September 20, 2024

Mr. Bradley Buselli
Environmental Specialist III
Florida Department of Environmental Protection
Hazardous Waste Program and Permitting
P.O. Box 3070
Tallahassee, FL 32315-3070

RE: Letter of Transmittal
Class 1 Permit Modification Request
Perma-Fix of Florida, Inc.
1940 NW 67th Place
Gainesville, Florida 32653
(FLD 980711071)

Dear Mr. Buselli:

On behalf of Perma-Fix of Florida, Inc. (PFF), we hereby present for your review, an enclosed Resource Conservation Recovery Act (RCRA) Permit Class 1 Modification Request for PFF located at 1940 NW 67th Place in Gainesville, Florida. The facility is currently operating as a commercial waste bulking, storage, and treatment facility for hazardous, industrial, universal, biomedical, mixed, radioactive-only, and non-hazardous waste under a RCRA Hazardous Waste Construction and Operation Facility Permit, which was issued by the Florida Department of Environmental Protection on June 3, 2020 and expires on June 8, 2025.

PFF is submitting this modification request to facilitate installation of enhancements to the existing thermal desorption unit, which is a part of the PF-II disposal process. The modification can be classified pursuant to 40 Code of Federal Regulations (CFR) 270.42 Appendix I, which categorizes "Equipment replacement or upgrading with functionally equivalent components" as a Class 1. The enhancement is the installation of a sulfur-impregnated activated carbon bed absorber that represents vapor treatment downstream of the existing post-desorption/condensation HEPA filter unit in the Treatment and Operations Building. Revised text, tables, figures, and appendices, in the current permit application, have been modified as appropriate to reflect the proposed system enhancements.

Attached please find an electronic copy of the following:

1. Part I General Facility Information (redline revised excerpts)
2. Part II Specific Facility Information (redline revised excerpts)

Summary of Permit Modifications (Part I)

Table I-1:
Permits references updated.

Table I-2:
Summary of treatment methods updated to include PCBs and mercury-containing wastes via proposed PF-II system modification.

Table I-6:
Permitted waste codes updated to reflect the proposed modification, including capture of mercury from carbon absorber.

Figure I-6:
Figure updated to reflect as-builts following previous modification.

Figures I-7-A and I-7-B:
Figures updated to reflect current and proposed process flow diagrams.

Figure I-9:
Decision tree updated to include proposed enhancement modification.

Figures I-11-A and I-11-B:
Figures updated to reflect current and proposed process schematics.

Figures I-24-A and I-24-B:
Figures updated to reflect current and proposed equipment layout.

Figure I-25:
Figure updated to reflect equipment layout as-builts following previous modification.

Figures I-26-A and I-26-B:
Figures updated to reflect current and proposed equipment layout.

Section D.1:
Text revised to include proposed PF-II process modification to include PCB waste treatment by thermal treatment.

Section D.2.1 (Treatment):
Text revised to include proposed PF-II process modification to include PCB waste treatment, and the addition of a carbon absorber downstream of the thermal treatment apparatus to capture non-condensed regulated organic and inorganic constituents.

Section D.4 (Definition of Mixed Wastes):
Text revised to include proposed PF-II process modification to include PCB waste treatment and capture non-condensed regulated organic and inorganic constituents via carbon absorption.

Section D.4 (Wastes Managed and Waste Management Activities):
Text revised to include proposed PF-II process enhancement modification to add a carbon absorber to capture non-condensed regulated organic and inorganic constituents.

Section D.4 (Secondary Waste Management for PCB Wastes Treated in the PF-II System):
Additional text incorporated to include recovered liquids and treated batch waste solids as part of the proposed PF-II system modification.

Summary of Permit Modifications (Part II)

Table II-11-1:
PF-II Vacuum Equipment List updated to reflect as-builts following previous modification.

Table II-11-2:
Table renumbered. No content changed.

Figures II-I-1-A and II-I-1-B:
Figures updated to reflect current and proposed PF-II system layout.

Figures II-I-2-A and II-I-2-B:
Figures updated to reflect current and proposed PF-II process flow diagrams.

Figures II-S-8 and II-S-9:
Figures updated to proposed PF-II vacuum system enhancements.

Section I.1:
Text revised to reflect as-builts following previous modification and include proposed PF-II process enhancement modification to add a carbon absorber to capture non-condensed regulated organic and inorganic constituents.

Section I.1 (Process Description):
Text revised to note figure changes and addition of carbon absorber.

Section I.1 (Thermal Desorption):
Text revised reflect as-builts following previous modification, to note figure changes, and addition of carbon absorber.

Section I.1 (Process Residuals Management):
Text revised to include condensed liquids management and metals treatment.

Section I.1 (Reactor Vessel and Condenser):
Text revised to reflect as-builts following previous modification.

Section I.1 (Vacuum Pumps, Accumulator, Activated Carbon Absorber):
Text revised to reflect as-builts following previous modification and addition of carbon absorber.

Section I.2 (Prevention of Releases to Air):
Text revised to reflect addition of carbon absorber.

Section I.5 (Piping, Instrumentation, and Process Flow):
Text revised to note revised figures.

Section K.2.1 (Treatment and Operations Building):
Text revised to reflect as-builts following previous modification and addition of carbon absorber.

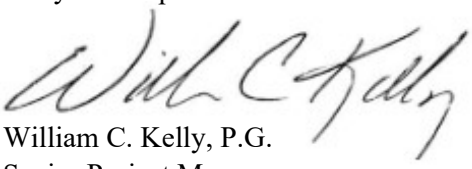
Section K.8 (Closure Cost Estimate):
Text revised to reflect replacement of former continuous PF-II process with current batch process following previous modification.

Section R:
Text revised to reflect as-builts following previous modification.

Section S:
Text revised to note revised tables.

The requisite permit fee will be submitted in conjunction with this modification request. Perma-Fix of Florida, Inc. appreciates the agency's consideration in reviewing this application. If you have any questions or comments, please contact Mr. Randy Self (Perma-Fix of Florida, Inc.) at (352) 395-1368 or Mr. William Kelly (Trihydro Corporation) at (904) 513-9742.

Sincerely,
Trihydro Corporation



William C. Kelly, P.G.
Senior Project Manager

PERMA-023-0001

Attachments

cc: Randy Self, Perma-Fix of Florida, Inc. (1 copy)
Florida Department of Environmental Northeast District (1 copy)
Brian Bastek, EPA Region 4 (1 copy)

4. Professional Engineer Registered in Florida

Complete this certification when required to do so by Chapter 471, F.S., or when not exempted by Rule 62-730.220(9), F.A.C.

This is to certify that the engineering features of this hazardous waste management facility have been designed or examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgement, this facility, when properly constructed, maintained and operated, or closed, will comply with all applicable statutes of the State of Florida and rules of the Department of Environmental Protection.

Signature

Gabriel S Pastrana

Digitally signed by Gabriel S Pastrana
DN: cn=Gabriel S Pastrana, c=US, o=Florida, email=g.pastrana@outlook.com
Reason: I attest to the accuracy and integrity of this document
Date: 2024.09.20 19:09:45 -04'00'

Gabriel S. Pastrana, P.E.
Name (please type)

Florida Registration Number 65536

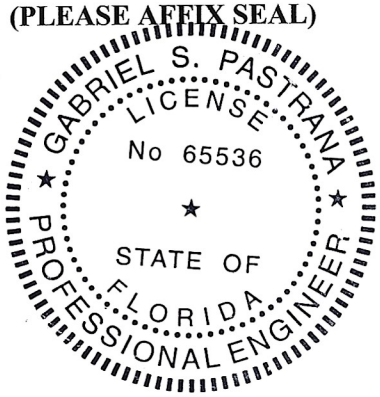
Mailing Address 3740 Saint Johns Bluff Road South, Suite 14
Street or P.O. Box

Jacksonville (City) | Florida (State) | 32224 (Zip)

Date 9/20/24 E-mail address gpastrana@trihydro.com

Telephone (904) 513-9740

(PLEASE AFFIX SEAL)



PART I

PART I

REVISED RCRA PERMIT APPLICATION

PERMA-FIX OF FLORIDA, INC.

1940 NW 67TH PLACE

GAINESVILLE, FLORIDA 32653

September 20, 2024

Project #: 61A-004-001

SUBMITTED BY: Trihydro Corporation

3740 St. Johns Bluff, Suite 14, Jacksonville, Florida 32224

Table of Contents

PART I

List of Tables

PART I

List of Figures

PART I

List of Figures (cont.)

PART I

List of Appendices

I. PART I

PFF, a subsidiary of Perma-Fix Environmental Services, Inc. operates a Resource Conservation and Recovery Act (RCRA) commercial waste bulking, storage, and treatment facility (Facility) in Gainesville, Florida. Waste managed on-site includes a wide variety of hazardous, industrial, universal, biomedical waste, mixed, radioactive-only and non-hazardous wastes. Currently, the Facility blends hazardous, non-hazardous, and mixed wastes into fuels for use in off-site facilities, such as incinerators and industrial furnaces and boilers. The Facility also consolidates, repackages, and sorts waste for shipment off-site for treatment and/or disposal. Current activities at the Facility also include the receipt and non-permanent storage of radioactive (or mixed) wastes pursuant to a license issued by the Florida Department of Health, Bureau of Radiation Control. PFF also manages Polychlorinated Biphenyls (PCBs) in accordance with EPA's Approval to Commercially Store PCBs.

The Part I portion of this application has been organized based on the structure found in Florida Department of Environmental Protection (DEP) Form 62-730.900(2)(a). This section includes the requisite supporting information for the DEP Form 62-730.900(2)(a), including additional descriptions of site information, tables, figures, and attachments, which are included below.

A GENERAL INFORMATION

The DEP Form 62-730.900(2)(a) Item A.19 includes a list of existing or pending environmental permits and relevant information, but is continued on Table I-1 due to space.

B SITE INFORMATION

Figure I-1 shows the location of all past, present, and future treatment, storage, and disposal areas. Photo documentation of the facility is included as Appendix I-A.

A FEMA flood zone map for the site property and surrounding area is included as Figure I-2. Figure I-3 displays the Topographic Map and associated information for the property. A current zoning map displays surrounding land use in Figure I-4.

PFF owns the contiguous property consisting of a wooded parcel and the property used for the RCRA facility as shown in Figure I-5. Based on the RCRA definition of "Facility" at 40 CFR 260.10, this entire contiguous property is considered the "facility" for Federal Hazardous and Soil Waste Amendments (HSWA) purposes. However, only the

area consisting of the property actually used for RCRA purposes (i.e., area marked “Perma-Fix RCRA Facility”) will be subject to the RCRA permit conditions and/or RCRA regulations (except for HSWA permit conditions/regulations).

C LAND USE INFORMATION

A current zoning map displays surrounding land use in Figure I-5.

D OPERATING INFORMATION

In addition to the general description of facility operations included in the permit application, below are additional details regarding the various waste management activities at the facility, including:

- Process Information
- Description of Operations by Buildings
- Estimated Operational Life of Facility
- Waste Types

D.1 SUMMARY OF SITE PROCESSES

Current treatment processes at the Facility include thermal desorption, fuel blending (including phase separation), chemical and physical extraction, chemical oxidation/reduction, stabilization, fixation, microencapsulation, lab pack decommissioning, Perma-Fix processes (i.e., PF-I® and PF-II®), treatment of hazardous debris in accordance with certain alternative treatment standards specified in 40 CFR 268.45, non-elementary neutralization, mercury amalgamation, treatment in drum rotators, and deactivation processes. The facility is currently permitted for the storage of Toxic Substances Control Act (TSCA) regulated polychlorinated biphenyl (PCB) waste by a storage approval issued by the United States Environmental Protection Agency (EPA) Region 4. After demonstration testing and EPA determination, PCB wastes will also be thermally treated in the PF-II® process under 40 CFR 761.60(e) disposal approval, in addition to the RCRA wastes currently permitted for treatment in this unit. A summary of the treatment methods and storage locations is included as Table I-2. The Facility also conducts transfer facility operations for used oil regulated under Chapter 62-710, F.A.C. (and 40 CFR 279) and for mercury- containing devices regulated under Chapter 62-737, F.A.C. The treatment codes are listed in Table I-3. The process codes are listed in Table I-4.

D.2 DESCRIPTION OF OPERATIONS BY BUILDING

D.2.1 TREATMENT AND OPERATIONS BUILDING (TOB)

Container Storage

The Facility receives and stores up to 640 drum equivalents (or 35,200 gallons) of hazardous and/or mixed waste in the Treatment and Operations Building. See Figure I-6 for the container storage configuration. Additional details regarding container management practices are provided in Part II Section B of this permit application. The Facility may store non-hazardous wastes and radioactive-only wastes in this container storage area provided the wastes are compatible and their quantities are counted against the total permitted hazardous waste storage capacity.

Treatment

Mixed wastes may be treated in the Treatment and Operations Building via either one or both of two proprietary processes known as the Perma-Fix I® (PF-I) process (stabilization and fixation) and Perma-Fix II® (PF-II) process (thermal desorption and/or chemical oxidation/reduction). See Figure I-6 for the general layout of the Treatment and Operations Building. The following provides a general description of the treatment processes. Additional details regarding the treatment processes are provided in Part II Section I of this permit application. See Figure I-7 for a detailed illustration of the Perma-Fix treatment processes.

The PF-I process is a two-step procedure for permanent stabilization and/or solidification of hazardous and mixed wastes. As indicated in Figure I-8, the inorganic wastes that do not contain organic hazardous constituents in excess of applicable land disposal restriction levels are target waste streams for the PF-I process. First, the waste is evaluated for specific chemical characteristics in order to identify the appropriate proprietary treatment "recipe" for converting the key waste constituents to a more chemically stable and insoluble form. After receiving chemical stabilization treatment, the waste is in a form that meets the waste acceptance criteria of the authorized disposal facility.

Once subjected to the PF-I process, the treated waste is sampled to determine whether it meets the desired treatment standards (e.g., whether the waste no longer exhibits a hazardous waste characteristic and/or meets applicable land disposal restrictions). Typically, the PF-I process is applied to wastes in drums. However, larger or smaller containers may be used, depending upon the nature of the waste to be treated. In any event, the waste is usually stabilized in the same container to be used to ship the waste off site for disposal. In some instances, the addition of treatment additives will increase volume such that the stabilized waste must be transferred to an additional or larger container prior to disposal.

The PF-I process will generate relatively small quantities of secondary waste consisting primarily of personal protective equipment (PPE) and plastic sheeting used to collect any incidental spillage of the treated waste or waste treatment materials. Secondary waste will be appropriately characterized, treated, and/or disposed. Additional details regarding the PF-I process are provided included in Appendix I-B.

The PF-II process consists of three possible steps used to treat RCRA organics and PCB remediation waste as soils, sludge, or other process waste (e.g. waste media not classified as debris or <60mm particle size). As indicated in Figure I-9, target waste streams for the PF-II process are organic-contaminated media and PCB wastes (i.e., soils and sludges). Wastes selected for PF-II treatment require compliance with the treatment standards identified in 40 CFR Parts 268.48 or 268.49 for RCRA organic wastes and 40 CFR 761 for PCB wastes prior to land disposal. Dependent upon waste code assignment on the waste "as received" from a generator or upon discovery during process control analyses, PF-II treated waste may require PF-I treatment to ensure total compliance with the identified regulations.

The first step of the PF-II process may involve pre-conditioning of the waste. Select solvents (as determined through preliminary data review or bench testing) are added to the waste and mixed to remove soluble oils, greases, and tars that typically impede successful thermal operations. This activity is conducted using the pneumatic drum tumbler for physical contact followed by liquids decanting.

The pneumatic dual drum tumbler is an end-over-end rotation device that can accommodate 55- or 85-gallon steel containers (Figure I-10). Approximately 1/3 of the tumbling vessel is filled with PF-II waste. An equivalent volume quantity of a select solvent is added to the vessel. The tumbling vessel is closed appropriately using the typical bung-top lid. A pressure-relief device accommodates the two-inch bunghole. The waste and solvent are tumbled for a predetermined amount of time (to support sufficient solvent extraction). The vessel's bung-top lid is removed and replaced with a perforated lid. The vessel is drained into a catch pan. A single drum rotator may also be used in lieu of or in addition to the dual drum tumbler.

The process is repeated with a follow-up pre-conditioning step using a solvent with an opposing chemical polarity. Effective solvents are selected through bench testing. Solvent extraction using a drum rotator may also be performed on wastes that may not undergo PF-II treatment.

The second step (sometimes conducted initially without going through the first step described above, depending on the waste matrix) to PF-II processing involves thermal desorption. Thermal desorption is used to remove the remaining volatile, semi-volatile, and other organic constituents from the waste matrix. Historical performance monitoring has shown pre-conditioning as an extremely effective method resulting in thermal desorption as more of a polishing step to

meet final LDR compliance objectives. USEPA has approved a demonstration test to process PCB wastes in the modified PF-II system (June 15, 2023) and the process will be implemented only after a successful demonstration and subsequent approval by USEPA.

To begin the thermal desorption process, contaminated media (waste) and, if necessary, water are loaded into trays which are then loaded into the externally heated retort chamber. The chamber is sealed, and a combination of vacuum, heated nitrogen gas purge, and radiant electrical heat is applied that vaporizes and transports the water, volatile, and semi-volatile organic constituents. Vapors are condensed by chilled water primary and secondary condensers and held within the collection accumulation tank. The small volume of non-condensable vapors that pass through the vacuum pumps downstream of the condensers, pass through High Efficiency Particulate Air (HEPA) filters, a sufur-impregnated activated carbon bed adsorber (to capture regulated organic and inorganic constituents [e.g., mercury] which were not condensed), then emissions from the process are vented to the regenerative thermal oxidizer (RTO). An inert atmosphere (e.g., nitrogen blanket) is provided for the process.

The third (optional) step is chemical oxidation/reduction to destroy or reduce any remaining organic compounds. Depending on the initial concentration, volatility, and solubility of the organic constituents, the final (optional) PF-II process treatment step (chemical oxidation/reduction) may not be required. Upon completion of the thermal desorption step, the temperature inside the reactor vessel is allowed to cool to below the boiling point of water, and an appropriate solution is added to chemically react with the residual organic constituents in the waste. Upon completion of the reaction, the reactor vessel is heated once again to the boiling point to destroy any residual treatment chemicals and dry the slurry as appropriate for further treatment and/or disposal. The oxidation/reduction treatment may also be conducted in containers at the facility.

All liquids (decant, condensate, and organic emission scrubbing solution) resulting from the PF-II processes are considered mixed waste. The liquid waste is containerized, blended in fuels bulking operations, and shipped to an authorized final treatment/disposal facility. When PCB wastes are treated in the PF-II process, the generated Figures I-7, I-10, and I-11 illustrate the PF-II process.

Solvent Recycling

The following information is included for informational purposes only since spent solvent recycling/reclamation is exempt from RCRA permitting requirements or by activities conducted onsite (e.g., recovery of select solvents used in the PF-II process to minimize mixed waste generation) pursuant to 40 CFR 261.6(c)(1). The Facility plans to recycle spent solvents (e.g., Freon) generated by various industrial generators. A low-temperature still or distillation unit will

be used to separate the re- useable solvents from contaminants. The reclaimed solvent will be returned to the generator for reuse, to a vendor for resale or kept in-house for further use. The separated contaminants will be containerized or managed in an on-site process. If hazardous, waste not managed on site will be shipped off-site for subsequent treatment and/or disposal by an authorized hazardous waste facility. Ancillary activities will be conducted, and equipment operated in accordance with applicable regulations. Applicable emissions control requirements are addressed in Part II Section R of this permit application. Vendor specifications for the planned distillation unit are enclosed in Appendix I-C for information purposes.

Lab Pack Decommissioning

Radioactive and mixed waste lab packs are decommissioned as follows depending upon the waste characteristic.

- Lab packs of compatible flammable, combustible, toxic, and/or non-hazardous liquids are processed (decommissioned) by un-packing the smaller containers, opening them, and pouring them (bulking) into larger containers. These larger containers are bulked into a tanker for shipment to a permitted disposal outlet.
- Lab packs of corrosives are neutralized and shipped to a permitted disposal outlet.
- Lab packs of oxidizers are treated to remove the oxidizing characteristic, and then shipped to a permitted outlet.
- Soluble solid wastes contained in lab packs are processed by first dissolving them in an appropriate solvent, and then bulked for shipment to a permitted disposal outlet.
- Insoluble solid wastes (e.g., soil samples) from lab packs are consolidated and processed through the PF-II treatment and/or PF-I treatment.

Fuel Blending Activity

Fuel blending of mixed waste is conducted as described in the subsection titled "Fuel Blending" for the Processing and Storage Building.

Treatment Using a Drum Rotator: This treatment is described in the PF-II Process of this section. The treatment pre-conditions the waste for the PF-II process or can treat wastes by solvent extraction to meet LDR standards.

Mercury Amalgamation: The PF-II process with high temperature and vacuum capability can be used to vaporize and condense mercury, which will be removed from the condenser in liquid elemental form. The process may be suitable for recycling, but if not suitable for recycling, the mercury will be amalgamated. This treatment will amalgamate liquid elementary mercury contaminated with radioactive materials, which results in a non-liquid amalgam that is non-RCRA regulated material. Amalgamation is specified in 40 CFR 268.40 as the technology-based land disposal treatment standard for certain hazardous wastes. The treatment will consist of mixing a small batch (i.e., up to

five gallons) of waste with inorganic reagents such as copper, zinc, nickel, gold, and/or sulfur in a portable unit. A detailed description of this process is contained in Appendix I-D.

Non-elementary Neutralization: Perma-Fix has performed elementary neutralization of mixed wastes for several customers in the past. PFF performs non-elementary neutralization in a portable 300-gallon tank or in containers, if quantities to be treated are small. A detailed description of the process is contained in Appendix I-E.

Deactivation of D003 Wastes: This process will be conducted in a nitrogen atmosphere in a glove box for wastes highly dangerous to human health (e.g., highly radioactive waste). See Appendix I-F for process description. This treatment will also be performed in small containers without using a glove box for wastes that do not pose a high health hazard.

D.2.2 PROCESSING AND STORAGE BUILDING

Fuel Blending

The majority of waste managed at the Facility is expected to be energy-bearing (organic) hazardous waste suitable for blending and use as a fuel in hazardous waste combustors such as boilers and cement kilns. PFF conducts phase separation and decanting activities at the Facility to allow for the blending of energy-bearing hazardous wastes that have significant water content.

Currently, the bulking of ignitable hazardous and mixed waste liquids from drums and other containers to tankers is performed in the Processing and Storage Building. PFF also performs phase separation (decanting) of water in addition to the bulking activities.

Currently, the method for bulking of hazardous and mixed waste fuels is to transfer "pumpable" liquids from containers into larger, DOT-approved containers or directly into a tanker truck using a pump and hose. The suction hose is attached to a metal wand that is immersed in the liquid waste. The discharge hose is fitted with an immersion wand that remains submerged in the larger container during transfer to reduce emissions.

PFF also performs phase separation. In this process, liquid hazardous waste containing excess water is transferred from smaller containers such as 55-gallon drums into larger DOT approved containers and allowed to sit until the excess water separates from the rest of the waste (approximately 3 to 5 hours). Then, the water is drawn from the containers using the previously described suction wand and pump, containerized, and treated or disposed of as a hazardous waste. The remaining hazardous waste is bulked into a tanker using the methods previously described. For containers with

solids and/or sludge, the liquids will be decanted, and the solids containerized and sent off site for treatment per the LDR standards. Mixed waste solids recovered in the nuclear operations are managed on site using the PF-II process or are sent off-site. In certain cases, the Facility may elect to ship mixed waste fuels, in smaller containers, to the intended final treatment or disposal facility to minimize radiological exposure and maintain contamination control.

See Figure I-12 for the layout of the Processing and Storage Building.

Lab Pack Decommissioning

Some lab packs are received, stored, and then sent to a disposal facility without any additional work being performed to them by PFF.

Lab packs of commonly received nonhazardous or hazardous only materials such as acids, bases, or oxidizers are processed by combining compatible materials into a larger lab pack before shipping off-site for disposal. An example of this would be combining six 5-gallon lab packs of small containers of solid oxidizers (e.g. sodium nitrate, potassium permanganate) into a 30-gallon container. This provides a degree of waste minimization as well as disposal cost reduction.

Chemotherapy/Pharmaceutical Waste

Non-infectious medical waste is received and stored in Zone 2 of the Processing and Storage Building (see Figure I-12). The pharmaceutical waste received from healthcare facilities is not treated at PFF; PFF will consolidate the waste into larger DOT-approved containers and then ship the waste to a third-party permitted treatment/disposal facility. This waste stream will consist of unused U- and P-coded pharmaceuticals, non-regulated drugs, and contaminated debris (i.e., intravenous (IV) tubing, IV bags, gloves, wipes, etc.) packaged in pails/buckets having a capacity of up to 30 gallons. Based on these operations conducted at PFF, PFF is not considered a reverse distributor. PFF only receives and consolidates pharmaceutical waste from healthcare facilities. PFF merely manages these wastes for shipment offsite to a permitted third-party treatment/disposal facility for destruction. A waste profile is created by each healthcare facility shipping the pharmaceutical waste to PFF, which states the type of hazardous pharmaceutical waste PFF will be receiving and the proper disposal techniques as well as the generator status of the healthcare facility (e.g., very small quantity generator/small quantity generator). PFF will record its onsite inventory, including the name or national drug code, and respective quantities. Waste will be stored onsite up to, but not exceeding, 180 days. PFF will maintain these pharmaceutical waste records onsite for at least three years from the date the shipment arrives.

Once a profile is received PFF will create a unique plan for proper disposal. The pharmaceutical wastes are dated upon arrival and scanned, logged, and tracked through a PFF inventory tracking system. The tracking system also notes waste that has been shipped off-site for final disposal. Reports from the tracking system including location and time stored can be printed as needed. A work order which describes the steps taken at PFF while handling the waste can also be created from the inventory tracking system.

Thus, PFF will receive wastes from a healthcare facility to PFF and then ship them to an outside approved final treatment and disposal site. PFF profiles and issues manifests for all waste shipments to the appropriate disposal facilities. Disposal sites may change with the market pricing and capacity limitations. The final destination may include an incinerator.

Container Storage

The Facility will continue to receive and store up to 1,311 drum equivalents (or 72,105 gallons) of hazardous and/or mixed waste in the Processing and Storage Building. See Figure I-12 for the layout of the Processing and Storage Building and a typical container storage configuration. Additional details regarding container management practices are provided in Part II Section B of this permit application.

Tank Storage

A single, 3,000-gallon storage tank may be used to accumulate and store the fluids (waste only) collected from the processing of Liquid Scintillation Vials (LSVs). The waste is stored in the tank until arrangements are made to ship the waste to an authorized waste treatment and/or disposal facility. See Figure I-12 for the layout of the Processing and Storage Building and the location of the storage tank. Additional details regarding the tank storage practices are provided in Part II Section C of this permit application.

Other Processes

Chemical precipitation, chemical reduction, neutralization, filtration, flocculation, and physical treatment (i.e., sorting and segregation) will also be performed in containers. In addition, the non- elementary neutralization and the chemical extraction using the portable equipment as described in TOB will also be performed in this building.

D.2.3 LSV PROCESSING AND WASTE STORAGE WAREHOUSE

LSV Processing

Medical researchers and scientists conduct research using trace amounts of radioactive materials and a liquid scintillation counting detection system to analyze the results. After the research, the scintillation fluid (either a

flammable solvent-based liquid or non-hazardous, biodegradable liquid), contaminated with the trace amount of radioactive material, is placed in a vial (hence, liquid scintillation vial) and accumulated in containers (usually 55-gallon drums) for subsequent treatment, disposal, or reuse as a waste-derived fuel.

Three types of radiological classifications are used at PFF for the scintillation fluid vials. The classifications are initially based on radiological determinations by the generator. PFF uses radiological analyses to verify the first two classifications prior to radiologically releasing these materials. The process residues are then handled as either hazardous or non-hazardous based on regulatory requirements. Items received as, or determined as mixed waste, are managed throughout their life cycle at PFF as radiologically licensed material. These materials are managed according to the regulatory requirements governing them. At the PFF Facility, drums containing LSVs are received at the LSV Processing and Storage Warehouse and processed as follows.

First, a drum of LSV is received in the processing room, the drum lid is removed, and the contents of the drum are visually examined to confirm its contents. Next, the drum is mechanically lifted, and the contents of the drum are dumped into a hopper and then onto a vibratory "Infeed Conveyor". This vibratory conveyor separates the vials from any absorbent packing material. The packing material is collected into a 55-gallon drum and is either treated on-site or sent off-site for disposal. The LSVs continue along the vibratory conveyor and transfer to the "Hog Infeed Belt." This belt feeds the "Knife Hog", which is designed to break up the LSVs and separate solids and liquids. The liquids and crushed vials are discharged from the Knife Hog onto the "Outfeed Conveyor." This outfeed system consists of a variable speed belt with perforations that allow the liquid scintillation fluid (LSF) to drain and collect in an approximately 110-gallon integral storage tank located beneath the outfeed conveyor unit. Crushed vials move up the outfeed conveyor and can be rinsed with appropriate solvent (e.g., ethanol) through the spray nozzles integral to the equipment. The solvent rinsate will also collect in the 110-gallon integral storage tank. The drained and crushed vials are then transferred from the Outfeed Conveyor into a 55-gallon container. The LSF is pumped out from the Outfeed Conveyor holding tank into a 275-gallon tote, where it is sampled and screened for radioactivity. The LSF is then pumped into containers up to 550-gallon capacity or into the 3,000-gallon storage tank in the Processing and Storage Building. From there, the LSF is shipped off site for use as a fuel or for treatment and/or disposal at an authorized waste facility. Depending upon the level of radioactivity, some LSF (and/or LSVs) may be containerized and stored on site to decay and attain the proper activity level before it may be shipped off site. LSF that is non-regulated radioactive is managed as a Hazardous Waste fuel.

During the rinsing process, the ethanol is continuously re-circulated through the system. Fines or small solid materials removed by the ethanol are accumulated in the Rinse Fines Removal System (RFRS), which consists of a holding tank,

grinder screw, and ancillary piping. Solid materials collect at the bottom of the holding tank and are removed by a grinder screw. The solid materials from the RFRS are collected in a 55-gallon drum for off-site treatment by incineration or energy recovery.

At the end of a workday, or when the ethanol becomes spent and unusable, the ethanol is pumped from the RFRS holding tank to the 350-gallon holding/test tank where it is sampled and screened for radioactivity. As with the LSF, the ethanol rinsate is containerized and stored on site to decay or is transferred to the 3,000-gallon storage tank in the Processing and Storage Building for subsequent shipment to an authorized mixed waste facility.

As a result of the above process, the Facility generates clean glass and plastic, packing materials, plastic bags/container liners, miscellaneous trash, liquids, and empty containers. All of these items are tested for radioactivity to assure that radioactivity is at allowable levels or to determine if reprocessing, decay storage, or additional treatment is required. After visually checking for fluids, the glass and plastic vials are bulked in trailers for shipment and subsequent treatment by incineration or energy recovery.

Alternative LSV Final Processing

In certain cases, radiological conditions exist that make final processing of generated LSV solids and liquid more prudent by conducting them manually. Conducting final processing steps manually drastically minimizes secondary waste generation involved with decontamination protocols.

LSV are processed (crushed) as dictated above; however, both the liquids and solids are collected in final containers and segregated per generator. The residual wastes are gravity drained, using a pneumatic drum lift and a perforated lid. Normal rinseate (e.g., ethanol) is added to the container (if hazardous initially), and the waste is again drained. This action is repeated until all visual signs of any original scintillation fluid are removed. Physically this is verified through the draining effort. The containers are maintained in an upright draining position until free liquids are removed to the best extent possible. The residual waste liquid and solid by-products are then managed in accordance with typical regulatory requirements outlined above.

See Figures I-13 and I-14 for an overview of the LSV processing operation. Figure I-15 illustrates the general layout of the LSV processing area. Equipment details for the LSV processing area are provided in Figures I-16, I-17, and I-18.

Technical/regulatory information regarding the sufficiency of the LSV equipment for its intended use, as well as containment calculations, is included as Appendix I-G and Table I-5, respectively.

Repackaging

Repacking, such as lab pack processing and dry activated waste (DAW) consolidation, will also be conducted in the LSV processing area. The Storage Warehouse is currently used for storage of hazardous wastes, non-hazardous wastes, universal wastes received from off-site, and for used oil transfer operations.

Chemical Extraction, Physical Extraction, and Micro-encapsulation (Including Debris Treatment)

Chemical extraction, physical extraction, and micro-encapsulation (including debris treatment) will also be conducted occasionally on hazardous debris in the LSV Processing Area. These activities will consist of the use of high-pressure steam and water sprays or submersion baths, using surfactants, acids, bases, and detergents to remove hazardous contaminants from debris surfaces or to remove contaminated debris surface layers. Decontaminated materials will be shipped off site for reuse, reclamation, or disposal depending upon the nature of the material. The contaminated media or rinsate generated as a result of the decontamination process will be properly characterized, containerized, and, if hazardous, manifested and shipped off site to an authorized treatment, storage, and/or disposal facility. If appropriate, contaminated media and/or treatment residuals may be subjected to microencapsulation or stabilization and fixation prior to shipment to an authorized disposal facility.

