorbent socks (4-feet each) • Waste containers/bags • Personal protective equipment (PPE)
B879	• 40 pounds granular absorbent • 1 absorbent roll (16-feet x 24-inches) • 2 absorbent socks (4-feet each) • 2 absorbent socks (3-feet each) • Waste containers/bags • PPE
B875 Hibay	• 40 pounds granular absorbent • 1 absorbent roll (16-feet x 24-inches) • 2 absorbent socks (4-feet each) • Waste containers/bags • PPE
B883 CSA	• 50 pounds granular absorbent • 6 absorbent socks (3-feet each) • Hand tools • Waste containers/bags • PPE
B883 WAA	• 50 absorbent pads • Hand tools • Waste containers/bags • PPE
Spill Kits on Mobile Refuelers	• 1 absorbent roll (16-feet x 24-inches) • 2 absorbent socks (4-feet each) • Waste containers/bags • PPE

Additional spill equipment available at Site 300, but not part of the inventories includes shovels, brooms, buckets, rags, drain covers, additional absorbent, PPE, and other materials located in various other locations throughout Site 300.

Appendix H

Inspection Procedures and Checklists

Appendix H. Aboveground Oil Systems and Oil-Filled Operating Equipment Inspection Procedures and Checklists

All oil containing equipment associated with active operations must be inspected and significant observations must be recorded on the inspection forms. **Monthly inspections must be completed and recorded on the form once each calendar month. The stationary bulk storage containers require a separate, more detailed Annual Inspection.** For these tanks only, the annual inspection is supplemental to the monthly inspections. The Portable Containers and Oil Filled Equipment have only the monthly inspection requirement.

Inspectors must focus on identifying oil leaks, spills, accumulations, or staining, as well as equipment wear, damage, or other degradation that is affecting or could affect the integrity or tightness of oil containing tanks, containers, and equipment. Observe all visible portions of any oil-containing apparatus including metal surfaces, flanges, pipe joints, expansion joints, valve bodies, valve glands, catch pans, pipe and tank supports, etc.

The checklists contain a series of "yes" or "no" questions. Some answers contain an asterisk (*) next to the "yes" or "no." Explain any checklist item answered with the "*" in the comments column and/or the space provided for explanations at the end of the form. Take appropriate actions consistent with Site 300 work practices to address non-compliant items. Forward a copy of the completed checklist to the Site 300 Manager once complete.

Using the Inspection Checklists

The attached checklists are used for documenting inspections at the facility. The monthly inspections include oil filled electrical equipment (such as transformers), oil filled operating equipment (such as the equipment at Building 801), as well as bulk storage containers such as tanks, and 55 gallon drums. The appropriate checklist for each container is indicated on Tables C-1, C-2, and C-3 of the SPCC Plan. In addition, tanks requiring an annual inspection are indicated on Table C-1. An annual inspection is **not** required for portable containers (such as 55 gallon drums), operating equipment, nor any electrical equipment (transformers).

Types of Equipment to Be Inspected

Three types of equipment require inspection: These include Bulk Storage Containers (e.g., tanks), Portable Containers (drums and portable tanks), and Oil filled Operating Equipment (which also includes electrical equipment containing oil). Separate monthly inspection forms are used for these three types of equipment, since the questions required by the regulation are different for each type of equipment. The SPCC Plan requirement for the inspection of Spill Kits is fulfilled through routine inspections of the spill kits. The contents of the spill kits are included as Appendix G of the SPCC Plan.

Who Can Inspect

This visual inspection does not require a certified inspector. It shall be performed by an owner's inspector who is familiar with the site and can identify changes and developing problems.

Required Actions

Remove promptly upon discovery standing water or liquid in the primary tank, secondary containment area, interstitial space, or spill container. Before discharge, inspect the liquid for regulated products or other contaminants. If a sheen or other contaminants are noted, notify the Site 300 manager immediately, and use booms, sorbents, or other means to remove the sheen.

Alternatively, liquids can be removed by a vacuum truck and disposed of properly. Plant records, if properly documented, can be used to document these actions. In order to comply with EPA SPCC rules, a facility must regularly test liquid level sensing devices to ensure proper operation (40 CFR 112.8(8)(v)).

