APPENDIX E-3

Hazardous Waste Storage Tanks and Feed System Information

D-2 Hazardous Waste Storage Tank Systems
(40 CFR 264.191,264.192, and 270.16)

The information provided in this section is submitted in accordance with the requirements of 40 CPR Part 270.16. Other sections of the regulation addressed to complete this section include 40 CFR parts 264.191 through 264.194.

This section discusses specific process information for the storage of hazardous waste in tanks. The facility operates eight (8) tanks for the storage of hazardous waste for periods exceeding 90 days. The total nominal design capacity of the eight tanks is 125,200 gallons. The actual design capacity of the eight tanks is 95% of nominal capacity, or 118,940 gallons. Existing tanks are described in Section D-2a. The facility is also proposing the construction of an additional above ground hazardous waste storage tank with a nominal design capacity of 19,000 gallons and actual capacity of 18,050 gallons. The proposed new tank is described in Section D-2b. The locations of the eight existing and one proposed storage tanks are presented in Attachment B-2.

D-2a Existing Tank System

Table D-1 is a list of the existing tanks covered by this application. The table provides the following information for each tank: date of installation, construction materials, design standards, overfill control equipment, tank capacity, design shell thickness, and operating temperature and pressure. All tanks are aboveground, vertical units and are constructed of stainless steel.

The tanks provide storage for wastes generated from process areas. The storage tanks contain wastes to be treated by on-site incineration. All tanks can manage both aqueous and organic wastes. Waste codes for aqueous and organic wastes could be F002, F003, F005, D001 and D002. Tanks may also manage discarded commercial chemical products including U002, U031, U056, U057, U112, U117, U154 and U239. Table D-2 gives the tank dimensions, specifications, material, capacity and related information for each of the existing hazardous waste storage tanks.

The tanks are contained within reinforced concrete dikes. Each tank is equipped with a manhole, a liquid level indicator, and inlet, outlet, and spare nozzles. Ancillary equipment on each tank also includes a steel access ladder to the tank roof. An tank vents are connected to the plant scrubber system.

Each tank is supported on an individual reinforced concrete pad, raised at least six inches from the main slab, and is secured by a series of No.4, % inch type AB-3 anchor bolts. The pads are designed for loads of 2,500 lb / in2. The mounting pads have been modified to provide for leak detection/ inspection of the tank bottoms.

Inlet valves *are* manually operated to control waste flow and prevent overfilling. Levels *are* monitored by viewing level indicators on each tank or remotely at the control panel. Table D-3 identifies the overflow controls fitted to each hazardous waste tank.

To prevent a possible source of external ignition, the tank areas have signs posted clearly marked with the legend: "Danger - Unauthorized Personnel Keep Out:" "No Smoking;" and "Peligro - Personal no Autorizado, No Entre." Spark-proof tools and flame arresters are used on all tanks storing ignitable materials.

The tanks do not handle or store reactive or incompatible wastes.

The locations of the hazardous waste storage tanks comply with the buffer zone requirements for stable liquids (pressure 2.5 psig or less) contained in the National Fire Protection Association's 1981 "Flammable and Combustible Liquids Code."

Pressure safety valves are installed on each tank to relieve pressure build-up and prevent a possible explosion.

Vapors are vented from the hazardous waste storage tanks via a closed vent system to one of two scrubber systems operated by the facility. The scrubber systems are designed to remove odors from facility emissions. Volatile compounds are removed from the air stream by a spray of water and biodegradable scrubbing agent. Spent scrubber liquid is collected and discharged to the facility wastewater treatment plant

The facility has written a contingency plan (Section G) and has instituted a personnel safety program that addresses the Proper operation of safety equipment (eye showers, respirators, etc.).

D-2a(1) Assessment of Existing Tank System Integrity

A local licensed engineering firm performed a tank assessment in December 1998 on the following tanks: 408,436,450,451,452, and 453. At the time of the assessment Tanks 604,430, and 436 were temporarily out of service.

Copies of the Test Inspection and Certification Reports for all tested tanks are presented in Attachment **D-2** as evidence of compliance with the applicable requirements. Each report is certified by an independent, registered, professional engineer.