As indicated in Figure I-19, the appropriate debris treatment method depends on the physical characteristics of the debris to be treated. For example, debris with a porous surface would require chemical extraction, and non-porous debris is suitable for physical extraction. The debris treatment methods (alternative treatment standards) are technologically simple, performance- oriented, and specified at 40 CFR 268.45, Table 2. PFF will conduct all debris treatment in accordance with the applicable requirements of 40 CFR 268.45.

Appropriate containment is furnished for the above treatment activities. Additional details regarding debris treatment operations are provided in Appendix I-H.

Lab Pack Decommissioning

Some lab packs are received, stored, and then sent to an offsite TSD facility or stored for on-site treatment.

Lab packs of commonly received non-hazardous or hazardous only materials such as acids, bases, or oxidizers are processed by combining compatible materials into a larger lab pack before shipping off-site for disposal or for on-site treatment. An example of this would be combining six 5-gallon lab packs of small containers of solid oxidizers (e.g.

sodium nitrate, potassium permanganate) into a 30-gallon container. This provides a degree of waste minimization as well as disposal cost reduction.

Solid Waste Management

Solid, non-hazardous wastes such as rags, paper, cardboard, plastic oily sludges, oil-contaminated absorbents, crushed glass, and plastic containers are also received at the Warehouse for bulking and shipment to an authorized off-site facility. These wastes are managed by simply bulking them into a roll-off container up to 30 cubic yards in size lined with 6-mil plastic sheeting. The roll-off containers are then covered with a tight tarpaulin and staged adjacent to the Process and Storage Building (PSB).

Miscellaneous Waste Storage and Transfer

Used oil, (including used oil regulated under 40 CFR 279), used oil filters, mercury-containing lamps (PFF is registered with the Florida Department of Environmental Protection to operate as a consolidation point for recyclable mercury-containing lamps and devices.), used antifreeze, and other miscellaneous non-hazardous wastes will be received, bulked, and stored in the Warehouse. Spent mercury-containing lamps will be managed in accordance with Chapter 62-737, F.A.C. The mercury-containing lamp storage (Universal Waste Storage) location is indicated on Figure I-15.

Container Storage

PFF receives and stores up to 54,340 gallons (988 drum equivalents) in this area. See Figure I-15 for aisle and drum storage layout. Additional details regarding container management practices are provided in Part II Section B of this permit application. The Facility may store non-hazardous wastes and radioactive-only wastes in this container storage area.

Fuel Blending Activity

Fuel blending of mixed waste lab packs will be performed as described in the subsection titled "Fuel Blending" for the Process and Storage Building.

Mercury Amalgamation

This treatment will amalgamate liquid elementary mercury, which results in a non-liquid amalgam that is non-RCRA regulated material. Amalgamation is specified in 40 CFR 268.40 as the technology-based land disposal treatment standard for certain hazardous wastes. The treatment will consist of mixing a small batch (i.e., up to five gallons) of

waste with inorganic reagents such as copper, zinc, nickel, gold, and/or sulfur in a portable unit (i.e., container). A detailed description of this process is contained in Appendix I-D.

Non-elementary Neutralization

Perma-Fix has performed elementary neutralization of mixed wastes for several customers in the past. PFF also performs non-elementary neutralization in a portable 300-gallon tank or in containers, if quantities to be treated are small. A detailed description of the process is contained in Appendix I-E.

Treatment Using a Drum Rotator

This treatment (i.e., solvent extraction) is described in the PF-II Process of this section. The treatment pre-conditions the waste for the PF-II process or is used to provide the alternate debris treatment standards under chemical extraction.

Deactivation of D003 Wastes

This process will be conducted in a nitrogen atmosphere in a glove box for highly dangerous waste to human health (e.g., highly radioactive wastes). See Appendix I-F for process description. This treatment will also be performed in small containers without using the glove box or nitrogen blanket for wastes that do not pose a high health hazard.

D.3 ESTIMATED OPERATIONAL LIFE OF FACILITY

It is anticipated that the PFF Facility will remain in operation at least until the year 2050.

D.4 WASTE TYPES

During the course of the waste management activities described in this section, PFF may generate a variety of hazardous wastes including spent solvent/water mixtures used to rinse and decontaminate equipment and debris, soiled personal protective equipment, treatment residuals, and other incidental wastes. PFF will comply with the applicable requirements of 40 CFR 260-268, 270 (hazardous waste) and 279 (used oil), as well as Chapter 62-710, F.A.C (used oil), Chapter 62- 730, F.A.C. (hazardous waste), and Chapter 62-740, F.A.C. (petroleum contact water) when managing these on-site generated wastes. The Facility will not engage in any waste generation activity other than that described in this and the preceding paragraphs. A list of permitted waste codes are included in Table I-6.

Definition of Mixed Wastes

Mixed wastes are wastes that are regulated by two separate federal agencies, the U.S. Environmental Protection Agency (EPA) and U.S. Nuclear Regulatory Commission (NRC). Mixed wastes contain hazardous waste subject to

EPA regulation as well as radioactive materials that are regulated by the NRC. The DEP has been delegated authority to administer the RCRA program in the state. The NRC has an agreement with the State of Florida, Department of Health, Bureau of Radiation Control to carry out the regulatory functions regarding radioactive waste management, environmental concerns, and employee safety at this facility. There are several waste streams described in the hazardous waste permit (i.e., hazardous waste fuels, metals, etc.) that may also contain radioactive materials. PFF understands that these wastes must be handled according to applicable hazardous waste management requirements and Bureau of Radiation Control regulations for mixed wastes. For purposes of this permit application, references to hazardous wastes may also include mixed wastes. There are certain situations where mixed wastes are specifically addressed. These are as follows:

a) The 3,000-gallon tank in which only mixed wastes will be temporarily blended and stored.

b) The closure plan that includes provisions for disposal for mixed wastes.

c) The authorized storage of mixed (hazardous/radioactive) wastes on-site longer than one year may occur pursuant to the facility's radioactive materials license. This license allows PFF to "decay" short-lived radioactive wastes and to perform research and work on the development of treatment options for mixed waste. These activities may take up to 3 years.

This initial discussion of hazardous and mixed wastes provides an overall definition of the potential wastes on site. For purposes of the review of this permit application, the term "hazardous wastes" or "wastes" includes mixed wastes unless otherwise specified.

PFF is submitting this permit application in order to:

1. Include thermal treatment of PCBs, condensing and holding of vaporized organic constituents, and activated carbon capture of non-condensed regulated organic and inorganic constituents in the PF-II system.

Wastes Managed and Waste Management Activities

The waste managed at the facility will come from a variety of sources, including medical and research institutions, government agencies, paint and coatings manufacturers and users, solvent users, and other industries that generate hazardous wastes. Waste received will come from Large Quantity, Small Quantity, and Conditionally Exempt Small Quantity Generators, or from other treatment and storage facilities. In addition, waste collected during various county or other household hazardous waste collection campaigns will be managed at the Facility.

The following information generally describes the waste management activities that are being renewed pending permit approval. A summary of all treatment codes for treatment conducted by building is provided in Table I-3. Process codes are included in Table I-4.

- The Treatment and Operations Building (TOB) is used to receive, store, and treat mixed wastes via thermal desorption, chemical oxidation/reduction, solvent extraction, stabilization, blending, bulking, solidification and microencapsulation. Future solvent recycling (RCRA exempt) via a solvent recovery distillation unit is also planned for this area. The current PF-II treatment system features a batch fed and externally heated retort chamber thermal desorption unit that will be fitted with a carbon adsorber to treat the non-condensable organic and inorganic vapors downstream of the refrigerated condensers and prior to the RTO.
- The Processing and Storage Building is used to receive, store, and blend hazardous and mixed waste into fuel for use at offsite facilities and to bulk wastes for transfer to offsite treatment and/or disposal facilities.
- The Liquid Scintillation Vials (LSV) Processing and Waste Storage Warehouse, in addition to the storage of hazardous and non-hazardous waste, is used to receive, empty, and decontaminate LSVs and other small containers, and to treat hazardous waste debris via chemical and physical extraction (e.g., water washing, liquid-phase solvent extraction).
- The Treatment and Operations Building, Processing and Storage Building, and LSV Processing and Waste Storage Warehouse are used to store hazardous and non-hazardous waste.

The conduct of these activities will be driven by the nature of the waste streams received at the Facility. Figures I-8, I-9, I-19, and I-20 are decision trees illustrating how incoming waste streams are evaluated and assignment made for their treatment and storage on-site and final disposal off-site.

As shown in Figure I-20 and addressed in detail in the Facility Waste Analysis Plan (include as Part II of this application), all incoming waste is subjected to inspection and/or sampling to verify conformance with the generator waste profile. The generator profile, the Land Disposal Restriction (LDR) form, and the inspection and/and sampling results performed by the Facility allow for the determination of the waste stream's acceptability and proper management at the Facility.

Secondary Waste Management for PCB Wastes Treated in the PF-II System

Recovered Liquids

Condensed water and contaminants generated during the batch thermal treatment are collected within the process tanks. The tank liquids are manually transferred by pump to portable containers (e.g., drums). Liquids are analyzed as unique secondary wastes and treated according to the hazardous characteristics (organics and metals), PCB concentrations and specific radiological parameters. Separated RCRA organic compounds and PCBs are thermally treated for destruction independent of the thermal desorption process. Hazardous metal constituents are treated by stabilization/fixation to immobilize the metals for land disposal compliance.

Treated Batch Waste Solids

As previously noted, the treated batch solid waste is containerized and sampled for analytical characterization to determine organic numerical treatment levels and regulated metals remaining for treatment. Containers are stored pending the analytical data review and disposition decision:

- Thermal desorption re-treatment of the solids for specific organic contaminants of concern.
- Stabilization/solidification of the solids for RCRA metals.
- Further off-site treatment or storage required; profiling and shipment to off-site TSDF; or
- No further treatment required; profiling and shipment for off-site disposal or return to generator.

PART I

TABLES

TABLE I-1. CURRENT AND PENDING PERMITS
RCRA PERMIT RENEWAL APPLICATION
PERMA-FIX FLORIDA, 1940 NW 67TH PLACE, GAINESVILLE, FLORIDA

NAME OF PERMIT	AGENCY	PERMIT NUMBER	DATE ISSUED	EXPIRATION DATE	RENEWAL SUBMITTAL
RCRA Permit	DEP	17680-012-HO	6/3/2020	6/8/2025	
NPDES Stormwater Permit	DEP	FLR05B553	1/30/2021	1/29/2026	
Air Permit	DEP	0010113-008-AO	2/3/2021	2/3/2026	
Biomedical Waste Storage	FDOH	01-64-01666	10/1/2024	9/30/2025	
Restricted Rx Drug Reverse Distribution/Destruction (See Note 2.)	FDOH	5310	4/30/2024	5/31/2026	
PCB Storage Approval	EPA	FLD980711071	7/24/2013	7/23/2023	12/6/2022
Radioactive Material License	FDOH	2598-1	6/19/2023	2/28/2025	

Notes:
1. Corresponds with DEP Form 62-730.900(2)(a) Item A.19 Existing or Pending Environmental Permits.

TABLE I-2. SUMMARY OF TREATMENT METHODS AND STORAGE LOCATIONS
RCRA PERMIT RENEWAL APPLICATION
PERMA-FIX FLORIDA, 1940 NW 67TH PLACE, GAINESVILLE, FLORIDA

Waste Description	PF-I®	PF-II®	Physical Extraction	Chemical Extraction	Micro-Encapsulation	Chemical Oxidation/ Reduction	Phase Separation	Deactivation	Mercury Amalgamation	Neutralization	Storage Location
Liquid Scintillation Fluid											T, TOB, LSW
Energy-Bearing Pumpable Liquid							X				PSB, LSW
Energy-Bearing Pumpable Liquid with High Water Content							X				PSB, LSW
Hazardous Wastewater											PSB, TOB, LSW
D002 Wastes	X				X					X	TOB, PSB, LSW
D003 Wastes	X	X						X			TOB, PSB, LSW
D004-D011 Aqueous Waste with No Organics >LDR Levels	X				X						TOB, PSB, LSW
Medical/Pharmaceutical Waste											PSB
D004-D011 Non Aqueous Waste with No Organics >LDR Levels	X				X						PSB, LSW, TOB
D004-D011 Wastes with Organics >LDR Levels (includes D012-D043 and F001-F005)	X	X									TOB, PSB, LSW
Debris (non-porous)			X								TOB, PSB, LSW
Debris (porous)				X							TOB, PSB, LSW
Debris Treatment Residuals	X	X			X						TOB, PSB, LSW
F, P, and U-Listed Flammable Liquids		X									PSB, LSW, TOB
F, P, and U-Listed Toxics	X	X	X	X	X	X	X	X		X	PSB, TOB, LSW
F, P, and U-Listed Corrosives	X									X	TOB, PSB, LSW
Polychlorinated Biphenyls (PCBs)		**X**									**TOB**
Mercury-Containing Wastes		**X**							X		TOB, LSW

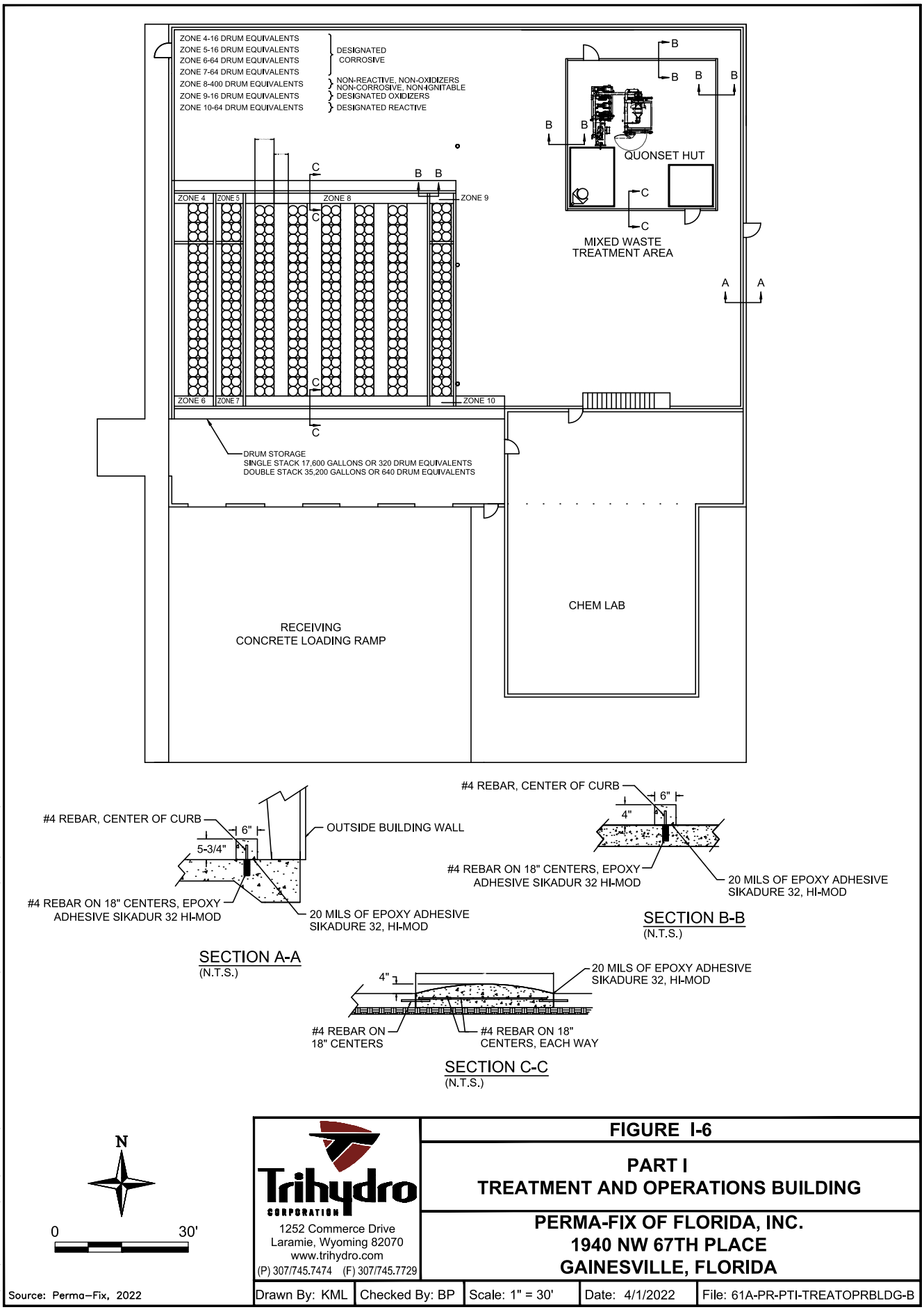
Notes:
T - aboveground storage tank
PSB - Processing and Storage Building
TOB - Treatment and Operation Building
LSW - Liquid Scintillation Vials (LSV) Processing and Waste Storage Warehouse
See Figures 5, 8, and 11 for Part I.

TABLE I-6. PERMITTED WASTE CODES FOR STORAGE AND TREATMENT (EXCEPT FOR TANK STORAGE)
RCRA PERMIT RENEWAL APPLICATION
PERMA-FIX FLORIDA, 1940 NW 67TH PLACE, GAINESVILLE, FLORIDA

Permitted Waste Codes for Storage and Treatment (except for tank storage)											
D001	D039	K062	P030	P074	P122	U020	U060	U099	U140	U179	U221
D002	D040	K086	P031	P075	P123	U021	U061	U101	U141	U180	U222
D003	D041	K156	P033	P077	P127	U022	U062	U102	U142	U181	U223
D004	D042	K157	P034	P078	P128	U023	U063	U103	U143	U182	U225
D005	D043	K158	P036	P081	P185	U024	U064	U105	U144	U183	U226
D006	F001	K159	P037	P082	P188	U025	U066	U106	U145	U184	U227
D007	F002	K161	P038	P084	P189	U026	U067	U107	U146	U185	U228
D008	F003	K169	P039	P085	P190	U027	U068	U108	U147	U186	U234
D009	F004	K170	P040	P087	P191	U028	U069	U109	U148	U187	U235
D010	F005	K171	P041	P088	P192	U029	U070	U110	U149	U188	U236
D011	F006	K172	P042	P089	P194	U030	U071	U111	U150	U189	U237
D012	F007	P001	P043	P092	P196	U031	U072	U112	U151	U190	U238
D013	F008	P002	P044	P093	P197	U032	U073	U113	U152	U191	U239
D014	F009	P003	P045	P094	P198	U033	U074	U114	U153	U192	U240
D015	F010	P004	P046	P095	P199	U034	U075	U115	U154	U193	U243
D016	F011	P005	P047	P096	P201	U035	U076	U116	U155	U194	U244
D017	F012	P006	P048	P097	P202	U036	U077	U117	U156	U196	U246
D018	F019	P007	P049	P098	P203	U037	U078	U118	U157	U197	U247
D019	F020	P008	P050	P099	P204	U038	U079	U119	U158	U200	U248
D020	F021	P009	P051	P101	P205	U039	U080	U120	U159	U201	U249
D021	F022	P010	P054	P102	U001	U041	U081	U121	U160	U202	U271
D022	F023	P011	P056	P103	U002	U042	U082	U122	U161	U203	U278
D023	F026	P012	P057	P104	U003	U043	U083	U123	U162	U204	U279
D024	F027	P013	P058	P105	U004	U044	U084	U124	U163	U205	U280
D025	F028	P014	P059	P106	U005	U045	U085	U125	U164	U206	U328
D026	F032	P015	P060	P108	U006	U046	U086	U126	U165	U207	U353
D027	F034	P016	P062	P109	U007	U047	U087	U127	U166	U208	U359
D028	F035	P017	P063	P110	U008	U048	U088	U128	U167	U209	U364
D029	F037	P018	P064	P111	U009	U049	U089	U129	U168	U210	U367
D030	F038	P020	P065	P112	U010	U050	U090	U130	U169	U211	U372
D031	F039	P021	P066	P113	U011	U051	U091	U131	U170	U213	U373
D032	H011	P022	P067	P114	U012	U052	U092	U132	U171	U214	U387
D033	K001	P023	P068	P115	U014	U053	U093	U133	U172	U215	U389
D034	K048	P024	P069	P116	U015	U055	U094	U134	U173	U216	U394
D035	K049	P026	P070	P118	U016	U056	U095	U135	U174	U217	U395
D036	K050	P027	P071	P119	U017	U057	U096	U136	U176	U218	U404
D037	K051	P028	P072	P120	U018	U058	U097	U137	U177	U219	U409
D038	K052	P029	P073	P121	U019	U059	U098	U138	U178	U220	U410
	K061										U411

PART I

FIGURES



Source: Perma-Fix, 2022

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

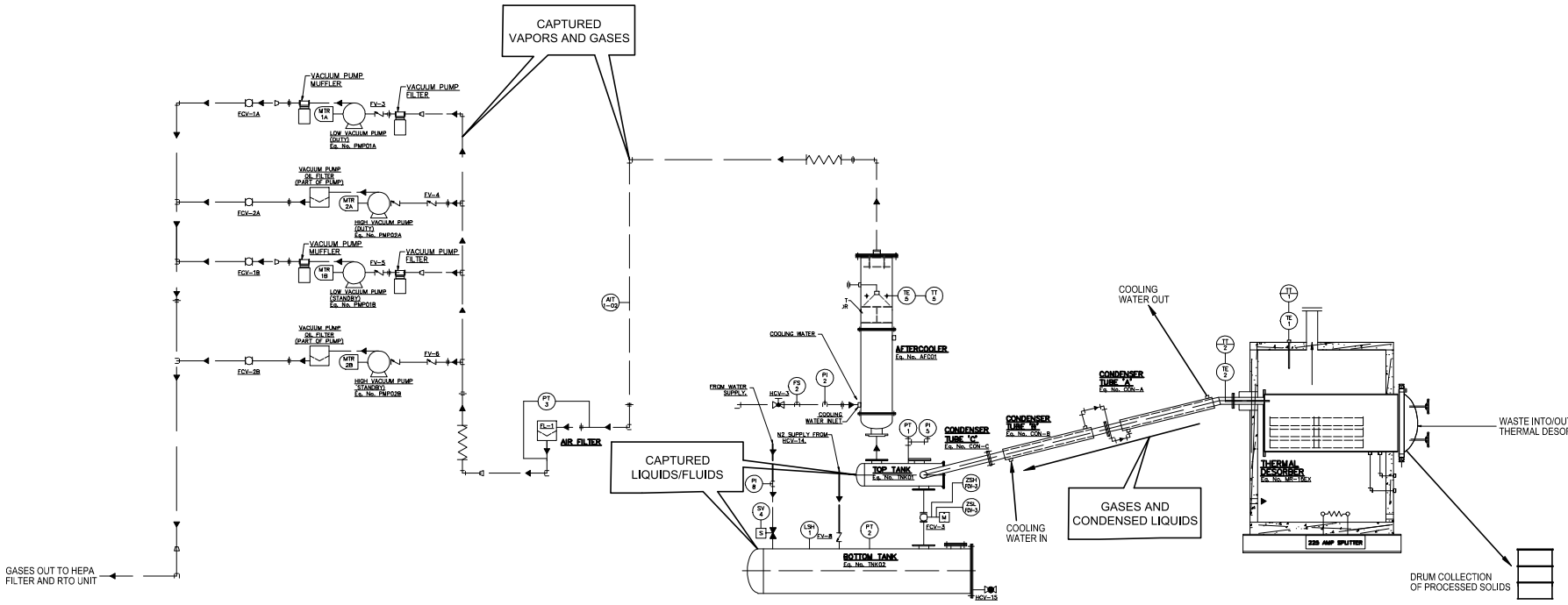
FIGURE I-6

PART I
TREATMENT AND OPERATIONS BUILDING

PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: KML	Checked By: BP	Scale: 1" = 30'	Date: 4/1/2022	File: 61A-PR-PTI-TREATOPRBLDG-B

M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-TREATOPRBLDG-B



M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-PFI-PFII-PFD-B

Source: Perma-Fix, 2022

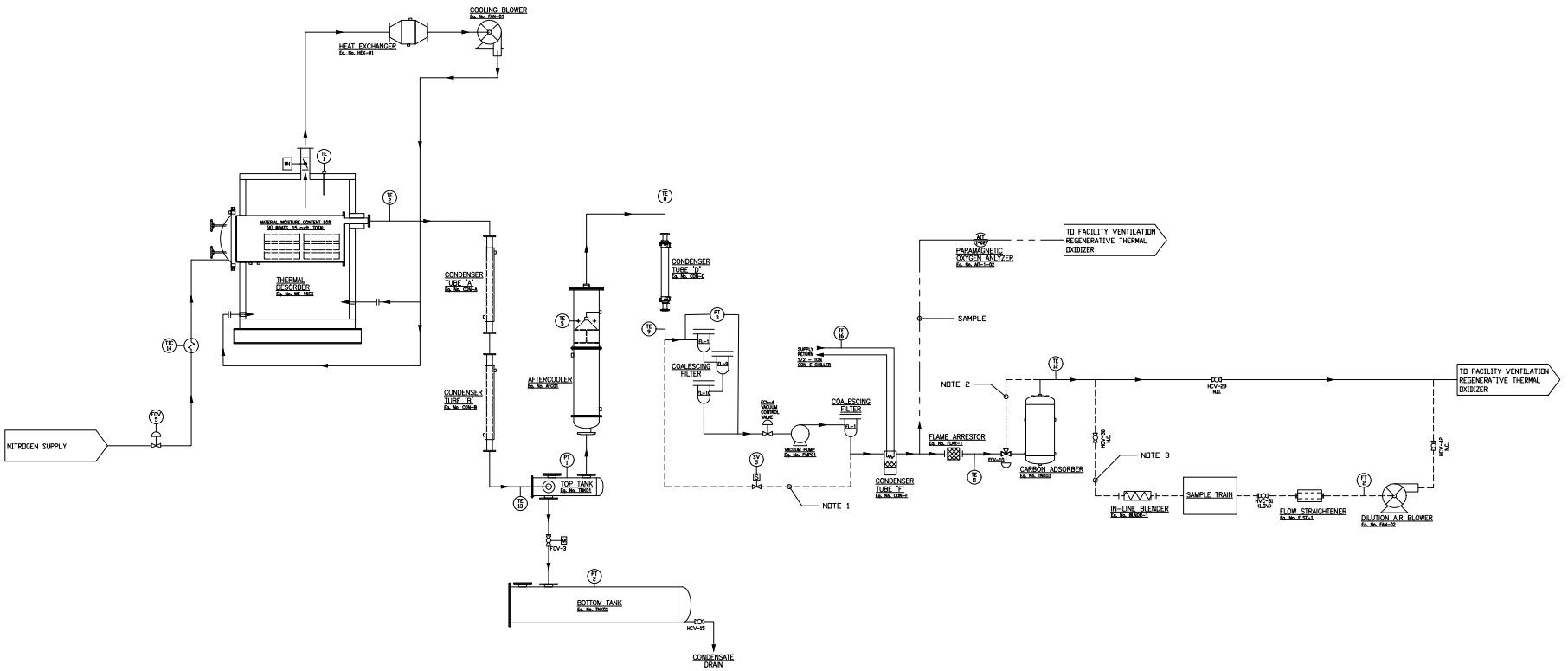
Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE I-7-A

**PART I CURRENT
PF-I AND PF-II
PROCESS FLOW DIAGRAM**

**PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA**

Drawn By: KML	Checked By: CE	Scale: NONE	Date: 4/6/2022	File: 61A-PR-PTI-PFI-PFII-PFD-B



M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-PROCSCHEM-B

Source: Perma-Fix, 2022

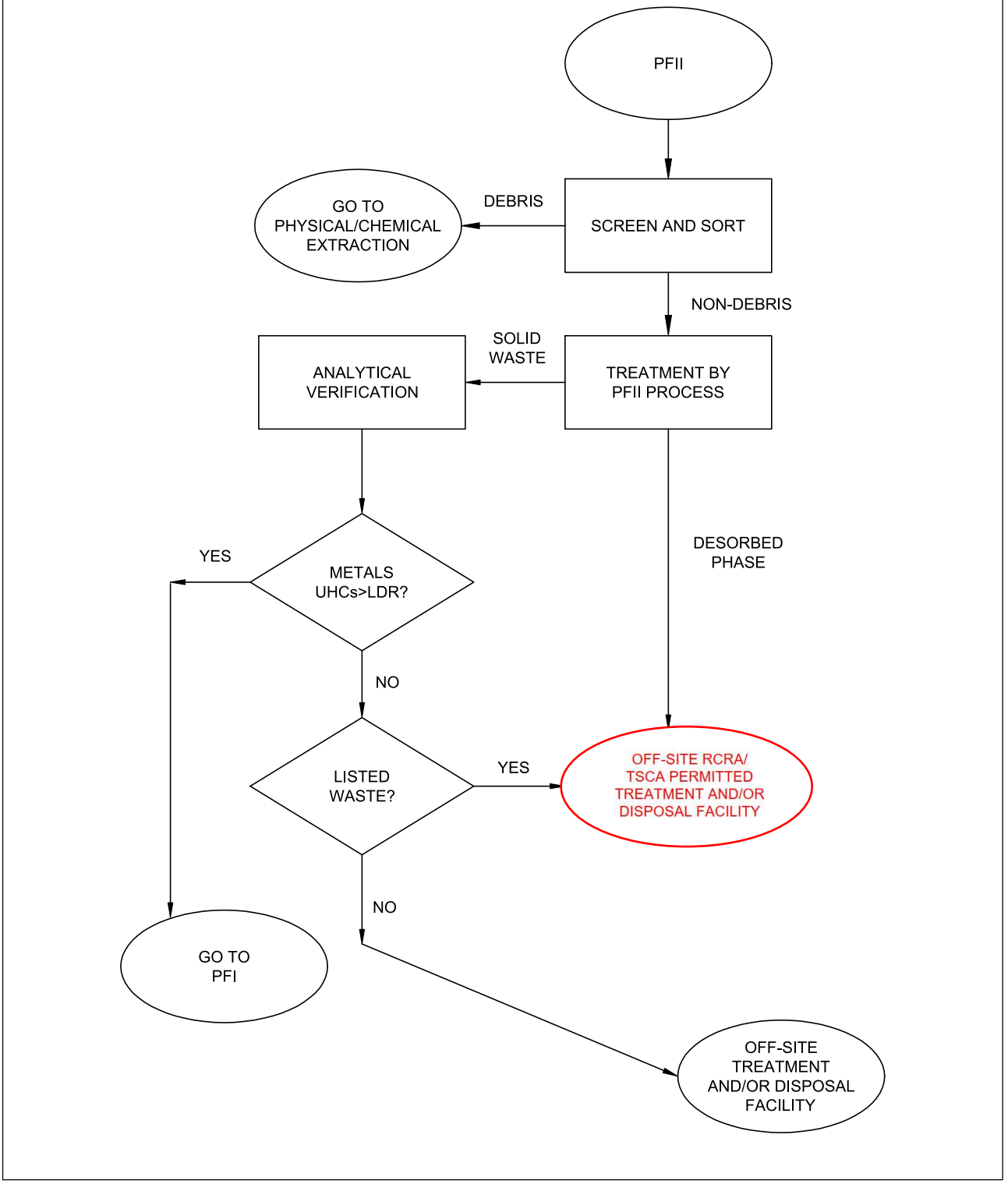
Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE I-7-B

PART I PROPOSED PF-I AND PF-II PROCESS FLOW DIAGRAM

PERMA-FIX OF FLORIDA, INC. 1940 NW 67TH PLACE GAINESVILLE, FLORIDA

Drawn By:	Checked By:	Scale:	Date:	File:
KML	BP	NONE	4/6/2022	61A-PR-PTI-PROCSCHEM-B



NOTES:

