



September 30, 2013

Mr. Merlin Russell Jr.
Professional Geologist II
Hazardous Waste Regulation
Florida Department of Environmental Protection
2600 Blair Stone Rd., M.S. #4560
Tallahassee, FL 32399-2400

**RE: Safety-Kleen Systems, Inc. Orange Park; FLD 980 847 214, Operating Permit No. 0077130-
HO-007, Clay County
First Notice of Deficiencies Dated August 6, 2013**

Dear Mr. Russell:

Safety-Kleen (SK) has prepared this letter in response to the above referenced letter from the Department dated August 6, 2013. We have identified each of the Departments comments in bold, followed by our response. Revised pages of the application are enclosed with this submittal.

FDEP Comments #1: Part I.A.19: The Used Oil/Filter Transporter registration was renewed during this review, and it now expires on June 30, 2014.

SK Response: Part I.A.19 has been revised accordingly.

FDEP Comments #2: Part I.D.3: Under Process Code, identify the specific attachment or location of the attachment.

SK Response: The wording on Part I.D.3 has been revised.

FDEP Comments #3: Part I.D.3, Operating Information, table: For the asterisked items at the bottom of the table please clarify where you obtain the volumes listed here. Also, do you intend to count the amount of product against your permitted capacity?

SK Response: The estimated annual volumes in the table are based on 2012 shipments from the facility. The asterisked items at the bottom of the table are based on secondary containment capacities for the permitted storage areas. The paint waste shelter actually has a secondary containment capacity of 1,222 gallons, but due to space constraints the storage area will hold a maximum of 4,800 gallons. Product will be counted against the permitted capacity in the paint waste shelter.

FDEP Comments #4: Figure 2.2-1a needs the elevations on the contours for the figure to be useful as a topographic map.

SK Response: Figure 2.2-1a has been revised accordingly.

FDEP Comments #5: Part II.A.2, Table 1, Cost Estimates: This table must include estimates for the disposal of used oil and antifreeze.

SK Response: It is Safety-Kleen's position that used oil and antifreeze are not hazardous waste management units, and therefore not required to be included in the closure cost estimates for the facility.

FDEP Comments #6 Contingency Plan:

FDEP Comments #6.1: We suggest a Table of Contents to assist people in finding appropriate sections of the plan quickly.

SK Response: A table of contents has been included in the contingency plan.

FDEP Comments #6.2: Include any visits from the fire department toward meeting the requirements of 40 CFR Part 264.37(1) (familiarizing local authorities with facility). In earlier discussions, Safety-Kleen had indicated that it was your belief that there is a visit once or twice each year.

SK Response: Page 31 of the plan has been revised to reflect these visits by the local fire officials.

FDEP Comments #6.3: We would recommend that you identify and include contacts and phone numbers for neighboring businesses in the event that they should be notified.

SK Response: Safety-Kleen will reach out to neighboring businesses to obtain contacts and phone numbers. However, this information will not be part of the formal contingency plan as it we cannot control changes to this information.

FDEP Comments #6.4: It would be appropriate for the CP to include reference to Chapter 62-150, F.A.C., Hazardous Substance Release Notification.

SK Response: The CP has been revised to include the above reference on page 19.

FDEP Comments #6.5: It would be appropriate to include timeframes for notifications. If an RQ is exceeded, guidance suggests that the NRC be notified within 15 minutes. Subsection 62-150.300(1), F.A.C., requires that DEP be notified "... within one working day of discovery of the release¹." On page

17, item 5, if an RQ is exceeded, the National Response Center must be called immediately. Therefore, do not wait 30 minutes before calling the NRC (see also comment 6.16 below).

SK Response: Page 17 of the CP has been revised to indicate the NRC is to be contacted within 15 minutes of a release where the RQ has been exceeded.

FDEP Comments #6.6: Page 4: The bottom paragraph mentions pumping used ethylene glycol into used oil tankers. Please clarify how the used ethylene glycol is kept separate from the used oil.

SK Response: Safety-Kleen used oil collection trucks have 2 or more compartments for storage. When picking up used antifreeze (ethylene glycol) the driver segregates this material in a separate compartment on the truck.

FDEP Comments #6.7: Page 12: DEP's phone number is now 904.256.1761.

SK Response: The correct DEP phone number has been added to page 13 of the CP.

FDEP Comments #6.8: Page 14: DEP's address is now 8800 Baymeadows Way West, Suite 100, Jacksonville, FL 32256.

SK Response: The correct DEP address has been added to page 15 of the CP.

FDEP Comments #6.9: Page 15, Spills Inside Buildings, last sentence: Explain the containment, characterization and treatment/disposal of the decontamination water.

SK Response: This information has been revised on page 16 of the CP to indicate proper characterization, treatment, and disposal will be done on a case by case basis, depending on the material released.

FDEP Comments #6.10: Page 16 under Spill Control Procedures: We suggest the following changes: "If a discharge occurs:" Harmful is quite ambiguous. As an alternative, you could also write something such as: "If a solid or hazardous waste, or hazardous material discharge occurs:".

SK Response: The above revision has been made and can be found on page 17 of the CP.

FDEP Comments #6.11: Page 16, end of item 2: "All residues...should be collected for proper disposal characterization." The material may end up being treated or recycled and not disposed.

SK Response: The sentence has been revised to indicate characterization instead of disposal.

FDEP Comments #6.12: Page 16: Item three somewhat overlaps with item 5 (on page 17). Perhaps they could be combined.

SK Response: These items have been reviewed and if the Department has no objection we would like to keep the same format as written.

FDEP Comments #6.13: Electronic copies of the CP/PPP should be made available to local authorities/first responders..

SK Response: SK will provide electronic copies of the CP/PPP to local authorities/first responders that request the plan in that format.

FDEP Comments #6.14: A copy of the CP/PPP should be maintained nearby off site in the event onsite access is not available.

SK Response: Please provide some guidance on what the Department considers a "nearby off site" location to maintain a copy of the CP/PPP.

FDEP Comments #6.15 Page 6, second bullet: The eyewash stands are checked for proper operation on a monthly basis but Table 5.2-1 (Inspection Schedule) has a weekly inspection scheduled.

SK Response: Page 6 second bullet has been revised to indicate the eyewash stands are inspected on a weekly basis.

FDEP Comments #6.16 Page 12, third bullet: The option of calling the Northeast District FDEP or National Response Center is noted. However, if an RQ is exceeded, you *must* notify the NRC immediately. Although reports are sometimes passed on to the NRC by State and local government agencies, a person responsible for reporting under CERCLA relies on such state or local "relay" of information at his or her own risk. This relay of information does not automatically satisfy CERCLA reporting requirements and state or local agencies are not responsible for an individual's compliance with a Federal statute. CERCLA section 103(a) specifically requires the person in charge of a facility to report immediately to the NRC a release of a hazardous substance whose amount equals or exceeds the assigned RQ. If the appropriate information is not received within an appropriate timeframe at the NRC, the person responsible for CERCLA reporting still may be found not to have complied with the section 103 notification requirements (see also comment 6.5 above).

SK Response: The NRC reporting requirement has been revised and is now found on page 13, third bullet.

FDEP Comments #6.17: Page 18 discusses spill reporting procedures. Your permit has, and will have additional requirements for reporting. If a De Minimis cleanup is undertaken, Safety-Kleen is required to submit a report to the Hazardous Waste Regulation Section (see condition Part V.5 of your current permit). Also, if the spill is not entirely cleaned up, SWMU reporting is also required (see condition Part V.2 of your current permit).

SK Response: Page 19 of the plan has been revised to include wording for permit condition reporting of spills at the facility.

FDEP Comments #6.18 Page 21, Tank Area: How do you verify that no spill has occurred? Water that has not been properly characterized that is discharged to the ground must be considered a potential SWMU requiring confirmatory sampling.

SK Response: Verification that no spill has occurred is done by visual inspection of the tank farm and secondary containment area. The tanks in this area contain used oil and waste solvent (mineral spirits/petroleum naphtha) so any spill or release of these constituents to the secondary containment would be easily be detected visually. If a spill or release is detected the material will be properly characterized and managed according to the characterization.

FDEP Comments #6.19 Page 22, Decontamination: Does this apply to any spill anywhere on the facility, or only to spills in certain areas? Also please document how visual inspection can be an indicator of successful decontamination.

SK Response: Decontamination procedures outlined in the CP are for minor spills inside the warehouse/container storage areas, and tank farm secondary containment area. All spills at the facility are reported to an internal database and recorded. Spills requiring reporting to the FDEP, or other agencies will be completed as required. The ultimate decontamination procedures for the facility will be addressed in the closure plan at the time of closure. This will take into account the type of material spilled, the area in which the spill occurred, confirmatory sampling (if required), and remediation (if necessary).

FDEP Comments #6.20 Page 23, paragraph 2: Explain in more detail the emergency alarms that are available. The high level alarms for the tanks are discussed in the Tanks section (and mentioned in other parts of your application). I was unable to find information on the alarms at the return/fill station or warehouse. Are these fire alarms? Also, the last sentence is not clear. Is the water pressure supplied by the City of Orange Park sufficient for fire-fighting purposes or does it require supplemental equipment to increase the pressure?

SK Response: Page 24 of the CP has been revised to include more detailed information regarding alarms at the facility. In addition, the last sentence has been revised to indicate the water pressure supplied by the City of Orange Park is sufficient for fire-fighting.