As part of the engineer's integrity assessment, each tank was visually inspected and the wall thickness of each tank was examined by ultrasonic means. The inspections and testing did not detect changes in wall thicknesses that were unacceptable under the code criteria. The steel tanks are painted with a rustproofing paint, which was found to be in good condition during the assessment. The assessment concludes that the

stainless steel tanks have not suffered serious attack from the hazardous waste streams handled by the facility. The tanks do not require inside linings given stainless steel's demonstrated suitability for storing the wastes handled at the facility.

Tanks 430, 436, and 604 will be tested and certified for structural integrity and suitability for hazardous waste service before being returned to service in accordance with the provisions of 40 CFR 264.196(f). EPA will be notified within 7 days after returning the tanks to service.

D-2a(2) *Dimensions and Capacity of Each Tank*
(40 CFR 270.16(b))

The dimensions and capacity of each existing hazardous waste storage tank are provided in Table D-2. The table indicates the diameter, straight side height, roof thickness, sidewall thickness, nominal capacity, actual capacity and related design and operating information. Attachments D-3 through D-7 includes a plan and elevation of each of the eight tanks. (A single drawing is provided for tanks 450, 451, 452 and 453, which are of identical design.)

D-2a(3) *Feed Systems, Safety Cutoff, Bypass Systems, and Pressure Controls*
(40 CPR *270.16(c))*

Each tank is equipped with a manhole, a liquid level indicator, and inlet outlet, and spare nozzles. Each tank is equipped with a conservation vent, either on the tank top or in the closed vent system, for the purposes of maintaining the tank internal pressure in accordance with the tank design specifications. In addition, each opening in the fixed roof cover of all tanks is either equipped with a closure device or is vented to the plant scrubber system. The plant scrubber system consists of two packed bed scrubbers units (S-414/S-405) operating in series. Each scrubber unit is equipped with a packed column, a re-circulation tank. and re-circulation pump. Vapors from the tanks are scrubbed with water in the first column and subsequently, with 10% caustic solution in the second column.

Wastes are directed to the storage tanks through an aboveground piping system. When a tank is filled near capacity, waste is fed into the incinerators by use of centrifugal pumps. Inlet valves are manually operated to control waste flow and prevent overfilling. In the event that tanks are nearing capacity, production areas are verbally notified to prevent overflow of storage tanks.

Each tank is equipped with a computerized level indicator and high-level alarm system. The high-level alarms are set at 90% of total tank volume. The level for each tank is shown on the Overview available to operations personnel at the PROVOX console (the

computerized incinerator control system described in Section D-3). Table D-3 identifies the overflow controls fitted to each hazardous waste tank.

D-2a(4) *Diagram of Piping, Instrumentation, and Process Flow*
(40 CFR 270.16(d))

A simplified process flow diagram of the facility's hazardous waste management system is presented in Attachment D-8. This diagram illustrates points of aqueous and organic waste generation, hazardous waste conveyance routes, pumps, valves, storage tanks and incinerators. This diagram is intended to show typical process flow conditions and is subject to the following limitations:

Production processes referenced in the drawing are subject to change
Any tank may be used for the storage of either aqueous or organic waste

It should also be noted that tanks 401, 406 and 434 shown on the drawing are used for the accumulation of hazardous waste for periods less than 90-days and are thus not subject to RCRA permitting requirements.

Simplified process flow diagrams for individual hazardous waste storage tanks are presented in Attachment D-9.

D-2a(5) *Containment and Detection of Releases*
(40 CFR 264.193(a) through (f) and 270.16(g)

Each of the hazardous waste tanks sits atop a reinforced concrete support pad within a secondary containment system constructed of reinforced concrete floor slabs and reinforced concrete dikes. The support pads are designed for loads of 2,500 Ibs/ in? and are raised at least six inches from the main slab. Anchoring is provided by a series of No.4 3!±-inch type *AB-3* anchor bolts. The concrete dikes are capable of containing a leak or spill and can safely contain the entire volume of the largest hazardous waste storage tank within each particular dike plus accumulated precipitation from a 24-hour/25-year storm event. The possibility of a spill is minimized, however, because each hazardous waste tank is equipped with a high-level alarm and/or a level indicator. Facility personnel monitor these level indicators twice per shift and before each waste transfer.

The concrete floor and inner dike walls of all secondary containment systems have been coated to prevent migration of liquids into the concrete and eventually to the soil. The floor slab and inner dike walls were sealed for resistance to splash, spillage, and fumes with Phenoline 305 Primer and Phenoline 305 Finish. This coating is compatible with the wastes stored in the tanks and meets the requirements of 40 CFR 264.193(e)(2)(IV) and 265.193(e)(2)(IV). The product data sheet is enclosed as Attachment D-l0. An equivalent product may be used by the facility in the future.