1. UHCs = UNDERLYING HAZARDOUS CONSTITUENTS
2. LDR = LAND DISPOSAL RESTRICTION LEVELS

Source: Perma-Fix, 2014

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

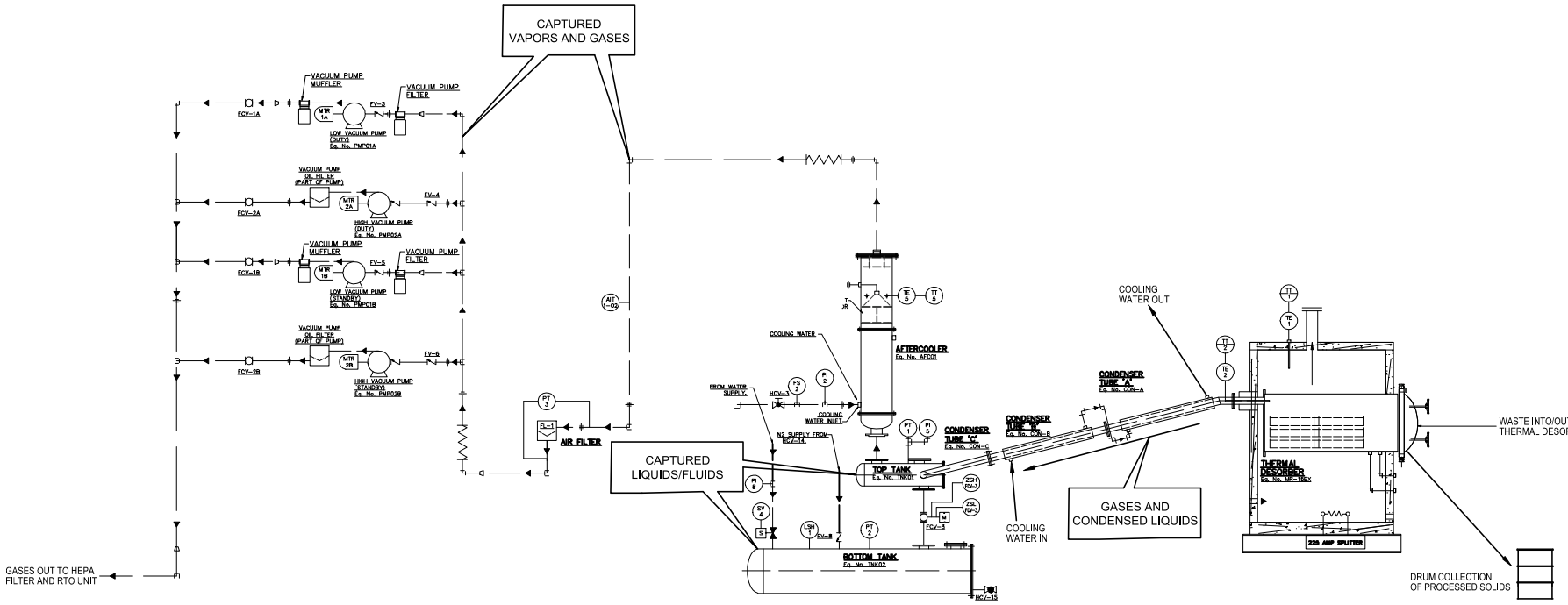
FIGURE I-9

PART I
WASTE MANAGEMENT DECISION TREE: PF-II

PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: REP	Checked By: CE	Scale: NONE	Date: 10/4/19	File: 61A-PR-PTI-WASTEMANDECTREE-PF-II

\\TRIHYDRO.COM\CLIENTS\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\PART_I\61A-PR-PTI-WASTEMANDECTREE-PF-II



M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-PROCSCHEM-B

Source: Perma-Fix, 2022

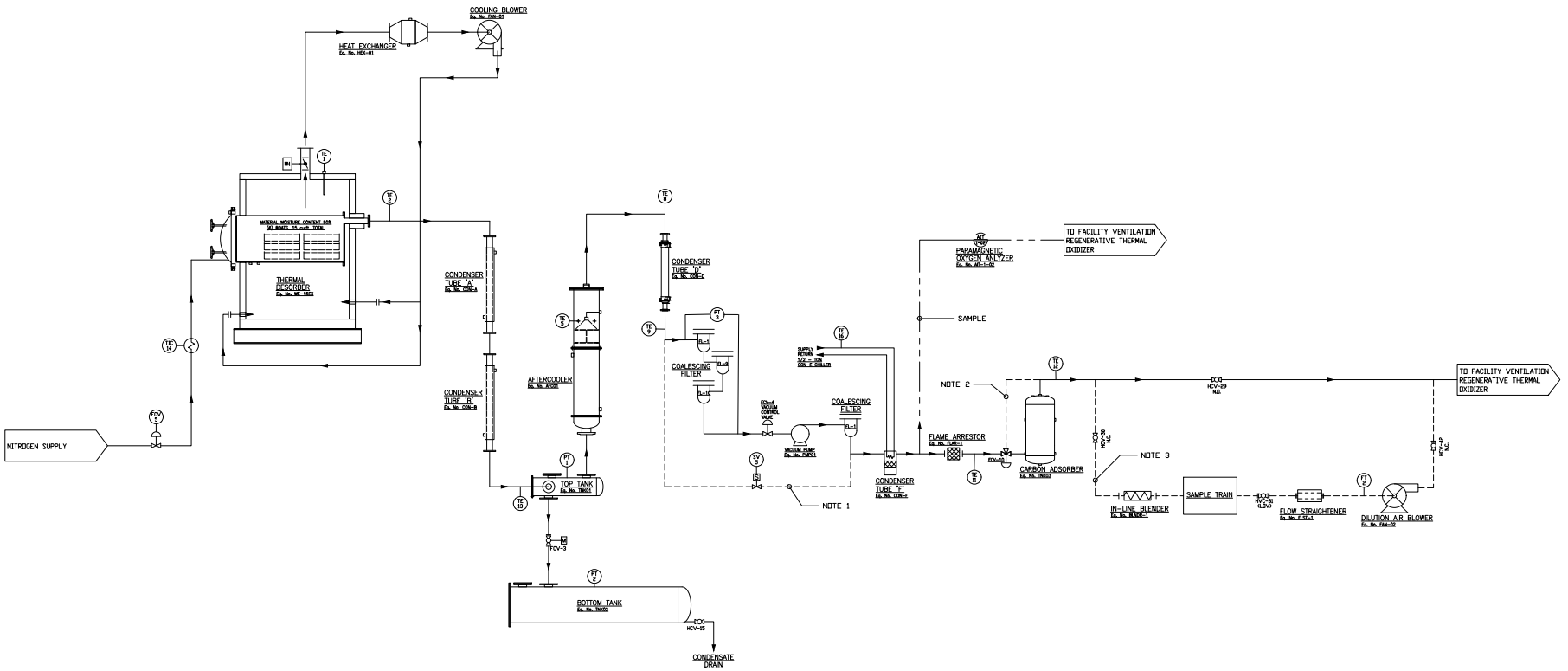
FIGURE I-11-A

PART I CURRENT PROCESS SCHEMATIC

PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

Drawn By: KML	Checked By: BP	Scale: NONE	Date: 4/6/2022	File: 61A-PR-PTI-PROCSCHEM-B



M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-PROCSCHEM-B

Source: Perma-Fix, 2022

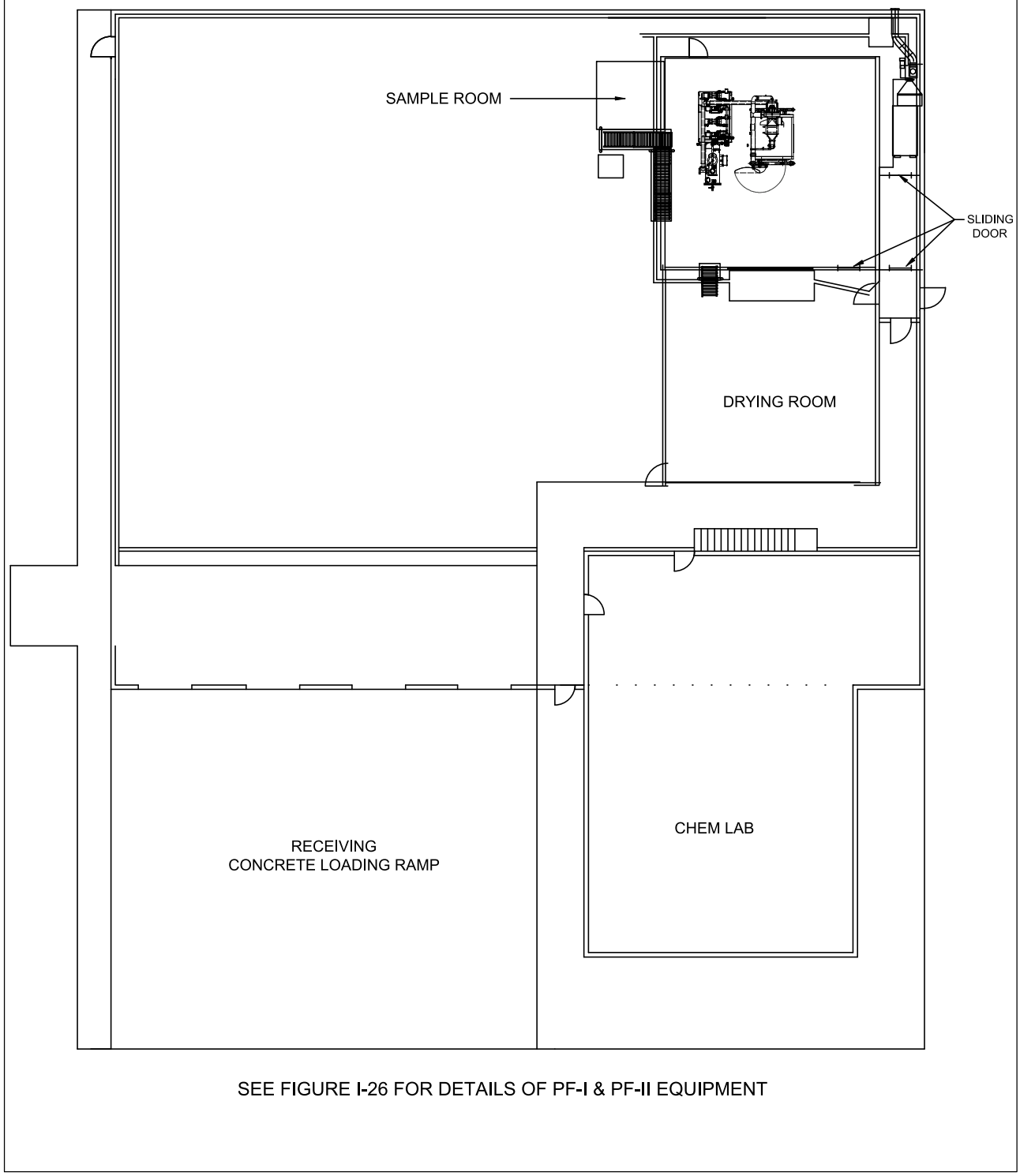
Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE I-11-B

PART I PROPOSED PROCESS SCHEMATIC

PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: KML	Checked By: BP	Scale: NONE	Date: 4/6/2022	File: 61A-PR-PTI-PROCSCHEM-B



SEE FIGURE I-26 FOR DETAILS OF PF-I & PF-II EQUIPMENT

N

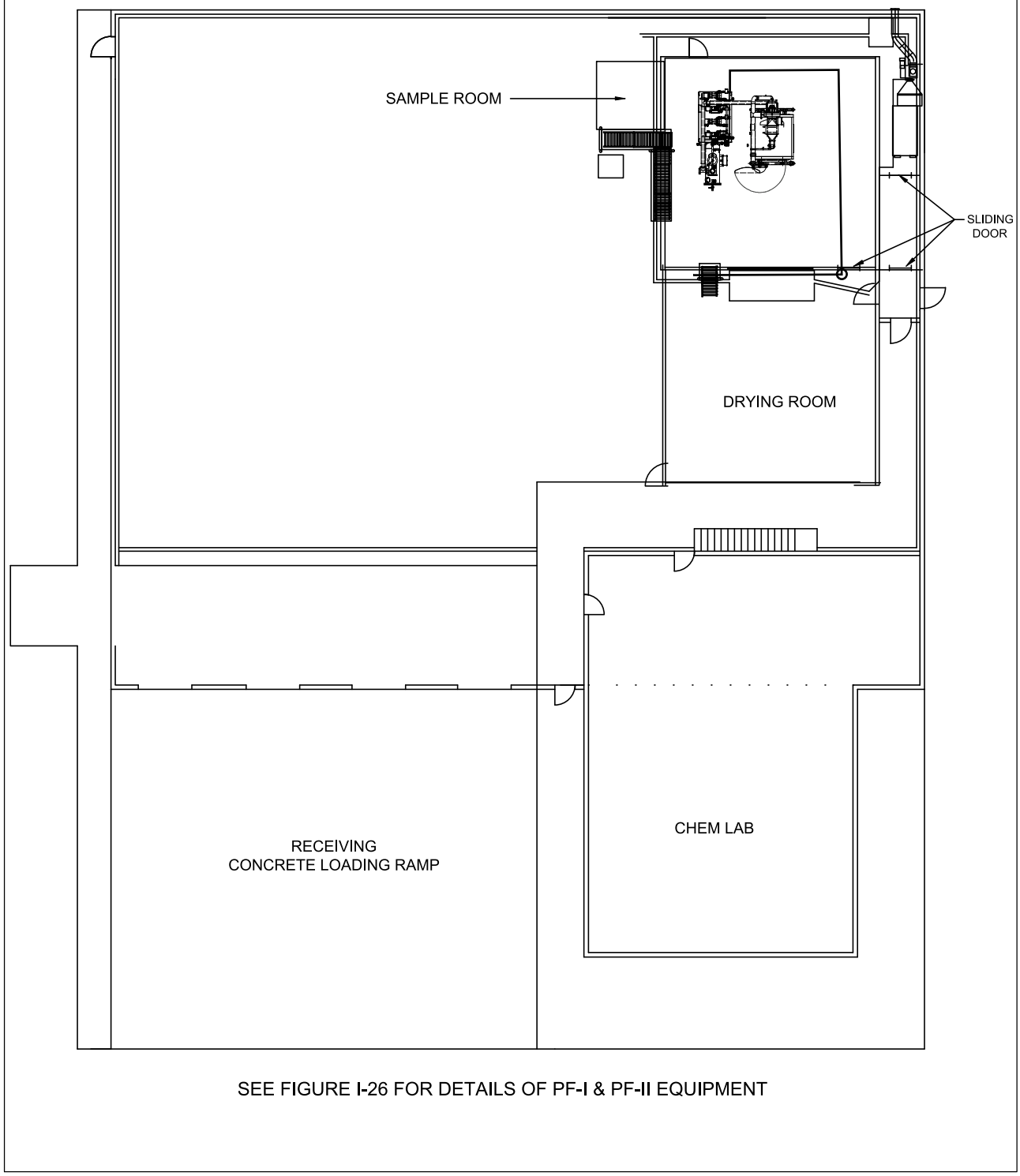
Source: Perma-Fix, 2022

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE I-24-A
PART I CURRENT EQUIPMENT LAYOUT FOR PF-I AND PF-II (PLAN VIEW)
PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: KML	Checked By: BP	Scale: NONE	Date: 4/6/2022	File: 61A-PR-PTI-EQLAY-PF-PLANVIEW-B

M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-EQLAY-PF-PLANVIEW-B



SEE FIGURE I-26 FOR DETAILS OF PF-I & PF-II EQUIPMENT

NOTE - ADDITION OF GAC

N

Source: Perma-Fix, 2022

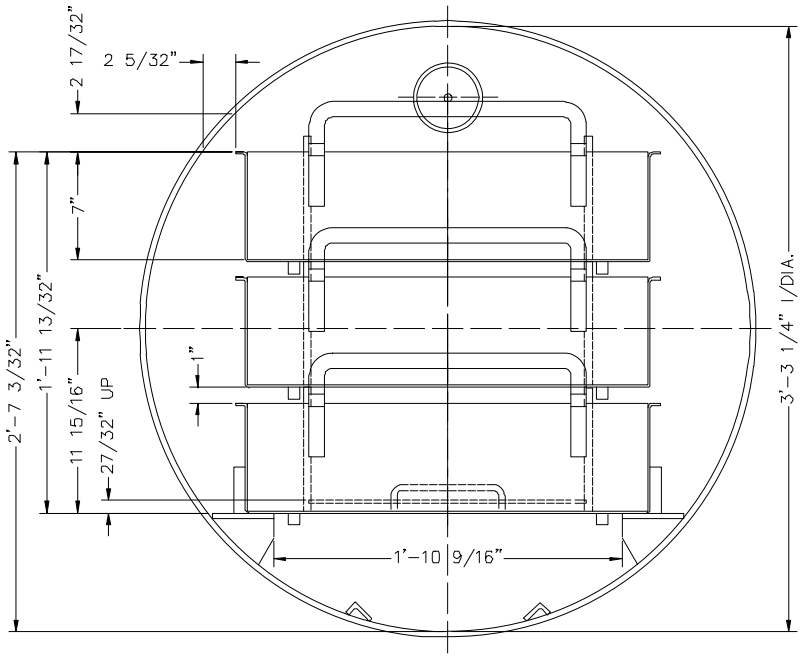
Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE I-24-B
PART I PROPOSED
EQUIPMENT LAYOUT FOR PF-I AND PF-II
(PLAN VIEW)

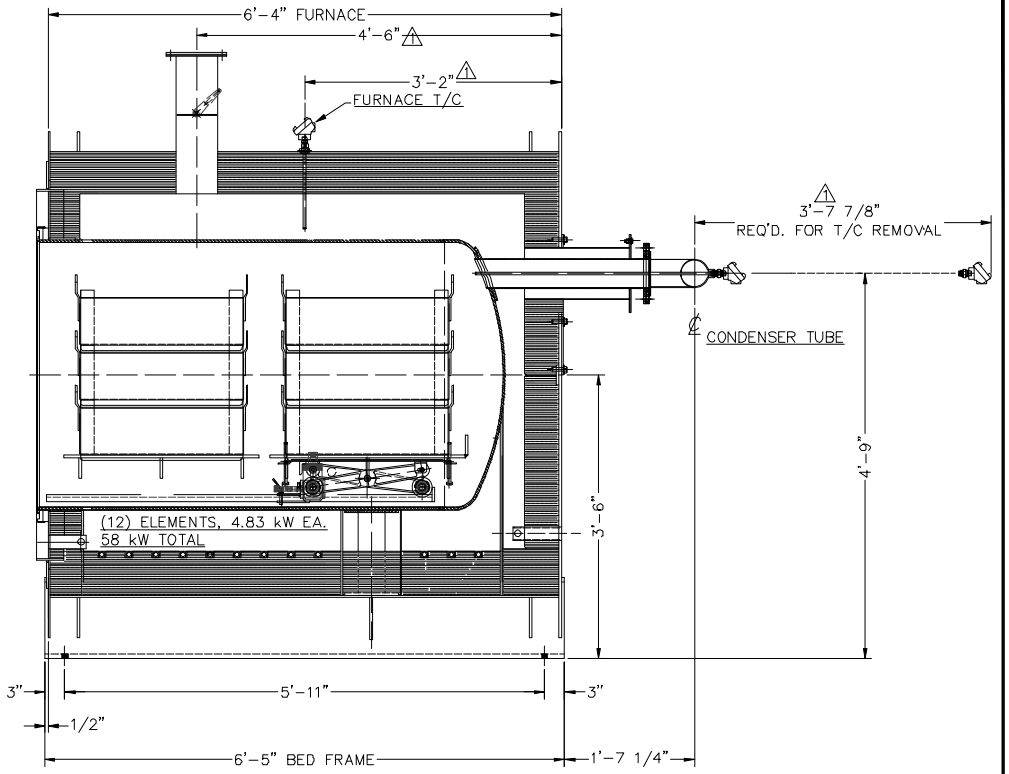
PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: KML	Checked By: BP	Scale: NONE	Date: 4/6/2022	File: 61A-PR-PTI-EQLAY-PF-PLANVIEW-B

M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-EQLAY-PF-PLANVIEW-B



1 **VIEW 'A-A'**
SCALE: NONE



2 **SECTIONAL VIEW**
SCALE: NONE

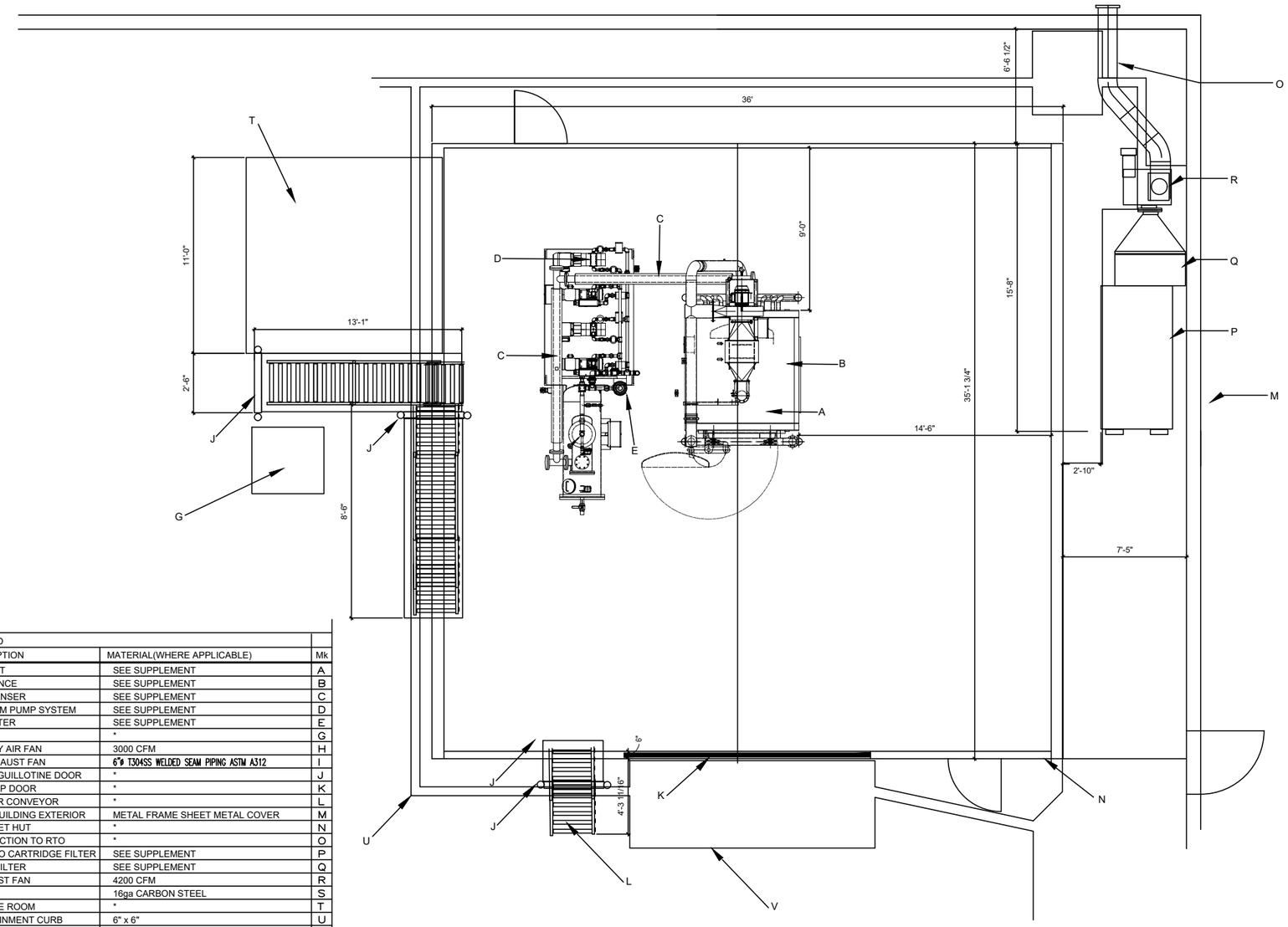
Source: Perma-Fix, 2022

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE I-25
PART I
EQUIPMENT LAYOUT FOR PF-I AND PF-II PROCESS (X-SECTION)
PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: KML	Checked By: BP	Scale: NONE	Date: 4/6/2022	File: 61A-PR-PTI-EQLAY-PF-XSEC-B

M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-EQLAY-PF-XSEC-B



LEGEND		
DESCRIPTION	MATERIAL(WHERE APPLICABLE)	Mk
RETORT	SEE SUPPLEMENT	A
FURNANCE	SEE SUPPLEMENT	B
CONDENSER	SEE SUPPLEMENT	C
VACUUM PUMP SYSTEM	SEE SUPPLEMENT	D
AIR FILTER	SEE SUPPLEMENT	E
SCALE	*	G
SUPPLY AIR FAN	3000 CFM	H
TO EXHAUST FAN	6"ø T304SS WELDED SEAM PIPING ASTM A312	I
DRUM GUILLOTINE DOOR	*	J
ROLL UP DOOR	*	K
ROLLER CONVEYOR	*	L
MAIN BUILDING EXTERIOR	METAL FRAME SHEET METAL COVER	M
QUONSET HUT	*	N
CONNECTION TO RTO	*	O
OPTIFLO CARTRIDGE FILTER	SEE SUPPLEMENT	P
HEPA FILTER	SEE SUPPLEMENT	Q
EXHAUST FAN	4200 CFM	R
FEED	16ga CARBON STEEL	S
SAMPLE ROOM	*	T
CONTAINMENT CURB	6" x 6"	U
CONTAINMENT BERM	6" x 14'	V
*	*	W
*	*	X
*	*	Y
*	*	Z

N

Source: Perma-Fix, 2022

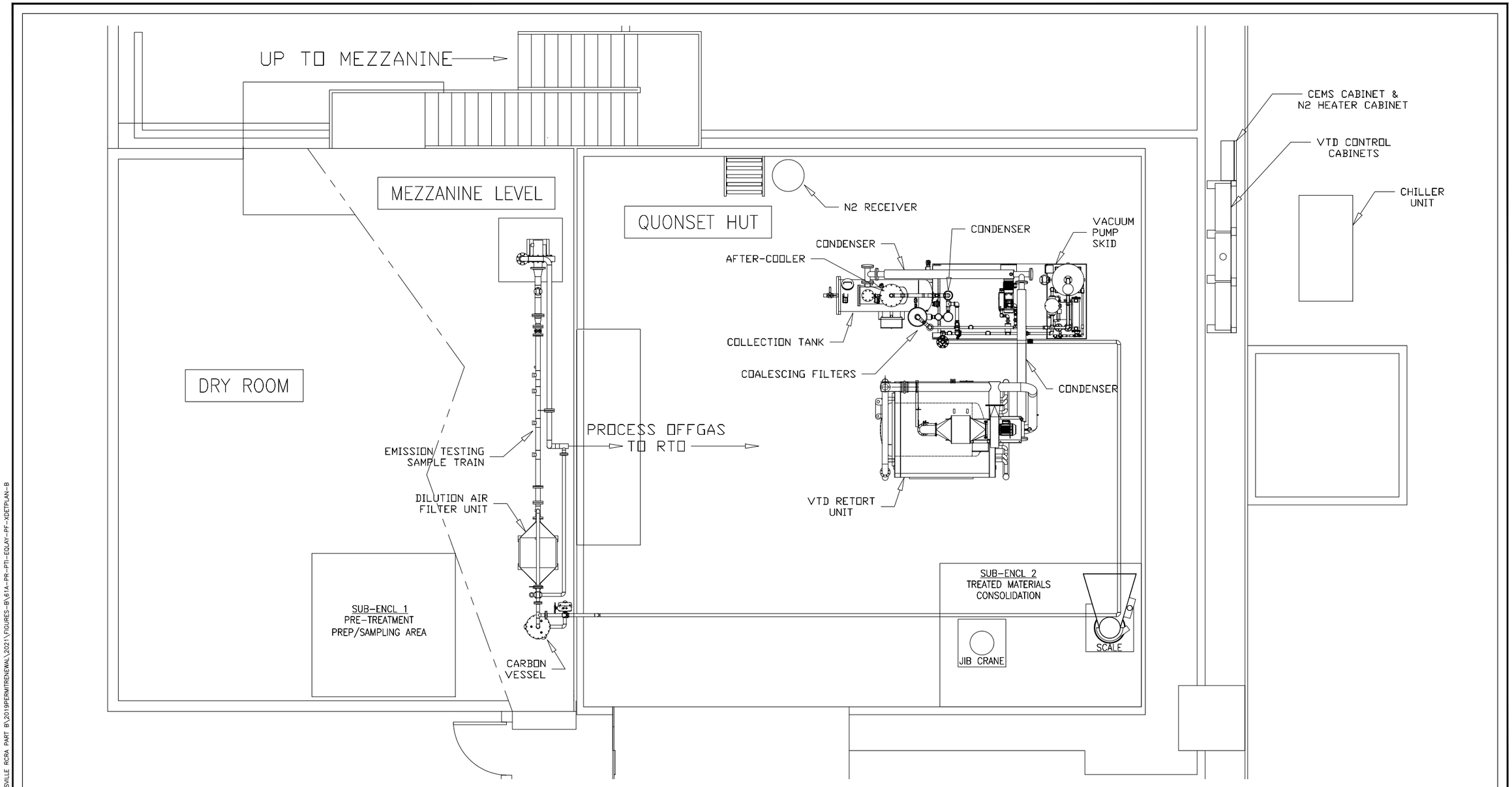
Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE I-26-A
PART I CURRENT
EQUIPMENT LAYOUT FOR PF-I AND PF-II
(DETAIL - PLAN)

PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: KML	Checked By: BP	Scale: NONE	Date: 4/6/2022	File: 61A-PR-PTI-EQLAY-PF-XDETPLAN-B

M:\OTOR\PERMAFIX\OFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-EQLAY-PF-XDETPLAN-B



Source: Perma-Fix, 2022

M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTI-EQLAY-PF-XDETPLAN-B

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE I-26-B
PART I PROPOSED
EQUIPMENT LAYOUT FOR PF-I AND PF-II
(DETAIL - PLAN)
PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: KML	Checked By: BP	Scale: NONE	Date: 4/6/2022	File: 61A-PR-PTI-EQLAY-PF-XDETPLAN-B

PART II

PART II

REVISED RCRA PERMIT RENEWAL APPLICATION

PERMA-FIX OF FLORIDA, INC.

1940 NW 67TH PLACE

GAINESVILLE, FLORIDA 32653

September 20, 2024

Project #: 61A-004-001

SUBMITTED BY: Trihydro Corporation

3740 St. Johns Bluff, Suite 14, Jacksonville, Florida 32224

Table of Contents

Table of Contents (cont.)

PART II

List of Tables

PART II

List of Figures

PART II

List of Figures (cont.)

PART II

List of Appendices

SECTION A. GENERAL

II-A-1. FINANCIAL ASSURANCE DOCUMENTATION

II-A-2. CONTINGENCY PLAN

II-A-3. PERSONNEL TRAINING PROGRAM

II-A-4. WASTE ANALYSIS PLAN

II-A-5. FEDERAL ENVIRONMENTAL LEGISLATION

SECTION B. CONTAINERS

II-B-1. EXAMPLE CONCRETE SEALER/HARDENER SPECIFICATIONS

II-B-2. NELSON BUILDING FLOOR SLAB INSPECTION

SECTION C. TANK SYSTEM

II-C-1. WASTE STORAGE TANK EVALUATION AND CERTIFICATION

II-C-2. FOUNDATION CALCULATIONS

II-C-3. SECONDARY CONTAINMENT CERTIFICATION

II-C-4. EXAMPLE CONCRETE SEALER/HARDENER SPECIFICATIONS

II-C-5. SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

SECTION I. MISCELLANEOUS UNIT

II-I-1. PROPOSED PERMA-FIX II PROCESS

II-I-2. EXAMPLE WASTE PROFILE

II-I-3. EXAMPLE LAND DISPOSAL RESTRICTION AND CERTIFICATION FORM

II-I-4. PF-II EQUIPMENT LIST AND DESCRIPTION

II-I-5. CERTIFICATION REPORT

PART II

List of Appendices (cont.)

SECTION K. CLOSURE PLAN

II-K-1. CLOSURE SAMPLING AND ANALYSIS PLAN

II-K-2. CLOSURE COST ESTIMATE

SECTION P. INFORMATION REGARDING POTENTIAL RELEASES FROM SWMUS

II-P. DEP FORM 62-730.900(2)(C) INFORMATION REGARDING POTENTIAL RELEASES FROM SOLID WASTE MANAGEMENT UNITS

SECTION Q. RCRA FACILITY ASSESSMENT

II-Q. ASSESSMENT REPORT

SECTION S. SUBPART BB REQUIREMENTS FOR EQUIPMENT

II-S-1. SAMPLE FORMS

II-S-2. REFERENCE METHOD 21

SECTION T. CERTIFICATION

II-T. DEP FORM 62-730.900(2)(D) CERTIFICATION

II. PART II

This application has been organized based on the structure found in Florida Department of Environmental Protection (DEP) Hazardous Waste Permit Application (DEP Form 62-730.900(2)(a)). The Part II section includes the specific facility information required as part of the permit application, including Section A General Information, Section B Containers, Section C Tanks, Section I Miscellaneous Units, and Section T Certification.