FDEP Comments #6.21 Tables 5.6-1 and 5.8-1:

- a. The various alarms should be included.
- b. Also, is any type of screening device such as an OVA, PID, etc. kept on site and used for screening wastes or air releases if needed?
- c. Correct the inconsistencies between the tables and the figures (e.g., location and number of fire extinguishers. See also various locations on Figure 5.6-1).

SK Response:

- a. The various alarms have been included on tables 5.6-1 and 5.8-1.
- b. There is not any type of screening device such as an OVA, PID, etc. kept on site for screening wastes or air releases.
- c. The inconsistencies between the tables and the figures have been corrected.

FDEP Comments #6.22 Appendix A: Please supply copies of executed letters.

SK Response: Copies of the executed letters will be sent to the Department after the CP has been approved and forwarded to local authorities.

FDEP Comments #7 Training: Page 33, paragraph 3: It appears that Table 6.1-1 should be referenced. Table 6.1-1: How do the items in the "Topic" column correspond to items in the "Course" column?

SK Response: The table 6.1-1 revision has been made, and table 6.1-1 has been revised to provide clarification on how the items in the "Topic" column correspond to those in the "Course" column.

FDEP Comments #8 Table 6.1-15: The WAP, page 11, paragraph 4 states that "...the service representative will take a sample of the waste and then seal the container and label it as hazardous waste." Training for the service representative must include waste sampling including the use of proper sampling equipment, preservation, labeling, chain-of-custody and other tasks associated with representative sampling. DEP's Waste Sampling SOP is located at:
<http://publicfiles.dep.state.fl.us/dear/sas/sopdoc/2008sops/fs5000.pdf>

SK Response: The WAP has been revised to include language stating that all personnel involved in sampling have been properly trained.

FDEP Comments #9 Waste Analysis Plan: In discussions with Jeff Curtis on July 1, 2013, there is no laboratory at the Orange Park facility. However, some sampling and analysis is performed when non-

conforming wastes are suspected (See sampling procedures on page 10, paragraph 2, and the Waste-Specific Criteria in the WAP, pages 12-15). Accordingly, the section entitled Waste Analysis at the Recycle Facility on page 16 must be updated, including Tables 7.2-1 through 7.2-4, to reflect the sampling and analyses that is actually being performed by the service representatives. Although there are probably many similarities, there are some differences. As an example, the frequency of sampling would be different. For suspected non-conforming wastes, the frequency would be "as needed" while the sampling for the annual characterization is on a routine basis. To assist you, EPA's WAP checklist is enclosed (Enclosure B). Keep in mind that information requested in the checklist, such as the Facility Description, is already included in other parts of your Part B, and need not be reiterated in the WAP.

SK Response: The section in the WAP regarding Waste Analysis at the Recycle Facility has been revised, along with applicable tables 7.2-1, 7.2-3, and 7.2-4 to reflect actual sampling and analysis that may be performed by SK personnel.

FDEP Comments #10 Page 6, Aqueous Parts Washer Solvent: The text states that the solvent may or may not be hazardous for TCLP constituents. How does Safety-Kleen determine which solvent is hazardous, and what does Safety-Kleen do when a hazardous solvent is discovered (Most of these aqueous parts washers are non-hazardous, but what safeguards are in place to catch ones that are hazardous)? The same question applies to the Aqueous Brake Cleaner.

SK Response: Safety-Kleen relies on each generator to make the determination regarding whether or not their aqueous parts washer, or aqueous brake cleaner solvent is hazardous. SK sales personnel involved in selling/leasing these units in the field inform customers to review their specific operation in order to determine if any hazardous constituents are being introduced during the cleaning process. In addition, customers are informed not to use chlorinated aerosols on parts cleaned in the units. If a customer notifies us that this is occurring Safety-Kleen will change the coding on the machine service to include the applicable hazardous waste codes.

FDEP Comments #11 Recordkeeping Requirements (located in WAP): The following items must be added to this section:

1. Discussion of operating record retention (three years per 40 CFR Part 264.73(b)) and format (paper, electronic).
2. Notices of planned changes to the permitted facility (270.30(1)(2)).
3. Notices of anticipated non-compliance situations at the facility (270.30(1)(2)).
4. 24-hour report of non-compliance situations which may endanger health or the environment (270.30(1)(6)).
5. Recordkeeping requirements for compliance with Subparts BB and CC.

SK Response:

1. A discussion of operating record retention has been added to page 18 of the WAP.

2. A statement regarding planned changes to the permitted facility has been added to page 21 of the WAP.
3. A statement regarding anticipated non-compliance situations at the facility has been added to page 21 of the WAP.
4. A statement regarding 24-hour report of non-compliance situations which may endanger health or the environment has been added to page 21 of the WAP.
5. A statement regarding recordkeeping requirements for compliance with Subparts BB and CC has been added to page 21 of the WAP.

FDEP Comments #12 Page 1, paragraph 2: Include the dimensions of the warehouse, and dimensions of the container storage area as you did with the Paint Shelter.

SK Response: The dimensions of the warehouse and container storage area have been added to Part II B Containers, page 1, paragraph 2.

FDEP Comments #13 Page 2, paragraph 3: Please include the Canadian Portland Cement Association study referenced here.

SK Response: The above referenced report is enclosed with this submittal.

FDEP Comments #14 Page 7, paragraph 4: The reference to the Medley Branch should be for the Orange Park Branch.

SK Response: The above reference has been revised to reflect the Orange Park Branch.

FDEP Comments #15 Figure 8.4-1 (inspection checklist):

1. Is antifreeze stored in 55-gallon drums? Figure 8.1-3 identifies a 6,000 gallon used antifreeze storage tank, and there is no text that discusses management of ethylene glycol in containers.
2. Page 1 includes checking batteries in 5- and 16-gallon containers. Elsewhere in the Part B, there is no discussion on managing batteries (as hazardous waste or recycling). If batteries are managed, then update the Part B to reflect battery management. If they are not at this location, then they should be removed from the checklist.

SK Response:

1. Used antifreeze is managed in 55-gallon containers. Text has been added to Part II B containers, page 8 to reflect this.
2. Management of batteries had been added in Part B Containers, and elsewhere in the Part B to reflect this activity.

FDEP Comments #16: Provisions for preventing or managing run on (Part II.B.1.b(4)) must be provided. Although it appears that the warehouse floor is above grade (if so, explicitly state so in this section), it is not clear if this is the case with the paint shelter.

SK Response: A statement for preventing or managing run-on has been added to Part II B Containers, page 6.

FDEP Comments #17 Figures 8.1-1 and 8.1-2: What direction do the floors drain? It appears in Figure 8.1-2 that the floors drain away from the containment. What happens when any one containment unit overflows? Are all containment units interconnected such that they form a single containment volume?

SK Response: In figure 8.1-1 the floors are slightly sloped and drain towards both secondary containment trenches. In figure 8.1-2 the containment unit consists of a metal base with metal side walls. The entire unit is flat and segregated into six pans with metal side walls. The inside side walls are lower than the outside side walls so any overflow from one pan would be captured and flow into neighboring pans.

FDEP Comments #18 Part II.C Tank Systems:

Page 1, paragraph 2:

1. There are some inconsistencies in this paragraph. The test indicates four above-ground tanks are present, three 15,000 gallon tanks and one 12,000 tank. The fourth tank is probably the 12,000 gallon horizontal tank used for virgin product. This discussion also leaves out the 6,000 gallon antifreeze tank.
2. For the tank, discuss any pressure controls, safety cutoff valves, the Moorman analog automatic tank gauge float, etc.
3. Identify the type of coating on the outside of the tank.
4. Indicate that the tank bottom is supported by a carbon steel skid on a 6" concrete slab.
5. Although entitled "Tank System Specifications", there is no information on the ancillary equipment. Include descriptions of the pipes (construction material, diameter(s), etc. Are they double-walled or within secondary containment? Although a partial figure is included in the Subpart BB Section, a figure must be included that shows the layout of the piping system from the wet dumpsters to the tanks, transfer pumps, instrumentation and process flow. Include locations of valves, etc. How are the pipes connected (threaded, welded, etc.)?
6. Indicate that the tanks are grounded.
7. Include the secondary containment calculations for the tank farm.

SK Response:

1. The inconsistencies regarding tank information on page 1, paragraph 2 have been revised.
2. Revisions have been made to discuss ventilation, safety cutoff valves, and the Moormann analog automatic tank gauge.

3. At this time Safety-Kleen does not have exact information regarding the specific coating used on the outside of the tank when it was re-painted.
4. Revision has been made to indicate the tank is supported by a carbon steel skid on a 6" concrete slab.
5. A discussion of the tank system piping has been added and a new figure (Figure 9.1-1) has been constructed to provide detail on the ancillary equipment.
6. A sentence indicating the tanks are grounded has been added.
7. Secondary containment calculations for the tank farm have been added and can be found on Figure 9.2-2.

FDEP Comments #19 Tanks, page 4, paragraph 2: The last sentence should reference Appendix C rather than Appendix D.

SK Response: The Portland Cement Association Study Report is included with this submittal.

FDEP Comments #20 Page 4, Tank System Inspections: You may want to discuss the automatic monitoring system that is going to be installed and used in the future. If you describe the system and how it is to be used, then it can be included in the permit renewal. Although you may not know for certain when its installation will be completed, an expected completion date can be used for now.

SK Response: A discussion of the automatic monitoring system has been added to Part II.C.