Non-conforming items important to tank or containment integrity require evaluation by an engineer experienced in AST design, a certified inspector, or a tank manufacturer who will determine the corrective action. Note the non-conformance and corresponding corrective action in the comment section.

Note: If a change has occurred to the tank system or containment that may affect the SPCC plan, the condition should be evaluated against the current plan requirement by a Professional Engineer knowledgeable in SPCC development and implementation.

Inspection Guidance
The following section provides additional details about the questions and responses needed for completing the inspection forms.

H.1 Bulk Storage Container Monthly Inspection Checklist (Appendix H.1)

Instructions: Verify that each checklist item is completed. Under status, check the appropriate box. Provide comments if necessary. Sign and date the checklist at the bottom. Submit completed checklists to the Site 300 Manager.

(*) in the status column designates an item is in a non-conformance status. The inspector must make a determination as to whether the non-conforming item is important to tank or containment integrity. An item important to tank or containment integrity is defined as an item, if not addressed, that would imminently lead to an environmental release. Non-conforming items important to tank or containment integrity (cracks, tank or containment deformation, etc.) require evaluation by an engineer experienced in AST design, a certified inspector, or a tank manufacturer to determine corrective action.

In the event of severe weather or maintenance that could affect the operation of critical components, an inspection of these components is required as soon as the equipment is safely accessible after the event.

1.0 Evidence of leaks/spills from container or tank, piping, gaskets or valves?
Check the exterior of the equipment, and note any spills/releases from any of the equipment. Continuing slow drips should be addressed through normal maintenance practices. If visible leaks are occurring, take appropriate action to address the leaking. Pay particular attention to the piping, gaskets, threaded connections, and valves, and report deficiencies on the form.

2.0 Is water present in the primary tank?
Check for water in the fuel in the primary tank.

3.0 Are visible signs of leakage from the interstice present?
Where present, check the interstitial monitoring equipment or interstitial space for indications of a leak. Liquid inside the interstitial space requires follow-up investigation and actions, as this condition implies a leak from the primary tank.

4.0 Any liquids in containment areas, or in surrounding concrete or soil?
Check for oil, rainwater, or other liquids in the containment. Evidence of petroleum in containment areas requires follow-up investigation and actions, as this condition implies a leak from the tank, drum, or container.

5.0 Are primary tank drain valves locked?

Where present, ensure that the primary tank drain valves are locked. Ensure there is no evidence of a leak around the valve.

6.0 Are secondary containment drain valves operable and in closed position?

Where present, ensure that the drain valves operate properly and are closed except when releasing liquids. If liquids are released, log this information on the proper form.

7.0 Any debris, cracks, or fire hazards in secondary containment areas?

Debris or fire hazards in external secondary containment take up space that is needed to contain a release if one were to occur from the equipment or tank/container. Take actions if these are found to remove these items from the secondary containment areas.

8.0 Are tank supports and foundation unstable or not suitable for continued use?

Check the tank supports and foundation areas for cracks, corrosion, failure, leaning or listing, or other indications of impaired integrity. If the supports or foundation are not suitable, note the condition and follow-up with Site 300 management to make repairs.

9.0 Is Level Gauge not operational or not readable? Record gauge level

Many of the tanks at LLNL use gauges that provide the level of the fuel in the tank. Record the level readings from each tank on the form. If the level gauge does not appear to be functioning properly, note this on the form and take action to repair or replace the equipment.

10.0 Is overfill equipment operable?

Where present, test overfill alarms to ensure they are operable.

11.0 Spill Containment Boxes on Fill Pipe

Where present, inspect spill boxes on fill pipes for debris, residue, or water. Ensure valves are operable and closed.

12.1 Are ladders and platform structures secure with no signs of corrosion or damage?

Where present, observe the condition of ladders and platform structures. If evidence of severe corrosion or other damage is observed, follow proper safety procedures for ensuring the equipment is not used until necessary repairs are made.

12.2 Any pathways or aisles blocked?

Can tanks be accessed easily to conduct inspections? For storage areas, pathways should remain clear and free of obstructions and fire hazards. Make sure that adequate aisle space remains so that people and equipment can move freely.

12.3 Any other conditions that should be addressed for continued safe operation or that affects the SPCC Plan?

If conditions are encountered that could affect the safe operation of the equipment or other conditions are observed that could affect the SPCC Plan, include this information on the form and report the information to Site 300 management.