The tank dikes have sumps to allow the removal of any spills. Any discharge remains in the sump until laboratory analyses indicate whether the accumulated liquid is hazardous 'waste or accumulated precipitation acceptable for release to the waste treatment system. 1£ laboratory analyses (i.e., pH, color, COD) indicate that the sump contains anything other than accumulated precipitation, the material is removed from the sump and transferred to an appropriate hazardous waste storage tank to be incinerated.

The eight existing hazardous waste tanks *are* located in four separate diked areas. Each diked area has been constructed to prevent run-off. The construction of the diked areas also prevents all run-on except falling precipitation (i.e., the diked areas are not covered). For each area, a description of the secondary containment system and the system capacity calculations demonstrate sufficient design capacity to contain a release from the largest hazardous waste storage tank within the containment structure plus accumulation of precipitation from a 24-hour/25-year storm event.

1. Tanks 408 and 430

Tanks 408 and 430 were erected in 1978 and 1977, respectively. The tanks are located in a diked area north of the incinerator control room and west of incinerators one and two. The secondary containment system was modified to comply with all RCRA requirements in 1990. A 30-inch high concrete curb lines the perimeter of the area to provide a total holding capacity of at least 3 times the capacity of the largest hazardous waste tank (i.e., 10,000 gallons). Attachment D-ll includes drawings of the secondary containment system for Tanks V-408 and V-430.

Tank levels are physically inspected daily and at the Provox each shift and before each transfer. Since they are filled slowly, the daily inspection allows ample time to prepare for emptying the tanks. The results of the daily tank inspections are reported and logged in a special record form (see Section F). The tanks, the secondary containment system, and all ancillary equipment are inspected to detect any deterioration and/ or accumulated liquids (from spills, leaks, or precipitation). Tanks 408 and 430 are provided with grooved mounting pads to provide a means for leak detection during daily tank inspections. If a leak is detected at one of the tanks or at any ancillary equipment flow to the leaking component is stopped immediately and repairs are instituted in accordance with 40 CFR 264.196.

The secondary containment system has a sump to allow for the removal of any leaks, spills, or accumulated precipitation. Any discharge remains in the sump until laboratory analyses indicate whether it is hazardous or acceptable for release to the 'wastewater sewer system. If analyses indicate that the sump contains hazardous waste, the material is pumped to an operating hazardous waste storage tank for future

incineration. Non-hazardous liquids are pumped to the wastewater treatment system. *N* on-contaminated storm water is discharged to the storm water system.

N one of the concrete structures (the foundation slab, the tank mounting pad and the concrete dikes) are subjected to vehicular traffic stresses. Possible chemical attack on the concrete is minimized by the precautions taken in the storage of wastes and the installation of an impermeable coating on the floor and inner dike walls of the secondary containment system. Attachment D-12 gives the details of the foundation design for Tanks 408 and 430. The slab is sloped to facilitate the collection and removal of liquids resulting from leaks, spills, and precipitation. At this time, Tank 430 is temporarily out of service.

2. Tank 436

Tank 436 is located in a diked area west of the incinerators control room. Originally installed in 1978, the tank system (including the secondary containment system) was modified in 1988. The system was brought into full compliance with all applicable RCRA requirements in 1990. A 27-inch high concrete curb lines the perimeter of the area to provide a total holding capacity of at least 2.5 times the capacity of the hazardous waste tank. Attachment D-13 includes drawings of the secondary containment system for Tank 436. At this time, Tank 436 is temporarily out of service.

Tank level is inspected physically daily and at the Provox each shift and before each transfer. Since the tank is filled slowly, the daily inspection allows ample time to prepare for emptying the tank. The results of the daily tank inspections are reported and logged in a special record form *(see* Section F). The tank, the secondary containment system, and all ancillary equipment are inspected to detect any deterioration and/ or accumulated liquids (from spills, leaks, or precipitation). Tank 436 is provided with a grooved mounting pad to provide a means for leak detection during daily tank inspections. If a leak is detected at the tank or at any ancillary equipment, flow to the leaking component is stopped immediately and repairs are instituted in accordance with 40 CFR 264.196.