A GENERAL

A.1 GENERAL INFORMATION

Topographic Contour and Other Required Figures

A topographic contour figure showing a distance of 1,000 feet around the hazardous waste management area at a scale of 1 inch to 200 feet is presented in Figure II-A-1. Site access control including the location of fences and gates is presented in Figure II-A-2. Figure II-A-3 shows the location of site buildings and other structures and loading/unloading areas. City of Gainesville sanitary sewer and water supply schematics are presented in Figure II-A-4. Surface water flow direction is presented in Figures II-A-5. Figure II-A-6 shows the location of hazardous waste units. The site drainage pattern is presented on Figure II-A-7.

Wind Rose

The Iowa State University Iowa Environmental Mesonet (IEM) provides recent climate and wind data for the Gainesville, Florida area. The IEM meteorological data was filtered to provide surface wind data for the five-year period from October 1, 2014 to October 1, 2019 at the Gainesville Regional Airport. The Gainesville Regional Airport site is approximately 5.5 miles southeast of the Perma-Fix of Florida, Inc. facility (PFF). A five-year wind rose for the 2014 to 2019 meteorological data set is presented in Figure II-A-8. The wind direction during the 2014 to 2019 time period was variable. The predominant wind direction is from the east with approximately 30.5 percent of the time winds being from the northeast, east-northeast, east, east-southeast, and southeast directions. Approximately 20 percent of the time the winds were from the west, west- southwest, and southwest.

Traffic Patterns

Traffic pattern, traffic control, and access patterns are identified in Figure II-A-9. The average truck traffic of incoming and outgoing waste is anticipated to be no more than 5 trailers or tanker trucks per day. The road system and parking area have adequate load-bearing capacity to withstand the projected loads. The access route to the plant is from US441 to SR121 to NW 67th Place and then to PFF. US441 and SR121 roadways are capable of truck traffic

carrying in excess of 80,000 pounds. There are no weight restrictions on these roadways. The internal roadway (NW 67 Place) and PFF parking lot are asphalt paved and can withstand truck traffic without difficulty.

A.2 FINANCIAL RESPONSIBILITY

A copy of the financial mechanism used to establish financial assurance for closure of the facility and a copy of the facility liability coverage are attached (see Appendix II-A-1).

A.3 FLOOD MAP

The operational area for the PFF site is located outside of the 100-year flood plain. As shown on Figure I-2 in Part I of this application, portions of the northern and eastern edges of the property have been redrawn to be within the 100-year flood plain. However, permitted activities are not conducted in these areas of the site.

A.4 FACILITY SECURITY

Description of Security

PFF is surrounded by a high-quality chain-linked fence topped with three strands of barbed wire with an overall height of at least six feet. The fence is in good condition and is periodically inspected. Entry into the facility is controlled by gate access. The entrance gates are closed and locked at all times, and only authorized personnel are allowed into the facility.

All facility visitors must enter through the main reception area located in the office building. See Figure II-A-3.

Warning Signs: Entrances to PFF loading, unloading, processing, and storage areas are posted with appropriate signs signifying “Danger - Unauthorized Personnel Keep Out” and “No Smoking”. These signs are visible and legible from a distance of at least 25 feet.

Contingency Plan

A copy of the PFF Contingency Plan is included as Appendix II-A-2.

Description of Procedures, Structures, or Equipment to Prevent Hazards, etc.

In the event of a power failure, all transfer pumps and treatment operations will stop. Automatic check valves prevent reversal of flow of waste in the LSV transfer lines. Operations in the container and tank storage areas and in the treatment areas are rendered safe during a power failure. Nevertheless, potential hazards will be assessed by the PFF Emergency Coordinator and PFF personnel during power outages and once again upon restoration of power.

Emergency exit signs and lighting are provided at critical locations throughout the facility and are powered by battery backup power units. A portable gas- powered electric generator is available for use, if necessary.

Containers of hazardous waste are unloaded from transport trucks into the staging and storage areas located in each of the three buildings where hazardous waste is managed. Special equipment such as non-sparking tools will be used in the flammable hazardous waste management areas. Forklift operators are instructed in proper and safe operation of the forklift and in incident response procedures. See the Contingency Plan and Personnel Training Plan included as Appendix II-A-2 and Appendix II-A-3, respectively, for training and incident response details.

All persons entering hazardous waste management areas are required to wear protective clothing, which is appropriate for the activities to be conducted in those areas. Personal protective equipment (PPE) is selected and used according to the standards and guidelines promulgated by the Occupational Safety and Health Administration (OSHA) and the American Conference of Governmental Industrial Hygienists (ACGIH). The Contingency Plan contains a list of PPE available at PFF. Training in the use of PPE is covered by the Personnel Training Plan.

PFF has been designed to prevent runoff from waste management areas onto other areas of the facility or to the environment (e.g., ground water). Waste management areas are enclosed and/or have sufficient containment to prevent runoff of contaminated water. Rainwater is directed to the on-site retention pond or to a drainage ditch north of the facility. The 3,000- gallon mixed waste storage tank is located inside the Processing and Storage Building in a containment area that is capable of containing 150% of the entire contents of the tank. Curbs and/or storm drains prevent surface drainage from passing through the waste management areas. Adequate containment is also provided for all process areas.

Avoiding the discharge of hazardous materials onto unprotected ground will prevent groundwater contamination. No drains are located within the waste management areas, and no unauthorized materials are released to the sanitary sewer or to surface water runoff. PFF accounts for all hazardous wastes delivered to and removed from the facility through a material accounting system. This includes a generator-specific numbering system to identify, at all times, the current status of each container of material received on-site. PFF tracks each container of material from time of receipt through final disposition. Intermediate and on-site generated waste packages are assigned a dedicated number for tracking purposes. Hazardous waste is stored and managed at the facility in areas equipped with secondary containment to prevent releases to the surrounding environment. In the unlikely event of a spill on unprotected ground from a transportation incident, the procedures outlined in the Contingency Plan would provide for immediate control and removal of hazardous waste spills.

All hazardous wastes received by PFF are assumed to be ignitable or reactive in some fashion and are managed accordingly until determined otherwise by facility personnel through sample analysis or profile review. Appropriate precautions are taken to eliminate sources of ignition including open flames; smoking, cutting, and welding hot surfaces; frictional heat; and spark from in and around the container storage, tank storage, and processing areas. PFF is fenced for security, and smoking is not allowed within the facility.

The hazardous waste storage and treatment areas are operated in accordance with applicable National Fire Protection Association (NFPA) standards. Other precautions against ignition include the following:

- All electrical systems and motors will be properly grounded and adequately rated for their intended use.
- Storage and treatment areas will be adequately ventilated.
- Special tools with low spark risk will be used for maintenance or repair work.

In the LSV processing and storage areas, additional safety features include:

- Electrical grounding for all key equipment including sampling tanks, bulk storage tank, and ancillary equipment.
- Automatic fire suppression for the LSV process line.
- Overflow interlocks and alarms for the sampling tanks and bulk storage tank.
- Circuit overload and lockout mechanisms.
- Ventilation systems for the process and work areas that maintain negative pressure in these areas and filter the exhaust for particulate matter and organic vapors.
- Automatic LSV process line shutdown button.
- Four-hour fire wall between LSV building and the office area.

In the TOB processing and storage areas, additional safety features include:

- Electrical grounding for all key equipment including the reaction vessel, condenser, and ancillary equipment.
- Automatic fire suppression for the PF-II process line.
- Mechanical drum dumper for loading the PF-II reactor vessel trays.
- Overflow interlocks and alarms for the process units.
- Mechanical drum lifter and pneumatic guillotine valve for emptying the reactor vessel into drums.

- Circuit overload and lockout mechanisms.
- Ventilation systems for the process and work areas that maintain negative pressure in these areas and filter the exhaust for particulate matter. Organic vapors which are treated by the regenerative thermal oxidizer (RTO).
- Equipment pressure relief valves and conservation vents to prevent over pressurization.
- Automatic PF-II process line shutdown button.

Undesirable, uncontrolled, and dangerous reactions between incompatible wastes will be prevented by the early identification of potentially incompatible waste streams. Waste characterization and screening procedures are described in detail in the Waste Analysis Plan (WAP) included as Appendix II-A-4. In addition, compatibility testing will be conducted on materials that are part of lab packs or that will be bulked with other waste streams. Compatibility testing procedures are also addressed in the WAP. These procedures include the mixing of samples of potentially incompatible wastes. The mixture(s) will be observed for temperature rise, evolution of gases, and/or polymerization. Leaking or damaged containers of hazardous waste will be isolated from other containers until the contents have been placed in new containers or such drum is overpacked.

Preparedness and Prevention Procedures Design and Operation of Facility

The PFF treatment, storage, and processing areas, and associated process equipment, are designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste constituents to the air, soil, surface water, or groundwater that could threaten human health or the environment. To facilitate effective responses to potential emergency situations, the following equipment and procedures are used by PFF.

All hazardous waste to be treated with the PF-II process will be assumed to be ignitable until proven otherwise. This waste will be separated and protected from sources of ignition or reaction such as open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electric, or mechanical), spontaneous ignition, and radiant heat. PFF is fenced for security, and smoking is not allowed anywhere inside the facility. Containers holding ignitable and reactive wastes are stored at least 50 feet from the facility property line.

Potentially incompatible wastes or incompatible wastes and materials will not be placed in the same container, tank, or treatment equipment unless the wastes/materials are first tested in order to determine the necessary precautions to prevent reactions that:

1. Generate extreme heat or pressure, fire or explosions, or violent reactions.
2. Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment.
3. Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion.
4. Damage the structural integrity of the container, tank, or treatment equipment or the facility.
5. May otherwise threaten human health or the environment.

Incompatible wastes will be stored in separate containers in separate secondary containment areas. Separation will be maintained by the use of berms, dikes, or by placing containers of incompatible waste in separate buildings. Incompatible wastes will not be placed in the same container, tank, or the same bermed storage section.

Required Equipment

A computer system is used for management of important operations data. To minimize the potential for loss of information during power outages or computer system failure, key waste management information is also maintained in hard copy form. The following emergency or incident response equipment is maintained by PFF:

- Internal telephone communication system capable of notifying all employees in the event of an emergency.
- External communications equipment to summon outside assistance, if necessary.
- Emergency equipment:
  - Strategically located fire extinguishers
  - Automatic fire sprinkler system with Aqueous Fire Fighting Foam in the waste processing and storage areas
  - Spill cleanup (e.g., absorbent materials, booms, shovels, etc.)
  - Decontamination supplies
- Water for fire control at an adequate volume and pressure to supply water hose streams, foam-producing equipment, or water spray systems. The water source for supplying water hose streams is the City of Gainesville.

Emergency equipment is listed in Table II-1.

Access to Communication System

Access to the communication system is readily available from several locations in and around the facility waste management areas. Additionally, a paging system allows for broadcasting of announcements at the facility. Activities

are not conducted in treatment or process areas unless at least two employees are present. Operating personnel will carry two-way portable radios or will have ready access to the plant telephone or both. The plant telephone system is connected to outside telephone systems and can be used to notify local authorities in the event of an emergency. The local fire department is less than one mile from PFF and is adequately equipped to respond in the event of a fire.

Testing and Maintenance of Equipment

An outside contractor inspects and tests PFF's fire suppression equipment and alarm system semi-annually. In addition, all emergency response equipment and supplies are tested and maintained by facility personnel to assure proper operation in time of emergency. Table II-1 lists the emergency equipment available at the facility.

Required Aisle Space

Adequate aisle space will be maintained in all areas of the facility to provide unobstructed movement of personnel, material handling machinery, fire suppression equipment, and spill control equipment. Pallets of hazardous waste containers or drums in storage areas that may be stacked up two high will be banded and situated so that at least two sides of each pallet are visible and accessible at all times, except for the chemotherapy and pharmaceutical waste containers. Pallets or drums are added and removed from the ends of rows by lift trucks.

Arrangements with Local Authorities

Arrangements have been made to familiarize local authorities, such as police, fire, and emergency response departments with the:

- Layout of PFF.
- Properties and associated hazards of the wastes managed on site.
- Places where facility personnel would normally be working.
- Entrances to and roads inside the facility.
- Possible evacuation routes.

This includes the opportunity for facility inspections/visits by the local authorities. Arrangements with state and local emergency response authorities for assisting PFF (in the event that outside emergency response becomes necessary) are listed in Section 12 of the Contingency Plan (Appendix II-A-2).

Copies of the current Contingency Plan are provided to the local police and fire departments, the nearest major hospital, and the local emergency response team (i.e., the fire department). Copies of each Contingency Plan update will be provided to each of the listed agencies.

Personnel Training

The training programs used to prepare persons to operate or maintain the facility in a safe manner are addressed in the Personnel Training Plan included as Appendix II-A-3 to this permit application.

A.5 CHEMICAL AND PHYSICAL ANALYSIS OF WASTE

The hazardous and mixed waste that is stored and treated by PFF is generated by off-site and on-site sources. Off-site sources of hazardous waste may include, but are not limited to, RCRA treatment, storage, or disposal (TSD) facilities; remediation sites; research institutions; government agencies; paint and coatings manufacturers and users; solvent users; and other industries that generate hazardous wastes. The facility also receives wastes from a variety of conditionally exempt and small quantity generators. In addition, waste collected during various county household hazardous waste collection campaigns is managed at the facility. Hazardous waste generated by on-site sources consists primarily of treatment residues, spent PPE, laboratory wastes, including samples of hazardous waste taken for testing and analysis, and, to a lesser extent, occasional small spill clean-up residues and soils.

The diverse nature of waste sources results in hazardous and mixed wastes of variable chemical composition being stored and treated by PFF. A list of wastes and waste constituents that may be accepted by PFF is included as Table II-2. These materials are listed by the EPA waste numbers found in 40 CFR Part 261, Subparts C and D.

The physical composition of the hazardous waste managed at the facility is either liquid (pumpable) or solid (non-pumpable). The physical composition of hazardous waste generated off-site generally determines its mode of transportation to the facility. Typically, the hazardous waste that is treated and stored at the facility can be characterized as follows:

- Organic liquids, including suspended solids, which are received from off-site in drums and other containers meeting Department of Transportation (DOT) specifications.
- Sludges and solids, possibly containing free liquids, which are received from off-site by truck in drums and other containers meeting the requirements of the DOT.
- A variety of debris contaminated with hazardous constituents received in containers.

- Miscellaneous liquid and solid hazardous waste generated by PFF as a result of waste treatment and miscellaneous management activities, such as clean-up materials, PPE, and decontamination rinsate.
- Lab packs received from off-site.

Liquid wastes generated on-site include cleaning solvents and residues. Solid wastes generated on- site include filter cleaning residues and used PPE.

All hazardous waste shipments determined to be unacceptable will be rejected. Rejected shipments will be returned to the generator or shipped to an alternate authorized TSD facility. Acceptance parameters are addressed in the Waste Analysis Plan.

A.6 WASTE ANALYSIS PLAN

The Waste Analysis Plan (WAP) has been developed as a stand-alone document and is included as Appendix II-A-4. The WAP establishes hazardous waste acceptance procedures, sampling methods, frequency of analyses, analytical techniques, and related quality control/quality assurance procedures that will be followed by PFF to ensure that sufficient information is available for proper storage and treatment of hazardous waste. The chemical and physical analytical parameters that define acceptable hazardous waste, along with the rationale for their selection, are presented in the WAP.

Also addressed in the WAP are the precautions used to prevent undesirable chemical reactions resulting from mixing of incompatible hazardous waste or from the inadvertent receipt of hazardous waste exhibiting undesirable chemical reactions.

Undesirable chemical reactions are listed in 40 CFR 264.17(b) as reactions that:

1. Generate extreme heat or pressure, fire or explosions, or violent reactions,
2. Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health and the environment,
3. Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions,
4. Damage the structural integrity of the facility, and
5. May otherwise threaten human health and the environment.

A.7 MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING

Required Notice

When entering into any agreement to receive any waste from a generator, PFF will inform the generator in writing of PFF's permit status and the ability to accept the waste the generator will be shipping.

Prior to transferring ownership or operation of PFF, PFF will provide appropriate notification in writing to the proper authorities in accordance with 40 CFR 270.40.

Use of Manifest System

PFF requires generators to provide a completed manifest for each shipment of hazardous waste. PFF will comply with the manifest use requirements of 40 CFR 264.71 and 264.72. In addition to the manifest number, PFF will assign a dedicated internal tracking number to each container and/or shipment received by PFF for ease of identification.

When hazardous waste accompanied by a manifest is received, PFF will:

1. Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received.
2. Note any significant discrepancies in the manifest (as defined in 40 CFR 264.72(a)) on each copy of the manifest.
3. Immediately give the transporter at least one copy of the signed manifest.
4. Within 30 days after the delivery, send a copy of the manifest to the generator.
5. Retain at the facility a copy of each manifest for at least three years from the date of delivery.

Manifest Discrepancies

Upon discovering a significant discrepancy (as defined in 40 CFR 264.72(a)), PFF will attempt to reconcile the discrepancy with the waste generator or transporter (e.g., through telephone conversations). If the discrepancy is not resolved within 15 days after receiving the waste, PFF will immediately submit to the Florida Department of Environmental Protection (DEP) a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest at issue.

Unmanifested Waste Report

If PFF accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest, as described in 40 CFR 263.20(e)(2), and if the waste is not excluded from the manifest requirement by 40 CFR 261.5, then PFF will prepare and submit a single copy of a report to the DEP within fifteen days after receiving the waste.

Such report will be submitted on EPA form 8700-13B (or by other means as required by DEP), be designated "Unmanifested Waste Report" and include the following information:

1. The EPA identification number, name, and address of PFF.
2. The date PFF received the waste.
3. The EPA identification number, name, and address of the generator and the transporter, if available.
4. A description and the quantity of each unmanifested hazardous waste PFF received.
5. The method of treatment, storage, or disposal for each hazardous waste.
6. The certification signed by the owner or operator of PFF or his authorized representative.
7. A brief explanation of why the waste was unmanifested, if known.

Electronic Manifests

PFF may choose to use electronic manifests in lieu of paper manifests by complying with 40 CFR 264.71(f), (g), (h), (i), (j), and (k); and 40 CFR 262.24.

Operating Record/Biennial Report

Copies of the manifests and operating records will be maintained on-site for at least one year. After that, all records may be transferred to an off-site records storage facility where they will remain for at least three years unless otherwise specified below. The Biennial Report of hazardous waste received and processed by PFF will address the quantities of materials shipped to PFF. Copies of the Biennial Report will be submitted to the DEP by March 1 of each even numbered year.

1. The biennial report will be submitted on EPA form 8700-13B [or by other means as required by DEP (e.g., electronic format)]. The report will cover facility activities during the previous calendar year and will include all information required by DEP/USEPA.

The following reports will be maintained by PFF:

- A description and the quantity of each hazardous waste received, and the method(s) and date(s) of its treatment and/or storage at the facility, as required. This record will be maintained until closure of PFF.
- The location of each hazardous waste within the facility and the quantity at each location. This information will include cross-reference to specific manifest document numbers if the waste was accompanied by a manifest. This record will be maintained until closure of PFF.

- Records and results of waste analysis performed.
- Summary reports and details of all incidents that require implementation of the Contingency Plan.
- Records and results of inspections.
- All closure cost estimates in accordance with 40 CFR 264, Subpart G. This record will be maintained until closure of PFF.

PFF will also maintain the following records at the facility or the off-site storage location for a period of at least three years:

- Waste minimization certification.
- Reports of releases, fire, and explosions.
- Closure Plan and Closure Cost Estimate.
- Notices to the off-site generators in accordance with 40 CFR 264.12(b).
- Land disposal restriction notices received from off-site generators.

All operating records maintained on site pursuant to this permit application will be available to state and federal environmental regulatory personnel for inspection.

A.8 FEDERAL ENVIRONMENTAL LEGISLATION

PFF is not subject to the Coastal Zone Management Act, Fish and Wildlife Coordination Act, the National Historic Preservation Act, and Wild and Scenic River Act. PFF is located within an Industrial Park in urban setting and to the best of our knowledge there are no endangered species or archaeological or historical sites within the property. Supporting documentation from the Florida Department of State, Division of Historical Resources, and the Florida Game and Fresh Water Fish Commission is included as Appendix II-A-5.

B. CONTAINERS

PFF is currently permitted to store up to 72,105 gallons of containerized hazardous waste in the Processing and Storage Building; up to 35,200 gallons of container storage in the Treatment and Operations Building (see Figures I-6-A and I-6-B in Part I of this application); and up to 54,350 gallons of hazardous waste in the LSV Processing and Waste Storage Warehouse in containers. In addition, permitted container treatment activities include stabilization/solidification (i.e., PF-I process); and treatment in containers, which includes deactivation of reactive

wastes (e.g., D003), mercury amalgamation, non-elementary neutralization, and treatment of debris using drum rotator(s).

B.1 DESCRIPTION OF CONTAINMENT SYSTEM

The secondary containment system for the Processing and Storage Building consists of curbed and sloped concrete slabs and sumps, which are designed to drain liquids resulting from leaks or spills to sumps for removal. The containment system for the Processing and Storage Building consists of the following:

- An approximately 4-foot 10-inch wide and at least 4-inch high #4 rebar reinforced concrete sloped berm ("rollovers") extending about 6 feet at forklift entry points to container storage areas.
- A 6-inch wide #4 rebar reinforced concrete curb with a minimum height of 2.5 inches around storage building perimeters.
- Continuous Neoprene® water stops within the concrete curbs and berms.
- Minimum of 20 mils of epoxy sealer at all joints and gaps.
- Polysulfide joint sealant in all floor joints.
- Sealant (e.g., Ashford Formula, which is a water-based inorganic silicate material for sealing and hardening of concrete floors), applied to the floor of the storage area to render the floor sufficiently impervious, in accordance with 40 CFR 264.175(b)(1).

The secondary containment system for the Treatment and Operations Building consists of curbed concrete slabs. The containment system for the Treatment and Operations Building consists of the following:

- 6-inch thick and approximately 5.75-inch high #4 rebar reinforced concrete curb near the building wall.
- 6-inch thick and 5.5-inch high #4 rebar reinforced concrete berm around each segregated container storage area.
- Approximately 7-foot wide and 4-inch high #4 rebar reinforced rollover berms for forklift entry/exit points for the container storage areas.
- Minimum of 20 mils of epoxy adhesive sealer at the concrete joints.
- Sealant (e.g., Ashford Formula, which is a water-based inorganic silicate material for sealing and hardening of the concrete floor), applied to the floor of the container storage area to render the floor sufficiently impervious, in accordance with 40 CFR 264.175(b)(1).

The container storage area within the LSV Processing and Waste Storage Warehouse is provided with a 5.5-inch thick and 5.5-inch-high concrete curbing. The minimum height of the rollover berms for this storage area is 2.75 inches. A sealer and hardener have been applied to the storage area floor.

The floor slab making up the container storage areas in the Treatment and Operations Building, the Processing and Storage Building, and the LSV Processing and Waste Storage Warehouse consists of a concrete base that is free of cracks or gaps and is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed. In addition, the surface of the concrete base has been applied with a sealant (e.g., Ashford Formula) to ensure the impervious nature of the containment base. The product data for the Ashford Formula is included as Appendix II-B-1. In the future, a sealant other than Ashford Formula may be used to render the floor sufficiently impervious, in accordance with 40 CFR 264.175(b)(1).

The capacities of the containment systems in the Processing and Storage Building, the Treatment and Operations Building, and the LSV Processing and Storage Warehouse are sufficient to contain more than 10% of the volume of the maximum number of containers in each building. Containment calculations are included as Table II-3. Details of the secondary containment system for the Processing and Storage Building, Treatment and Operations Building, and the LSV Processing and Waste Storage Warehouse are shown on Figure I-12, Figures I-6-A and I-6-B, and Figure I-15, respectively, in Part I of this application.

Engineering reviews have been conducted on the floor slabs in the container storage areas of each container storage building at the Facility. Copies of the engineering reports for the floors are included as Appendix II-B-2. The October 13, 1997, Floor Slab Inspection letter addresses the concrete pad in the former Nelson Building; referred to in this permit application as the Treatment and Operations Building. The 1989 work sheet addresses the integrity of the concrete pad in the former Quadrex container and tank storage building; referred to in this permit application as the Processing and Storage Building. The concrete slab in the LSV Processing and Storage Warehouse is similar in nature as the other two buildings.

To prevent run-on and accumulation of precipitation, the container storage areas in each building are roofed and sufficiently sided to prevent run-on of stormwater. In addition, the perimeters of the concrete floor slabs are curbed in each building. Finally, site grading directs surface water away from the buildings.

The sloped floors in the Processing and Storage Building will direct any liquid to the sumps. The container storage areas will be inspected at least once a week for accumulation of liquids, and any accumulation will be removed from the container storage area and/or sumps in as timely a manner as possible but no later than within 24 hours of detection

by PFF personnel. Material removed from the container storage area and/or sump will be characterized and managed in accordance with applicable regulations. In addition, all containers stored in the Processing and Storage Building are kept off the floor on pallets or, in the case of totes, on built-in legs that prevent tote contact with any standing liquids.

The concrete slab in the Treatment and Operations Building and in the LSV Processing and Storage Warehouse is on a near level gradient. These container storage areas will be inspected at least once a week for accumulation of liquids, which will be remediated in as timely a manner as possible but no later than within 24 hours of detection. Depending on the amount involved, absorbents, submersible pumps, or a vacuum truck will be used to remove any liquids. All containers stored in the Treatment and Operations Building and in the LSV Processing and Storage Warehouse will also be kept off the floor on pallets or, in the case of totes, on built-in legs that prevent tote contact with standing liquids. All material removed from secondary containment areas will be characterized in accordance with 40 CFR 262.11 and stored, treated, or disposed of accordingly.

Ignitable, Reactive, and Incompatible Wastes

No container of ignitable or reactive waste will be stored within 15 meters (50 feet) of the Facility property line or a public right-of-way as shown on Figure I-1 in Part I of this permit application. Hazardous waste will not be placed in an unwashed container that previously held an incompatible waste or material. A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers or open tanks will be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

In order to ensure compatibility of waste streams intended for co-mingling, PFF will implement the following management procedures prior to mixing potentially incompatible wastes.

- Prior to receipt at the Facility, all hazardous wastes must be profiled and preapproved. See the Facility Waste Analysis Plan (WAP) (Appendix II-A-4 of this permit application) for details on the approval and profile process.
- Containers of incompatible waste identified by the waste profile and/or WAP will be segregated from each other.
- Potentially incompatible wastes will be mixed together in small quantities and observed for undesirable reactions prior to being stored, treated, or otherwise managed together at the Facility. See the WAP for compatibility testing details. Incompatible wastes, or incompatible wastes and materials, will not be placed in the same container (or an unwashed container), unless the requirements of 40 CFR 264.17(b) are complied with.
- Lab Pack packing lists will be reviewed to identify potentially incompatible wastes.
- During Lab Pack decommissioning (transfer of waste from small containers to bulk containers), potentially incompatible wastes will not be bulked together unless compatibility testing indicates that the wastes may be

combined i.e., the requirements of 40 CFR 264.17 (b) are complied with. Incoming Lab Pack wastes determined to be incompatible will be segregated from each other and shipped off site for disposal in separate containers unless treated or deactivated and made compatible. See Figures I-6-A and I-6-B in Part I of this permit application for an illustration of segregated storage bays.

Condition and Management of Containers

Upon receipt of a shipment of containers, PFF personnel will review the manifest and other documents accompanying the shipment for completeness and accuracy and to identify the shipment and verify its compliance with 40 CFR 264.71 and 40 CFR 264.72. After verification, the containers will be inspected for defects and/or unacceptable conditions, as required in 40 CFR 264.171. If a container is found to be leaking, or is of questionable integrity, the container will be overpacked or its contents transferred into another container in good condition. If, following analysis in accordance with the WAP, the contents of a container are found to be unacceptable, the containerized waste will be rejected and returned to the generator, or sent to an alternate TSD, per the generator's instructions.

A representative sample of the incoming waste will be collected and analyzed in accordance with the Waste Receipt Analysis section of the WAP to determine consistency with the waste profile. Containers of waste will remain in the receiving area portions of the storage areas until accepted for storage in accordance with the WAP. Upon acceptance, containers will be moved to one of the container storage areas in the Processing and Storage Building, Treatment and Operations Building, or LSV Processing and Storage Warehouse. Unacceptable or rejected containers will be stored in one of the container storage areas until transportation to the generator or an alternate TSD can be arranged.

- All containers will be managed as if they contain free liquids until determined by Facility personnel to contain solids through inspection and/or sampling. Containers of hazardous waste will be kept closed except during sampling or when hazardous waste is added or removed. All 55-gallon containers will be palletized upon arrival, and all palletized containers will be banded when double- stacked, except for the chemotherapy drugs and other pharmaceuticals stored in the cage area in Zone 2 of the Processing and Storage Building where pallets of chemotherapy drugs and pharmaceutical waste can be stacked three pallets high.
- Adequate aisle space will be maintained in all areas of the Facility to provide unobstructed movement of personnel, material handling machinery, fire suppression equipment and spill control equipment. Pallets of hazardous waste containers or drums in storage areas that may be stacked up two high (except for chemotherapy drugs and pharmaceutical waste) will be banded and situated so that at least two sides of each pallet are visible and accessible at all times. Pallets or drums are added and removed from the ends of rows by lift trucks.

All containers received from off-site must meet US Department of Transportation (DOT) requirements for the material being shipped in the container. Containers that do not meet DOT requirements will be overpacked into suitable containers for storage and/or shipment off site.

Examples of containers typically received at the Facility will include:

- 55-gallon steel drums (on standard pallets)[1]
- 55- and 30-gallon poly drums (on standard pallets) [1]
- 30-gallon steel and poly drums (on standard pallets) [2]
- 5-gallon steel and poly drums (on standard pallets)
- DOT overpacked drums containing glass vials, plastic vials, ½- to 1-gallon glass or plastic containers, and up to 30-gallon plastic carboy containers (on standard pallets)
- DOT specification roll-off containers
- DOT specification fiberboard containers (on standard pallets)
- DOT specification tote tanks (up to 550-gallon capacity)[3]
- DOT specification tanker/trailers (not stored in container storage areas)
- Other DOT-approved (performance-oriented) containers (on standard pallets)

B-25 and B-12 Containers: these are 96 and 48 cubic feet Strong Type A containers used by the Nuclear Waste industry, typical dimensions are 6'W x 4'H x 4'D for the B-25 and 6'W x 2'H x 4'D for the B-12.

Figures I-6-A and I-6-B, I-12, and I-15 in Part I of this permit application illustrate typical container storage configurations in the container storage areas. These configurations are for illustration purposes only. PFF will only receive containers made of or lined with materials that will not react with and are otherwise compatible with the hazardous waste to be stored.

[1] Typical dimensions: 55-gal drum – 36" x 22" dia; 30-gal drum – 27" x 18" dia; 5-gal container – 14" x 10" dia.
[2] Typical dimensions: 55-gal drum – 36" x 22" dia; 30-gal drum – 27" x 18" dia; 5-gal container – 14" x 10" dia.
[3] Totes are on legs, which keep them off the ground and away from accumulated liquid in containment areas. The dimensions for 450-gallon totes are 4 feet by 4.5 feet (base) by 5 feet, 4 inches (height). 450-gallon totes have 5.5- inch legs. 550-gallon totes have a base that is 3.5 feet by 4 feet and are 6 feet, 3 inches tall. 550-gallon totes sit on 6.5-inch legs.

Inspections

PFF personnel will inspect areas where containers are stored or treated at least once per week. The inspections will cover proper placement of containers for ready access, container conditions, labeling, and inventory control. A detailed inspection log is maintained to ensure compliance with applicable Florida container and tank inspection requirements. An example of inspection log for container storage areas is included as Table II-4. Inspection logs will be maintained in the Facility operating record for a period of at least three years.

Closure Plan and Closure Cost Estimate

A copy of the Facility Closure Plan and closure cost estimate is included in Section II.K of Part II of this application.

C TANK SYSTEMS

C.1 TANK SYSTEM INTEGRITY

The integrity of the existing tank has been certified by Lewis Engineering and Consulting, Inc. (Appendix II-C-1). The certification by Richard Lewis, a professional engineer, found the tank to be structurally sound. The certification process included a review of Facility records for the tank system, a visual inspection of the tank, and an ultrasonic thickness survey of the tank walls. The visual inspection found no leaks or exterior corrosion of the tank. The ultrasonic survey found that the head and shell thickness was nominally 0.25 inch.

Figures II-C-1 and II-C-2 provide design details of the tank.

The storage tank is located within the walls of the secondary containment system. Foundation support for the full storage tank is provided by the concrete floor of the containment structure and underlying soil. Foundation calculations for the storage tank are provided in Appendix II-C-2. Based on this review, the tank foundation is designed to maintain the load of a full tank in a satisfactory manner. The tank is supported by three carbon steel support frames. The foundation appears to be adequate to resist anticipated frost heave.

Ancillary equipment is provided with secondary containment. The piping from the LSV Processing area is contained in a sealed concrete pipe valley. The pipe valley is overlaid with a steel grid making the piping available for inspection by Facility personnel at all times.