H.2 Portable Container Monthly Inspection Checklist (Appendix H.2)

Portable containers at the facility include drums, totes, and the tanks associated with the mobile refueler. Many of the questions are similar to inspection items for other equipment.

Instructions: Verify that each checklist item is completed. Under status, check the appropriate box. Provide comments if necessary. Sign and date the checklist at the bottom. Submit completed checklists to the Site 300 Manager.

(*) in the status column designates an item is in a non-conformance status. The inspector must make a determination as to whether the non-conforming item is important to tank or containment integrity. An item important to tank or containment integrity is defined as an item, if not addressed, that would imminently lead to an environmental release. Non-conforming items important to tank or containment integrity (cracks, tank or containment deformation, etc.) require evaluation by an engineer experienced in AST design, a certified inspector, or a tank manufacturer to determine corrective action.

In the event of severe weather or maintenance that could affect the operation of critical components, an inspection of these components is required as soon as the equipment is safely accessible after the event.

1.0 Are containers within designated storage areas?

Drums and other portable storage containers at the facility should be stored within the designated storage areas on containment pallets or inside the units, unless they are in active use elsewhere. If no longer needed at active use areas in other parts of the facility, make arrangements to move the containers back to the designated storage area.

2.0 Any debris, spills or fire hazards in containment or storage area?

Containment areas should be free of debris and fire hazards. This includes spills or liquids in containment pallets or on the floor of buildings or structures. If spills or fire hazards are found note results on form, notify supervisor, and take actions to restore area.

3.0 Evidence of leaks/spills from container?

Check the containers for any leaking or spillage from the container—the entire storage area should be inspected. Record the results on the form. If leaks are found, take action consistent with Site 300 practices to repair equipment or remove the equipment from service and repair.

4.0 Any containers distorted, buckling, denting or bulging?

Inspect containers to check for damage, including checking for bulging or distorted conditions. If found, ensure that the containers are still suitable for petroleum storage. If not, take action to replace the container.

5.0 Any pathways or aisles blocked?

This inspection item applies to hazardous materials and waste storage areas. Pathways should remain clear and free of obstructions and fire hazards. Make sure that adequate aisle space remains so that people and equipment can move freely.

6.0 Any liquids in any containment pallets?

Standing water in secondary containment reduces the capacity of the containment, and if in contact with steel, accelerates corrosion. If liquids are found, take actions consistent with plant policies and document any release of water or liquids following inspection.

7.0 Any secondary containment valves closed?

Secondary containment valves (at B883, for example) should be checked to ensure they are in a closed position.

H.3 Oil Filled Equipment Monthly Inspection Checklist (Appendix H.3)

Oil filled equipment at the facility include transformers and programmatic equipment as identified in Table C-2 and C-3 of the SPCC Plan. The inspection of this equipment is fairly straightforward.

Instructions: Verify that each checklist item is completed. Under status, check the appropriate box. Provide comments if necessary. Sign and date the checklist at the bottom. Submit completed checklists to the Site 300 Manager.

(*) in the status column designates an item is in a non-conformance status. The inspector must make a determination as to whether the non-conforming item is important to equipment integrity. An item important to equipment integrity is defined as an item, if not addressed, that would imminently lead to an environmental release. Non-conforming items important to equipment integrity (cracks, equipment deformation, etc.) require evaluation by an engineer experienced in AST design, a certified inspector, or a tank manufacturer to determine corrective action.

In the event of severe weather or maintenance that could affect the operation of critical components, an inspection of these components is required as soon as the equipment is safely accessible after the event.

1.0 Any Evidence of Oil Leaks/Spills from container, piping, gaskets or valves?

Check the exterior of the equipment for any leaking or spillage —the entire perimeter of the equipment should be inspected. Pay close attention to any piping, gaskets, or valves, as these are common areas for leaks. Record the results on the form. If oil leaks are found, take action consistent with Site 300 procedures to repair equipment.

2.0 Any Equipment Damage or Deterioration, including bolts and seams?

Check the equipment for evidence of wear or damage. Evidence of wear could include frayed wiring, piping, and other mechanical equipment. Note the location of the wear or damage on the form and notify Site 300 management if condition warrants.

3.0 Any other conditions that should be addressed for continued safe operation or that affects the SPCC Plan?

If conditions are encountered that could affect the safe operation of the equipment or other conditions are observed that could affect the SPCC Plan, include this information on the form and report the information to Site 300 management.