The secondary containment system has a sump to allow for the removal of any leaks, spills, or accumulated precipitation. Any discharge remains in the sump until laboratory analyses indicate whether it is either hazardous or acceptable for release to the wastewater treatment system. If analyses indicate that the sump contains hazardous waste, the material is pumped to an operating hazardous waste storage tank for future incineration. Non-hazardous liquids are pumped to the wastewater treatment system. Non-contaminated storm water is discharged to the storm water system.

None of the concrete structures (the foundation slab, the tank mounting pad and the concrete dikes) are subjected to vehicular traffic stresses. Possible chemical attack on

the concrete is minimized by the precautions taken in the storage of wastes and the installation of an impermeable coating on the floor and inner dike walls of the secondary containment systems. Attachment D-14 gives the details of the foundation design for Tank 436. The slab is sloped to facilitate the collection and removal of liquids resulting from leaks, spills, and precipitation.

3. Tanks 450, 451, 452, and 453

Tanks 450,451,452,453 are located within the same dike, east of the incinerator control room. Each tank is fitted with a mixer to ensure that homogeneous conditions are maintained in each batch of incinerated waste. Originally installed with a 26-inch curb in 1978, the secondary containment system was modified to fully comply with all applicable RCRA requirements in 1990. Today, a 42-inch high concrete curb lines he perimeter of the tanks to provide a total holding capacity of at least 1.5 times the capacity of the largest hazardous waste tank. Attachment D-15 includes drawings of the secondary containment system for Tanks 450, 451, 452, and 453.

The levels in Tanks 450, 451, 452, and 453 are inspected daily. The results of the daily tank inspections are reported and logged in a special record form (see Section F). The tanks, the secondary containment system, and all ancillary equipment are inspected to detect any deterioration and/ or accumulated liquids (from spills, leaks, or precipitation). The tanks are provided with 'l-inch spacers between the tank bottom and the mounting pad to provide a means for leak detection during daily tank inspections. If a leak is detected at one of the tanks or at any ancillary equipment, flow to the leaking component is stopped immediately and repairs are instituted in accordance with 40 CFR 264.196.

The secondary containment system has a sump to allow for the removal of any leaks, spills, or accumulated precipitation. Any discharge remains in the sump until laboratory analyses indicate whether it is either hazardous or acceptable for release to the wastewater treatment system. If laboratory analyses indicate that the sump contains hazardous waste, the material is pumped to an operating hazardous waste storage tank for future incineration. Non-hazardous liquids are pumped to the wastewater treatment system. Non-contaminated storm water is discharged to the storm water system.

None of the concrete structures (the foundation slab, the tank mounting pad and the concrete dikes) are subjected to vehicular traffic stresses. Possible chemical attack on the concrete is minimized by the precautions taken in the storage of wastes and the installation of an impermeable coating on the floor and inner dike walls of the secondary containment systems. Attachment D-16 gives the details of the foundation design for Tanks 450 through 453. The slab is sloped to facilitate the collection and removal of liquids resulting from leaks! spills, and precipitation.