C.2 TANK SYSTEM AND ANCILLARY EQUIPMENT DESCRIPTION

The facility storage includes an aboveground 3,000-gallon tank to accumulate and store mixed liquid wastes solely that are ultimately transported off-site for energy recovery. The tank was constructed in 1999. The tank is installed

horizontally on steel supports in a concrete block secondary containment structure inside the Processing and Storage Building. (See Figure I-12 in Part I of this application for the tank location.) The tank is connected to the liquid scintillation vial (LSV) processing system located in the LSV Processing and Waste Storage Warehouse. The connection is through piping running from the LSV processing area to the tank. See Figures I-13 and I-14 in Part I of this application for process flow diagrams. See Figure II-C-3 for the LVS piping diagram.

The feed system associated with the 3,000-gallon bulk storage tank consists of the following equipment:

- Type 5, air driven, dual diaphragm pump.
- Pump suction line with ball valve.
- Pump discharge line with ball valve.
- Main fluid discharge control ball valve.
- Discharge hose connection.
- Main pump cutoff ball valve.
- Piping from the pump to the bulk tank.

The materials stored in the 3,000-gallon tank consist of the scintillation fluids, and solvent-based liquid carriers used for scintillation fluids, rinse solvents and other mixed organics (e.g., ethanol) used to clean the vial glass. Major compounds that may individually constitute up to 25% of the supplemental fuel include ethanol, toluene, and xylenes. Toluene and xylenes are contained in scintillation fluids, and ethanol is the primary solvent of choice, although conditions may occur requiring the use of other rinse solutions (isopropyl alcohol, detergents, etc.). Figures I-15, I-16, I-17, and I-18 in Part I of this permit application show the location of the LSV processing area and associated equipment.

C.3 DESCRIPTION OF SAFETY SYSTEMS AND CONTROLS

40 CRF 264.31 requires facilities to be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents. The following addresses the equipment and procedures employed by PFF to facilitate compliance with 40 CFR 264.31.

All flanges and openings on the tank have been sealed to minimize the emission of volatile organic chemicals (VOCs). This sealing is accomplished by using rubber seals on doors/latches wherever there are openings (i.e., hinged hatch and manway shown in Figure II-C-1). In addition, even though the mixed waste storage tank is exempt from 40 CFR 264

Subpart CC VOC emission control requirements while storing mixed waste per 40 CFR 264.1080(b)(6), the tank is designed and will be operated in a manner consistent with Subpart CC Level 1 emission controls. Specifically, the following controls will be maintained:

- Fixed Roof.
- Vent pipe with a spring-loaded pressure relief valve.

The tank is equipped with mechanical pressure and temperature gauges, as well as a fill gauge. Overfill protection is provided by an intrinsically safe high-level alarm. The alarm emits an audible signal and shuts off power to the tank feed pump when the tank level reaches 80% of its capacity.

In addition, the tank is grounded to prevent risks associated with potential electrical surges and is located within containment in the Processing and Storage Building to prevent releases to the soil or surface water. Exposure to the sun and extreme temperatures is not an issue because the tank is under a roof, which protects it from direct sunlight.

C.4 DIAGRAM OF PIPING, INSTRUMENTATION, AND PROCESS FLOW

A process flow diagram is presented in Figure I-13 in Part I of this application. The piping diagram is provided as Figure II-C-3.

C.5 CORROSION PROTECTION

The tank system and its appurtenances are not directly exposed to the weather. Since the tank and associated fixtures are made of stainless steel, they are not painted. Exposed piping is galvanized and not painted. The P.E. certification report (Appendix II-C-1) indicates that there has been no deterioration of the tank.

Surface protection for the secondary containment has been provided. This protection consists of application of a sealant (e.g., Ashford Formula) to the containment floors. This application seals cracks and voids in the structure surfaces and hardens the concrete surface to provide good resistance to splashes and spillage that may occur in the containment area.

C.6 NEW TANK SYSTEMS

There are no new tank systems on site. Section C.6 does not apply to this permit application.

C.7 SECONDARY CONTAINMENT SYSTEM ASSESSMENT

The following paragraphs give a detailed comparison between current containment system features and applicable requirements. For brevity, "secondary containment" as used here means features that meet the requirements of 40 CFR 264.193.

A. Materials compatibility (40 CFR 264.193(c)(1))

The primary waste material collected and stored in the tank system consists of toluene, xylenes, ethanol, or other selected rinse solvents/solutions. The primary hazardous characteristic of the waste is ignitability. These wastes are considered compatible with the system materials of construction (primarily concrete, stainless and galvanized steel, and the concrete sealer/hardener).

B. Strength and Foundation (40 CFR 264.193(c)(2))

The most critical strength requirement for the floor slab of the tank containment structure is its service as foundation support for the tank when full. Pressures on the soils below the floor slab are well below acceptable levels (see Appendix II-C-2). Satisfactory service with practically no cracking of the slab or the containment walls is further evidence of the adequacy of the system. As previously stated, the foundation support is adequate to prevent failure due to settlement, compression, uplift, or pressure gradients. The carrying capacity of the floor under the tank supports is enhanced by increased concrete thickness and steel reinforcing.

C. Leak Detection (40 CFR 264.193(c)(3))

All components of this system are accessible for visual inspection. Leak detection is provided by a documented daily visual inspection of the tank system on each day it contains hazardous waste. The Inspection Log for the tank is included as Table II-5. Overfill protection is provided by a high-level alarm that emits an audible alarm and shuts off the feed pump when the tank level reaches 80% capacity (i.e., 4 feet). Normal operating practice will be to keep the tank level below 4.0 feet.

D. Liquid Removal (40 CFR 264.193(c)(4))

Liquid removal from the secondary containment is accomplished by a vacuum pump that removes liquid from a blind sump within the containment to the tank or other container. The containment floor is sloped to the blind sump.

E. External Liner System (40 CFR 264.193(d) and (e)(1))

As documented in Appendix II-C-3, the secondary containment for the tank system has a design capacity (4,870 gallons) sufficient to hold more than 100 percent of the tank's capacity (3,000 gallons). Inspection of the facility in January 1988 demonstrated that the secondary containment floor slab and walls were free of cracks and gaps (see Appendix II-C-3). The impermeable sealant/hardener described in Appendix II-C-4

had been applied to the floor. The containment completely surrounds the tank and is capable of preventing both lateral and vertical migration of the waste.

C.8 VARIANCES

There are no variances for this site. Section C.8 does not apply to this permit application.

C.9 SPILLS AND OVERFLOW PROTECTION

The tank feed lines are utilized only in a batch mode and are not prone to fluid loss. Detailed inventory logs are maintained for each process batch, with any potential losses occurring in the transfer of fluids being readily identified. The overflow protective device is interlocked to the fluid feed system to prevent overfilling. The tank has a high-level alarm that shuts off the feed pump when the tank reaches 80% capacity. The feed system will not function, and an alarm will sound. The high-level alarm is inspected each day the tank contains hazardous waste to ensure its operability.

The bulk tank is compatible with flammable liquids and is permanently grounded via a dedicated grounding system.

C.10 IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES IN TANKS

The 3,000-gallon storage tank is a dedicated tank and will only receive mixed liquid wastes. PFF operating procedures, including waste profile review prior to acceptance and evaluation upon arrival at PFF, are designed to prevent the addition of incompatible wastes that could cause failure of the tank system.

Specifically, PFF will not place incompatible wastes, or incompatible wastes and materials, in the same tank per the requirements of 40 CFR 264.17(b). Wastes designated as D002 will not be managed in the tank system. Stored waste is protected from any material or condition that may cause the waste to react or ignite. The tank content is tested prior to each shipment for disposal as described in the Waste Analysis Plan (Section 6.0). The fluids are pumped into and out of the tank through a manifold system.

The tank location meets the requirement of 40 CFR 264.198(b) regarding maintenance of protective distance from the public way or adjoining property line that can be built upon.

C.11 INSPECTION REQUIREMENTS

The bulk tank, its associated equipment, and containment are inspected each day the tank contains hazardous waste in accordance with applicable requirements of 40 CFR 264.195. Detailed inspection logs are maintained in the Facility Operating Record for at least three years from the date of inspection. An example inspection log for a tank is included in Table II-5.

C.12 RESPONSE TO LEAKS OR SPILLS

Should there be a leak or spill from the storage tank and/or its secondary containment or if the tank system is unfit for use, the following will be performed:
PFF will immediately stop flow to the tank or to the secondary containment and inspect the system to determine the cause of release.

If the release was from a tank system, hazardous waste will be removed from the tank as much as possible to prevent further release within 24 hours of release detection. If can be demonstrated that this time frame is not feasible, then waste removal from the tank will be conducted at the earliest practicable time. Inspections and repair to the tank system will be performed after removal of waste.

Accumulated liquids will be removed from the secondary containment as soon as it is practicable and safe to do so; but no later than 24 hours after detection.

Upon detection of a release, a visual inspection of the release will be immediately conducted to prevent further migration of the leak, or spill to soils or surface water. If visual inspection reveals contamination of soil or surface water, the contaminated media will be removed and properly disposed of. Proper disposal will require waste characterization of the contaminated soil or surface water.

PFF will prevent further migration of the leak or spill.

In accordance with 40 CFR 264.196(d), any release of hazardous waste into the environment, except as provided in paragraph (d)(2), will be reported to the hazardous waste section of the DEP's N.E. District Office within 24 hours of its detection. A report of a release in excess of the reportable quantity (RQ) as specified in 40 CFR Part 302 will satisfy this requirement. In addition, reporting is not required if the leak or spill is confined in the tank secondary containment system, as explained on page 25455 of the Federal Register dated July 14, 1986. Any leak or spill of hazardous

waste of less than one (1) pound that is immediately contained and cleaned up will be exempt from the reporting requirement.

A written report in accordance with the requirements of 40 CFR 264.196(d)(3) will be sent to the DEP within 30 days of detection of a reportable release.

PFF will perform the repairs, or provide secondary containment, as required, prior to returning the tank system to service.

If repairs are extensive, PFF will obtain a certification from a qualified professional engineer registered in the state of Florida, prior to returning the tank system to service. A copy of such certification will be kept in the facility operating record until the closure of the facility, in accordance with 40 CFR 264.196(f).

The PFF Spill Prevention, Control, and Countermeasure Plan (SPCC) has been included as Appendix II-C-5.

C.13 TANK SYSTEMS THAT DO NOT MEET REQUIREMENTS

The PFF tank systems meet requirements of 40 CFR 264.193.

C.14 CLOSURE PLAN

A copy of the Facility Closure Plan is included in Section K of this permit application.

C.15 CLOSURE COST ESTIMATE

A copy of the Facility Closure Cost Estimate is included in Section K of this permit application.

I MISCELLANEOUS UNITS

I.1 DESCRIPTION OF MISCELLANEOUS UNITS

This section describes the Perma-Fix II® process that may be identified as a miscellaneous unit regulated under 40 CFR 264 Subpart X. The unit will be used to physically and/or chemically treat hazardous wastes and/or non-RCRA radioactive wastes. This section of the permit application is intended to address the regulations for miscellaneous units applicable to this process.

PFF conducts thermal desorption and/or chemical oxidation/reduction in a treatment unit. The operation is a proprietary process known as Perma-Fix II® (PF-II). A detailed description of the ~~proposed~~ batch unit and its operation follows. The batch thermal desorber is ~~planned to be replaced with~~ an externally heated batch retort including new condensers and vacuum pumps, which is described in Appendix II-I-1. The ~~new replacement~~ PF-II unit has a 3,000 lbs./day waste processing rate. In addition, supporting PF-II ancillary equipment, associated air pollution control systems have been upgraded to include a sulfur-impregnated activated carbon bed absorber.

Process Description

The PF-II process typically consists of three primary steps used to treat organic contaminated soils, sludge, or other process waste (e.g., waste media not classified as debris or <60 mm particle size). Wastes selected for PF-II treatment require compliance with the treatment standards identified in 40 CFR Parts 268.40, 268.48, 268.49 prior to land disposal. Dependent upon generator waste profile information and/or PFF process control analyses, PF-II treated waste may require PF-I treatment (metals stabilization) to ensure total compliance with the identified regulations.

PF-II treatment candidates are identified using the information provided by generators on waste (material) profile forms and accompanying support documentation such as land disposal restriction (LDR) notification forms. Example material profile and LDR forms are included as Appendix II-I-2 and I-3. Upon arrival at the facility, wastes are evaluated for proper management (storage and/or treatment) per the Waste Management Decision Trees of Figures I-8, I-9, I-19, and I-20 in Part I of this application.

See Figures I-6-A and I-6-B in Part I of this application for the general layout of the Treatment and Operations Building and the location of the PF-II process equipment and container storage areas. See Figure II-I-1-B for the proposed PF-II process layout. See Appendix II-I-1 of this permit application section for a detailed description.

The PF-II process is conducted inside the Treatment and Operations Building (TOB). Emissions from treatment activities inside the TOB are controlled using a negative pressure ventilated system consisting of a dust collector, four HEPA filters (each rated at 1,000 cfm), a sulfur-impregnated carbon adsorber, and an RTO. These units are collectively referred to as the "air emissions control system".

Feed Stock Preparation

Containers of hazardous waste requiring PF-II treatment are delivered to the TOB by powered lift trucks or drum dollies.

PF-II candidate waste streams are visually and physically screened for nonconforming items (e.g., items identified as debris according to 40 CFR 268.45). Non-debris solids (PF-II waste) are consolidated separately for the PF-II treatment. All drum unloading activities take place at ambient temperature while the TOB is under negative pressure.

Waste Treatment

Preconditioning

The first treatment step of the PF-II process usually involves pre-conditioning of the waste. Select solvents (as determined through preliminary data review or bench testing) are added to the waste and mixed to remove soluble organics that typically prohibit successful thermal operations. Some waste streams that have a high solubility potential (i.e., paint-related materials), are drastically reduced in volume during the pre- conditioning stage. This reduction is beneficial since it minimizes the solids destined for land disposal. Wastes that do not require pre-conditioning (e.g., lightly contaminated soils) are sent directly to thermal desorption.

The pre-conditioning activities are conducted using the pneumatic drum tumbler. The pneumatic drum tumbler is an end-over-end rotation device that can accommodate 55- or 85-gallon container(s). Approximately one-third of the tumbling vessel is filled with PF- II waste. An equivalent volume of a select solvent is added to the vessel. The tumbling vessel is closed appropriately using a bung-top lid. A pressure relief device is placed in the bunghole. The waste and solvent are tumbled for a predetermined amount of time (to achieve sufficient solvent extraction). The vessel's bung top lid is removed and replaced with a perforated lid. The vessel is drained of its liquid-phase contents into a catch-pan.

The process is repeated with a follow-up pre-conditioning step using a solvent with an opposing chemical polarity. Typically, the solvents of choice are hexane followed by water. In certain cases, other more effective solvents are selected through bench testing.

Thermal Desorption

Figures I-11-A and I-11-B in Part I of this application provides a process schematic for the thermal desorption step of the PF-II process. Wastes selected for thermal desorption are transferred from their holding container (normally a 55-gallon drum) into 5-gallon buckets using a shovel. The buckets of PF-II waste solids are loaded into trays for the ~~proposed~~ unit, which are then loaded into the retort. If appropriate, water may be added to the reactor vessel and

thoroughly mixed with the waste to form a homogeneous mixture or slurry[1]. The slurry is mixed and externally heated in the retort reactor vessel. Non-contact steam circulated through a temperature control jacket is used to heat the reactor vessel and its contents[2]. During this phase of the process, the liquid portions of the waste evaporate, and water and organic constituents pass through the heat exchanger (condenser) where part of the vaporized waste is condensed (liquid phase) and part remains in the vapor phase.

The vapor phase and condensate (liquid phase) are discharged into accumulator tanks. From there, the small volume of non-condensable vapors that pass through the vacuum pumps downstream of the condenser go to the HEPA filters, a carbon adsorber (to capture regulated organic and inorganic constituents [e.g. mercury] which were not condensed), and RTO to destroy residual organics. Nitrogen may be used to blanket the waste inside the process.

The process of heating the waste and removing the water and/or organic constituents from the vaporized waste continues until the free water and organic constituents have been stripped from the waste and collected in the accumulation tanks. The absorber tank vents to the air emission control system. This system operates under a vacuum and an inert atmosphere (e.g., nitrogen blanket) to prevent explosions and fires.

Once the thermal desorption step is complete, the condensate and liquid treatment residuals are collected from the accumulator tanks; containerized; characterized; and sent off site to a permitted waste management facility. The treated waste solids are containerized. Prior to container closure, a sample of the treated solid residuals is obtained and analyzed for compliance with the land disposal treatment standard. The containerized waste solids are placed in storage pending the results of the analytical tests.

If the PFF process control analyses determine the waste has not been successfully treated, the waste residuals may undergo additional cycles of pre-conditioning and thermal treatment or undergo chemical oxidation/reduction.

If successful treatment of the organic constituents is determined by the PFF laboratory screening analysis, the residual waste may require treatment for inorganic contaminates using the PF-I process. The waste solids remain in storage until the PF-I treatment is conducted. Once all applicable land disposal treatment standards are met, treated wastes are

[1] Alternatively, some waste may already be in slurry form when introduced into the reactor vessel and will not require the addition of water. In addition, certain wastes may require the addition of surfactants or organic solvents (e.g., hexane) to the waste slurry to mobilize contaminants and facilitate the treatment process. This step is conducted, when needed, during the pre-conditioning stage of the PF-II process.

[2] Alternatively, hot water or cold water can be circulated through the system to control the temperature in the reactor vessel.

stored until a sufficient number of containers are obtained to support a shipment for disposal to a permitted waste management facility. Treated wastes will not be stored for more than a year.

Chemical Oxidation

If chemical oxidation treatment is required, the type and amount of oxidizer to be used is selected by bench tests carried out on that particular waste stream. The possible oxidizers are: peroxydisulfate salts (solid or in solution), persulfuric acid, and/or hydrogen peroxide. Water is added to the reactor vessel if deemed necessary to dissolve the oxidizer. Mixing is resumed, and the temperature of the vessel is raised enough to allow the oxidation reaction to begin (approximately 75 to 85ºC). Any vapors created during this step are condensed in the condenser, and the condensate is discharged into the accumulator tanks.

An example oxidation chemical reaction is as follows:

$$\text{organics} + H_2O + S_2O_8^{-2} \rightarrow CO_2 + 2HSO_4\text{-} + \text{inorganics}$$

$$\text{organics} + H_2O_2 \rightarrow CO_2 + H_2O + \text{inorganics}$$

Example using sodium peroxydisulfate and toluene as the organic contaminant:

$$C_7H_8 + 14H_2O \rightarrow 7CO_2 + 36H+ + 36e- \quad \text{(oxidation)}$$

$$18Na_2S_2O_8 + 36H+ + 36e- \rightarrow 36NaHSO_4 \quad \text{(reduction)}$$

$$C_7H_8 + 14H_2O + 18Na_2S_2O_8 \rightarrow 7CO_2 + 36NaHSO_4 \quad \text{(redox)}$$

Example using hydrogen peroxide:

$$C_7H_8 + 14H_2O \rightarrow 7CO_2 + 36H^+ + 36e^- \quad \text{(oxidation)}$$

$$18H_2O_2 + 36H^+ + 36e- \rightarrow 36H_2O \quad \text{(reduction)}$$

$$C_7H_8 + 18H_2O_2 \rightarrow 7CO_2 + 22H_2O \quad \text{(redox)}$$

Water is also capable of reducing the oxidizer:

$$H_2O + S_2O_8^{-2} \rightarrow ½\ O_2 + 2HSO_4^{-1}$$

Oxygen is produced during the oxidation step. Through bench tests, it has been determined that the amount of volatile and semi-volatile organic compounds left in the stream after the thermal desorption step is very low; consequently, the

amounts of off- gasses produced from the oxidation of chlorinated organic compounds, namely hydrochloric acid and chlorine gas, are also very low.

The time required to complete the oxidation process depends on temperature, the waste stream composition, and the amount of water added. Before the reaction is assumed to be complete, a sample of the aqueous phase is titrated to determine the concentration of unreacted oxidizer. When the oxidizer has been depleted, the oxidation step is considered complete.

Upon completion of the oxidation step, the reactor vessel is allowed to cool, and, if necessary, either calcium hydroxide or sodium hydroxide is added to adjust the pH of the mixture to within a range that minimizes corrosion of the PF-II process equipment. The reactor vessel may be heated to the boiling point of water to dry the slurry as appropriate for further treatment and/or disposal. The water condensed from the drying of the oxidized stream is discharged into the accumulator tanks. Condensed/separated organic liquids recovered from the vaporized organic constituents are collected in the accumulator tanks and pumped into drums when the treatment run is complete. An inert atmosphere (e.g., nitrogen blanket) is provided at all times during treatment operations to prevent explosions and fires.

The non-volatile residual solids remaining in the reactor vessel are discharged into 55- gallon drums through a pneumatic guillotine valve located beneath the reactor vessel. Prior to container closure, a sample of the treated residual solids is obtained and analyzed for compliance with the appropriate treatment standard. The containerized residual solids are placed in proper storage awaiting analytical determination.

If the PFF process control analyses determine the residual solids have not been successfully treated for organics, the residual solids will undergo additional cycles of pre- conditioning and thermal treatment or undergo the chemical oxidation step again.

If analysis indicates successful treatment of the organic constituents, the residual solids may require treatment for inorganic contaminates using the PF-I process. The residual solids remain in storage until the PF-I treatment is conducted. Once all applicable treatment standards are met, the residual solids are stored until a sufficient number of containers are obtained to support a shipment for disposal to a permitted waste management facility. The residual solids storage period will not exceed one year.

Process Residuals Management

The various steps in the PF-II process may generate several types of waste. These wastes will be characterized in accordance with the requirements of 40 CFR 262 and 40 CFR 268. Waste characterization may include the application

of knowledge of the PF-II process and/or analytical testing pursuant to the Facility's Waste Analysis Plan. Generally, PFF will "carry through" all listed waste codes to each of the residual wastes generated by the PF- II process. In other words, PF-II residual wastes will be generated and manifested with the same listed waste codes assigned to the waste prior to its treatment. Appropriate characteristic waste codes will be retained or assigned to the residual wastes at the waste stream's final point of generation (prior to its being shipped off site). The anticipated disposition of residual wastes is discussed in further detail below.

- Wastes treated to meet the land disposal restrictions for hazardous waste constituents by thermal desorption, chemical oxidation, and/or stabilization/solidification, will be shipped to a permitted waste facility for disposal.
- The condensed volatiles separated by the thermal desorption process will be shipped to a permitted waste facility for energy recovery.
- The segregated debris is containerized in 55-gallon drums and placed in storage in the container storage area located in the TOB awaiting debris treatment and/or final packaging and shipment to a permitted waste management facility.
- RCRA empty containers originating from the PF-II activities are compacted, consolidated and managed as non-RCRA radioactive waste. The non-RCRA radioactive waste is stored until sufficient quantities are collected, at which point the waste is sent to a permitted waste management facility for final disposal.
- Condensed water and contaminants generated during the batch are collected within the process tanks. The tank liquids are manually transferred by pump to portable containers (e.g., drums). The containerized liquids from multiple treatment batches of the same waste population may be bulked (e.g., totes) and/or pre-treated (e.g., filtration or phase separation).
- Hazardous metal constituents are treated by stabilization/fixation to immobilize the metals for land disposal compliance.

Decontamination Procedures

Decontamination of PF-II process equipment will be conducted whenever it would be inappropriate for treated wastes to come in contact with residuals from wastes previously treated in the equipment (e.g., when potentially incompatible wastes are involved, or high radio-isotopic activity levels require decontamination to minimize cross-contamination).

When necessary, PF-II process equipment will be decontaminated as follows:

The tray surfaces, the interior of the reactor vessel, and the contact surfaces of the unloading valve will be scraped, wiped, and rinsed. The recovered solids collected in the reactor vessel will be scraped, swept, and/or wiped out through the unloading valve at the bottom of the reactor.

When necessary, the PF-II process organic constituent recovery system (i.e., condenser, accumulator, and associated piping) will be decontaminated as follows:

The accumulator tanks will be emptied. Next, approximately 55 gallons of water will be heated and evaporated in the reactor vessel, flushing all the condensing surfaces in the organic constituent recovery system. If further decontamination is necessary, the accumulator tanks will be rinsed with water until no phasing or discoloration is detected in any of the units.

Physical Characteristics, Materials of Construction, and Dimensions of the Unit

A list and description of equipment currently contained in the design of the PF-II process system is included as Appendix II-I-2.

The PF-II process equipment is designed, located, constructed, operated, maintained, monitored, inspected, and closed in accordance with the applicable requirements of 40 CFR 264. A copy of the inspection schedule for the PF-II processing area and equipment is included as Table II-6 of this section. All relevant procedures to prevent hazards, inspections, testing, and maintenance and closure procedures and containment requirements addressed in this permit application for tanks and containers are applied to the construction and operation of the PF-II process equipment as well. Records of inspections, etc. will be maintained in the Facility Operating Record. The PF-II process equipment and location has been addressed in the Facility Closure Plan included in this permit application.

Reactor Vessel

The ~~proposed~~ reactor vessel is designed to process 15 cubic feet (cft) of slurry or solids (using six stacked trays with individual storage capacities of approximately 2 cft). The ideal waste to water ratio is estimated to range from 1:1 to 1:2. However, the optimal water content may vary for particular waste streams. The duration of the desorption process depends on the organic contaminant loading of the particular wastes as well as the processing temperatures. The organic contaminant levels are predetermined through onsite testing activities prior to processing. Preconditioning and or oxidization methodologies to reduce contaminate levels may also be used prior to desorption to minimize process duration. An inert atmosphere (e.g., nitrogen blanket) is provided at all times during treatment operations to prevent explosions and fires.

The electric heating jacket unit has a design pressure of +/-29" Hg and a design temperature of 1200°F. The jacket is constructed of stainless steel (SS), which is compatible with steam or hot water. The pressure relief valves are tested on an annual basis, with documentation in the Facility Operating Record.

Condenser

The shell and tubes of the two sequential condensers plus a process gas aftercooler have a design pressure of 14.7 psi. The shell (non- waste contact) side of the condenser unit is constructed of carbon steel, which is compatible with the cooling water to be circulated through the condenser unit. The internal tube (waste contact) side of the condenser unit is constructed of SS, which is compatible with the waste to be processed.

The centrifugal pump with a maximum head pressure of approximately 30 psi is used to circulate water through the shell of the condenser. The pressure generated by the circulation pump is well below the design pressure of 14.7 psi for the shell of the condenser.

Vacuum Pumps

The PF-II operating pressure and process gas flow through the system are maintained using adjustable speed vacuum pumps. The configuration allows selection of the pump design (e.g., oil bath rotary vane, liquid ring, etc.) and performance to the desired vacuum level conditions for the treatment batch. A high efficiency coalescing filter provides oil vapor separation from the process gas flow.

Activated Carbon Adsorber

Process gas flow discharged from the vacuum pump is routed by piping into a stainless steel vertical adsorber. Sulfur-impregnated (10 - 15%) and standard activated carbons are used as the adsorbent media to capture mercury and organic vapors that were not removed by the upstream process condensers. Process temperatures are continuously monitored within the bed and gas outlet locations. Due to exothermic chemical reactions of the carbon with certain (e.g., aldehydes and ketones) organic compounds and the potential for fire, a valved by-pass is configured to direct the gas flow around the bed based on temperature. A manually activated water spray is configured to wet the carbon as well.

Accumulator

The two accumulator tanks have a design pressure of 15 psi. The tanks are constructed of SS, which is compatible with the material being contained in the accumulator. The accumulator operates at about 70°F. The top accumulator tank can hold 18 gallons while the bottom tank can hold 125 gallons.

I.2 ENVIRONMENTAL PERFORMANCE STANDARDS

Release Prevention

The hydrogeologic, geologic, and meteorological factors of concern for the PFF Facility site and surrounding areas are addressed in Section A of this permit application. For purposes of ensuring protection of human health and the environment, PFF will operate the PF-II process equipment in conformance with applicable container and tank standards. Appropriate secondary containment and air emission controls are incorporated into the design and operation of the equipment. See Part II, Section B of this permit application for details regarding containment; management of ignitable, reactive, and incompatible wastes; condition and management of containers; inspections; and prevention of run on and accumulation of precipitation in the Treatment and Operations Building where the PF-II process operations take place.

Prevention of Releases to Groundwater or Subsurface Environment

Releases to groundwater or the subsurface environment from the PF-II treatment process are extremely unlikely for the following reasons:

- The process will manage relatively small volumes of material, i.e., each treatment batch is approximately 15 cft of waste.
- The unit is located within a secondary containment system designed to meet the requirements of 40 CFR 264, Subparts I and J. The containment system is designed to contain the entire volume of the waste being treated plus the volume of containers staged for processing. A sealant (e.g., Ashford Formula, which is a concrete sealer and hardener) has been applied to the containment system floor and walls. Containment calculations are included as Table II-7. In the future, sealants other than Ashford Formula may be used to provide a sufficiently impervious floor, in accordance with 40 CFR 264.175(b)(1).
- The PF-II process area will be inspected each operating day. Leaks or spills from the system will be cleaned up immediately upon detection or as soon as it is practicable and safe to do so.
- The system is located within the TOB, i.e., the system is physically separated from the subsurface environment and groundwater.
- PFF maintains a Contingency Plan to provide a framework for PFF responses to emergencies such as spills, fires, or explosions. This plan provides procedures to respond to threats to human health or the environment from the PF-II process.

Prevention of Releases to Surface Water, Wetlands, or Soil Surface

Releases to surface water, wetlands, or soil surface from the PF-II process are also extremely unlikely for the reasons listed above.

Prevention of Releases to Air

Releases to air from the PF-II process are extremely unlikely for the following reasons:

- The system is located within an enclosure inside the TOB. The enclosure is equipped with an emissions control system. The emissions control system is designed to handle the volume of organic emissions anticipated from the process. See air emissions control system description below.
- Organic vapors released from the waste streams in the reactor vessel during processing will be routed to a condenser. Liquids from the condenser will be transferred to the separator, while uncondensed vapors are routed through the HEPA filter, carbon adsorber, and RTO.
- Emissions at the reactor vessel loading point are minimized by limiting the time the containers are open prior to processing.
- Emissions during unloading of the reactor vessel are minimal because the potential air contaminants will be significantly removed or destroyed during processing.

Air Emissions Control System

PFF has installed and operates an organic emissions control system consisting of a regenerative (heat recovering) thermal oxidizer designed to control the emission of volatile organic compounds (VOCs) from the LSV processing area and the PF-II treatment operations enclosure in the TOB. The oxidizer will use a higher temperature to destroy VOCs. The following provides an overview of the current system. Figures I-21 through I-23 in Part I of this application are system layout, P&ID, and general arrangement drawings detailing this system.

Process VOCs are delivered to the air emission control system fan. This fan provides the motive force for the system. From the fan, the airstream moves to a switching valve for distribution into one of two heat recovery chambers filled with ceramic media to provide heat transfer. Recovery of up to 95% of thermal energy is accomplished using ceramic media. The airstream travels upward through the ceramic media and is preheated by the heat previously absorbed (retained in the ceramic media) to a temperature of approximately 1,300°F prior to entry into the combustion chamber. In the combustion chamber, the temperature is raised to approximately 1,500°F by a burner, and the VOCs in the airstream are destroyed.

After destruction in the combustion chamber, the cleaned hot gases (airstream) pass downward through the second heat recovery chamber, where heat is absorbed by the ceramic media. The cooled airstream then discharges from the heat recovery chamber through a valve and is ducted to the exhaust stack.

The VOC destruction efficiency specified in the system design is 95% minimum. The system is based on the following design criteria:

Process	LSV Processing	PF-II Treatment Area	Combined
Airflow	4,000 CFM	8,000 CFM	12,000 CFM
Temperature	70°F	70°F	70°F
VOC Concentration	571 ppm	500 ppm (est.)	500 ppm (estimated)[1]

[1] It should be noted that the assumptions used for the design criteria (i.e., air flow and VOC concentration) are purposely conservative to ensure the effectiveness of the thermal oxidizer.

The regenerative thermal oxidizer was designed, installed, and is operated in accordance with the applicable requirements of 40 CFR 264 Subpart AA (Air Emission Standards for Process Vents). See also Part II Section R of this permit application.

Monitoring and Inspections

The PF-II process will be monitored by PFF personnel during process operations. The PF-II process area and equipment will be visually inspected each operating day for evidence of leaks or spills. The inspection will be in accordance with the requirements of the PFF inspection plan. The secondary containment system will also be inspected each operating day for evidence of cracks or breaches in containment as specified in the PFF inspection plan.