H.4 Bulk Storage Container Annual Inspection Checklist (Appendix H.4)

Bulk storage containers requiring an annual inspection (in addition to the monthly inspection) are indicated on Table C-1. The following section provides additional details about the questions and responses needed for completing the inspection forms.

Instructions: This annual checklist should be completed on an annual basis supplemental to the monthly-performed inspections.

Verify that each checklist item is completed. Under status, check the appropriate box. Provide comments if necessary. Sign and date the checklist at the bottom. Submit completed checklists to the Site 300 Manager.

(*) in the status column designates an item is in a non-conformance status. The inspector must make a determination as to whether the non-conforming item is important to equipment integrity. An item

important to equipment integrity is defined as an item, if not addressed, that would imminently lead to an environmental release. Non-conforming items important to equipment integrity (cracks, equipment deformation, etc.) require evaluation by an engineer experienced in AST design, a certified inspector, or a tank manufacturer to determine corrective action.

In the event of severe weather or maintenance that could affect the operation of critical components, an inspection of these components is required as soon as the equipment is safely accessible after the event.

1.1 Any holes or cracks in external secondary containment walls or floor, and/or evidence of tank leakage?

Inspect secondary containment area and note any substantial cracks or holes. Hairline cracks that appear to have no significant impact to the integrity of the containment (that is, would not leak or fail) will normally not be of major concern. If holes or cracks in containment exist that could affect the ability to contain a release are observed, take action to address situation. Check for any tank leakage.

1.2 Are secondary containment drain valves operable and in closed position?

Ensure that the drain valves operate properly and are closed except when releasing liquids. If liquids are released, log this information on the proper form.

2.1 Any evidence of tank settling?

Check external secondary containment systems for indications of settlement of the tank. Evidence of settling would be cracking or dimpling of the containment system, tanks not level, or other similar conditions.

2.2 Any washout of containment, foundation or supports?

Check the perimeter of the containment area for locations where footings or anchors have been eroded or degraded or exposed. Observe the foundation and tank footings to ensure these have not settled or have been undermined or washed-out. Evidence of settlement could include tanks noticeably out of level, or stress cracking in the vicinity of the tank's footings. If the integrity of the containment could be compromised, take actions to repair or replace any areas of washout or settlement.

2.3 Any evidence of corrosion or paint failure of the tank supports?

Check the saddles or footings of the tank for evidence of significant corrosion or paint failure that could jeopardize the stability of the tank. Tanks that are in contact with stormwater for extended periods should be checked carefully, as standing water will rapidly corrode tank supports. Take actions to address corrosion or paint failure of tank supports.

2.4 Does water drain away from tank?

To avoid corrosion, water should drain away from the tank and footings. Ensure that containment areas remain free of standing water by taking appropriate actions. Do not allow water to remain in contact with steel supports or the tank.

2.5 Any cracking or spalling of the concrete pad?

Most tanks are situated on housekeeping or structural concrete pads. Check these for the presence of cracks or spalling (deterioration of the concrete, sometimes associated with corrosion of rebar). Observe these areas and record results on the form.

2.6 Is grounding strap secured and in good condition?

Check the grounding strap to make sure remains securely connected to the tank and is not frayed or damaged.

3.1 Evidence of corrosion or coating failure?

Check all areas of the tank exterior for significant corrosion or paint failure has occurred. Take actions to address corroded areas and to repaint failed areas promptly.

3.2 Evidence of denting, buckling, bulging, or cracking?

Visually inspect the shells of the tanks to check for damage of these types. If observed, take prompt actions consistent to address these issues. If noticeable distortions have occurred, a more detailed inspection may be required to ensure safe continued operation.

4.1 Venting

Visually inspect vents. Ensure they are unobstructed and can move freely. If vents are obstructed or otherwise not operating properly, take action consistent with Site 300 procedures to repair equipment.

4.2 Any active leaks from piping, valves or gaskets?

Piping, valves, and gaskets should be in good condition, not leaking, corroded or damaged. If this equipment is not fit for continued service, take appropriate action consistent with Site 300 procedures to repair or replace.