FDEP Comments #21 Page 7 Notifications: More specifically, 40 CFR Part 264.196(d)(2) exempts spills *equal to or less than one pound*. It would be appropriate to include the citation in the text, and this language should also be added to the Contingency Plan.

SK Response: The above citation has been added to this section as well as the Contingency Plan.

FDEP Comments #22 Page 7 Subsequent Reporting: Because reporting requirements vary (e.g., if an RQ is exceeded, the NRC must be notified immediately; reporting to FDEP has other timeframes and requirements (Chapter 62-150, F.A.C., permit conditions, etc.). For consistency, the easiest way to address this is to simply reference the reporting requirements in the Contingency Plan.

SK Response: A sentence stating subsequent reporting will be completed as referenced in the facility Contingency Plan has been added to this section.

FDEP Comments #23: Information for the piping from the wet dumpsters to the tanks is not included (pipe diameters, construction material, location of pumps, valves and other appurtenances). It is noted that Figure 11.1-1 (Tab Part 2 S) illustrates some of this information.

SK Response: This information as well as a new figure (Figure 9.1-1) has been added to this section.

FDEP Comments #24 Part 2 J Tab: Tab Part 2 J appears to be substantially redundant information, and should be removed. I did not do a line-by-line review, but if a specific detail is noted in this section that is not mentioned elsewhere in the Part B, this information can be moved to that section. Note the following comparisons:

SK Response: Safety-Kleen agrees this information is redundant and can be found in other parts of the Part B application. The Part 2 J Tab will be removed from the renewal application.

FDEP Comments #25 Page 3, second bullet: Add petroleum constituents to the parameter list.

SK Response: Petroleum constituents have been added to the parameter list.

FDEP Comments #26 Page 5, first bullet; page 6, bullet 3: GCTLs are not necessarily appropriate decontamination levels for rinsewaters although the verbiage on page 3, second bullet, indicates that the container storage area will be decontaminated to meet FDEP's guidance at the time.

SK Response: The reference to GCTLs has been removed, and as stated in Part II K Safety-Kleen will perform decontamination at the time of closure that meets FDEP's guidance.

FDEP Comments #27 Page 6, first bullet:

1. The last sentence should probably read, "...will be sampled at the following locations, as follows:"
2. Also, we recommend that prior to sampling, you consult with the Department on the number of sampling locations, and specific locations. This sampling will be based, in part, upon circumstances such as history of spills, and physical condition of containment.

SK Response:

1. Page 6, first bullet has been revised per the above comment.
2. Safety-Kleen agrees with the Department that, prior to sampling, consultations will take place on the number of sampling locations along with the specific locations to be sampled.

FDEP Comments #28 Page 6, second bullet: Add petroleum constituents to the parameter list.

SK Response: Petroleum constituents have been added to the parameter list.

FDEP Comments #29 Page 8, first bullet: The active life of a facility continues until FDEP receives the certification of closure (See definition of "Active life of a facility" in 40 CFR Part 264.10).

SK Response: Page 8 has been revised accordingly.

FDEP Comments #30: The waste recycling operations box should be checked as antifreeze and mercury-containing devices/bulbs are stored for recycling.

SK Response: The above revision has been made to Part II P.

FDEP Comments #31 Page 1, SWMU-3: It would be appropriate to add that the location of the original SWMU-3 was located at the Allied Product Storage Area next to the Paint Shelter.

SK Response: The above revision has added.

FDEP Comments #32 Page 1, SWMU-4: According to the RFA, this SWMU was removed. Because it no longer exists, we will note that in the permit. However, the location of this SWMU in the original RFA was immediately east of the northern used oil storage tank. I have enclosed a copy of the RFA's figure for your convenience (Enclosure A). Figure Part II-Q identifies the location of SWMU-4 as the Allied Product Storage Area. Resolve this discrepancy.

SK Response: The above discrepancy has been resolved, and Figure Part II-Q has been revised.

FDEP Comments #33 Page 1, SWMU-7: Your renewed permit will also reflect that used oil rather, than ethylene glycol, is now stored in the northern tank. It also appears that SWMU-7 consists of two 15,000 gallon tanks. Only one tank (managing used ethylene glycol) was identified in the RFA. The southern tank was not identified in the RFA (see Enclosure A). Update your description.

SK Response: SWMU-7 has been update to reflect the above information.

FDEP Comments #34 Page 1, SWMU-8: The loading/unloading area for the tank farm is not identified on Figure Part II-Q.

SK Response: Figure Part II-Q has been updated regarding SWMU-8.

FDEP Comments #35 Page 2, SWMU-12: If this tank never managed a solid waste, then it need not be considered a SWMU. You should remove this tank and renumber the last few SWMUs (Make similar changes in Part II.Q).

SK Response: The clean solvent tank has been removed, and figure Part II.Q revised accordingly.

FDEP Comments #36 Page 3: One spill on July 25, 1990 is documented in the RFA, page 17. This spill occurred inside the warehouse and no release to the environment occurred.

SK Response: Part II.P.3 has been revised to document the spill that took place on July 25, 1990.

Part II.S: Requirements for Equipment Leaks:

FDEP Comments #37: Figure 11.1-1 is incomplete. Items 17, 19, 20, 21, 25 are missing from the figure. Structures in the figure need to be identified. The piping diagram needs to accurately show how all the piping connected to items identified in the table are interconnected.

SK Response: Figure 11.1-1 has been revised and the diagram accurately shows items along the piping system.

FDEP Comments #38 Table 11.2-3: Suggest removing the section on surface impoundments.

SK Response: The section on surface impoundments has been removed.

FDEP Comments #39 Page 1, paragraph 1:

1. Figure 2.2-6 does not use the term "tank storage management area". For clarity, use the same nomenclature.
2. Appendix D, rather than Appendix E, should be referenced in the last sentence (There is no Appendix E). This same error is in the last sentence on page 11.

Page 4: Page 4: The first line references your Medley facility.

Page 10, Level 2 Containers should read "... (264.1086(d)). Within the paragraph, the reference to 265... should be changed to 264...

Table 11-2-2, last column, bottom row: "!!" should be "11".

SK Response: The above items have been revised.

Appendix A Site Photographs:

1. The first photograph should indicate it is the east side of the facility facing west.
2. The second photograph should indicate it is the west side of the facility facing east.

SK Response: The above photographs have been re-named.

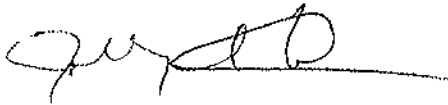
Appendix C Tank Integrity Inspection Report: The inspection report states that the Moormann float had liquid in it and should be replaced. Was this float replaced?

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SK Response: A new Moormann float has been delivered to the facility. Replacement of the float is being scheduled and Safety-Kleen will inform the Department when this has been completed.

Thank you for the Departments time in this matter. If you have any question or require additional information, please do not hesitate to contact me.

Best regards,

A handwritten signature in black ink, appearing to read 'Jeff Curtis', with a long horizontal line extending to the right.

Jeff Curtis
EHS Manager, Florida
Safety-Kleen Systems, Inc.

Enclosure(s): Permit application revisions

cc: Jabe Breland, FDEP Northeast District
Ashwin Patel, FDEP Northeast District

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16. Site ownership status

- ☒ Owned ☐ To be purchased ☐ To be leased _____ years
☐ Presently leased; the expiration date of the lease is ____/____/____.

If leased, indicate land owner's name _____

Address _____
Street or P.O. Box city state zip

17. Name of engineer Robert W. Fox Registration No. 40980

Address 10210 Highland Manor Drive Tampa FL 33610
Street or P.O. Box city state zip

Associated with Environmental Resources Management

18. Is the facility located on Indian land? ☐ Yes ☒ No

19. Existing or pending environmental permits (attach a separate sheet if necessary)

NAME OF PERMIT	AGENCY	PERMIT NUMBER	DATE ISSUED	EXPIRATION DATE
HW Permit	FDEP	0077130-HO-006	03/11/09	12/20/13
UO/Filter Trans	FDEP	TXR000081205	7/3/1	6/30/14
HW Trans	FDEP	FLD980847214	9/1/12	9/1/13
Lamps/Mercury	FDEP	FLD980847214	2/18/13	3/1/14

B. Site Information

- The facility is located in Clay County.
The nearest community to the facility is Orange Park.
Latitude 30 10' 46" North Longitude 81 43' 08" West
Method and datum UTM # 17/430869.59E/3338136.47N
- The area of the facility site is 1.0 acres.
- Attach a scale drawing and photographs of the facility showing the location of all past, present, and future treatment, storage and disposal areas. Also show the hazardous wastes traffic pattern including estimated volume and control.

PART I**D. Operating Information**

3.