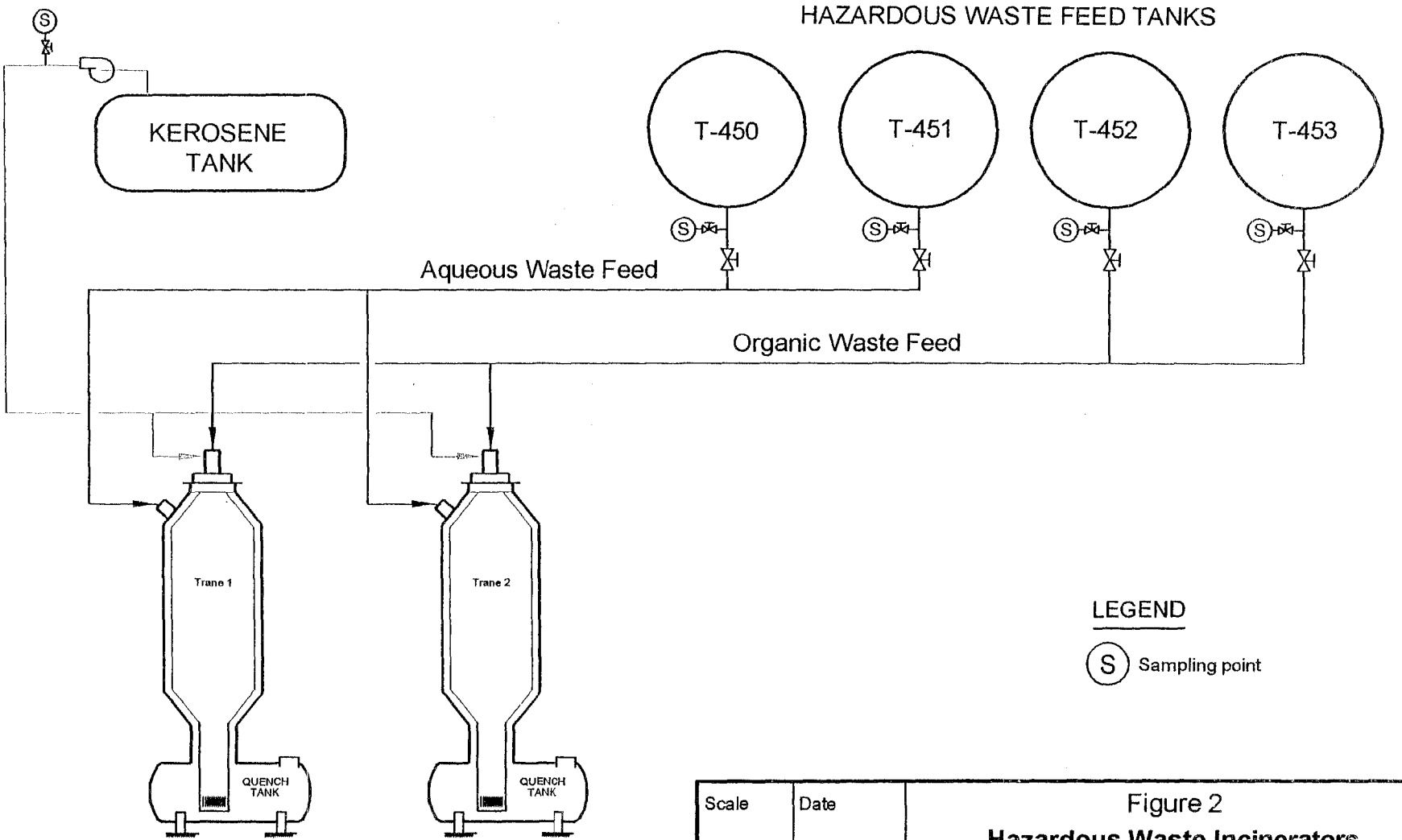
4. Tank 604

Tank 604 was installed in 1979 and is located in a diked area north of the incinerator control room and north of incinerators one and two. A 34-inch high concrete curb lines the perimeter of the area to provide a total holding capacity of at least 2.5 times the capacity of the hazardous waste tank. Attachment D-17 includes drawings of the secondary containment system for Tank 604.

The level in Tank 604 is physically inspected daily and at the Provox in each shift and before each transfer. Since it is filled slowly, the daily inspection allows ample time to prepare for emptying the tank. The results of the daily tank inspections are reported and logged in a special record form (see Section F). The tank, the secondary containment system, and all ancillary equipment are inspected to detect any deterioration and/ or accumulated liquids (from spills, leaks, or precipitation). Tank 604 is provided with a grooved mounting pad to provide a means for leak detection during daily tank inspections. If a leak is detected at one of the tanks or at any ancillary equipment, flow to the leaking component is stopped immediately and repairs are instituted in accordance with 40 CFR 264.196. At this time, Tank 604 is temporarily out of service.

The secondary containment system has a sump to allow for the removal of any leaks, spills, or accumulated precipitation. If any discharge remains in the sump a determination based on either knowledge of waste, knowledge of process and/ or laboratory analyses indicates whether the accumulated liquid is either hazardous or acceptable for release to the wastewater treatment system. If the determination is that the sump contains hazardous waste, the material is pumped to an operating hazardous waste storage tank for future incineration. Non-hazardous liquids are pumped to the wastewater treatment system. Non-contaminated storm water is discharged to the storm water system.

None of the concrete structures (the foundation slab, the tank mounting pad and the concrete dikes) are subjected to vehicular traffic stresses. Possible chemical attack on the concrete is minimized by the precautions taken in the storage of wastes and the installation of an impermeable coating on the floor and inner dike walls of the secondary containment systems. Attachment D-18 gives the details of the concrete foundation for Tank 604. The slab is sloped to facilitate the collection and removal of liquids resulting from leaks, spills, and precipitation.