4.3 Check condition of interstitial leak detection equipment

Ensure interstitial leak detection equipment is operational. Where interstitial leak detection is electronic and a test button is present, test the button to ensure operation. If this equipment is not fit for continued service, take appropriate action consistent with Site 300 procedures to repair or replace.

4.4 Spill Containment Boxes on Fill Pipe

Where present, inspect spill boxes on fill pipes for debris, residue, or water. Ensure valves are operable and closed. If this equipment is not fit for continued service, take appropriate action consistent with Site 300 procedures to repair or replace.

4.5 Filters

a. Is the filter is in good condition and within the manufacturer's expected service life?

Check the fuel filter. Replace if not in good condition or if the service life expectation has been exceeded.

b. Are leaks or decreased fuel flow present?

Observe for leaks or decreased fuel flow. Replace filter if leaks or fuel flow decreases are observed.

4.6 Liquid Level Equipment

a. Is the tank liquid level gauge operable? Record Tank Level

Observe the liquid level gauge to check for operability. Record the tank level on the form. Refer to the following question to confirm the accuracy of the gauge for level indication.

b. Has level gauge been calibrated or checked consistent with the manufacturer's recommendations (at minimum annually)?

Liquid level gauges are required to be checked regularly under SPCC Plan regulations, normally interpreted as "annually" or as required by the equipment manufacturer. Typically, level gauges are

checked by manually gauging the tank, and then comparing the results from the gauge. Check with the equipment manufacturer to determine the best means to confirm proper operation of the level gauge.

c. Test high level alarm. Does it operate as designed?
High level alarms should also be checked using manufacturer's instructions.

5.1 Are electrical wiring and boxes in good condition??
Where electrical boxes are present, do they appear in good condition? Is evidence of frayed wires visible? Make arrangements to have electrical condition inspected by electrician if warranted.

5.2 Are labels and tags intact and readable?
Ensure that any labels are accurate, intact, and readable, if tank is so equipped. Make arrangements to replace labels if they have become unreadable.

5.3 Are there other conditions that should be addressed for continued safe operation or that may affect the site SPCC Plan?
Use this section to record any observations that could affect the safe operation of the equipment, or if there are other findings that could affect the Spill Plan. If equipment is found that is not suitable for continued service, take action consistent with facility practices to return the equipment into active service.

Form H.1: Bulk Storage Container Monthly Inspection Checklist

REQUIRED INFORMATION:
Inspection Date: _____ Inspector Name: _____ Container Number: _____
Location: _____ Container Contents: _____

Checklist --See Section H.1 for instructions and required follow-up actions for non-conforming items marked with an asterisk (*)

	Inspection Item:	**Status:**	If (*), is item important to tank or containment integrity? (Y/N)	**Comments, Including Follow-up Action taken (Work Order #, etc.)**
1.0	Is evidence of leaks/spills from container, piping, gaskets or valves present?	☐ Yes* ☐ No		
2.0	Is water present in the primary tank?	☐ Yes* ☐ No		
3.0	Are visible signs of leakage from the interstice present (applies only to double-walled tanks)?	☐ Yes* ☐ No ☐ NA		
4.0	Are oil-based liquids (e.g., diesel, hydraulic oil) present in containment areas or surrounding concrete or soil?	☐ Yes* ☐ No		
5.0	If present, are primary tank drain valves locked?	☐ Yes ☐ No* ☐ NA		
6.0	Are containment drain valves in a closed position?	☐ Yes ☐ No* ☐ NA		
7.0	Are debris, cracks, or fire hazards present in secondary containment areas?	☐ Yes* ☐ No ☐ NA		
8.0	Are tank supports/foundation unstable or not suitable for continued use?	☐ Yes* ☐ No ☐ NA		
9.0	Is Level Gauge operational and readable? Record gauge level in comments.	☐ Yes ☐ No* ☐ NA		
10.0	Is overfill equipment (e.g., high level alarm) operable?	☐ Yes ☐ No* ☐ NA		
11.0	Spill Containment Boxes on Fill Pipe	☐ Yes*		
a.	Is debris, residue, or water present in spill containment box on fill pipe	☐ No ☐ NA		
b.	Are drain valves on spill containment boxes on fill pipe operable and closed	☐ Yes ☐ No* ☐ NA		
12.0	**Other Conditions**	☐ Yes		
12.1	If present, are ladders and platform structures secure with no signs of severe corrosion or damage?	☐ No* ☐ NA		
12.2	Any pathways or aisles blocked?	☐ Yes* ☐ No ☐ NA		
12.3	Are there other conditions that should be addressed for continued safe operation or that may affect SPCC?	☐ Yes* ☐ No		