I.3 POTENTIAL PATHWAYS OF EXPOSURE OF HUMANS OR ENVIRONMENTAL RECEPTORS

PFF workers within the PF-II treatment enclosure are the most likely human receptors of exposure to chemicals or chemical constituents released from the PF-II process. The exposure is anticipated to be minimal because of the negative pressure maintained in the process area and the air emission control system provided for the PF-II process area. The primary pathway for human exposure from the PF-II process is air emissions (volatiles or particulates) generated during the loading and unloading of the preconditioning and reactor vessels.

Personnel operating the system (or personnel present in the PF-II treatment enclosure for any other reason) are required to wear personal protective equipment (PPE) selected to address the potential hazards identified for the wastes to be managed and the operating parameters of the system. The PPE selected will be in accordance with OSHA standards.

Environmental receptors outside of the PF-II treatment enclosure, such as soil, surface water, groundwater, and air, are unlikely to be impacted by the PF-II system due to the air pollution control system, the containment system, and the location of process equipment within a building that physically separates the process area from groundwater, the subsurface environment, and precipitation.

I.4 EFFECTIVENESS OF PERMA-FIX II PROCESS

Experience has shown that >95% of target organic constituents concentrations are removed during the pre-conditioning phase of the PF-II process. Wastes introduced into the reactor following preconditioning have minimal volatile organic emissions. The wastes are primarily wetted sludge. As stated, the organic constituents are removed through solvent extraction during preconditioning. Analytical screening has shown LDR universal treatment standard levels are frequently achieved by pre-conditioning prior to thermal desorption.

The manufacturer's specifications for the reactor vessel and condenser indicate a 67% recovery efficiency for freon. Bench scale testing has indicated worst-case heat exchanger (condenser) efficiencies for typical organic constituents of 69% to 90%. The operation of the accumulator tanks (liquid-liquid extraction) substantially improves the organic constituent removal/recovery efficiency. Current test results indicate that the thermal desorption and liquid-liquid extraction process will remove more than 90% of the organics contained in the pretreated wastes. This efficiency level has been achieved with low volatility organics such as PCBs as well. It is anticipated that subsequent chemical oxidation, when selected, will effectively destroy the remaining residual organic constituents. VOC emissions from the process will be vented to and/or captured and destroyed by the air emissions control system. The thermal oxidizer will reduce VOCs a minimum of 95%.

The effectiveness of the PF-II process is dependent on the complexity of individual waste streams and individual hazardous waste organic constituents. Waste streams are subjected to the PF-II process until a sample of the treated waste indicates that it meets applicable land disposal restriction treatment levels. Experience has shown that preconditioning of the waste streams followed by thermal desorption has been highly successful and repeat processing cycles are rare. In fact, chemical oxidation is almost never required following the two initial treatment steps.

The treatment steps of the PF-II process (i.e., thermal desorption, condensation, organic separation and absorption, and chemical oxidation) are established technologies comprising the technology-based treatment standards of 40 CFR 268.42, Table 1 based on the following technology codes: chemical or electrolytic oxidation (CHOXD), deactivation (DEACT), liquid-liquid extraction (LLEXT), and recovery of organics (RORGS).

I.5 APPLICABLE TANK STANDARDS

The PF-II process contains several components that have been certified in accordance with certain tank standards, as specified in 40 CFR 264.192. This certification is included as Appendix II-I-5 to this permit application section. Management practices for ignitable, reactive, and incompatible wastes at the facility have been designed to minimize the potential for fires, explosions, gaseous emission, leaching, or other discharge of hazardous waste or hazardous waste constituents that could result from the mixing of incompatible wastes or materials if tank systems ruptured or failed. PFF will not place incompatible wastes or incompatible wastes and materials in the same tank or tank-like system per the requirements of 40 CFR 264.17(b). In addition, hazardous waste will not be placed in a tank or tank-like system that previously held an incompatible waste or material and has not been decontaminated per the requirements of 40 CFR 264.17(b).

Where ignitable or reactive waste will be stored or treated in a tank or tank-like system, the permittee will comply with the requirements for the maintenance of protective distances between the waste management area and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in the NFPA code.[1]

In addition, ignitable or reactive waste will not be placed in tank or tank-like systems, unless the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that:

- The resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste under 40 CFR 261.21 or 261.23 and the requirements of 40 CFR 264.17(b) are complied with; or
- The waste is stored or treated in such a way that it is protected from any material or conditions that may cause the waste to ignite or react; or
- The tank system is used solely for emergencies

[1] National Fire Protection Association (NFPA), "Flammable and Combustible Liquids Code," Tables 2-1 through 2-6, 1990. NFPA Tables 2-1 through 2-6, 1977 or 1981, are incorporated by reference into 40 CFR 260.11.

New Tank Standards – Tank Assessment

An as-built written certification by an independent, qualified, registered professional engineer for the PF-II process components for handling hazardous waste was submitted to the DEP in October 2000. Please see Appendix II-I-5 for tank certification documentation.

External Corrosion Protection

The PF-II process equipment is located indoors; hence, it is protected from the weather.

Tank Installation and Testing

Prior to placement of a tank or tank-like system in hazardous waste service, an independent, qualified installation inspector or an independent, qualified registered professional engineer inspected the tank system for the following items:

- Weld breaks.
- Punctures.
- Scrapes of protective coatings.
- Cracks.
- Corrosion.
- Other structural damage or inadequate construction/installation.

This inspection report will be included as Appendix II-I-5 once installation is complete.

Dimensions and Capacity

Details regarding dimensions and capacity of the PF-II process unit and components are included in the engineering certification provided as Appendix II-I-5 of this permit application section.

Descriptions of Feed Systems, Safety Cut-offs, Bypass Systems, and Pressure Controls

The PF-II process includes enclosed vessels equipped with loading and unloading ports and vents. The reactor vessel is loaded at the top, and contents are piped through downstream equipment via hard piping. The unloading of treatment residuals from the reactor vessel is accomplished from the bottom of the unit. As appropriate, manways are used for inspection and cleaning operations.

Piping between components is regulated by valves (or equivalent devices). Typically, the rigid lines are attached to the tanks by flange couplings. The pressure control system for components consists of thief hatches with a combination of normal venting and a vacuum breaker. A nitrogen purge system is used to minimize the potential for fires or explosions. Additional details of feed systems, safety cutoff, bypass systems, and pressure controls for tank systems are provided in Appendix II-I-1.

Piping, Instrumentation, and Process Flow

The normal process flow for the batch treatment is summarized in the process description provided above. See Figures II-I-2-A and II-I-2-B for the PF-II process flow diagram. See also Figure I-7-A and I-7-B in Part I of this permit application.

High/Low Pressure Piping

The PF-II process incorporates the use of flexible hoses as well as semi-rigid or rigid piping. Hazardous waste transfer on-site will be classified as low-pressure transfer.

Ancillary Equipment

Ancillary equipment consists of piping between the PF-II system components as well as loading and unloading equipment and other container management equipment used in association with the process. Additional details regarding ancillary equipment are provided in Appendix II-I-4 in Part II and Figures I-7-A and I-7-B in Part I of this permit application.

Containment of Releases

The PF-II process line is located within secondary containment in accordance with the applicable requirements of 40 CFR 264.192. PFF operating procedures include inspections designed to identify spilled liquids in a timely manner. Detailed inspection logs are maintained in the Facility Operating Record for a period of at least three years. After discovery, spilled liquids will be removed from the collection area in as timely a manner as is necessary to prevent overflow of the collection system. Spilled liquids will be identified by visual observation, review of Facility records, and, if necessary, by chemical analysis. If required, analyses will be conducted in accordance with the Facility Waste Analysis Plan.

I.6 CLOSURE PLAN

A copy of the Facility Closure Plan is included in Section K of this permit application.

K CLOSURE

K.1 INTRODUCTION

This section contains a discussion of the steps that shall be taken should PFF decide to partially or completely close hazardous waste operations at the Facility during the intended operating life. Procedures to be used for an unplanned partial closure are, as applicable, similar to the procedures outlined for final closure.

The Closure Plan has been prepared to meet the requirements of Subpart G of 40 CFR 264 and included as Appendix II-K-1. This written plan for closure of hazardous waste management units will be amended, and written notification of or request for a permit modification to authorize the change in the approved Closure Plan will be submitted to the DEP, whenever:

- Changes in operating plans or Facility design affect the Closure Plan.
- In conducting partial or final closure activities, unexpected events require a modification of the approved Closure Plan.

Any modifications to this Closure Plan after the Part B permit are renewed for PFF will be made in accordance with the requirements of 40 CFR 270.42 and Rule 62-730.290, F.A.C. Copies of the approved Closure Plan for the Facility will be maintained at the Facility office until the DEP has notified PFF of satisfactory closure after reviewing the closure certification.

PFF will submit the notification or request for a permit modification including a copy of the amended Closure Plan, for approval by DEP, at least sixty (60) days prior to any proposed change in Facility design or operation, or no later than sixty (60) days after an unexpected event has occurred which has affected the Closure Plan. If an unexpected event occurs during the partial or final closure period, PFF will notify DEP as soon as possible and will submit a request for a permit modification no later than thirty (30) days after the unexpected event; or will not submit a permit modification request (if agreed to by DEP), and changes to the approved Closure Plan will be documented in the Closure Report. PFF will attempt to meet or discuss with DEP prior to submitting a permit modification regarding any rule changes that could affect the closure plan.

A closure schedule is provided in Table II-9. PFF will close hazardous waste tank and container management units in accordance with this Closure Plan unless an alternate partial or final Closure Plan has been approved by DEP. In accordance with 40 CFR 264.112(e), this Closure Plan shall not preclude PFF from removing hazardous wastes and decontaminating or dismantling equipment in accordance with the approved partial or final Closure Plan at any time before or after notification of partial or final closure.

At the time of closure, all regulated hazardous waste management units and ancillary equipment will be decontaminated and left in place or dismantled and disposed of properly. Within 180 days of receipt of the final waste shipment, the complete waste inventory will be taken for off-site treatment, storage, or disposal, as appropriate. Closure of the permitted units will be completed within 180 days of initiation of closure. In accordance with the requirements of 40 CFR 264.115, PFF will submit to DEP, by registered mail, a certification that the hazardous waste facility has been closed in accordance with specifications in the approved Closure Plan. The certification, to be submitted within 60 days of the completion of final closure, will be signed by PFF and by a qualified professional engineer registered in the state of Florida.

PFF will close the facility in a manner that minimizes the need for further maintenance; controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground, surface waters, or atmosphere; and complies with the closure requirements of 40 CFR 264, Subpart G.

A description of the closure procedures to be used to close the existing hazardous waste container storage areas and tank is located in Section K.7. Closure procedures for the proposed units (i.e., additional PF-II process equipment) are also presented in Section K.7. Closure of the hazardous waste container storage areas and tank and the proposed additional-PF-II process equipment will be conducted such that no post-closure care shall be necessary.

In the event that the clean closure criteria presented in Section K.6. cannot be achieved, a closure/post-closure plan will be submitted to the DEP. The Closure Cost Estimate presented in Appendix II-K-2 conservatively assumes that hazardous waste inventory will be treated or disposed of off-site; closure activities will be carried out by third party personnel; and decontaminated equipment will remain on-site. This scenario assumes a “worst case” closure situation.

There is no on-site disposal activity of hazardous waste at the Facility; therefore, there is no disposal capacity to be exhausted. It is anticipated that the Facility will remain in operation at least until the year 2050.

K.2 FACILITY DESCRIPTION

The Facility is located in Gainesville, Florida. The street and the mailing address for the operation is:

Perma-Fix of Florida, Inc.
1940 N.W. 67th Place
Gainesville, FL 32653

A copy of the Closure Plan or the most recent plan revision is maintained at the Facility. It is intended that all closure work will be completed and final with processing and/or removal of all hazardous waste, followed by cleaning and decontamination of the Facility and equipment used in hazardous waste receipt, storage, processing, transfer, and handling; and disposing of wastes generated during closure activities.

K.2.1 IDENTIFICATION OF RCRA PERMITTED UNITS

Closure procedures will be performed on the following units which are/will be utilized for the storage and treatment of hazardous waste during operation of the RCRA facility:

- Processing and Storage Building
- Container Storage Area
- 3,000-Gallon Storage Tank

LSV Building

110-Gallon LSV Fluids Tank Underneath the Outfeed Belt
275-Gallon Test Tank
521-Gallon Portable Debris Vat (Dip Tank) Shredder
Container Storage Area

Treatment and Operations Building

60 cft Reactor Vessel (Thermal Desorber)
18-Gallon Top Accumulator Tank
125-Gallon Bottom Accumulator Tank
83-gallon Aftercooler Tank
Container Storage Area
300-Gallon Non-Elementary Neutralization Tank
Maximum 55-Gallon Capacity Deactivation Unit
Maximum 170-Gallon Capacity Dual Drum Rotator
Maximum 15-Gallon Mercury Amalgamation Unit

The last four units listed above for the TOB are portable and can be used in the PSB and LSV buildings.

The locations of the existing and proposed units are shown in Figures II-K-1, II-K-2, and II-K-3 (see also Figure I-1 in Part I of this application). The proposed unit is the new activated carbon absorber.

Ancillary equipment scheduled for closure will consist of the following:

- Pumps
- Piping
- Hoses
- Connectors
- Valves
- Flanges
- Aftercooler

Other equipment scheduled for closure will consist of the following:

- Grinders
- Strainers
- Forklifts
- Conveyors
- Screens
- Sorting Table

K.2.2 OPERATING RECORDS

The operating records associated with the Closure Plan include:

- Closure Plan (A copy of the Closure Plan and current amendments is maintained in the Facility Operating Record.).
- Closure Cost Estimate (The Closure Cost Estimate and all amendments or annual adjustments for inflation will be maintained in the Facility Operating Record).
- Financial Assurance document(s) to cover the closure cost estimate.

K.3 MAXIMUM CLOSURE INVENTORY

The required estimate for maximum waste inventory at the time of closure is based on the condition that Facility tanks and container storage areas are full of material. The maximum capacity of the existing Facility is 166,574 gallons of hazardous waste. The tabulated compilation of this maximum inventory is tabulated in Table II-8.

K.4 CLOSURE TIME SCHEDULES

An outline of the Closure Time Schedule is included in Table II-9. As indicated in Table II-9, some of the closure activities will be occurring simultaneously.

If it is expected that closure activities will take longer than 180 days to complete, PFF will apply for an extension to the closure period from the DEP. This request will be made at least 30 days prior to expiration of the allowable 180-day period.

K.5 AMENDMENTS TO CLOSURE PLAN

PFF can foresee possible future needs for modifications to this Closure Plan. These could be associated with changes in Facility design or in operating plans. Specific requirements for amending the Closure Plan, if applicable, are contained in 40 CFR 264.112(c)(2) and (3) and will be met. Written requests for approval of Closure Plan amendments, if required, will be in accordance with 40 CFR 264.112(c). If an unexpected event affects the Closure Plan, a written request for a modification to the Plan will be submitted within 60 days of the event.

K.6 CLOSURE PERFORMANCE STANDARDS

Closure procedures will be performed on the RCRA units, identified in Section K.2.1, which are utilized for the processing and/or storage of hazardous waste during operation of the Facility.

The RCRA units will be closed in a manner that will eliminate the need for further post-closure maintenance or remediation and will be protective of human health and the environment. The potential for release of hazardous waste or hazardous waste constituents to groundwater, surface water, soil, or to the atmosphere after final closure of the Facility will be eliminated as a result of successful implementation of this Closure Plan.

During closure, all wastes that exist on-site will be shipped off-site for proper treatment and/or disposal. The contaminated equipment will either be decontaminated as appropriate to provide for future reuse, recycled as scrap, or disposed of off-site. The decontamination residues generated will be disposed of off-site for proper treatment and/or disposal.

If, due to naturally occurring or pre-hazardous waste operating conditions, the following clean closure standards cannot be applied, an alternate (hybrid) closure standard may be established for individual units. PFF will submit to the DEP copies of analytical results obtained during closure activities and proceed with additional investigations around suspect sample locations, if deemed necessary. Any additional subsurface investigations will define the extent and magnitude, as is practical, for that unit.

Additional investigation procedures will be similar to those specified in Appendix II-K-1 and will continue until the extent of potential contamination is assessed. Once the additional investigation activities are completed, the resulting data will be evaluated to determine if a risk assessment will be performed or if corrective action activities will be implemented. Closure verification data, analytical results, and certification reports will be submitted to the DEP.

Prior to conducting additional investigation activities or performing a risk assessment, PFF will submit a written work plan to DEP, and a permit modification request will be made if advised by DEP.

All final rinse water samples will exhibit constituent concentrations that meet Florida's groundwater standards and minimum criteria listed in Chapter 62-777, Florida Administrator Code (F.A.C.). For the parameters that are not listed in these Chapters, final rinse water samples shall exhibit constituent concentrations that are protective of human health and the environment.

Adequate protection of human health and the environment may be demonstrated either by using Florida's risk assessment methodology found in Rule 62-780.650, F.A.C., or alternatively PFF may use Florida's groundwater and/or soil cleanup Target Levels listed in Chapter 62-777, F.A.C.

K.6.1 TANK CLOSURE STANDARDS

In order to verify that the tanks have been properly decontaminated, the tanks shall be considered clean closed when sampling verifies that each final rinsate sample exhibits constituent concentrations below those levels listed in "Table I: Groundwater and Surface Water Cleanup Target Levels for Chapter 62-777, F.A.C." (See Table I-10 for a summary of closure performance standards for tanks). DEP guidance or rules pertaining to acceptable rinsate levels available at the time of closure may be used in lieu of Table I-10.

Final rinsate samples will be collected and analyzed for constituents identified in 40 CFR 261 Appendix VIII that have been stored at the facility as well as any degradation and reaction products. To achieve the clean closure standard, each

tank and associated ancillary equipment will be initially emptied of all hazardous wastes (i.e., liquids and solids). Subsequently, each tank and associated equipment will be cleaned and rinsed adequately to achieve the clean closure standard. Rinsate generated during tank and equipment cleaning will be managed as a hazardous waste, with the exception of final rinsate that meet the clean closure performance standard.

Following final tank and equipment rinsing, the following options, dependent upon rinsate analysis, may be exercised.

1. If the final rinsate meets the clean closure standard, no end use restrictions shall be placed on decontaminated tanks or process equipment, and closure of each tank unit will be deemed final.
2. Tanks or process equipment that cannot meet the clean closure standard will be recycled as scrap metal.

The secondary containment structures associated with tanks will also undergo decontamination activities and will be decontaminated to the standards identified in Section K.6.2. Detailed closure procedures for tanks are further discussed in Section K.7.1.1.

K.6.2 SECONDARY CONTAINMENT CLOSURE STANDARDS

In order to verify that secondary containment areas have been properly decontaminated, the units shall be considered clean-closed when sampling verifies that either 1) the final rinse water demonstrates compliance with either Table I Groundwater and Surface Water Cleanup Target Levels for Chapter 62-777, F.A.C., or the Risk Assessment Methodology provided in Chapter 62-780, F.A.C., or 2) concrete samples demonstrate clean closure upon meeting the Table II Soil Cleanup Target Levels for Chapter 62-777, F.A.C. See Table I-10 for a summary of closure performance standards for secondary containment areas.

Final rinsate samples or concrete samples will be collected and analyzed for hazardous constituents identified in 40 CFR 261, Appendix VIII that have been previously stored at the facility. To achieve the clean closure standard, the secondary containment areas will be decontaminated by scrubbing down all surfaces, and subsequently pressure washing and rinsing the surfaces.

Rinsate generated during decontamination activities will be managed as a hazardous waste, with the exception of the final rinsate that meet the clean closure standard.

Following final rinsing, the following options, dependent upon rinsate analysis and/or concrete analysis, may be exercised.

1. If the final rinsate or concrete samples meet the clean closure criteria, no end use restrictions shall be placed on the decontaminated units, and closure of the unit will be deemed final.
2. Concrete that cannot meet the clean closure criteria will be removed and disposed of. If the concrete is not contaminated by a known listed waste and if it passes TCLP, concrete will be managed as a non-hazardous waste.

Detailed closure procedures for secondary containment areas are further discussed in Section K.7.1.2.

K.6.3 ANCILLARY EQUIPMENT AND MISCELLANEOUS RCRA UNITS CLOSURE STANDARDS

In order to verify that ancillary equipment and miscellaneous RCRA units have been properly decontaminated, the equipment shall be considered clean closed when field sampling verifies that the final rinsate sample exhibits constituent concentrations below the Table I Groundwater and Surface Water Cleanup Target Levels for Chapter 62-777, F.A.C., or the Risk Assessment Methodology provided in Chapter 62-780, F.A.C. See Table I-10 for a summary of closure performance standards for ancillary equipment.

Final rinsate samples will be collected and analyzed for constituents identified in 40 CFR 261, Appendix VIII that have been previously stored at the facility. To achieve the clean closure standard, the ancillary equipment and miscellaneous RCRA units will be initially emptied of all hazardous wastes (i.e., liquids and solids). Subsequently, the equipment will be cleaned and rinsed adequately to achieve the clean closure standard. Rinsate generated during equipment cleaning will be managed as a hazardous waste, with the exception of final rinsate that meet the clean closure standard. Following final equipment rinsing, the following options, dependent upon rinsate analysis, may be exercised.

1. If the final rinsate meets the clean closure standard, no end use restrictions shall be placed on decontaminated equipment, and closure of the ancillary equipment or miscellaneous RCRA unit will be deemed final.
2. Equipment (composed of steel) that cannot meet the clean closure standard will be recycled as scrap metal. Non-ferrous equipment will be recycled to the extent feasible as non-hazardous waste; otherwise, it will be disposed of as hazardous waste.

Detailed closure procedures for ancillary equipment and miscellaneous RCRA units are further discussed in Section K.7.1.3.

K.6.4 SUBSURFACE INVESTIGATION CLOSURE STANDARDS

Subsurface investigations will be conducted at the secondary containment areas where hazardous wastes were previously stored. In order to verify that the soil underlying these areas has not been impacted with hazardous waste or hazardous waste constituents, the soil underlying these units shall be considered clean closed when representative soil samples exhibit constituent concentrations below the Table II Soil Cleanup Target Levels for Chapter 62-777, F.A.C., naturally occurring background concentrations, or the Risk Assessment Methodology provided in Chapter 62-780, F.A.C. See Table 10 for a summary of closure performance standards for subsurface investigations. To meet the clean closure criteria, any contaminant remaining in the soil below Table II Soil Cleanup Target Levels must not leach contaminants into groundwater above Groundwater Cleanup Target Levels (GCTLs), if GCTLs for such contaminant is listed in Table I of Chapter 62-777, F.A.C.

Soil samples will be collected and analyzed for constituents identified in 40 CFR 261, Appendix VIII that have been previously stored at the facility. To verify clean closure of the secondary containment areas, a subsurface investigation will be conducted at these areas as presented in Appendix II-K-1. Following receipt of analytical results, the following options may be exercised.

1. If the soil results meet the clean closure standard, no end use restrictions shall be placed on the units.
2. If soil results exceed the clean closure standard, additional subsurface investigations will be performed to define the extent and magnitude of constituent contamination, or the Facility may utilize the Risk Assessment Methodology provided in Chapter 62-780, F.A.C.
3. Upon defining the extent and magnitude of constituent contamination, a risk assessment will be performed, or corrective action activities will be conducted. Detailed subsurface investigation activities are discussed in detail in Appendix II-K-1.

K.7 CLOSURE PROCEDURES

The following subsections outline the procedures for partial and final closure of the units at the Facility. During partial and final closure of the units, a decontamination area/station will be set up for the cleaning of equipment used during closure (tools, machines, material handling equipment, etc.). Shower facilities, cleaning equipment, and decon supplies will be available to workers performing closure activities. All potentially contaminated rinse water, debris, and personal protective equipment (PPE) will be containerized in a tank(s) or deposited in containers for subsequent characterization and management at an off-site treatment, storage, or disposal facility (TSDF). A separate Closure Sampling and Analysis Plan is presented in Appendix II-K-1.

K.7.1 PARTIAL CLOSURE ACTIVITIES

Required partial closure notices will be submitted as specified in 40 CFR 264.112(d) to the following:

Waste and Air Resources Management Administrator
Florida Department of Environmental Protection
7825 Baymeadows Way, Suite B200
Jacksonville, FL 32256-7577

K.7.1.1 TANK CLOSURE

Standard tank cleaning activities associated with tank closure shall consist of the following procedures.

- Drain all liquid materials from the tank through the lowest fitting on the tank. Transfer the liquid contents to a different container for transportation off-site.
- Test for explosive vapors and oxygen content using standard instrument procedures before entering in a tank.
- Remove any solids that may have settled out of the liquid at the bottom of the tank. This may include the use of self-priming, high-clearance centrifugal pump(s) or rental vacuum pump unit(s). Some more compacted solids may have to be removed manually within the tank and transferred to externally located roll-off bins for temporary on-site storage and final disposal at an off-site TSDF. Removal procedures will follow standard confined space entry procedures.
- Use a high-pressure wash with detergent for cleaning the interior of each tank and associated fittings and piping. After use, transfer the potentially contaminated rinse water to a transport container for transport off-site.
- Open the tank access ports. Allow the tank to dry out.
- Inspect the tank interior for visual cleanliness. Repeat the above steps, if necessary.
- Analyze the final rinse water, using methods outlined in Appendix II-K-1, to check for the presence of constituents identified in Section K.6.1. The tank will be certified as clean-closed (decontaminated) when analytical results on the final rinse water indicate that levels of constituents are below the closure criteria identified in Table II-10.

The tank cleaning procedures listed above will also be followed during final closure to decontaminate the associated tank appurtenances (piping, fittings, nozzles, valves, pumps etc.). A partial closure of these items may occur during the normal operations of the Facility and may include washing in parts washers and/or power washing and other methods to remove visible signs of contamination prior to reuse or scrapping for metal recovery.

Following cleaning/decontamination activities, one of the options identified in Section K.6.1 will be initiated.

K.7.1.2 CONTAINER STORAGE FACILITIES AND SECONDARY CONTAINMENT AREA CLOSURE

Standard cleaning activities associated with container storage facilities and secondary containment areas closure shall consist of the following procedures.

- Process all existing wastes stored in containers or ship the containers to an off-site RCRA permitted TSDF.
- Dispose of all empty containers through an authorized drum recycler/disposal facility.
- Examine the containment structures for evidence of cracks, stains, spills, or residuals, as well as review past operating records for information on past spills or leaks. These activities will form the basis for selection of sampling locations.
- Decontaminate the units by scrubbing down all surfaces and subsequently pressure washing the surfaces with detergent solution followed by a clean water rinse.
- Collect a final rinse water sample and analyze the sample, using methods outlined in Appendix K-1, to check for the presence of constituents identified in Section K.6.1. The structures will be deemed clean-closed when analytical results on the final rinse water indicate that levels of constituents are below the closure criteria identified in Table II-10, or PFF may elect to forgo collecting a rinse water sample and collect a concrete sample.

The concrete sample will be collected and analyzed utilizing the methods outlined in Appendix II-K-1, to check for the presence of constituents identified in Section K.6.1. The structures will be deemed clean-closed when analytical results of the concrete indicate that levels of constituents are below the closure criteria identified in Table II-10.

Following cleaning/decontamination activities, one of the options identified in Section K.6.2 will be initiated.

K.7.1.3 ANCILLARY EQUIPMENT AND MISCELLANEOUS UNIT CLOSURES

Routine operational replacement of ancillary equipment, such as filter canisters and baskets, shredders, grinders, pumps, valves, piping, hoses and fittings, etc., may require removal and partial closure during the life of the Facility. This section addresses the "partial closure" of these items during the normal routine operations of the Facility, prior to reuse, recycle for scrap metal recovery, or disposal as non-hazardous waste. Additionally, this section addresses the closure of the miscellaneous RCRA unit (i.e., Perma-Fix II® process).

Ancillary Equipment

Standard cleaning activities associated with ancillary equipment replacement include the following procedures.

- Isolate and remove all liquid holdup from the equipment through the fitting(s) situated at the lowest level to ensure proper drainage. A vacuum pump may be used, if necessary. Transfer the liquid contents to a tank/container that is in hazardous waste service for further processing and/or proper disposal.
- Remove any solids/slurry that may have settled out at the bottom sections, using a vacuum pump, if necessary. Transfer the solids/slurry contents to a tank/container that is in hazardous waste service for further processing and/or proper disposal.
- Cleaning of the parts and/or equipment using parts washers; recirculation of virgin, waste, or recycled solvents such as alcohols, ketones, aliphatic hydrocarbons, etc.; and/or high-pressure wash with detergent solution and other methods to remove visible signs of contamination.
- Inspect the equipment for visual cleanliness. Repeat the above steps, if necessary. Visual cleanliness will be the adequate closure criteria for ancillary equipment, prior to disposal as scrap metal.
- If rinse water is used, analyze the rinse water, using methods outlined in Appendix II-K-1, to check for presence of constituents identified in Section K.6.1. The equipment will be deemed clean-closed when analytical results of the final rinse water indicate that levels of constituents are below the closure criteria identified in Table II-10.
- Equipment that meets the clean closure criteria will be removed from service. Equipment that does not meet the criteria will have the cleaning steps repeated until it meets the requirements or will be disposed at an off-site facility as hazardous waste, or it will be disposed of as scrap metal.

Cleaning solutions, rinse waters, and other liquids resulting from cleaning activities will be collected and sent off site for proper treatment or disposal. Following cleaning and decontamination, the parts and/or equipment will be available for reuse, recycle for scrap metal recovery, or disposal as non-hazardous waste.

Miscellaneous Unit Closure

- Drain all liquid materials from each piece of equipment listed in Appendix II-I-1 that is associated with the Perma-Fix II® process (i.e., miscellaneous unit). Drain liquids from the lowest fitting on the equipment or tank.
- Transfer the liquid contents to a different container (if required) for transport off-site.
- Remove any hazardous waste solids or liquids that may remain in the unit. This may include the use of self-priming, high-clearance centrifugal pump(s) or rental vacuum pump unit(s). Compacted sludge solids may have to be removed manually from each piece of the unit and transported to externally located roll-off bins

for temporary on-site storage and final disposal at an off-site TSDF. Removal procedures will follow standard confined space entry procedures and will be conducted by qualified individuals.

- Pressure wash with appropriate detergent for cleaning and decontaminating the interior of each piece of equipment and all associated valves, fittings, piping, and pumps.
- Transfer the potentially contaminated rinse/wash water to a transport container for transport off-site.
- Open all access ports, drains, valves, etc. Allow the equipment's interior and exterior to dry out.
- Test for explosive vapors and oxygen content using standard instrument and industrial hygiene/safety procedures.
- Inspect the interior of each tank, reservoir, or piece of ancillary equipment.
- Gather a composite final rinse water sample from the miscellaneous unit.
- Analyze the final rinse water, using methods outlined in Appendix II-K-1, to check for the presence of constituents identified in Section K.6.1. The miscellaneous unit will be deemed clean-closed (i.e., decontaminated) when analytical results of the final rinse water indicate that levels of hazardous constituents are below the closure performance standard specified in Table II-10.
- Equipment that meets the clean closure criteria will be removed from service. Equipment that does not meet the criteria will have the cleaning steps repeated until it meets the requirements or will be disposed at an off-site facility as hazardous waste, or it will be disposed of as scrap metal.

Cleaning solutions, rinse waters, and other liquids resulting from cleaning activities will be collected and sent off-site for proper treatment or disposal. Following cleaning and decontamination, the parts and/or equipment will be available for reuse, recycle for scrap metal recovery, or disposal as non-hazardous waste.

K.7.1.4 SUBSURFACE INVESTIGATION ACTIVITIES

As a means of demonstrating that hazardous constituents have not impacted soils underlying and surrounding the container storage facilities, a subsurface investigation will be conducted at these units. Detailed subsurface investigation activities are provided in Appendix II-K-1. Planned boring locations are presented in Figures II-K-1 through II-K-3.

K.7.2 FINAL CLOSURE ACTIVITIES

It is anticipated that the Facility will remain open and in operation until at least the year 2050. Final closure activities will follow the procedures presented in this section.

Final closure activities will basically follow the same procedures described in Section K.7. However, prior to final closure of the Facility, the DEP will be notified of the intent to close the Facility. After receiving approval from the Agency to implement the Closure Plan, final closure will start, and waste will no longer be accepted at the Facility. A qualified professional engineer will provide general oversight over the Closure Activities.

No environmental impact on surrounding land surfaces and soil areas is expected, because of the widespread use of concrete for secondary containment, use of welded flanged steel piping, frequent inspection of operations, and prompt corrective action, if necessary, after inspections.

The miscellaneous residues from facility decontamination work, including debris, absorbents, supplies, and used personal protective clothing will be collected and accumulated on-site in containers. Containers will be sent off-site for treatment or disposal, as appropriate, to permitted hazardous waste facilities.