Waste Type	Process Design Capacity (Gallons)	Process Code(s)	Estimated Annual Amounts (Tons)	Waste Codes
Spent Parts Washer Solvent	15,000	S01* S02**	456	D001 and D-codes listed in Note below
Branch-Generated Liquids Solids (Debris)	2,553	S01*	16	D001 and D-codes listed in Note below; F001, F002, F003, F004, F005
Dumpster Sediment	2,553	S01*	Included above	D001 and D-codes listed in note below
Tank Bottoms	2,553	S01*	Included above	D001 and D-codes listed in note below
Used Immersion Cleaner (IC 699)	2,553	S01*	2	D-codes listed in note below
Dry Cleaning Waste (Perchloroethylene)	2,553	S01*	21	F002 and D-codes listed in note below
Dry Cleaning Waste (Non-perchloroethylene)	2,553	S01*	Included above	D-codes listed in note below
Paint Wastes	1,222	S01*	9	D001, F003, F005 and D-codes listed in note below
Fluid Recovery Service (FRS)	14,080	S01***	100	Transfer wastes-waste codes assigned by generator
Mercury-Containing Lamps/Devices	N/A	N/A***	Less than 2.2	N/A-handled as non-hazardous transfer wastes

NOTES:

D-Codes: D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, D043

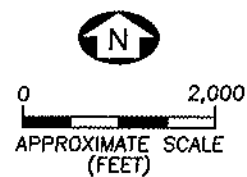
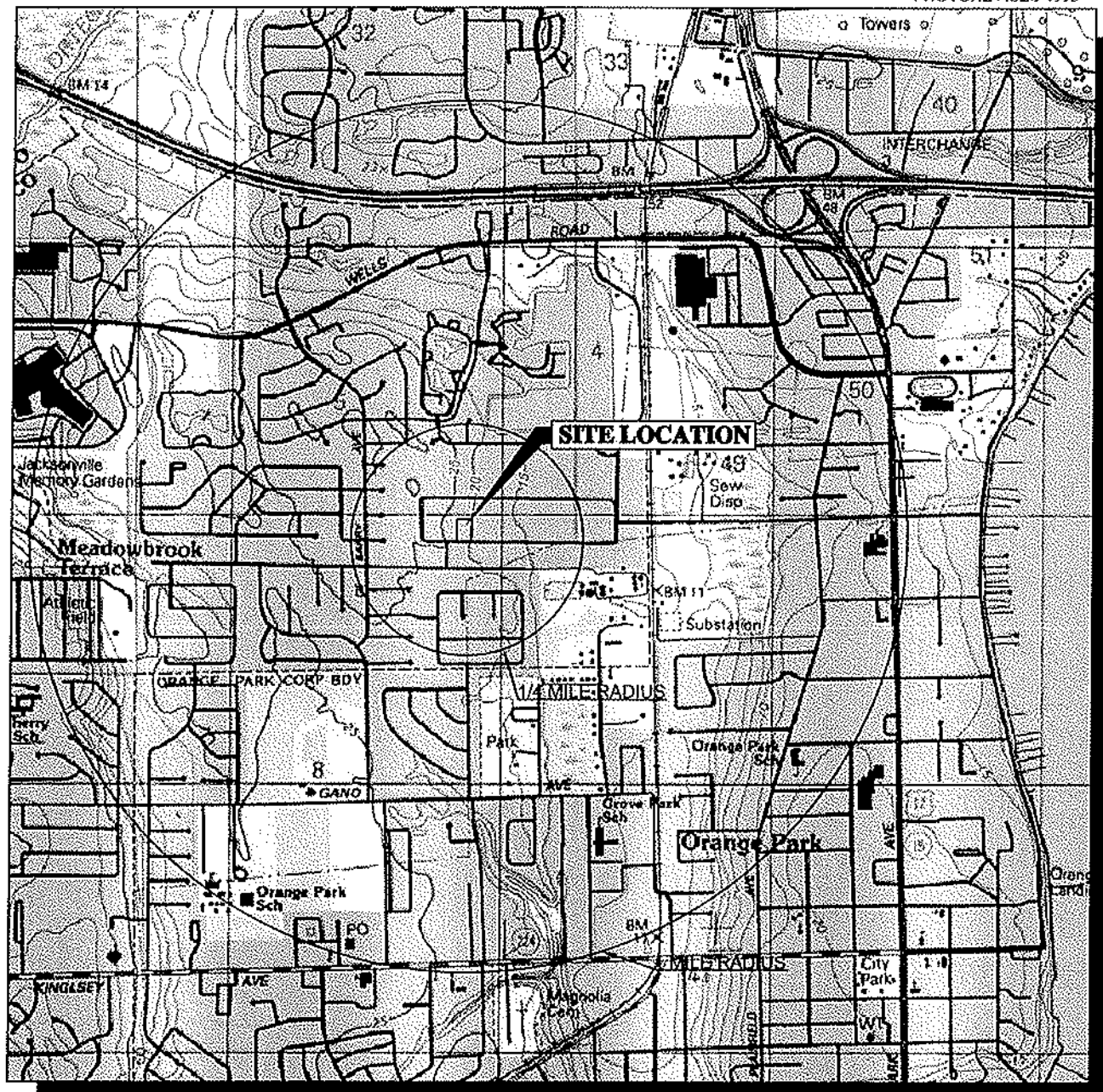
* This waste will be stored in containers in the container storage area and Paint Waste Shelter. The maximum capacity in the container storage area for hazardous waste is 2,553 gallons and 4,800 gallons for the paint waste shelter.

** The spent parts washer solvent storage tank has a capacity of 15,000 gallons and may be filled up to 14,250 gallons.

*** This waste will be held for transfer in containers in the transfer area and designated mercury bulb storage area.

FIGURE 2.2-1
TOPOGRAPHIC MAP
SAFETY-KLEEN CORP. FACILITY
ORANGE PARK, FLORIDA

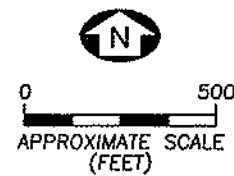
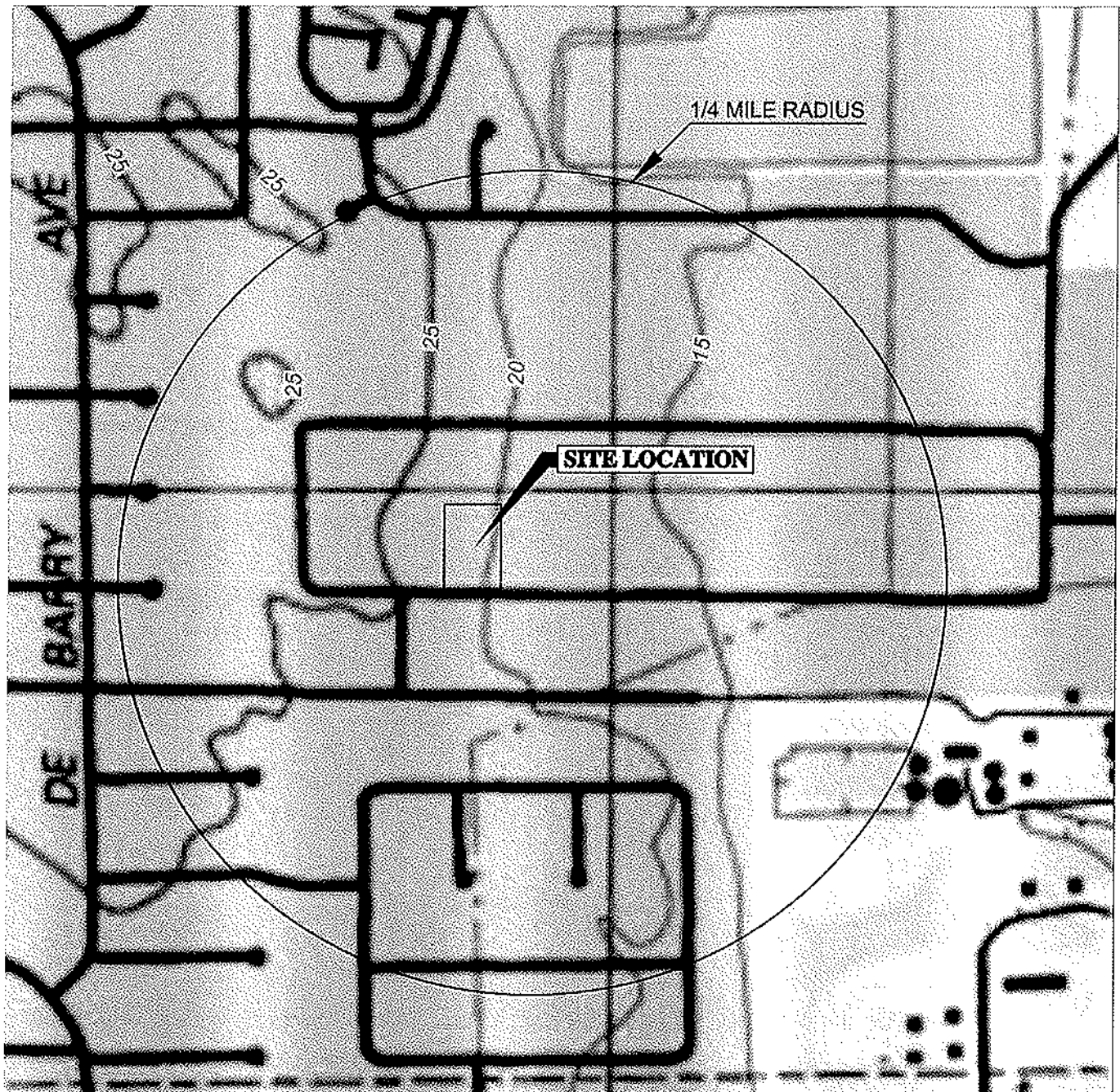
ORANGE PARK QUADRANGLE
FLORIDA
7.5 MINUTE SERIES (TOPOGRAPHIC)
PHOTOREVISED 1993



ERM.

FIGURE 2.2-1a
TOPOGRAPHIC MAP (AT A SCALE OF 1"=500')
SAFETY-KLEEN CORP. FACILITY
ORANGE PARK, FLORIDA

ORANGE PARK QUADRANGLE
FLORIDA
7.5 MINUTE SERIES (TOPOGRAPHIC)
PHOTOREVISED 1995



ERM.