Scale	Date
None	Sep 2004

ANDERSON - MULHOLLAND & ASSOCIATES, INC.
WHITE PLAINS, NEW YORK
SAN JUAN, PUERTO RICO

Figure 2

Hazardous Waste Incinerators
Feed Stream Sampling Locations

API Industries, Inc.
Guayama, Puerto Rico

TABLE D-2

PHYSICAL CHARACTERISTIC OF HAZARDOUS WASTE STORAGE TANKS

API Industries, Inc.
Guayama, Puerto Rico

Parameter	*V-408*	*V-430*	*V-436*	*V-450*	*V-451*	*V-452*	*V-453*	*V-604*
Date Installed	1978	1977	1978	1978	1978	1978	1978	1979
Design Standard Code	API-650, App. F&J	API-650, App. F&J	API-650, App. F&J	API-650, App. F&J	API-650, App. F&J	API-650, App. F&J	API-650, App. F&J	API-650, App. F&J
Seam Type	Full Penetration Double Welded with Back Chipping	Full Penetration Double Welded with Back Chipping	Full Penetration Double Welded with Back Chipping	Full Penetration Double Welded with Back Chipping	Full Penetration Double Welded with Back Chipping	Full Penetration Double Welded with Back Chipping	Full Penetration Double Welded with Back Chipping	Full Penetration Double Welded with Back Chipping
Foundation	Reinforced Concrete	Reinforced Concrete	Reinforced Concrete	Reinforced Concrete	Reinforced Concrete	Reinforced Concrete	Reinforced Concrete	Reinforced Concrete
Emission Control	Scrubber	Scrubber	Scrubber	Scrubber	Scrubber	Scrubber	Scrubber	Scrubber
Control Type	Absorption	Absorption	Absorption	Absorption	Absorption	Absorption	Absorption	Absorption
Tank Location	Above Ground	Above Ground	Above Ground	Above Ground	Above Ground	Above Ground	Above Ground	Above Ground
Filling Method	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged
Roof Type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Manhole Diameter (in)	24	24	24	24	24	24	24	24
Shell Construction	Butt Welded	Butt Welded	Butt Welded	Butt Welded	Butt Welded	Butt Welded	Butt Welded	Butt Welded
Shell Color	White	White	White	White	White	White	White	White
Roof Color	White	White	White	White	White	White	White	White
Tank Coating	None	None	None	None	None	None	None	None
Roof Design Thickness (in)	3/16	5/16	3/16	3/16	3/16	3/16	3/16	3/16
Sides Design Thickness (in)	¼	0.266	¼	¼	¼	¼	¼	¼
Diameter (ft)	12	12	12	12	12	12	12	12
Straight Side (ft)	12	6	12	24	24	24	24	24

API Industries
25/October/04
2/3,7/4

TABLE D-2 (Contd.)

PHYSICAL CHARACTERISTIC OF HAZARDOUS WASTE STORAGE TANKS

API Industries, Inc.
Guayama, Puerto Rico

Parameter	*V-408*	*V-430*	*V-436*	*V-450*	*V-451*	*V-452*	*V-453*	*V-604*
Nominal Capacity[1] (gal)	10,000	5,200	10,000	20,000	20,000	20,000	20,000	20,000
Vapor Space (in)	6	12	6	12	12	12	12	12
Available Containment Capacity (ft^3)	4,366	4,366	3,438	3,708	3,708	3,708	3,708	7,159
Required Containment Capacity (ft^3)	2,998	2,998	2,725	3,668	3,668	3,668	3,668	5,123
Available Capacity/Required Capacity Ratio	1.46	1.46	1.26	1.01	1.01	1.01	1.01	1.40
Throughput (gal/yr.)	1,637,000	1,637,000	1,246,000	1,246,000	1,246,000	4,218,000	4,218,000	1,246,000
Design Temperature (°F)	120	120	120	120	120	120	120	120
Design Pressure	6" w.c. vacuum	6" w.c. vacuum	6" w.c. vacuum	5" w.c. vacuum	5" w.c. vacuum	6" w.c. vacuum	5" w.c. vacuum	6" w.c. vacuum
Pressure Control	Vent	Vent	Vent	Vent	Vent	Vent	Vent	Vent

1 The nominal design capacity is the maximum theoretical capacity of the tank. The actual capacity of the tank is 95% of the design nominal capacity.