PFF will submit a certification of final closure per the requirements of 40 CFR 264.115. All supporting documentation for the certification will be made available to the Director of DEP upon request, until PFF is released from financial assurance requirements. Supporting documents to be maintained will minimally consist of the following:

(a) A copy of the certification of closure prepared by the qualified professional engineer registered in the state of Florida;

(b) Results of all sampling and analyses;

(c) Activities conducted by the professional engineer or his/her designee(s) during site visits and inspections;

(d) Field reports documenting each site visit;

(e) List of Facility records that were reviewed in preparing the certification report; and,

(f) Photographic documentation.

K.8 CLOSURE COST ESTIMATE

The Closure Cost Estimate has been prepared utilizing CostPro® software (Version 6.0) and is unchanged from the 2015 permit renewal application. It should be noted that non-default values were used in the Closure Cost Estimate in certain instances to estimate labor and disposal costs as well as to estimate the time it will take to conduct certain closure activities. A note to that effect is included in the appropriate CostPro® worksheet.

The Closure Cost Estimate shall be reviewed whenever a change in the closure plan increases or decreases the cost of closure. Copies of the original Closure Cost Estimate, or a revised cost estimate (if applicable), and the latest annual inflation adjusted estimate required by 40 CFR 264.142(b) shall be kept at the Facility during its operating life. The cost of closure for the Facility is detailed in Appendix II-K-2. ~~It does not include the closure cost for proposed units (i.e., vibrating screen, crusher, shredder, pug mills) associated with the continuous PF-II process. Since a continuous PF-II process is not being installed and this is considered an "in-kind" replacement an updated closure cost was not prepared.~~

K.9 POST-CLOSURE PLAN

A Post Closure Plan is not required at this time since there is no hazardous waste disposal unit at the facility. However, if "clean closure" in accordance with 40 CFR 264.197(b) cannot be achieved for closure of the tank, then PFF will submit a closure/post-closure plan in accordance with the requirements for landfills (40 CFR 264.310).

P INFORMATION REGARDING POTENTIAL RELEASES FROM SWMUS

Part II.P Information Regarding Potential Releases from SWMUS (DEP Form 62-730.900(2)(c)) can be found in the attached Appendix II-P. Although unassociated with a SWMU, one release was reported by the facility recently to the DEP in January 2017. A fire was reported within a roll-off dumpster, which led to soil sampling and the removal of approximately 42 cubic yards of soil with polyaromatic hydrocarbons in September 2019. Confirmation soil sample concentrations were below Residential Direct Exposure and Groundwater Leachability Soil Cleanup Target Levels. Further details are available in the *Source Removal Report and No Further Action Request* dated November 5, 2019 (Trihydro 2019).

Q. RCRA FACILITY ASSESSMENT

RCRA Facility Assessment conducted by EPA's contractor, A. T. Kearney, is attached as Appendix II-Q.

A Release Assessment Report for Area of Concern A (Paint Spray Booth) and Area of Concern C (Soil Mound Area) prepared by Environmental Science Associates, Inc. and dated June 2001 was submitted to DEP. This Report had concluded that no further action was warranted for Areas of Concern A and C, based on the results of the laboratory analysis of the soil samples. This investigation was required by the HSWA corrective action section of the hazardous waste permit that was in effect then.

The current hazardous waste permit issued on May 27, 2015 requires no further action for any potential SWMUs at the facility. No releases from any additional SWMUs have been identified after the issuance of this permit.

The current operational facility property was acquired by PFF from Quadrex Corporation on June 17, 1994. The Quadrex Annex Area was never owned by PFF; the Quadrex Annex Area is indicated on the SWMU map (Figure II-Q-1). Hence, SWMUs #30, 31, and 32 shown on the attached map are not SWMUs associated with PFF.

R PROCESS VENTS

These standards apply to process vents associated with distillation, fractionation, thin- film evaporation, solvent extraction, and air or steam stripping operations that manage hazardous waste with organic content of at least 10 ppm by weight.

PFF currently operates affected process vents in association with the Liquid Scintillation Vial (LSV) waste treatment unit, the Perma-Fix II® (PF-II) process that meets the definitions of "distillation", "solvent extraction", and "steam stripping operations" as defined in Subpart AA, and chemical extraction operations for debris treatment as described in Part I of this permit application. Hence, Subpart AA will apply to operation of each of these three units when hazardous waste of at least 10 ppm organic content by weight is processed.

In addition, PFF plans to operate a solvent distillation process at the Facility. Although this process will be exempt from permitting requirements, it will be subject to Subpart AA requirements because the unit will be located at a TSDF otherwise subject to permitting requirements of Part 270. The unit will be located in an area equipped with a vapor recovery system in accordance with the requirements of 40 CFR 264.1033.

Under the provisions of 40 CFR 264.1032(a), total facility organic emissions from affected process vents must be either reduced with a control device by 95 weight percent or limited to 3 pounds/hour and 3.1 tons/year.

PFF has installed a closed-vent system and air pollution control device on the PF-II unit to control volatile organic compounds (VOCs). The PF-II process is designed to vent minimal concentrations of VOCs that are not collected in the condenser and absorber units to a regenerative thermal oxidizer (RTO). The RTO is described in detail in Part II.I of this permit application. The PF-II process equipment is located within the Facility's Treatment and Operations Building. See Part I, Figure I-6-A and I-6-B.

The LSV unit is connected to a closed-vent system meeting the definition of 40 CFR 264.1031. Chemical extraction operations for debris treatment are conducted in a vat near the LSV processing area. Each of the three process areas regulated under 40 CFR 264, Subpart AA are vented through the RTO. The RTO is designed and operated to capture and control VOC air emissions. The minimum VOC control efficiency of the RTO is 95%.

Compliance Documentation for Process Vent Air Emission Standards

PFF has implemented volumetric flow monitoring for the LSV process area (including debris treatment) and the PF-II process as required by 40 CFR 264.1033(f)(1). Flow monitors are located upstream of the RTO gas inlet. Process vent volumetric air flow is recorded at least once per operating hour. In addition, a temperature-monitoring device equipped with a continuous recorder is installed as specified by 40 CFR 264.1033(f)(2)(i). To demonstrate compliance with the 95% efficiency requirements of 40 CFR-264.1033(c), PFF relies on the manufacturer's guarantee of a minimum of 95% destruction efficiency.

S REQUIREMENTS FOR EQUIPMENT

Pursuant to the requirements of 40 CFR 264.1050, the air emissions standards for equipment leaks apply to the equipment at the Facility that contain or come in direct contact with hazardous waste with organic chemical concentrations of 10% by weight or higher.

PFF manages hazardous waste with organic chemicals that range in concentration from 0 to 100% by weight. Therefore, all of the equipment (as defined in 40 CFR 264.1031) at the Facility that contains or is in direct contact with hazardous waste is potentially subject to the leak detection and monitoring standards.

The equipment in the following areas of the Facility is potentially subject to 40 CFR 264, Subpart BB:

- LSV area
- 3,000-gallon Tank
- Debris treatment area
- Hazardous waste transfer area
- Mixed waste tanker loading area
- Mixed waste transfer to larger containers area
- PF-II treatment area

Except for the LSV area equipment, the hazardous waste transfer equipment, and the mixed waste transfer to larger containers equipment, all equipment contacting hazardous waste with organic chemical concentration of 10% by weight or higher is exempt from the Subpart BB requirements. These exemptions are described below.

40 CFR 264.1050(f) states, “Equipment that contains or contacts hazardous waste with an organic concentration of at least 10% by weight for less than 300 hours per calendar year is excluded from the requirements of Sections 264.1052 through 264.1060, if it is identified, as required by Section 264.1064(g)(6).” This exemption applies to the equipment associated with the 3,000-gallon storage tank, debris treatment area, and mixed waste tanker loading. A log identifying either by list or location (area or group) of this exempted equipment will be kept in the Facility Operating Record as required by 40 CFR 264.1064 (g)(6).

40 CFR 264.1050(e) states, “Equipment that is in vacuum service is excluded from the requirements of 264.1052 to 264.1060 if it is identified as required by 264.1064(g)(5).” This exemption applies to equipment used by the PF-II treatment. A log containing a list of identification numbers for equipment in vacuum service will be kept in the Facility Operating Record as required by 40 CFR 264.1064(g)(5).

Per the requirements of 40 CFR §264.1050, PFF has identified and marked each piece of existing equipment to which the equipment leak standards apply. PFF has developed process and instrumentation diagrams (P&IDs) to identify the location of each piece of equipment subject to 40 CFR 264, Subpart BB requirements and the associated hazardous waste management units. The diagrams have been provided as Figures II-S-1 through II-S-4. Exempt equipment for the 3,000-gallon tank, debris treatment, mixed waste tanker loading area, and PF-II treatment area is shown by Figures II-S-5 through II-S-9. A comprehensive list of the equipment subject to the standards of 40 CFR 264 Subpart BB has been included in Table II-11-1 for the PF-II vacuum equipment, Table II-11-2 for the hazardous waste transfer area equipment, Table II-12-1 and II-12-2 for the LSV area equipment, and Table II-13 for mixed waste transfer to larger containers area equipment.

The Facility storage tank is exempt from Subpart CC tank requirements because the 3,000-gallon tank is used to receive mixed waste. The PF-II process components, although considered tank-like for permitting, are also exempt from Subpart CC requirements because they are designated solely for the management of mixed wastes. Because Subpart CC container requirements do not apply to containers or tanks holding mixed waste, the LSV processing equipment will not be subject to Subpart CC since only mixed wastes are processed in the equipment. For containers up to 110 gallons holding hazardous wastes with a volatile organic content of less than 500 ppm and that are not radioactive, PFF will meet the Level 1 control requirement regulations specified in 40 CFR 264.1086 (c). For any container greater than 110 gallons (e.g., totes) holding hazardous waste that is not radioactive, PFF will meet the Level 2 control requirements specified at 40 CFR 264.1086(d). PFF receives hazardous waste and places treatment residuals which are hazardous waste in containers that meet U.S. Department of Transportation (DOT) regulations on packaging hazardous materials for transportation as specified in 40 CFR 264.1086(c). It should be noted that the PF-I stabilization and fixation process will be used to treat characteristic mixed wastes having an average VOC

concentration of less than 500 ppmw. Therefore, Subpart CC does not apply to the PF-I process. Debris treatment operations conducted in the LSV Processing Area involving the use of the debris treatment vat (Dip Tank) will meet the Level 3 Subpart CC emission control requirements specified in 40 CFR 264.1086(e). The air pollution control system (regenerative thermal oxidizer) that will be used to meet the Level 3 controls is described in Part II.I of the permit application.

Pumps in Light Liquid Service

All of the pumps subject to Subpart BB standards are designated for light liquid service at this time. As provided in 40 CFR 264.1052(e), all the pumps in the hazardous waste transfer area, the LSV area, and the mixed waste transfer to larger containers area are designated "no detectable emissions" (i.e., instrument reading of less than 500 ppm above background) and will be monitored annually using Method 21 specified in 40 CFR Part 60. These pumps do not have an externally actuated shaft penetrating the pump housing.

Compressors

The Facility does not have any compressors that are in direct contact with hazardous waste; therefore, 40 CFR 264.1053 is not applicable.

Pressure Relief Devices in Gas/Vapor Service

The PF-II the piping system includes pressure relief devices. However, since the pressure relief devices are part of a closed vent system (see previous regenerative thermal oxidizer discussion) capable of capturing and transporting leakage from devices, the requirements of 40 CFR 264.1054 do not apply.

Sampling Connection Systems

The Facility does not have any sampling connecting systems or in-situ sampling systems. The samples for analysis are collected through open-ended valves or lines. Hence, the requirements of 40 CFR 264.1055 are not applicable.

Open-ended Valves or Lines

The open-ended valves and lines that are subject to the requirements of 40 CFR 264.1056 are identified in the equipment list for the PF-II treatment area, hazardous waste transfer area, LSV area, and the mixed waste transfer to larger containers area as shown in Table II-11-1, Table II-11-2, Table II-12.1, Table II-12.2, and Table II-13, respectively. These pieces of equipment are either equipped with caps, blind flanges, plugs, or second valves that seal the open end at all times except during operations requiring hazardous waste flow through the open-ended valve or line. Each open-ended valve or line equipped with a second valve is operated so that the valve on the hazard waste side is closed before the second valve is closed.

Valves in Gas/Vapor Service or in Light Liquid Service

All existing valves that come into direct contact with hazardous waste liquid are designated for light liquid service at this time and are identified in the equipment list. All valves in light liquid service and in gas/vapor service will meet the standards specified by 40 CFR 264.1057.

As provided in 40 CFR 264.1057(f), all valves in the hazardous waste transfer area, the LSV area, and the mixed waste transfer to larger containers area are designated for no detectable emissions (i.e., instrument reading of less than 500 ppm above background) and will be monitored annually using Method 21 specified in 40 CFR Part 60. These valves do not have an external actuating mechanism in contact with the hazardous waste.

Pumps and Valves in Heavy Liquid Service, Pressure Relief Devices in Light Liquid or Heavy Liquid Service, and Flanges and other Connectors

At the present time, all pumps and valves in contact with hazardous waste liquid are designated for light liquid service. There are no pressure relief devices in liquid service at the facility. Flanges and other connectors subject to the requirements of 40 CFR 264.1058 are identified in the equipment list and will be monitored within 5 days if evidence of a potential leak is found by a visual, audible, or olfactory method during the daily inspection of piping.

If a leak is detected using Method 21 specified in 40 CFR Part 60 (i.e., an instrument reading of 10,000 ppm or greater above the background), the flange or connector will be repaired as soon as practicable, but no later than 15 calendar days after detection. The first attempt at repair will be made within 5 days of detection. Repair of a leaking flange/other connector may extend beyond 15 days if at least one of the conditions specified in the subsection titled "Delay of Repair" is met.

Recordkeeping Requirements

Pursuant to the requirements of 40 CFR 264.1064, PFF has identified each affected piece of equipment by number and location as shown in Tables II-11, II-12, and II-13.

The following information will be maintained at the Facility to demonstrate compliance with the requirements of 40 CFR 264 Subpart BB:

1. Type of equipment - valve, pump, flange, etc.
2. Service - designated as light liquid at this time, based on knowledge of the hazardous waste received and managed at the Facility for all equipment contacting liquids.

3. Percent-by-weight of total organics is not necessary for the affected equipment because PFF has determined applicability and consequently designed the compliance program based on the fact that PFF manages hazardous waste up to 100% organics by weight.
4. Method of compliance with the standard.
5. Leak monitoring results and any repairs conducted at the Facility.
6. Notification record(s) to the Florida DEP if a detected leak is not repaired within the designated time period.
7. Records associated with the Test Methods and Procedures outlined in 40 CFR 264.1063. These records typically include VOC Analyzer Calibration, Response Time, and Calibration Precision Logs (typical forms included in Appendix II-S-1). A copy of Reference Method 21 (40 CFR Part 60) has been included in Appendix II-S-2. Copies of sample inspection forms and the VOC analyzer logs are included in Tables II-14-1 and II-14-2, respectively.

PFF may choose the exemption provided in 40 CFR 264.1050(f) for the affected equipment identified in Tables II-11, II-12, and II-13 if this equipment contains or contacts hazardous waste for less than 300 hours per calendar year and keep a record of hours of operation.

Delay of Repair

All detected leaks will be repaired as soon as practicable, but not later than 15 days after detection unless the following conditions arise.

- The repair is not technically feasible without shutdown of a hazardous waste management unit. In such a case, the leak repair will be completed before the end of the next shutdown of the hazardous waste management unit.
- The leaking equipment is isolated and does not continue to contain or contact hazardous waste with an organic concentration of at least 10% by weight.
- The emissions resulting from immediate repair of a leaking valve would be greater than the emissions likely to result from delay of repair.
- The repair of a leaking pump requires the use of a dual mechanical seal system, which includes a barrier fluid system. In such a case, the repair will be completed as soon as practical, but no later than six months after leak detection.

Reporting Requirements

For each semi-annual reporting period designated by the Florida DEP Director, a report will be submitted including the information required by 40 CFR 264.1065(a) if the following condition occurs during that reporting period.

- Leak repair is not performed within 15 calendar days of leak detection and/or the first attempt at repair is not performed within 5 calendar days of the leak detection for valves in gas/vapor service or in light liquid service.

This report will include:

- EPA identification number, name, and address of the facility;
- Dates of hazardous waste management unit shutdowns that occurred during the reporting period; and,
- Equipment identification number of each pump or valve for which leak repair was not performed within 15 calendar days after leak detection or the first attempt at repair was not performed within 5 calendar days.

T CERTIFICATION

DEP Form 62-730.900(2)(d) Certification has been included as Appendix II-T.

PART II

TABLES

TABLE II-11-1 EQUIPMENT LIST - PF-II VACCUM EQUIPMENT
RCRA PERMIT RENEWAL APPLICATION
PERMAFIX FLORIDA, 1940 NW 67TH PLACE, GAINESVILLE, FLORIDA

ITEM NO./ EQUIP. NO.	QTY	DESCRIPTION	PART NUMBER	COMMENTS	APPLICABLE REGULATION
FCV—1A	1	BALL VALVE, VACUUM PUMP OUTLET	HOWELL #H3DM—SS—IP—R—114—SD4B—528	1 1/4" NPT., c/w ACTUATION KIT & POSITION SW.	40 CFR 264.1050(e)
FCV—1B	1	BALL VALVE, VACUUM PUMP OUTLET	HOWELL #H3DM—SS—IP—R—114—SD4B—5ZS	1 1/4" NPT., c/w ACTUATION KIT & POSITION SW.	40 CFR 264.1050(e)
FCV—2A	1	BALL VALVE, VACUUM PUMP OUTLET	HOWELL #H3DM—SS—IP—R—114—SD4B—528	1 1/4" NPT., c/w ACTUATION KIT & POSITION SW.	40 CFR 264.1050(e)
FCV—2B	1	BALL VALVE, VACUUM PUMP OUTLET	HOWELL #H3DM-SS—IP—R-114—SD4B—52S	1 1/4" NPT., c/w ACTUATION KIT & POSITION SW.	40 CFR 264.1050(e)
FCV—3	1	BALL VALVE, TOP TANK DRAIN	HOWELL #H3DM-SS-FL-R-2MR4B-F07ZS	2"-150# FLG., c/w ACTUATION KIT & POSITION SW.	40 CFR 264.1050(e)
FL-1	1	AIR INTAKE FILTER #1	SOLBERG MODEL #5169K87	2" FNPT, ELEMENT #5169K93 5 MICRON FILTER.	40 CFR 264.1050(e)
FV-3	1	CHECK VALVE, VACUUM PUMP INLET	GRINNELL OR EQ.	1" NPT, 200 WOG, T316L, SS	40 CFR 264.1050(e)
FV—4	1	CHECK VALVE, VACUUM PUMP INLET	GRINNELL OR EQ.	1 1/4" NPT.	40 CFR 264.1050(e)
FV—5	1	CHECK VALVE, VACUUM PUMP INLET	GRINNELL OR EQ.	1" NPT, 200 WOG, T316L, SS	40 CFR 264.1050(e)
FV-6	1	CHECK VALVE, VACUUM PUMP INLET	GRINNELL OR EQ.	1 1/4" NPT.	40 CFR 264.1050(e)
FV—7	1	CHECK VALVE, VACUUM PUMP BYPASS	GRINNELL OR EQ.	2" NPT, 200 WOG, T316L, SS	40 CFR 264.1050(e)
HCV-6	1	BALL VALVE, AIR FILTER DRAIN	GRINNELL OR EQ.	1" NPT, 1000#, FULL PORT, T316L, SS	40 CFR 264.1050(e)
HCV-15	1	BALL VALVE, BOTTOM TANK DRAIN	GRINNELL OR EQ.	2" NPT, 1000#, FULL PORT, T316L, SS	40 CFR 264.1050(e)
MTR-1A	1	MOTOR, LOW VACUUM PUMP (DUTY)	WEG #HT005404NPW22 5	5 HP, 1760 RPM, TEFC, 460/3/60, FR. 182/4T, 6.45 FLA	40 CFR 264.1050(e)
MTR-1B	1	MOTOR, LOW VACUUM PUMP (STANDBY)	WEG #HT005404NPW22 5	5 HP, 1760 RPM, TEFC, 460/3/60, FR. 182/4T, 6.45 FLA	40 CFR 264.1050(e)
MTR-2A	1	MOTOR, HIGH VACUUM PUMP (DUTY)	PART OF VACUUM PUMP	2 HP, 1800 RPM, TEFC, 460/3/60, FR. 145TC, 2.7 FLA	40 CFR 264.1050(e)
MTR-2B	1	MOTOR, HIGH VACUUM PUMP (STANDBY)	PART OF VACUUM PUMP	2 HP, 1800 RPM, TEFC, 460/3/60, FR. 145TC, 2.7 FLA	40 CFR 264.1050(e)
PI-5	1	VACUUM GAUGE, TOP TANK	WEKSLER BY12WC4LW	O to -30" Hg, 1/4" NPT, BOTTOM MOUNT, SS.	40 CFR 264.1050(e)
PI-8	1	WATER PRESS GAUGE, BOTTOM TANK	WEKSLER BY12YPE4LW c/w SNUBBER	0—60 psi, 1/4" NPT, BOTTOM MOUNT, SS. clw SW42	40 CFR 264.1050(e)
PMP01A	1	LOW VACUUM PUMP, OIL-LESS VANE TYPE	GAST 6066-V103	0.875" SHAFT, 0.1875" SQ. KEY.	40 CFR 264.1050(e)
	1	VACUUM PUMP DRIVE COUPLING	GAST #AE544B	0.875" BORE x 1.125" BORE.	40 CFR 264.1050(e)
	1	VACUUM PUMP FILTER	GAST #AD560	1" NPT, c/w GLASS BOTTLE	40 CFR 264.1050(e)
	1	VACUUM PUMP MUFFLER	GAST #AD56OB	1" NPT, c/w GLASS BOTTLE	40 CFR 264.1050(e)
PMP01B	1	LOW VACUUM PUMP, OIL-LESS VANE TYPE	GAST 6066-V103	0.875" SHAFT, 0.1875" SQ. KEY.	40 CFR 264.1050(e)
	1	VACUUM PUMP DRIVE COUPLING	GAST #AE544B	0.875" BORE x 1.125" BORE.	40 CFR 264.1050(e)
	1	VACUUM PUMP FILTER	GAST #AD560	1" NPT, c/w GLASS BOTTLE	40 CFR 264.1050(e)
	1	VACUUM PUMP MUFFLER	GAST #AD56OB	1" NPT, c/w GLASS BOTTLE	40 CFR 264.1050(e)
PMP02A	1	HIGH VACUUM PUMP, OIL-LUBR., VANE TYPE	BUSCH #R5 RA 0040 F	27.6 cfm, 0.003" Hg	40 CFR 264.1050(e)
		c/w BUILT IN CHECK VALVE, EXHAUST GAS		c/w 2 HP, 1800 RPM MOTOR, 460/3/60	40 CFR 264.1050(e)
		OIL SEPARATOR			40 CFR 264.1050(e)
PMP02B	1	HIGH VACUUM PUMP, OIL-LUBR., VANE TYPE	BUSCH #R5 RA 0040 F	27.6 cfm, 0.003" Hg	40 CFR 264.1050(e)
		c/w BUILT IN CHECK VALVE, EXHAUST GAS		c/w 2 HP, 1800 RPM MOTOR, 460/3/60	40 CFR 264.1050(e)
		OIL SEPARATOR			40 CFR 264.1050(e)
SV-4	1	SOLENOID VALVE, BOTTOM TANK WATER SUPPLY	ASCO # 8210G088, NORMALLY CLOSED	3/4" NPT, 5/8" PORT, 120 V, 17.1W, SS.	40 CFR 264.1050(e)
SV-5	1	SOLENOID VALVE, VACUUM PUMP BYPASS	ASCO # 8210G133, NORMALLY OPEN	2" NPT, 1 3/4" PORT, 120 V, 16.1W, SS.	40 CFR 264.1050(e)
AFC 01	1	AFTERCOOLER	MR-15EX-AFC01		40 CFR 264.1050(e)
TNK 01	1	COLLECTOR - TOP TANK (ACCUMULATOR)	MR-15ES-TNK01		40 CFR 264.1050(e)
TNK 02	1	COLLECTOR - BOTTOM TANK (ACCUMULATOR)	MR-15EX-TNK02		40 CFR 264.1050(e)
CON A	1	CONDENSOR TUBE "A"	MR-15EX-CON-A		40 CFR 264.1050(e)
CON B	1	CONDENSOR TUBE "B"	MR-15EX-CON-B		40 CFR 264.1050(e)
CON C	1	CONDENSOR TUBE "C"	MR-15EX-CON-C		40 CFR 264.1050(e)
MR-15EX	1	THERMAL DESORBER			40 CFR 264.1050(e)

Notes:
VACUUM SERVICE:
40 CFR264.1050(e) Equipment that is in vacuum service is excluded from the requirements of Sec. 264.1052 to Sec. 264.1050 if it is identified as required in Sec. 264.1064(g)(5).
40 CFR264.1064(g) The following infomration pertaining to all equipment subject to the requirements in Secs. 264.1052 through 264.1060 shall be recorded in a log that is kept in the facility operating record:
40 CFR264.1064(g)(5) A list of identification numbers for equipment in vacuum service.

Source: Perma-Fix 2022, and Trihydro 2022

TABLE II-11-2. EQUIPMENT LIST - HAZARDOUS WASTE TRANSFER AREA (PSB)
RCRA PERMIT RENEWAL APPLICATION
PERMA-FIX FLORIDA, 1940 NW 67TH PLACE, GAINESVILLE, FLORIDA

Equipment ID# (Tag Number)	Equipment Type/Location	Exemption from Subpart Requirements	Applicable Regulation
BV-1	Valve, Ball, 2" @ KN-1 and CA-1 on Pump Suction, wand end. Open ended valve.	**2**	40 CFR 264.1057
BV-2	Valve, Ball, 2" @ KN-2 and CA-2 on Pump Suction, pump end. Open ended valve.	**2**	40 CFR 264.1057
BV-3	Valve, Ball, 2" @ suction side of Pump PU-5. Open ended valve.	**2**	40 CFR 264.1057
BV-4	Valve, Ball, 2" @ discharge side of pump PU-5. Open ended valve.	**2**	40 CFR 264.1057
BV-5	Valve, Ball, 2" @ CA-6 on 2" Sch 40 pipe on bulk tank wall. (Drop pipe). Open ended valve.	**2**	40 CFR 264.1057
BV-6	Valve, Ball, 2" @ CA-10 on 2" Sch 40 pipe at discharge end (to tanker). Open ended valve.	**2**	40 CFR 264.1057
BV-7	Valve, Ball, 2" @ CA-9 on 2" Chemhose, from 2" tanker discharge end of pipe. Open ended valve.	**2**	40 CFR 264.1057
BV-8	Valve, Ball, 2" @ CA-8 on tanker end of discharge hose. Open ended valve.	**2**	40 CFR 264.1057
BV-9	Valve, Ball, 2" @ Discharge side of pump PU-4. Open ended valve.	**2**	40 CFR 264.1057
BV-10	Valve, Ball, 2" @ Suction side of pump PU-4. Open ended valve.	**2**	40 CFR 264.1057
CA-1	Camlock, Male, 2" @ BV-1 on wand end of suction hose.	n/a	40 CFR 264.1058
CA-2	Camlock, Male, 2" @ BV-2 on pump end of suction hose.	n/a	40 CFR 264.1058
CA-3	Camlock, Female, 2" @ CP-1 and CA-2 on suction of pump PU-5	n/a	40 CFR 264.1058
CA-4	Camlock, Male, 2" @ CP-2 on discharge side of pump PU-5	n/a	40 CFR 264.1058
CA-5	Camlock, Female, 2" @ KN-3 on jumper hose connecting to ovhd.	n/a	40 CFR 264.1058
CA-6	Camlock, Female, 2" @ BV-5 on 2" Sch 40 pipe on bulk tank wall. (Drop pipe)	n/a	40 CFR 264.1058
CA-7	Camlock, Male, 2" @ KN-4 on 2" Chemhose jumper to overhead.	n/a	40 CFR 264.1058
CA-8	Camlock, Male, 2" @ BV-8 Tanker end of discharge hose.	n/a	40 CFR 264.1058
CA-9	Camlock, Female, 2" @ BV-7 on pipe end (Overhead) of tanker fill hose.	n/a	40 CFR 264.1058
CA-10	Camlock, Male, 2" @ BV-6 on discharge (tanker) end of overhead pipe.	n/a	40 CFR 264.1058
CA-11	Camlock, Female, 2" @ EL-6 on suction wand	n/a	40 CFR 264.1058
CA-12	Camlock, Male, 2" on Discharge side of pump PU-4	n/a	40 CFR 264.1058
CA-13	Camlock, Female, 2" on Suction side of pump PU-4	n/a	40 CFR 264.1058

TABLE II-11-2. EQUIPMENT LIST - HAZARDOUS WASTE TRANSFER AREA (PSB)
RCRA PERMIT RENEWAL APPLICATION
PERMA-FIX FLORIDA, 1940 NW 67TH PLACE, GAINESVILLE, FLORIDA

Equipment ID# (Tag Number)	Equipment Type/Location	Exemption from Subpart Requirements	Applicable Regulation
CP-1	Coupling, 2" @ BV-3 on suction side of pump PU-5	n/a	40 CFR 264.1058
CP-2	Coupling, 2" @ BV-4 on discharge side of pump PU-5	n/a	40 CFR 264.1058
CP-3	Coupling, 2" @ BV-9 on discharge of pump PU-4	n/a	40 CFR 264.1058
CP-4	Coupling, 2" @ BV-10 on suction side of pump PU-4	n/a	40 CFR 264.1058
CV-1	Check Valve, 1/4" Backflow preventer on PU-5 Discharge (Blowback lines)	**2**	40 CFR 264.1057
CV-2	Check Valve, 1/4" Backflow preventer on PU-5 Suction (Blowback Lines)	**2**	40 CFR 264.1057
CV-3	Check Valve, 1/4" Backflow preventer on PU-4 Discharge (Blowback lines)	**2**	40 CFR 264.1057
CV-4	Check Valve, 1/4" Backflow preventer on PU-4 Suction (Blowback Lines)	**2**	40 CFR 264.1057
EL-1	Elbow, 45 deg., Galv., 2" @ BV-5 @ jumper hose connection to drop pipe on wall.	n/a	40 CFR 264.1058
EL-2	Elbow, 45 deg., Galv., 2" @ KN-6 on pulse dampener hose to overhead.	n/a	40 CFR 264.1058
EL-3	Elbow, 45 deg., Galv., 2" @ KN-6 on pulse dampener hose to overhead.	n/a	40 CFR 264.1058
EL-4	Elbow, 90 deg., Galv., 2" @ pump end of overhead pipe	n/a	40 CFR 264.1058
EL-5	Elbow, 90 deg., Galv., 2" @ tanker end of overhead pipe after U-2	n/a	40 CFR 264.1058
EL-6	Elbow, 90 deg., Galv., 2" on drum suction wand.	n/a	40 CFR 264.1058
KN-1	Nipple, King, 2" @ BV-1 on wand end of suction hose.	n/a	40 CFR 264.1058
KN-2	Nipple, King, 2" @ BV-1 on wand end of suction hose.	n/a	40 CFR 264.1058
KN-3	Nipple, King, 2" @ CA-5 on pump end of jumper hose connecting to ovhd.	n/a	40 CFR 264.1058
KN-4	Nipple, King, 2" @ CA-7 on overhead end of jumper hose, connected to CA-6	n/a	40 CFR 264.1058
KN-5	Nipple, King, 2" @ 45 deg Elbow EL-2 @ dampener hose connecting to overhead.	n/a	40 CFR 264.1058
KN-6	Nipple, King, 2" @ 45 deg Elbow EL-3 @ dampener hose connecting to overhead.	n/a	40 CFR 264.1058
KN-7	Nipple, King, 2" @ BV-7 on pipe end of tanker fill hose.	n/a	40 CFR 264.1058
KN-8	Nipple, King, 2" @ BV-8 on tanker end of tanker fill hose.	n/a	40 CFR 264.1058
PU-4	Pump, Sandpiper, 2", SB-2 series diaphragm pump	**1**	40 CFR 264.1052

TABLE II-11-2. EQUIPMENT LIST - HAZARDOUS WASTE TRANSFER AREA (PSB)
RCRA PERMIT RENEWAL APPLICATION
PERMA-FIX FLORIDA, 1940 NW 67TH PLACE, GAINESVILLE, FLORIDA

Equipment ID# (Tag Number)	Equipment Type/Location	Exemption from Subpart Requirements	Applicable Regulation
PU-5	Pump, Sandpiper, 2", SB-2 series diaphragm pump	**1**	40 CFR 264.1052
U-1	Union, 2" Galv. On 2" galv. Overhead pipe @ EL-4 end of pipe. (Pump End)	n/a	40 CFR 264.1058
U-2	Union, 2" Galv. On 2" galv. Overhead pipe @ EL-5 end of pipe. (Tanker end)	n/a	40 CFR 264.1058

LEGEND:

CA – CAMLOCK BV – VALVES CP- Coupling FA – FLANGE CP - COUPLING
KN- KING NIPPLE EL - ELBOW M - MOTOR CV- CHECK VALVE U - UNION
VP - VACUUM PUMP T - TEE TK - TANK X - CROSS

PSB - Processing and Storage Building

Exemptions:

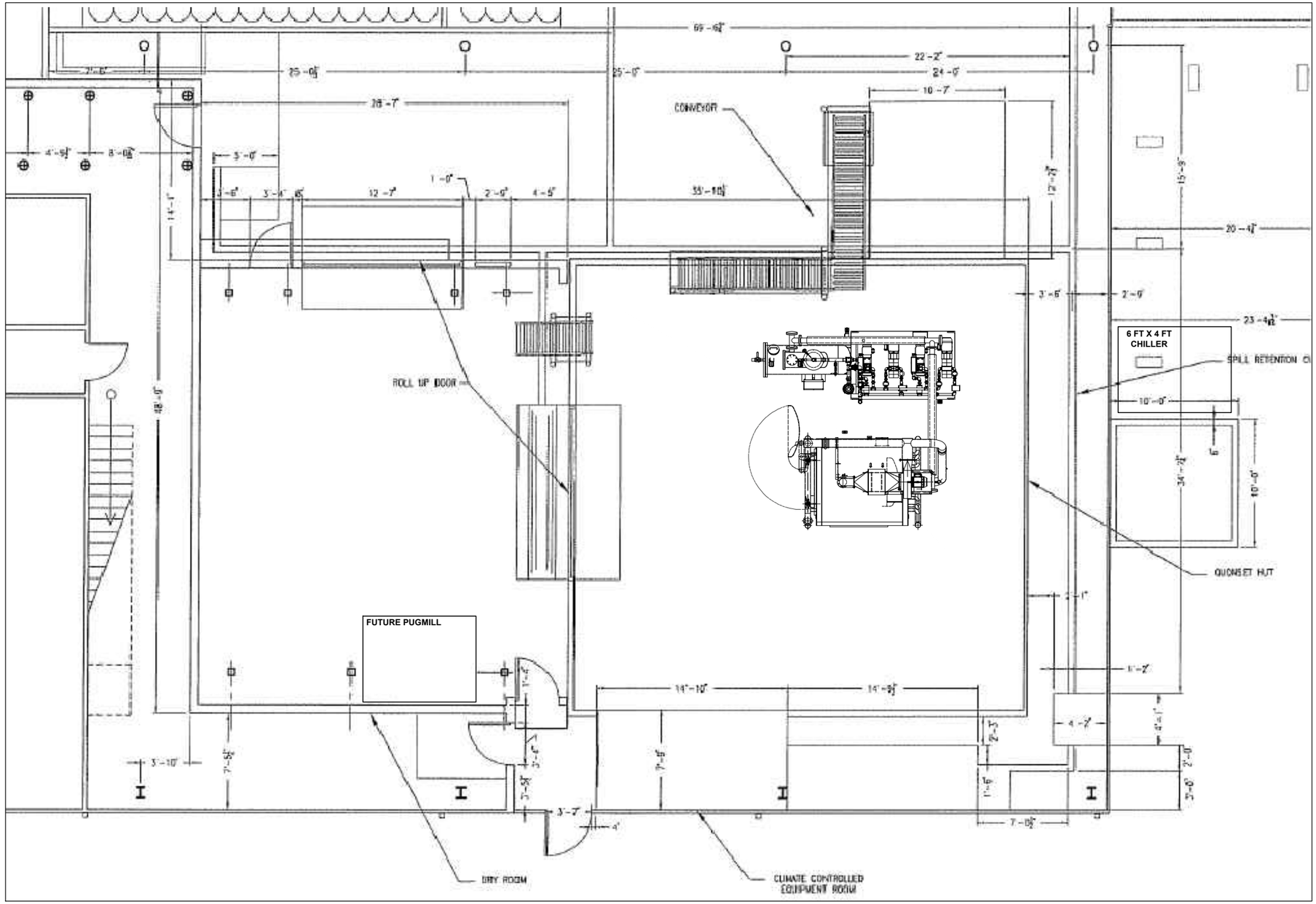
PUMPS (1): 40 CFR 264.1052(e) Pumps without externally actuated shafts, which penetrate the pump housing (e.g. sandpiper pumps), will be monitored. If the results of the monitoring indicate no detectable emissions (instrument reading of < 500 ppm), the pump is exempt from monthly monitoring and weekly inspection and is subject to annual monitoring. The exempted pump identification numbers will be kept in a list as required by 40CFR264.1064(g)(2).