***SAFETY-KLEEN SYSTEMS, INC.
ORANGE PARK FACILITY***

***PREPAREDNESS, PREVENTION, CONTINGENCY PLAN, AND
EMERGENCY PROCEDURES FOR DAILY BUSINESS OPERATIONS***

Revision: 07/18/13

**Safety-Kleen 307901
Orange Park Branch
Emergency Coordinator Phone Numbers**

Primary:	Jeff Duncan	Alternate:	Gerry Friede
	3259 Claremont Rd.		2004 Tickford St.
	Jacksonville, FL 32207		Middleburg, FL 32068
	Office (904) 264-2607		Office (904) 264-2607
	Cell (904) 652-5128		Cell (904) 449-0503

Emergency Notification Numbers

(Safety-Kleen 24 Hour Emergency Response Reporting System)
1-800-468-1760

Florida DEP- Northeast District

(904) 256-1700 (Monday – Friday, 8:00 a.m. to 5:00 p.m. except Holidays)
After Hours, please call (850) 413-9911 or 1-800-320-0519

If you are unable to contact the DEP at the above, please call:
National Response Center 1-800-424-8802

Emergency Teams to be Notified:

Clay County Sheriff
901 Orange Avenue
Green Cove Springs, FL 32043
(904) 529-5900 or 911

Clay County Fire Rescue
P.O. Box 1366, 2519 S.R. 16
Green Cove Springs, FL 32043
(904) 529-2779 or 911

Orange Park Medical Center
2001 Kingsley Avenue
Orange Park, FL 32073
(904) 276-8500

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***PREPAREDNESS, PREVENTION, CONTINGENCY PLAN, AND EMERGENCY
PROCEDURES FOR DAILY BUSINESS OPERATIONS***

GENERAL INFORMATION

Purpose

The preparedness, prevention, and contingency plan and emergency procedures are designed to ensure that Safety-Kleen reduces the possibility of emergency situations and, should they occur, respond in a manner to prevent or minimize hazards to human health or the environment from fire, explosion, or any unplanned sudden or non-sudden release of hazardous material constituents to the air, soil, surface water, or ground water at the facility.

The provisions of the plan are to be carried out immediately if there is a fire, explosion, or release of hazardous materials that could threaten human health or the environment. All responses must conform to the procedures contained in this plan.

General Description of Activities

The business activities conducted at the Orange Park Branch relate to the leasing and servicing of Safety-Kleen Parts Cleaning Equipment, including the provisions of a solvent leasing service for the customers. Clean solvents are distributed from, and the used solvents returned to, the Branch, where separate storage tanks are utilized for the storage of clean and used parts washer solvent. One 12,000-gallon fresh parts washer solvent storage tank currently is utilized at the facility. In addition, a 15,000-gallon tank is used to contain hazardous waste solvent, two 15,000-gallon tanks are used for storage of Used Oil, and a 6,000-gallon tank is used for storage of used antifreeze. Warehouse space is designated for the storage of containers of both clean and used immersion cleaner, parts washer solvent, paint waste, Fluid Recovery Services (FRS) wastes, and dry cleaning wastes. Over-pack containers are used for the management of containers whose integrity has been compromised.

Parts washer solvents are transported in covered containers between the Branch and customers. Upon returning to the Branch, the used parts washer solvent is transferred from the containers into a wet dumpster (solvent return receptacle) in which coarse solids in the parts washer solvents are retained. Used parts washer solvent from the wet dumpster flows into a 15,000-gallon aboveground tank for storage. Hazardous waste parts washer solvent is picked up regularly by a bulk tank truck from a Safety-Kleen TSDf, which at the same time delivers clean parts washer solvent. The sludge in the wet dumpster is regularly cleaned out, containerized, and stored as Branch generated waste in a permitted waste storage area for later shipment to a permitted Safety-Kleen TSDf for reclamation or disposal.

The immersion cleaner remains in a covered container at all times during transportation and storage. The solvent is not transferred to another container while being used by the customers or while in storage at the Branch.

Dry cleaning wastes are picked up at commercial dry cleaning establishments in containers. Dry cleaning wastes handled by Safety-Kleen consist of spent filter cartridges, powder residue from diatomaceous or other powder filter systems, and still bottoms, all of which fall into the categories of either perchloroethylene-based waste or naphtha-based waste. The dry cleaning wastes are packaged on the customer's premises in containers.

All antifreeze collected and managed by Safety-Kleen within Florida is recycled. At the customer's location, Safety-Kleen pumps used ethylene glycol (antifreeze) into a Safety-Kleen used oil tanker truck. The SK collection trucks have more than one compartment so the antifreeze is picked up and stored in a separate compartment until off-load at the branch. The used antifreeze is transported from the customer site to the branch for storage until shipment to be reprocessed into a pure product. This procedure is in accordance with FDEP's Best Management Practices for Managing Used Antifreeze at Vehicle Repair Facilities, dated May 22, 2012. In addition, Safety-Kleen sells its' own private label antifreeze in 55-gallon containers. Customers will then place used antifreeze in these containers to be shipped back to the branch. This material is shipped to SK distribution centers, and then shipped to 3rd party recyclers.

Safety-Kleen also provides a paint waste reclamation service. Wastes containing various thinners and paints are collected in containers and are stored at the permitted container storage area. Paint wastes are received at the Branch on manifests which are terminated at that point. These wastes are then re-manifested and shipped to a permitted Safety-Kleen TSDF, and the regenerated solvent may be distributed to Safety-Kleen customers for use as a product.

The FRS wastes are packaged in polyethylene or steel containers which are not opened until they reach a permitted Safety-Kleen TSDF. The FRS wastes are transfer wastes and may be stored onsite for up to 10 days. The FRS wastes may also undergo branch-to-branch or truck-to-truck transfer. This transfer will occur at the return/fill station inside secondary containment.

The waste products exhibit essentially the same biological, physical, and chemical properties as the fresh product. Used products are basically fresh products with impurities of dirt and metals. Material Safety Data Sheets (MSDSs) for each hazardous material are available at the Branch and on demand by fax through a company-owned MSDS information service. This service provides 24-hour phone or fax access to an extensive MSDS database.

The Branch is registered in Florida as a transporter and storage facility for mercury-containing lamps and devices destined for recycling. This registration includes a commitment to comply with the requirements of Florida Administrative Code (FAC) 62-737.400, including all training requirements. Route trucks handling these materials are equipped with mercury clean up kits. As a registered storage facility, the Branch can store up to 2,000 kilograms of lamps/devices for a period of up to 180 days. Safety-Kleen provides customers with empty four-foot and eight-foot boxes which hold up to 39 lamps. Boxes containing lamps are picked up from customers and are handled at the Branch as nonhazardous transfer wastes. The boxes are stored at the Branch in a designated area within the transfer waste storage area. This storage area is labeled in accordance with FAC 62-737.400(5)(b), and is partially isolated from other transfer wastes to avoid potential for accidental breakage. The boxes are periodically shipped to a permitted mercury recovery or reclamation facility. Prior to shipment out of the Branch, the boxes are placed on pallets and shrink-wrapped with plastic. Figures 5.1-1 and 5.1-2 show the basic site and floor plans and the locations of waste management facilities and facility storage.

Table 5.1 1 provides a list of permitted and transfer wastes handled at the facility.

Safety-Kleen handles all types of batteries with the exception of lithium batteries. All applicable batteries, per 40 CFR Part 273.2 & 273.9, are managed in accordance with the Standards For Universal Waste Management found in 40 CFR Part 273. Batteries not meeting these standards may be managed as 10-day transfer hazardous waste.

Note: All waste containers are unloaded within 72 hrs. of arrival at the facility and all waste containers are shipped outbound within 72 hrs. of being loaded for shipment.

INSPECTION PROCEDURES

Inspection of Safety Equipment

The purpose of the inspection plan is to establish a procedure and schedule for the systematic monitoring and inspection of emergency and spill control equipment to ensure proper operation, and to maintain compliance. Table 5.2 1 is an Inspection Schedule.

The Branch Manager or designee is responsible for carrying out the inspection in accordance with the following procedure and schedule.

- A weekly inspection of fire extinguishers must be performed to ensure that the tag date has not expired and the units are properly charged and accessible.
- A weekly inspection of eyewash stands must be performed to assure accessibility, and proper operation of this equipment. Inventory of the first-aid kit must be checked on a weekly basis.
- A weekly check of the supply of spill control equipment (absorbent material) must be performed.
- A weekly check of the conditions and inventory of other emergency equipment will be made. This includes gloves, aprons, goggles, respirators, and other personal protective equipment.

Inspection of Security Equipment

The Branch Manager or designee, using the Weekly Inspection Log (Figure 5.2 1 or similar), inspects the security features of the facility weekly (e.g., gates and locks), looking for any evidence of sticking, corrosion, or unusual activity. The facility fence will be checked weekly for deterioration, gaps, and broken wire ties.

Inspection of Waste Management Facilities

The purpose of the inspection plan is to establish a procedure and schedule for the systematic monitoring and inspection of hazardous waste management and other material management facilities to ensure proper operation and maintain compliance. Table 5.2 1 provides an Inspection Schedule.

The Branch Manager or designee is responsible for carrying out the inspections of all hazardous waste management facilities in accordance with the following procedure and schedule.