COMMENTS:

Signature: _____ Date: _____

Form H.2: Portable Container Storage Area Monthly Inspection Checklist

REQUIRED INFORMATION:

Inspection Date: _____ Inspector Name: _____ Container Number: _____

Location: _____ Container Contents: _____

Checklist --See Section H.2 for instructions and required follow-up actions for non-conforming items marked with an asterisk (*)

Inspection Item:	**Status:**	If (*), is item important to tank or containment integrity? (Y/N)	**Comments, Including Follow-up Action taken (Work Order #, etc.)**
1.0 Are containers within designated storage areas?	☐ Yes ☐ No*		
2.0 Are debris, spills, or other fire hazards present in the containment or storage area?	☐ Yes* ☐ No		
3.0 Are visible signs of leakage around the container or storage area present?	☐ Yes* ☐ No		
4.0 Are there noticeable container distortions such as buckling, denting, or bulging?	☐ Yes* ☐ No		
5.0 Are egress pathways clear and gates/doors operable?	☐ Yes ☐ No* ☐ NA		
6.0 Is water present in the outdoor secondary containment?	☐ Yes* ☐ No ☐ NA		
7.0 Are secondary containment drain valves in a closed position?	☐ Yes ☐ No* ☐ NA		

COMMENTS:

Signature: _____ Date: _____

Form H.3: Oil-Filled Electrical and Operational Equipment Inspection Checklist

REQUIRED INFORMATION:

Inspection Date: _____ Inspector Name: _____ Equipment Number: _____

Location: _____ Equipment Contents: _____

Checklist --See Section H.3 for instructions and required follow-up actions for non-conforming items marked with an asterisk (*)

Inspection Item:	**Status:**	If (*), is item important to tank or containment integrity? (Y/N)	**Comments, Including Follow-up Action taken (Work Order #, etc.)**
1.0 Is evidence of a leak or spill visible from anywhere on the exterior of the equipment (seams, piping/hosing, gaskets, or valves)?	☐Yes* ☐ No		
2.0 Any equipment damage or deterioration that could affect equipment integrity (including bolts and seams)?	☐Yes* ☐ No		
3.0 Are there any other conditions that should be addressed for continued safe operation that may affect the Site SPCC Plan? If yes, please describe.	☐Yes* ☐ No		

COMMENTS:

Signature: _____ Date: _____

Form H.4: Bulk Storage Container Annual Inspection Checklist

REQUIRED INFORMATION:
Inspection Date: _____ Inspector Name: _____ Container Number: _____
Location: _____ Container Contents: _____

Checklist --See Section H.4 for instructions and required follow-up actions for non-conforming items marked with an asterisk (*)

Inspection Item:	**Status:**	If (*), is item important to tank or containment integrity? (Y/N)	**Comments, Including Follow-up Action taken (Work Order #, etc.)**
1.0 Tank Secondary Containment Area			
1.1 Is evidence of any of the following observed in the containment structure: Holes or cracks in containment wall or floor, liner degradation, leakage	☐ Yes* ☐ No ☐ NA		
1.2 Are secondary containment drain valves operable and in a closed position?	☐ Yes ☐ No* ☐ NA		
2.0 Tank Foundation and Supports			
2.1 Are visible signs of foundation settlement present?	☐ Yes* ☐ No		
2.2 Are visible signs of washout of containment, foundation or supports present?	☐ Yes* ☐ No		
2.3 Are visible signs of corrosion, paint failure, or other defect present on the tank supports?	☐ Yes* ☐ No ☐ NA		
2.4 Does water drain away from the tank?	☐ Yes ☐ No* ☐ NA		
2.5 Is the concrete pad or ring wall cracking or spalling?	☐ Yes* ☐ No ☐ NA		
2.6 Is the tank grounding strap secured and in good condition?	☐ Yes ☐ No* ☐ NA		
3.0 Tank Exterior 3.1 Is evidence of corrosion or coating failure present?	☐ Yes* ☐ No		
3.2 Is evidence of any of the following observed in the steel: Dents, Buckling, Bulging, Cracking	☐ Yes* ☐ No		
4.0 Tank Equipment 4.1 Are tank vent components moving freely and are vent passages unobstructed?	☐ Yes ☐ No*		
4.2 Are visible signs of leaks, corrosion and/or damage present on any valves, gaskets, or piping?	☐ Yes* ☐ No		
4.2.1 Cycle the anti-siphon check and gate valves open and closed. Are they operating properly?	☐ Yes ☐ No* ☐ NA		
4.3 Check the condition of the interstitial leak detection equipment.			
a. Is the sight glass clean and clear for sight leak gauges?	☐ Yes ☐ No* ☐ NA		
b. Are the wire connections of electronic gauges tight and free of corrosion?	☐ Yes ☐ No* ☐ NA		
c. If present, is the test button operational?	☐ Yes ☐ No* ☐ NA		