VALVES (2): 40 CFR 264.1050(f) Equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year is excluded fro mthe requirements of section 264.1052 through 264.1060 of this subpart if it is identified, as required in section 264.1064(g)(6) of this subpart.

All repairs must be performed within 15 days of discovery.

PART II

FIGURES



Source: Perma-Fix, 2022

FIGURE II-I-1-A

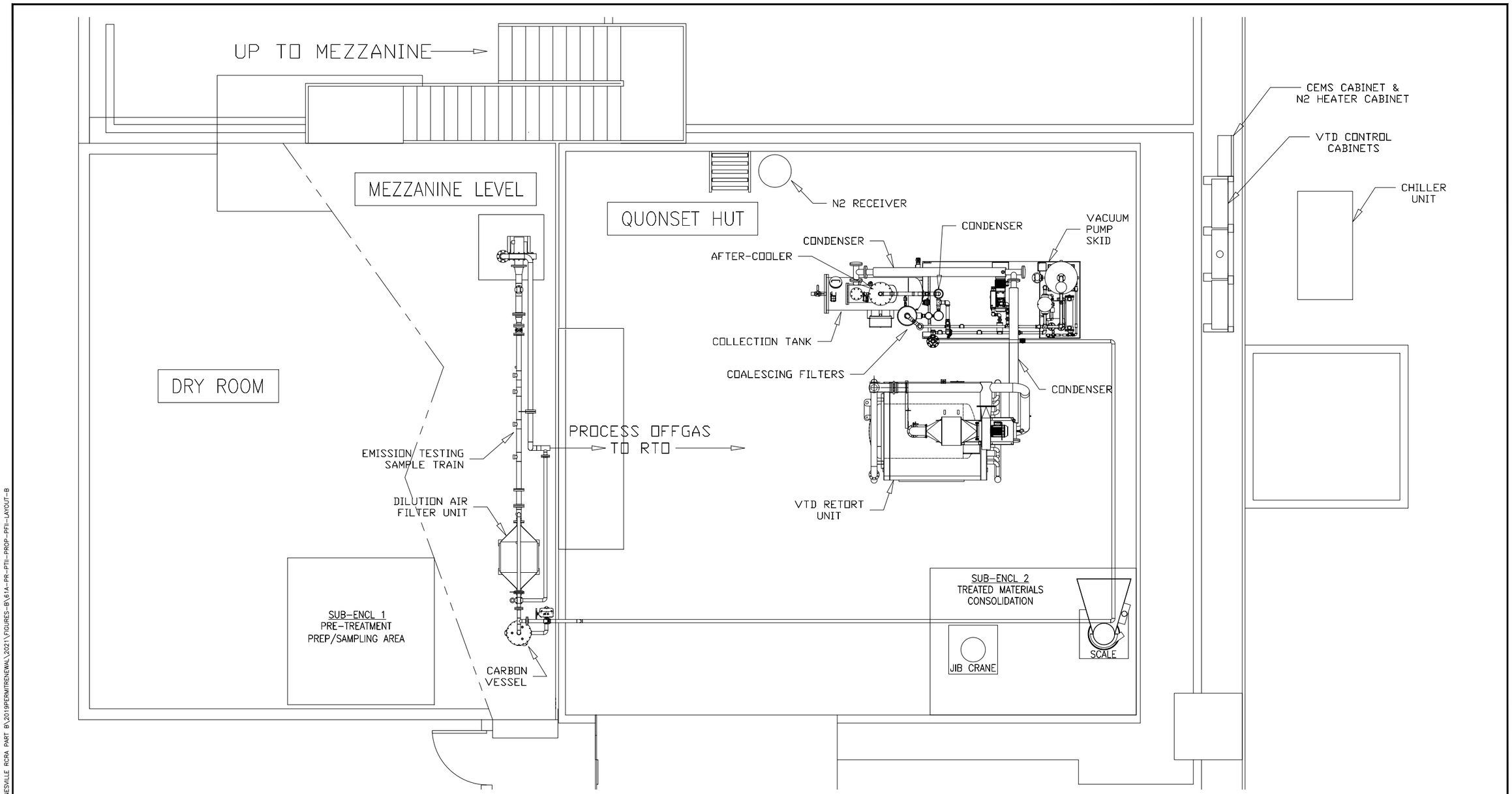
PART II
CURRENT PF-II LAYOUT

PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

Drawn By: REP	Checked By: CE	Scale: NONE	Date: 10/4/2019	File: 61A-PR-PTII-PROP-PFII-LAYOUT-B

M:\DTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTII-PROP-PFII-LAYOUT-B



M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTII-PROP-PFII-LAYOUT-B

Source: Perma-Fix, 2022

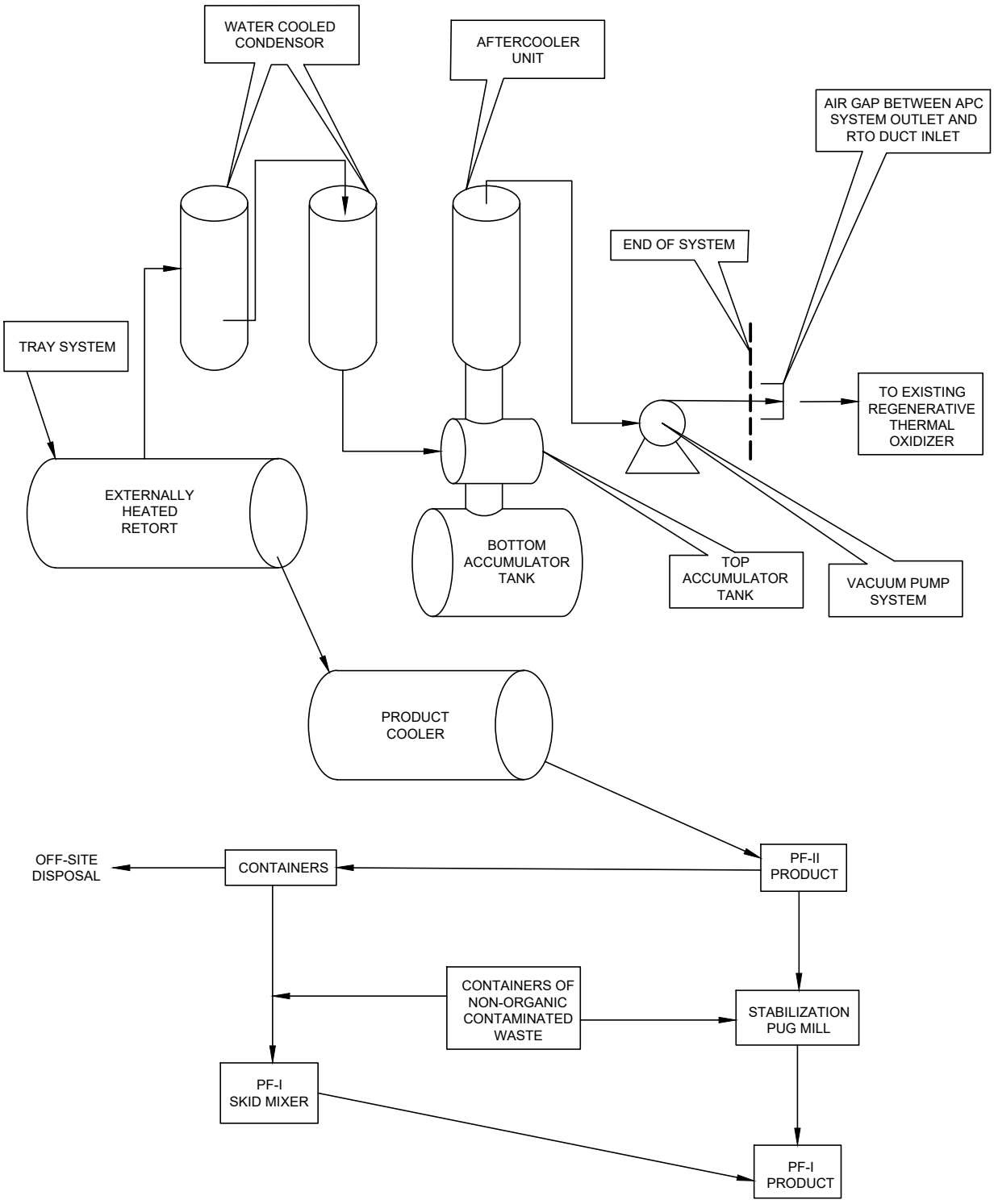
Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE II-I-1-B

PART II
PROPOSED PF-II LAYOUT

PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: REP	Checked By: CE	Scale: NONE	Date: 10/4/2019	File: 61A-PR-PTII-PROP-PFII-LAYOUT-B



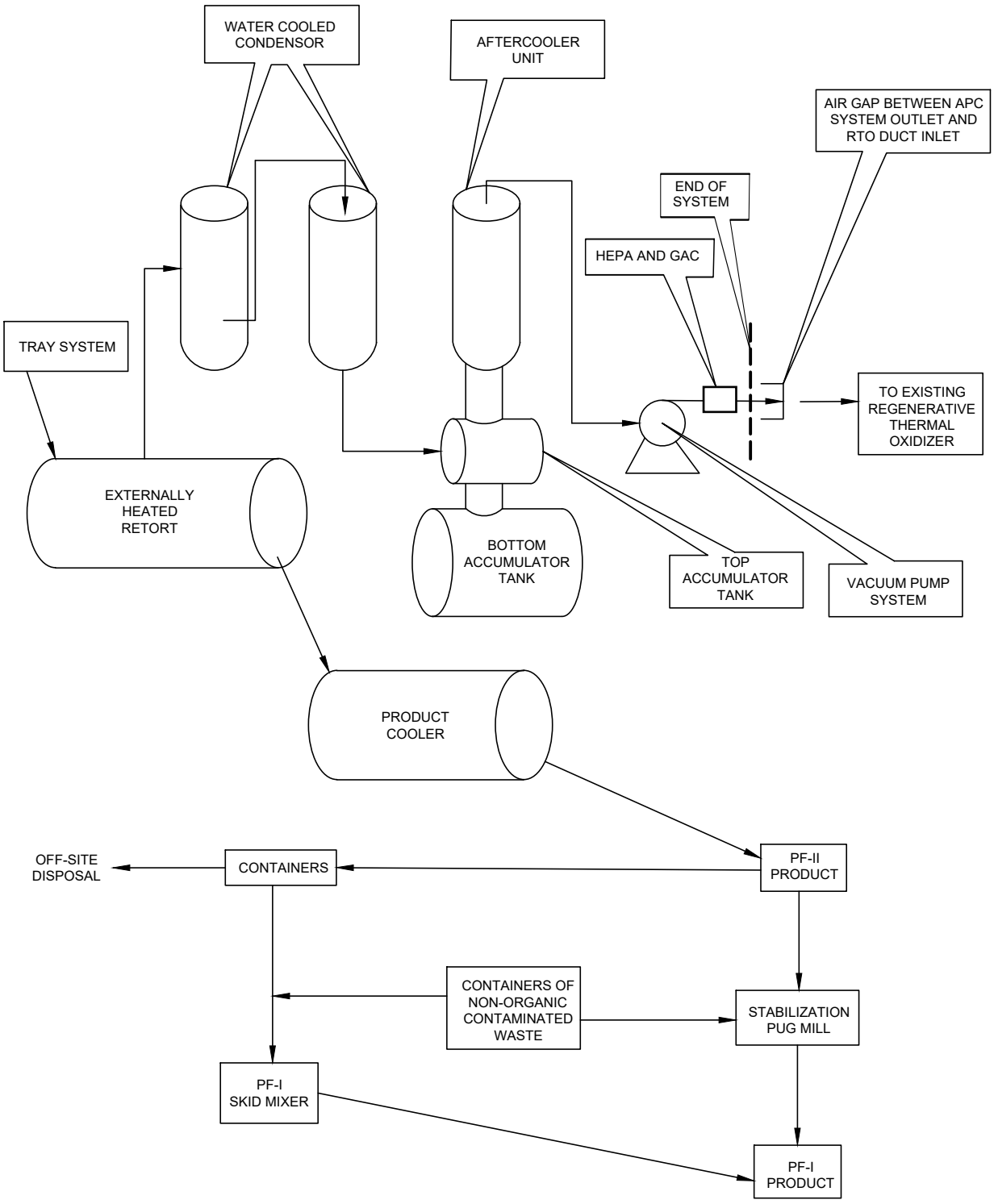
M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTII-PFD-PFI-PFII-B

Source: Perma-Fix, 2022

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE II-I-2-A
PART II CURRENT
PROCESS FLOW DIAGRAM
PF-I AND PF-II PROCESSES
PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: KML	Checked By: BP	Scale: NONE	Date: 3/30/2022	File: 61A-PR-PTII-PFD-PFI-PFII-B



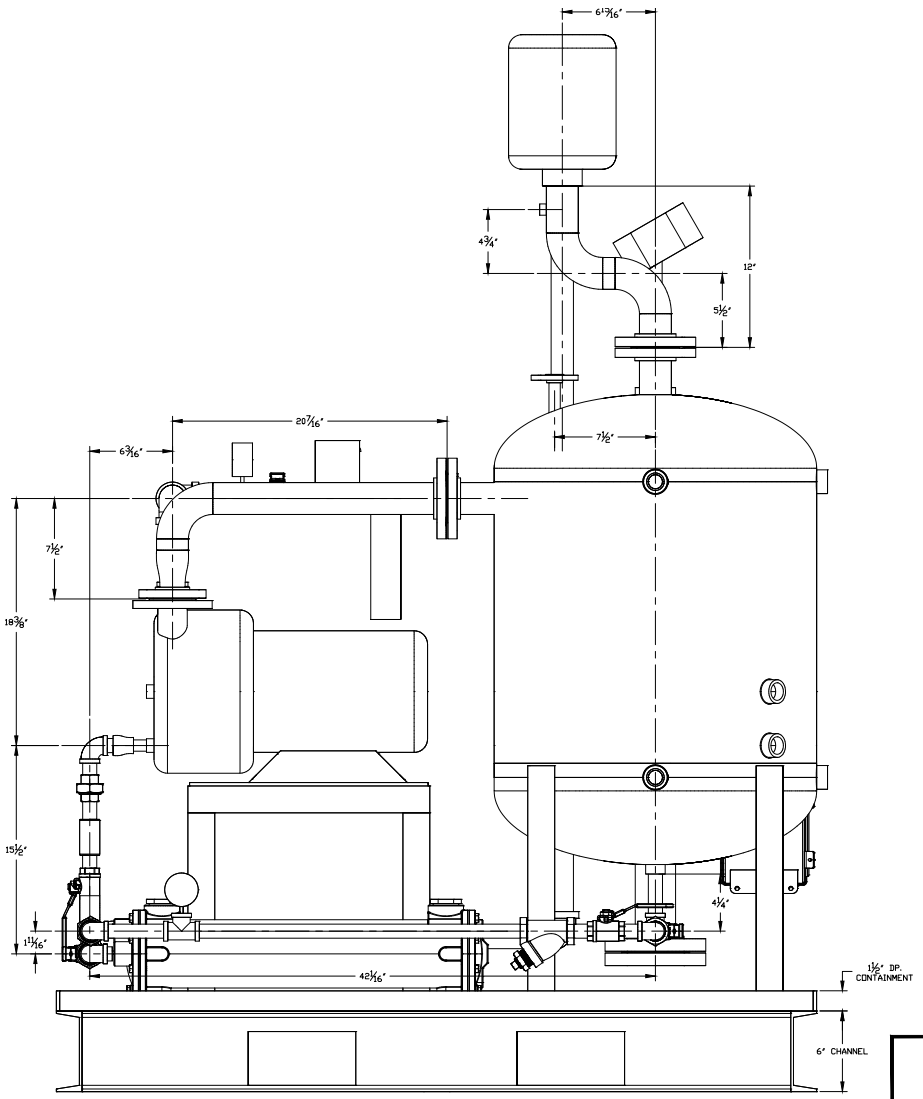
M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\2021\FIGURES-B\61A-PR-PTII-PFD-PFI-PFII-B

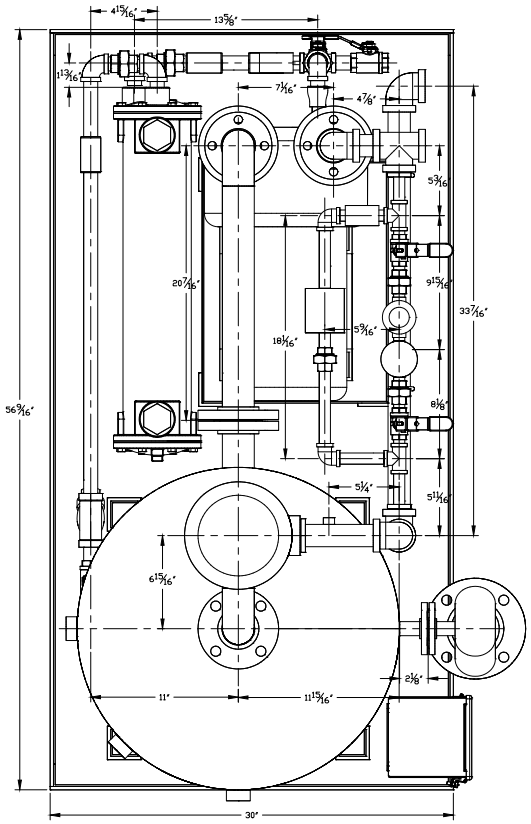
Source: Perma-Fix, 2022

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE II-I-2-B
PART II PROPOSED
PROCESS FLOW DIAGRAM
PF-I AND PF-II PROCESSES
PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: KML	Checked By: BP	Scale: NONE	Date: 3/30/2022	File: 61A-PR-PTII-PFD-PFI-PFII-B





M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\PART_II\61A-PR-PTII-PFII-VACSYS-FLGVALV

Source: Perma-Fix, 2014

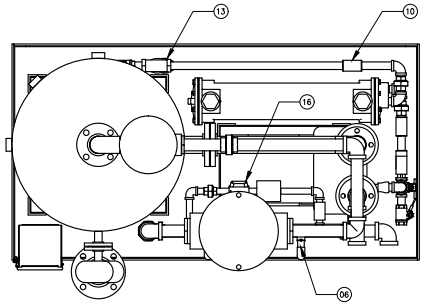
Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

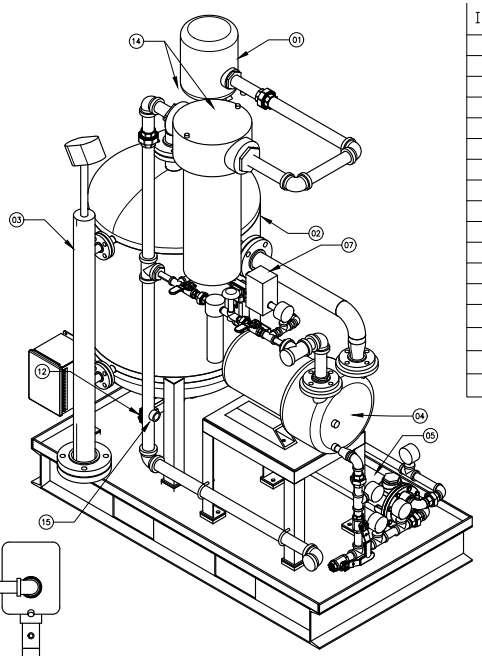
FIGURE II-S-8

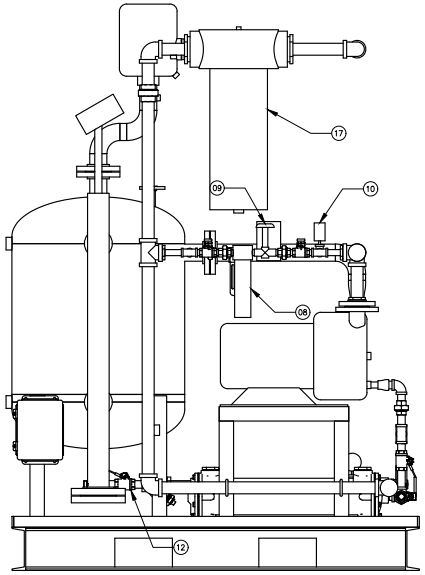
PART II PROPOSED
PF-II VACUUM SYSTEM -
FLANGES, TEES, ELBOWS

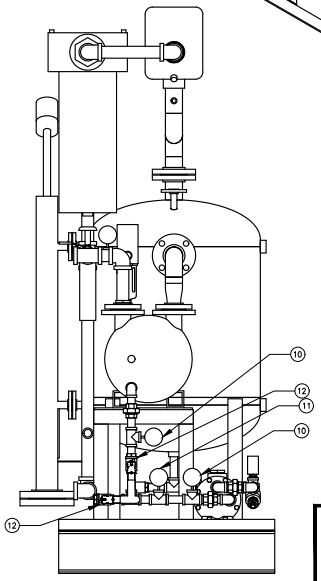
PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By:	Checked By:	Scale:	Date:	File:
REP	CE	NONE	10/7/2019	61A-PR-PTII-PFII-VACSYS-FLGVALV









ITEM	QTY.	PART NO.	DESCRIPTION
01	1	HDL-PSG850/1-200HC	SOLBERG COALESCING FILTER
02	1	N/A	ACCUMULATOR TANK
03	1	2E1-AA1A-CAAA-11111	S.G. & L.T. COMBO
04	1	SM55A06TM	LIQUID RING VACUUM PUMP
05	1	35185K46	S.S. HEAT EXCHANGER
06	2	76F-103-27	1/2" S.S. BALL VALVE
07	1	PCR3S-15PSIA-D-M12...	VACUUM CONTROL VALVE
08	1	370F-1/4"; 25-127-50CS	COALESCING FILTER
09	1	NV4-F-8N	NEEDLDE VALVE .37 ORIFICE
10	4	PRO-301L-254A-01	(-) 30-0" Hg GAUGE
11	1	3470K61	0-200°F THERMOMETER
12	5	76F-104-27	3/4" S.S. BALL VALVE
13	1	4745K452	40 MESH TEE STRAINER
14	1	2010	0-10"WC DP, ¼" NPT COUPL
15	1	1J1BKG3.5S(UN4H1)PZZZM8	TYPE J T/C, ¾" NPT COUPL
16	1	3353N14	VACUUM COALESCING FILTER
17	1	JCT-C3123-300CV	HEAT EX/COAL FILTER COMBO

M:\OTOR\PERMAFIXOFFL\CADD_REPORTS\61A-003 GAINESVILLE RCRA PART B\2019PERMITRENEWAL\PART_II\61A-PR-PTII-PFII-VACSYS-TEEEG

Source: Perma-Fix, 2014

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE II-S-9

PART II PROPOSED
PF-II VACUUM SYSTEM -
VALVING AND GAUGES

PERMA-FIX OF FLORIDA, INC.
1940 NW 67TH PLACE
GAINESVILLE, FLORIDA

Drawn By: REP	Checked By: CE	Scale: NONE	Date: 10/7/2019	File: 61A-PR-PTII-PFII-VACSYS-TEEEG

APPENDIX II-A-1

FINANCIAL ASSURANCE DOCUMENTATION

APPENDIX II-A-1. FINANCIAL ASSURANCE DOCUMENTATION

STATE OF FLORIDA
CERTIFICATE OF LIABILITY INSURANCE
HAZARDOUS WASTE TRANSPORTER AND USED OIL HANDLER

1. XL Insurance America, Inc.
(Name of Insurer)

(the "Insurer"), of 505 Eagleview Boulevard Suite 100 Exton, PA 19341-0636
(Address of Insurer)

hereby certifies that it has issued liability insurance covering bodily injury and property damage including environmental restoration for sudden accidental occurrences to

Perma-Fix of Florida, Inc.
(Name of Insured)

(the "Insured"), of 1940 NW 67th Place, Gainesville, FL 32653
(Physical Address of Insured)

in connection with the insured's obligation to demonstrate financial responsibility under Florida Administrative Code Rule 62-710.600(2) and 62-730.170. The coverage applies at:

EPA/DEP I.D. No.	Name	Physical Address
FLD 98071107	Perma-Fix of Florida, Inc.	1940 NW 67th Place, Gainesville, FL 32653

(If coverage is for multiple facilities, identify each facility insured.)

This insurance is primary and the company shall not be liable for amounts in excess of $1,000,000 for each accident, exclusive of legal defense costs. The coverage is provided under policy number AEC004445110, issued on 09/01/2024 (date).

The effective date of said policy is 09/01/2024 (date) and the expiration date of said policy is 09/01/2025 (date).

This insurance is excess and the company shall not be liable for amounts in excess of $_____ for each accident in excess of the underlying limit of $_____ for each accident, exclusive of legal defense costs. The coverage is provided under policy number_____, issued on_____ (date). The effective date of said policy is _____ (date) and the expiration date of said policy is _____ (date).

DEP FORM 62-730.900(5)(a), incorporated in Rule 62-730.170(2)(b), and 62-710.600(2)(e), F.A.C., Effective Date 4-23-13

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.

(b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the Insurer.

(c) Whenever requested by the Secretary (or designee) of the Florida Department of Environmental Protection (FDEP), the Insurer agrees to furnish to the Department a signed duplicate original of the policy and all endorsements.

(d) Cancellation of the insurance, whether by the Insurer or the Insured and any other termination of the insurance (e.g., expiration, non-renewal), will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Secretary of the FDEP as evidenced by certified mail return receipt.

(e) The Insurer shall not be liable for the payment of any judgment or judgments against the Insured for claims resulting from accidents which occur after the termination of the insurance described herein, but such termination shall not affect the liability of the Insurer for the payment of any such judgment or judgments resulting from accidents which occur during the time the policy is in effect.

I hereby certify that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one of more States including Florida.

Signed by:
Joseph S Catanese
F83A4B5958C1474...
(Signature of Authorized Representative of Insurer)

Joseph Catanese
(Typed name)

Head of Environmental, Property and Casualty
(Title)

Authorized Representative of

XL Insurance America, Inc.
(Name of Insurer)

505 Eagleview Blvd, Suite 100
Exton, PA 19341-0636
(Address of Representative)

DEP Form # 62-730.900(4)(k)
Form Title HW Certificate of Liability Insurance
Effective Date January 5, 1995
DEP Application No.

STATE OF FLORIDA
HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE
(Primary Policy)

1. Indian Harbor Insurance Company **,(the "Insurer"),**
Name of Insurer

of Seaview House, 70 Seaview Avenue, Stamford, CT 06902-6040
Address of Insurer

hereby certifies that it has issued liability insurance covering bodily injury and property damage to PERMA-FIX ENVIRONMENTAL SERVICES, INC. **, (the "Insured"), of**
Name of Insured

8302 Dunwoody Place, Ste 250, Atlanta, GA 30350
Address of Insured

in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147, as adopted by reference in Section 62-730.180, Florida Administrative Code (F.A.C.). The coverage applies at

EPA/DEP I.D. No.	Name	Address
FLD980711071	Perma-Fix of Florida, Inc.	1940 NW 67th Place, Gainesville,

for:

X **sudden accidental occurrences**

_____ **nonsudden accidental occurrences**

_____ **sudden and nonsudden accidental occurrences**

If coverage is for multiple facilities and the coverage is different for different facilities, indicate which facility(ies) are insured for sudden accidental occurrences, which are insured for nonsudden accidental occurrences, and which are insured for both.

The limits of liability are $ 1,000,000 **each occurrence and $** 2,000,000 **annual aggregate, exclusive of legal defense costs. The coverage is provided under policy number** PEC004445410 **, issued on** 9/01/24 **. The effective date of said policy is** 9/01/24 **.**
Date Date

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.

(b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147(f) or 265.147(f), as adopted by reference in Section 62-730.180, F.A.C.

(c) Whenever requested by the Secretary of the Florida Department of Environmental Protection (FDEP), the Insurer agrees to furnish to the Secretary a signed duplicate original of the policy and all endorsements.

(d) Cancellation of the insurance, whether by the Insurer or the Insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Secretary of the FDEP.

(e) Any other termination of the insurance (e.g., expiration, non-renewal) will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Secretary of the FDEP.

I hereby certify that the wording of this instrument is substantially identical to the wording specified in 40 CFR 264.151(j), as adopted by reference in Section 62-730.180, F.A.C., as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States including Florida.

Signature of Authorized Representative of Insurer

Chris Zeman

Type name

Product Line Leader

Title

Authorized Representative of

Indian Harbor Insurance Company

Name of Insurer

Seaview House, 70 Seaview Avenue, Stamford, CT 06902-604

Address of Representative