Daily inspections of aboveground tanks will include the following:

- Note volume in tank.
- Observe tank exterior for loose anchoring, wet stops, leaks.
- Check the automatic high level alarm. In addition, measure the depth of used solvent in the tanks to confirm the proper functioning of the automatic alarm system and to determine unexpected deviations in tank measuring data, or a sudden drop in liquid level, which may indicate leakage.
- Inspect secondary containment walls and piping.

- Inspect transfer pumps for leaking seals and overheated motors.
- Inspect the solvent dispensing hose, fittings, and valve for any leaks, damage, or wear that could cause a leak to develop.
- Inspect the valves for proper seat. Stem leaks from worn glands and warped valve bodies should be repaired. If the valve cannot be repaired, replace the unit.

Also, the tanks will be visually inspected and tested periodically.

Daily inspection of the solvent return receptacle (wet dumpster) will consist of an inspection for leaks and excess dumpster mud build-up.

Daily inspections of the container storage area include the following:

- Verify that total volume is within permitted limits.
- Physically examine the condition of containers to verify that leaks have not occurred since the last inspection.
- Verify that all container identification, dates, and hazardous waste labels are attached and current.
- Inspect container placement and stacking such as aisle space, height, and stability of stacks.
- Examine containment areas to detect signs of deterioration and failure of the containment system such as cracks, breakage, settlement, and spillage.

Corrective Action

Any discrepancies or deficiencies found during routine inspections will be recorded in the inspection log and brought to the attention of a supervisor. At this time an evaluation of the seriousness of the problem will be noted and a decision made if the situation requires immediate action or the problem can be handled as routine maintenance. The evaluation of the seriousness of the problem will be recorded in the facility's inspection log. If the problem poses a threat to human health or the environment, action will be taken immediately. The Branch Manager has the overall responsibility for resolving any discrepancies found during the routine inspection.

EMERGENCY NOTIFICATION

Emergency Coordinator

The Branch Manager or designee is the emergency coordinator. Page iii at the beginning of the plan includes the names, home addresses, and both office and home phone numbers of the primary emergency coordinator and alternate. At least one employee will be either present on the facility premises or on call with responsibility for coordinating all emergency response measures at all times. This primary emergency coordinator and alternate emergency coordinator are thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of materials handled, the location of all records within the facility, and the facility layout. In addition, these coordinators have the authority to commit the resources needed to carry out the contingency plan.

EMERGENCY RESPONSE AGENCIES AND TEAM MEMBERS

The agencies and response team members to be notified whenever an imminent or actual emergency occurs are presented on page iii, located at the beginning of this plan.

ACTIONS OF THE EMERGENCY COORDINATOR

Whenever there is an imminent or actual emergency situation, the emergency coordinator (or the designee when the emergency coordinator is on call) must immediately:

- a. Notify all facility personnel present of the emergency. The relatively small size of this facility makes direct verbal communication the most expedient form of emergency notification. The emergency coordinator may also elect to proceed to the front of the building and repeatedly sound a car horn to notify building occupants of an emergency. A head count will be performed by the emergency coordinator.
- b. Notify appropriate state or local agencies with designated response roles if their help is needed.
- c. Summon the primary emergency coordinator, if that person is absent.

Whenever a release, fire, or explosion occurs, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any released materials. Because of the limited types of chemicals in storage, the identification processes can easily be performed visually.

Procedure for Assessing Possible Hazard to the Environment and Human Health

- After identification of the character, source, amount, and extent of a release, fire, or explosion, the emergency coordinator must decide whether the situation can be contained or cleaned up by plant personnel and equipment.

- If a fire or explosion is determined uncontrollable by plant personnel or threatening neighboring establishments or population, assistance from a local emergency response agency shall be summoned immediately and an evacuation order requested.
- In case of a release outside of the containment area that is deemed immediately uncontrollable or unrecoverable, the local emergency response agency and/or specialty cleanup contractor shall be called in.
- After termination of a fire or explosion or containment and preliminary cleanup of a spill, evaluate whether residues in the form of gas or liquid have become airborne, seeped into ground water, and/or flowed into surface water bodies.
- Expert assistance should be requested to determine whether the escaped materials are potentially harmful and whether the receiving medium ultimately will be a populated area, public water supply source, a private well, or an environmentally sensitive area.
- Additional steps shall then be taken to mitigate the potential impact on the environment and human health, in accordance with expert recommendations.

If the emergency coordinator determines that the facility has had a release, fire, or explosion or other emergency that could threaten human health, or the environment outside the facility, the coordinator must report those findings, as follows:

- If the assessment indicates that evacuation of local areas may be advisable, the coordinator must immediately notify appropriate authorities. The coordinator must be available to help appropriate officials decide whether local areas should be evacuated.
- The coordinator must immediately notify the State Warning Point at (850) 413-9911 (24 hours).
- The coordinator must immediately notify the Northeast District of the FDEP, (904) 256-1761 during regular business hours, and if a release equals or exceeds the Reportable Quantity (RQ) the National Response Center (800) 424-8802 must immediately (within 15 minutes) be contacted.

The report must include:

- (1) Name and telephone number of notifier;
- (2) Name and address of facility;
- (3) Time and type of incident (e.g., release, fire);
- (4) Name and quantity of material(s) involved, to the extent known;
- (5) The extent of injuries, if any; and
- (6) The possible hazards to human health, or the environment outside the facility.

Immediate assistance in assessing and responding to an emergency is obtained by the emergency coordinator by calling the 24-hour Safety-Kleen emergency number ((800) 468-1760). The 24 hour emergency number is used by Safety-Kleen to respond to all reports of spills or chemical emergencies. All Safety-Kleen facilities in the state use this 24-hour emergency number. This allows Safety-Kleen to respond to any emergency with a maximum of effort, thereby reducing the threat to human health or the environment.

During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure build-up, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

The emergency coordinator must ensure that, in the affected area(s) of the facility:

- No waste that may be incompatible with the released material is treated or stored until cleanup procedures are completed; and
- All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

The owner or operator must notify the appropriate state and local authorities that the facility is in compliance with the requirements of the preceding paragraph, before operations are resumed in the affected area(s) of the facility.

The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, the owner

must submit a written report on the incident to the Northeast District of the FDEP, at 8800 Baymeadows Way West, Suite 100, Jacksonville, Florida 32256. The report must include:

1. Name, address, and telephone number of the owner or operator;
2. Name, address, and telephone number of the facility;
3. Date, time, and type of incident (e.g., fire, explosion);
4. Name and quantity of material(s) involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
7. Estimated quantity and disposition of recovered material that resulted from the incident.

POTENTIAL SPILL SOURCES

The following is a list of activities that have the potential for a small scale (less than 55 gallons of waste) pollution incident.

1. Moving of containers.
Every time a container is moved, the possibility exists that it could tip over or be dropped. To minimize the possibility of spillage of solvent under those conditions, all container lids must be secured before the container is moved.

2. Delivery truck container transfers.
 - a. Individual delivery containers hold from 5 to 55 gallons of waste, a quantity which can be contained by oil sorbent clay or pads, if accidentally spilled.
 - b. Each vehicle is equipped with a hoist and hand cart for ease of moving clean solvent containers off the truck and into the customer's shop and returning the dirty solvent containers to the truck.
 - c. Lids are secured on containers during movement to prevent a spill.
 - d. Each truck contains a complete spill kit, shovel, and a quantity of sorbent material to contain minor spills.
 - e. The cargo must be secured in the route vehicle before transit.

Spills Inside Buildings

In the event of a spill indoors, the doors and windows should be opened to improve the ventilation in the confined area. Following the instructions of the Material Safety Data Sheet (MSDS), a worker would enter the area wearing rubber gloves, boots, and mop up the liquid and return it to dirty storage. Spills inside the building will be contained by the existing secondary containment structures, or by using available absorbent material and booms. Proper characterization, treatment, and disposal of the decontamination water will be done on a case by case basis depending on the material released. All material will be disposed of per federal, state, and local regulations. The cleanup is completed only when the workers have cleaned themselves and the emergency equipment with soap and water.

Spills on Concrete Pads

Concrete pads in loading and unloading areas are, in most cases, equipped with secondary containment. Under most spill conditions, product can be totally contained on the concrete surface and in the containment system. Upon containment, arrangements must be immediately undertaken to recover the material. Any soil that may be involved must be removed and handled in the same manner as the material spilled.

Tank Spills or Leakage

Aboveground tanks are underlain by a concrete slab and surrounded by a concrete dike to contain any spilled or leaked solvent. The containment system has been sized in accordance with the regulations, and the product will be totally contained under most spill conditions. Should a spill occur, arrangements must be immediately undertaken to recover the material. In the event of leakage, tank repair or replacement will be initiated. Any soil that may be involved must be removed and handled in the same manner as the material spilled.

Spill Control Procedures

If a solid or hazardous waste, or hazardous material discharge occurs:

1. Stop the discharge, if possible, by immediately transferring the liquid to a good container.
2. Retain, contain, or slow the flow of the material, if possible, by diking with sorbent pad or dirt. Based on the seriousness of the incident, the emergency coordinator will select the level of personal protective equipment required to address the incident. Pump and mop up the liquid from the floor into a good container and return the container to storage for subsequent shipment to a Safety-Kleen recycle center for reclamation/disposal. The area and equipment that comes in contact with the spill must be decontaminated with soap and water. All residues resulting from containment and decontamination will be collected for proper characterization.
3. If the material escapes the containment efforts, immediately call the 24-hour Safety-Kleen emergency number with response time less than two hours (page iii). Record the date, time, and name of person taking the message. The State Warning Point ((850) 413-9911) is to be contacted as soon as possible, but no later than within one working day of discovery of the release. If a release equals or exceeds the Reportable Quantity (RQ) the National Response Center ((800) 424-8802) is to be contacted within 15 minutes.