Inspection Item:		Status:	If (*), is item important to tank or containment integrity? (Y/N)	Comments, Including Follow-up Action taken (Work Order #, etc.)
4.4 Check the condition of the spill containment boxes on fill pipes				
a.	Is corrosion, damage or wear present that compromises the ability of the unit to perform spill containment functions.	☐ Yes* ☐ No ☐ NA		
b.	Are connections to the container tight?	☐ Yes ☐ No* ☐ NA		
c.	Are drain valves operable and closed?	☐ Yes ☐ No* ☐ NA		
4.5 Filters				
a.	Is the filter is in good condition and within the manufacturer's expected service life? Replace, if necessary.	☐ Yes ☐ No* ☐ NA		
b.	Are leaks or decreased fuel flow present?	☐ Yes* ☐ No ☐ NA		
4.6 Liquid Level Equipment				
a.	Is the tank liquid level gauge operable (record tank level in comments)?	☐ Yes ☐ No* ☐ NA		
b.	Has level gauge been calibrated or checked consistent with the manufacturer's recommendations?	☐ Yes ☐ No* ☐ NA		
c.	Test the high level alarm. Does equipment operate as required?	☐ Yes ☐ No* ☐ NA		
5.0 Miscellaneous				
5.1	Are electrical wiring and boxes in good condition?	☐ Yes ☐ No* ☐ NA		
5.2	Are labels and tags intact and readable?	☐ Yes ☐ No* ☐ NA		
5.3	Are there other conditions that should be addressed for continued safe operation or that may affect the site SPCC Plan?	☐ Yes* ☐ No		

COMMENTS:

Signature: _____ Date: _____

Appendix I

24-Hour, 25-Year Return Period Storm Memorandum

January 4, 2006

TO: Lily Sanchez, Environmental Engineer

FROM: Chris G. Campbell, Environmental Scientist

SUBJECT: CALCULATION OF THE 24-HOUR 25-YEAR RETURN PERIOD STORM FOR THE EXPERIMENTAL TEST SITE 300 (S300) FOR DESIGN OF SECONDARY CONTAINMENT FOR TANKS.

The following analysis was designed to establish the 24-hour 25-year storm return period for the Experimental Test Site 300 (Site 300) at the Lawrence Livermore National Laboratory. Precipitation values (in inches) for this design storm are required for calculations made in support of regulatory guidance on the design of secondary containment berms around tanks.

Data

Data was gathered from historical records of total daily rainfall for LLNL S300 since 1996. This record has been subjected to a quality control and assurance program and although it is only a 10 yr record, it is the best available for the site.

Analysis

The analysis was performed by developing a frequency distribution for the occurrences of precipitation events at 0.25 inch intervals up to 2.0 inches. The frequency of occurrences per year were plotted using the upper and lower value of the 0.25 inch ranges to present a reasonable range for a return period. The frequency distribution of 24-hr precipitation events in inches is in Figure 1. The resulting 24-hr return periods in years are plotted against the precipitation amount in inches in Figure 2.