4. Immediately recover spilled solvent to reduce property and environmental damage using the emergency and safety equipment stored onsite for such situations (Figure 5.6 1 and Table 5.6 1), or call in emergency response contractors (page iii). Start recovery operations immediately.

After recovery of spilled solvent, wash all contaminated impervious surfaces and equipment with soap and water. The residue of spill- or fire-contaminated soils and waste waters must be removed and disposed of at a Safety-Kleen recycle center. In addition, the recovered solvent will be sent to a Safety-Kleen recycle center for reclamation.

5. The person reporting a spill should be prepared to give their name, position, company name, address, and telephone number. The person reporting also should give the nature of the material spilled (e.g., immersion cleaner, etc.) and, if possible, some estimate of the amount, and whether it is near a stream or could enter a stream by flowing through ditches or storm sewers.

If assistance is needed, the emergency coordinator should describe the containment status and specify any additional equipment needed. When reporting a spill, record the date and time of the call and the name of the person answering the call at the above number.

Spill prevention plans are reviewed with facility personnel every year, and records of the training are kept at the facility.

Information on every spill will be recorded through an internal database. A notification of each spill will be sent to the Corporate Environment Health and Safety Department.

Reports of emergency incidents will be transmitted to the Secretary of the FDEP or designee within 15 days of occurrence. This report shall include:

1. Name, address, and telephone number of the owner of operator;
2. Name, address, and telephone number of the facility;
3. Date, time, and type of incident (e.g., fire, explosion);
4. Name and quantity of materials involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
7. Estimated quantity and disposition of recovered material that resulted from the incident.

The facility will complete all permit condition spill reporting as required, and follow the requirements of Chapter 62-150, F.A.C. Hazardous Substance Release Notification.

Containment Systems

Containerized Wastes

The hazardous waste container storage area consists of three areas: the container storage area located in the warehouse, the paint/allied product storage shelter located north of the main

building and the Transfer Waste Staging Area located in the Return/Fill station and warehouse. These areas are shown in Figures 5.6-3 and 5.6-4. The containment system is free of cracks. Containers are stored on pallets whenever possible.

The container storage area shown in Figure 5.6-3 occupies a portion of the main building. This warehouse area has concrete floors, concrete berms, and a central collection trench to form a spill containment system within the area. The permitted container storage area has a 25'5" X 24' concrete floor with 6-inch curbing on exposed sides and two containment trenches with a combined capacity of 255.3-gallons. Maximum storage capacity is 2,553 gallons. Waste allowed for storage is immersion cleaner, dry cleaning solvent, parts washer solvent dumpster mud, tank bottoms, and oil filters. The types and number of each type of container may vary; however, the storage capacity will not be exceeded.

In the container storage area, containers are handled with a fork-lift and/or a hand-truck free of sharp points and stacked by hand. Every time a container is moved, the possibility exists that it will be tipped over, dropped, or punctured. To minimize the possibility of spillage, container lids are secured and containers are kept in an upright position. A small portable electric pump is available to quickly transfer the liquid from any leaking container into a safe container. Each route truck is equipped with a lift gate or an electric hoist. The appropriate device is used in the loading/unloading operation to minimize chances for spillage and/or employee injury.

Containerized wastes at the Orange Park facility are loaded/unloaded in the vicinity of the contained concrete dock on the western side of the building (Figure 5.1 2) and return/fill dock. Because these areas are fully enclosed, spills originating in these areas should not come in contact with stormwater.

Paint Waste Shelter

The permitted waste shelter consists of a 45' X 68' concrete pad underlying a 15.5' X 20' shelter with metal containment pans. This shelter is divided into a paint waste storage area and an allied product storage area. Allied products are unused virgin materials. The storage shed consists of six metal containment pans each measuring 5' X 10'. The pans have overlapping lips which

prevent liquids from migrating between the pans and onto the concrete. Total containment capacity is 1,222 gallons. Materials allowed include virgin materials and flammable paint-waste up to 4,800 gallons. The types and number of each container may vary; however, the storage capacity will not be exceeded.

FRS Wastes and Transfer Wastes

Transfer wastes may be stored in the southern portion of the warehouse and on the southeast Return/Fill dock. The containment system in the warehouse is free of cracks and is sufficiently impervious to prevent seepage into and through the concrete. Since FRS wastes are transfer only, they are not required to have containment. Because these areas are fully enclosed within the building, spills originating in these areas should not come into contact with stormwater.

All containers are covered during movement and are located within diked, concrete floored areas to contain any potential spill. The small quantities of waste onsite at any time can be cleaned up immediately through the use of hand-held electric pumps, mops, wet/dry vacuums, or sorbent materials, should a spill occur. Any spilled waste is contained for offsite recycling/reclamation. All containerized waste movement is performed manually, by a pallet jack, or propane fueled forklift truck. Therefore, power outages are not expected to threaten employee safety.

Return/Fill Station

The return/fill station is located at the northern end of the main warehouse building. A slight, slope (three inches) exists, which terminates at the sumps (18" diameter, 18" deep). The sloped floors and containment sump were measured to have a containment capacity of 3,952 gallons, which equates to a storage capacity of 39,520 gallons. A steel grate dock (approximately 33 inches above the floor) is located perpendicular to the floor and extends in an L-shape to cover portions of this area (Figure 5.6-5). Any spill which occurs on the concrete floor is directed by gravity into the sumps. Any residual remaining on the floor can be cleaned up immediately through the use of mops, wet/dry vacuums, or sorbent materials, should a spill occur. Spilled waste is contained and sent for recycling/reclamation.

Doors in this area include four overhead roll-up doorways for trucks entering/exiting the service building, one personnel doorway for employees entering/exiting the service building, one overhead doorway connecting the return/fill station and container storage area (warehouse), one doorway connecting the return/fill station and the container storage area (warehouse). Based on the capacity of the return/fill station collection sumps and sloped floor, it is extremely unlikely that a spill would escape through the overhead doorways or two doorways entering/exiting the service building. The area just outside the service building return/fill station is asphalt covered. Because the return/fill station is fully enclosed and the pavement outside this area is sloped to carry water away from the building, spills originating in this area should not come in contact with stormwater.

Tank Area

The tank area (Figure 5.6-6) houses three 15,000-gallon tanks and is provided with more than 20,000 gallons of secondary containment, which is in excess of the single largest tank (15,000 gallons). This containment area is only slightly sloped. Any spilled material is removed by pump or wet vacuum. When rainwater accumulates in the containment area, and it has been verified that no spill has occurred, then the rainwater will be discharged to the ground surface. Verification is done by visual inspections of the tank area. As stated above, the tank farm holds 3-15,000 gallon tanks (2-used oil, 1-used solvent), so contamination (by spill or release) of any rainwater that has accumulated in the secondary containment will be easily identified visually. Only the Branch Manager or someone operating under his/her direct orders may discharge to the ground surface. If it is not possible to verify that a spill has not occurred or the water exhibits an iridescent sheen, then the rainwater will be pumped into the used parts washer solvent tank. Any spills which occur on the pad will be cleaned up and the area decontaminated. Decontamination methods are discussed later in this Plan. This decontamination will result in de minimis residue. Employee training emphasizes the importance of inspection, maintenance, personal safety, and reporting of conditions with pollution incident potential. This training, coupled with the Safety-Kleen's containment system and immediate cleanup of any spills, eliminates or greatly minimizes the chance of contamination of ground water and/or surface water in the vicinity of the site. In addition, surface run-off at the site does not come in contact with stored products in the waste management area.

DECONTAMINATION

Once the spilled material has been cleaned up, the spill area and equipment used during the spill clean-up must be decontaminated and/or disposed, as described below.

Concrete Surfaces/Containment Area

- Concrete surfaces/containment areas will be cleaned with a detergent solution and then rinsed with hot water. The rinsate will be collected via wet vacuums and placed in containers. Visual inspection will be used to determine the success of the decontamination procedure.
- The intent of the surface decontamination is to prevent current or future releases of materials to the environment. Vigorous cleaning with detergent is sufficient to prevent releases to the environment during normal operations. Potential for hazards from residual materials to future occupants of the facility are addressed in the closure plans for the facility and the decontamination procedures incorporated therein.

Equipment

The equipment used to clean the area includes mops, pails, scrub brushes, and a wet/dry vacuum. Equipment which is considered reusable (i.e., pails, wet/dry vacuum, hoses) will be washed with detergent, and wash water and rinsate will be collected for proper disposal. All non-reusable equipment and/or equipment which is not capable of being decontaminated will be containerized and disposed of as hazardous waste. Equipment used in a response will be deemed fit for use after being used in any response.

Wash Water and Rinsate

If the rinsate or other wastes generated in the clean-up process is determined to be hazardous, it will be properly disposed of as a hazardous waste; otherwise, the material will be disposed of as an industrial waste. It should be noted that wash water and rinsate will not be allowed to drain to surface waters.