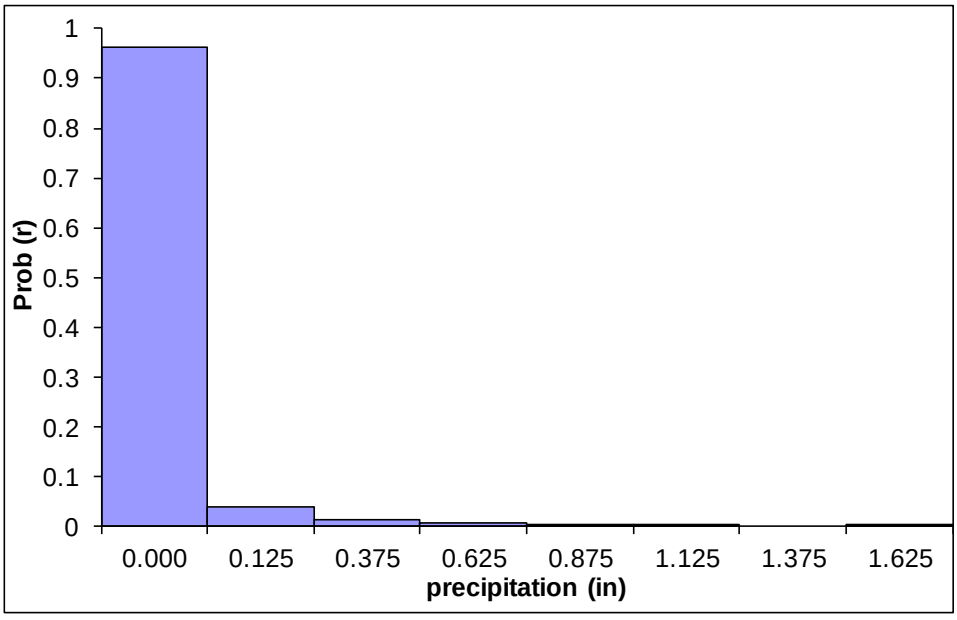


Figure 1: The frequency distribution (histogram) for precipitation events measured for 1996–2006 at LLNL Site 300.

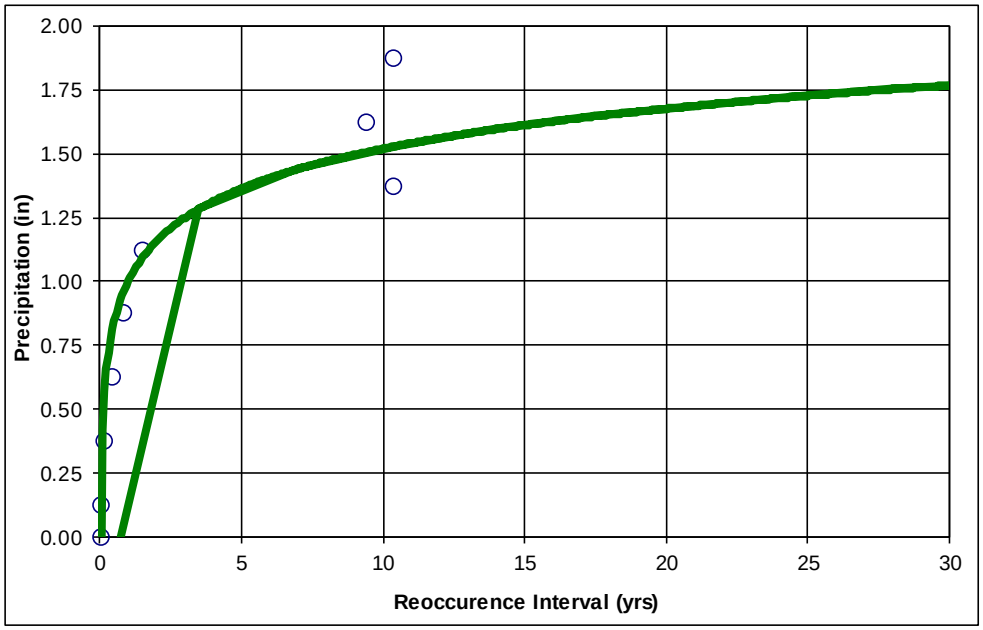


Figure 2: The 24-hr storm return periods for years on the X-axis and precipitation in inches on the Y-axis for precipitation events measured for 1996–2006 at LLNL Site 300.

Results

Our analysis provides a conservative range for precipitation values for the 24-hr 25-yr event of 2.0 inches. The 2.0 inch target was selected as an upper range (rounding up to the nearest quarter inch) and should be used as a conservative value, understanding the limitations of our available 10 year data set. This result is the best available estimate of the 24-hr 25-yr storm event calculated using the best available data and information.

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