EMERGENCY RESPONSE EQUIPMENT AND COMMUNICATION

Due to the small size of the facility, routine communication will be accomplished by voice communication. Fire alarms are available in the office, warehouse, and return/fill station – monitored by a 3rd party that will immediately contact the local fire department if the alarms are activated. An emergency alarm is available at the return/fill station – this alarm can be activated manually and sounds in the office to indicate an emergency situation. High level alarms are available at the tank farm. Telephones are used in case of a spill or fire emergency to summon assistance. Emergency numbers are posted by phones throughout the facility. Included with these phone numbers is the 24-hour Safety-Kleen spill number. Figure 5.6-1 provides the locations of fire extinguishers, first-aid kits, emergency eyewashes, alarms, and spill equipment. Other emergency response equipment (Table 5.6-1) is kept in a small storage area inside the warehouse. This equipment includes mops and buckets, soap, shovels, and spill sorbent pads. Rubber gloves, boots, pumps, and a wet/dry vacuum cleaner are stored in an emergency supply area near the container storage area. Descriptions and uses of the equipment are provided in Table 5.8-1. Adequate aisle space is provided in the container storage area for movement in an emergency situation. The City of Orange Park supplies water for domestic use, decontamination, and fire fighting. Water is supplied by the City of Orange Park for domestic use, decontamination, and fire-fighting. The water pressure is sufficient for these purposes.

Pails, hoses, and detergents are the primary equipment that will be used for decontamination. The equipment available at the facility for emergency situations is adequate for most cases. Large or serious emergency situations will be remediated by local emergency response teams or special emergency response or cleanup contractors. The facility is constructed and operates in accordance with National Fire Protection Association (NFPA) standards and applicable local ordinances. Applicable health and safety standards are also observed at the facility.

All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment will be tested and maintained as necessary to assure its proper operation in time of emergency.

FIRE CONTROL PROCEDURES

In the event of a fire at the facility, the following activities will be executed.

Call the Fire Department (page iii). [Note: Center aisles are available in container storage areas to permit fire department personnel to pass with fire fighting equipment.]

Act quickly with the fire extinguisher to put out the fire before it spreads.

Call the Police Department (page iii) to maintain traffic and on-lookers and local hospital (page iii) to notify the type and extent of injuries, if any.

Ignitable Wastes

All wastes and products are kept away from ignition sources--Personnel must confine smoking and open flames to remote areas, separate from any solvent (e.g., outside front of facility). The parts washer solvent and paint waste handling areas are separated from the office area to minimize the potential for a fire to spread or injury to personnel to occur.

The tank farm is more than 20 feet from the property line as required in 40 CFR Part 264.198(b).. Likewise, the flammable storage area is 50 feet or more from the property line per 40 CFR Part 264.176. Both of these distances meet the NFPA code for storage of ignitable materials.

Ignitable wastes are handled so that they do not:

1. Become subject to extreme heat or pressure, fire or explosion, or a violent reaction--The parts washer solvents and paint wastes are stored in a tank or in containers, none of which

are near sources of extreme heat, fire, potential explosion sources or subject to violent reactions. The tanks are vented and the containers kept at room temperature to minimize the potential for pressure build-up. The tanks are painted white to reflect sunlight and are vented to prevent pressure build-up.

2. Produce uncontrolled toxic mists, fumes, dusts, or gases in quantities sufficient to threaten human health--The vapor pressure of petroleum based parts washer solvent is low (2 mm mercury) and it and the paint waste may react with strong oxidizers and reactive metals only. Toxic mists, fumes, and dusts do not form in quantities sufficient to threaten human health since strong oxidizers are not handled at this facility and the solvent vaporization is minimal under normal working conditions.

[Note: Drycleaning wastes are initially not flammable, but may produce toxic gases and hydrochloric acid at elevated temperatures (about 1,200°F).]

3. Produce uncontrolled fires or gases in quantities sufficient to pose a risk of fire or explosion--See "1" above and "4" below.
4. Damage the structural integrity of the Safety-Kleen facility--The parts washer solvent and paint wastes do not cause deterioration of the tank, drums, or other structural components of the facility.

Incompatible Wastes

Incompatible wastes are segregated in an appropriate manner in accordance with industry standards. All waste or products are kept away from ignition sources. Employees must confine smoking or open flames to designated safe areas.

Materials are handled so they do not:

- a. Generate extreme heat or pressure, fire or explosion, or violent reaction.
- b. Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health.
- c. Produce uncontrolled fires or gases in sufficient quantities to pose a risk of fire or explosion.
- d. Damage the structural integrity of the Safety-Kleen facility.

Adequate aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, and decontamination equipment to any area of the facility operation in an emergency.

External Factors

The design of the facility is such that a harmful spill is highly unlikely to occur from most external factors. The storage tanks are inaccessible to non-Safety-Kleen personnel. Also, the container storage areas are in buildings which are inaccessible to unauthorized personnel.

1. Vandalism - Only extreme vandalism would result in a solvent spill or fire. Responses to spills and fires are described in a previous section of this Plan.
2. Strikes - A strike would not result in a solvent spill or fire.
3. Power Failure - A power failure would not result in a spill or fire. Should a power failure occur, all activities requiring electricity will cease.

4. Flooding - The waste management facility elevation is above the projected 100-year flood plain; therefore, a 100-year flood will not affect the facility.
5. Storms or Cold Weather - The solvent return/fill station, tank storage, and the container storage areas are roofed to eliminate the possibility of rain entering the waste management areas. Neither snow, cold weather, nor stormwater is expected to affect the facility.
6. Hurricanes – Safety-Kleen will adhere to the following procedures in the event of an approaching hurricane:

Hurricane Watch

- Compile list of employees with telephone numbers. Give each a call-in number for the branch (Branch Manager cell phone or branch number) in the event operations are interrupted.
- Prepare battery-operated radio (if the facility has one) and other equipment in the case of power outage.
- Complete cleanup of facility property – all empty drums, containers, trash containers, chairs, spill kits, etc. should be brought inside the facility structure.
- Facility services should be restricted to local routes (no more than 30-45 minutes from the facility) in case weather conditions deteriorate.
- Ensure any areas which may be exposed to rainwater are clean and secure filling nozzles.
- Route trucks should be re-fueled prior to the storm, emptied of all wastes and product, secure lift gates and side compartments.
- Ensure all bulk collection trucks have off-loaded into the facility storage tank or BIDS terminal.
- Move trucks inside building as possible and park the remaining trucks as close to the building as possible (preferably at the bay doors).
- Secure computers, monitors, etc. and wrap in plastic with tape.

- If possible schedule solvent tanker in a manner, which would allow the maximum volume of liquid to remain in the storage tanks as the structural integrity of a tank increases with content volume. Camlock all ends of hose fittings and turn off valves at the storage tanks.
- After all preparation has concluded, all employees should be sent home and the facility secured. Turn off main breaker.

Hurricane Warning

- All employees are excused from work if their county of residence is put under a hurricane warning. However, the branch manager or other key personnel may be available to perform some last minute activities if weather permits.
- Notification, via incident alert system or telephone, that a hurricane warning has been posted.
- Walk-around of facility to ensure all preparation work conducted under the hurricane watch has been completed.
- Completion of any remaining items that were not finished.

Following Hurricane

- Depending on the intensity of the storm, the following actions should be carried out as soon as conditions permit.
- Employees should phone-in, following local government employee guidelines, for returning to work.
- Branch manager and/or the emergency coordinator should be the first people to enter the facility. Perform a complete walk-around of the facility checking for security of premises, waste management areas, determine if there are any safety issues that pose risk for employees, inspect for any damage, looting, or theft and generate a list of items to report.

EVACUATION PLAN

In an uncontrolled emergency, all persons are to be evacuated from the area by means of a verbal cry or use of the public address system and are to assemble across the street from the entrance drive to the facility to assure that all personnel are accounted for and out of the area. The emergency coordinator may elect to use a car horn as a means of emergency notification. A head count will be performed by the emergency coordinator.

The Fire Department must be notified at the time of evacuation either from a safe onsite building or neighboring facilities. Clearly marked exits exist in warehouse and office area.

AVAILABILITY AND REVISION OF THE PREPAREDNESS, PREVENTION, AND CONTINGENCY PLAN

This Plan and all revisions to the Plan are kept at the facility and regularly updated throughout the operating life of the facility. Copies of this document are provided to local authorities and organizations listed under the Preparedness and Prevention Plan, which may be called upon to provide emergency services. This Plan and all revisions to the Plan are made readily available to employees working at the facility.

This Plan is reviewed and updated, if necessary, whenever:

1. The facility permit is modified to allow new process wastes to be stored or treated, or applicable regulations are revised;
2. The list or location of emergency equipment changes;
3. The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that:
 - a. Materially increase the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or
 - b. Changes in response necessary in an emergency.
4. The names, addresses, or phone numbers of emergency coordinators change;
5. The employee assigned to each emergency task changes, or
6. The plan fails when implemented in an emergency.

ARRANGEMENTS WITH LOCAL AUTHORITIES

Arrangements have been made to familiarize the Police Department, Fire Department, and local emergency response teams with the layout of the facility, properties of hazardous materials handled (Material Safety Data Sheets) at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes. The local fire department also conducts annual fire inspections to ensure we are in compliance, and this also gives the Department an opportunity to familiarize themselves with the layout of the facility in person.

Arrangements have been made to familiarize the local hospital with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which would result from fires, explosions, or releases at the facility.

Appendix A of this Plan (located at the end of this section) includes copies of example distribution letters for transmittal. Copies of updated transmittal letters are kept on file at the facility.

TABLE 5.6-1
EMERGENCY RESPONSE EQUIPMENT

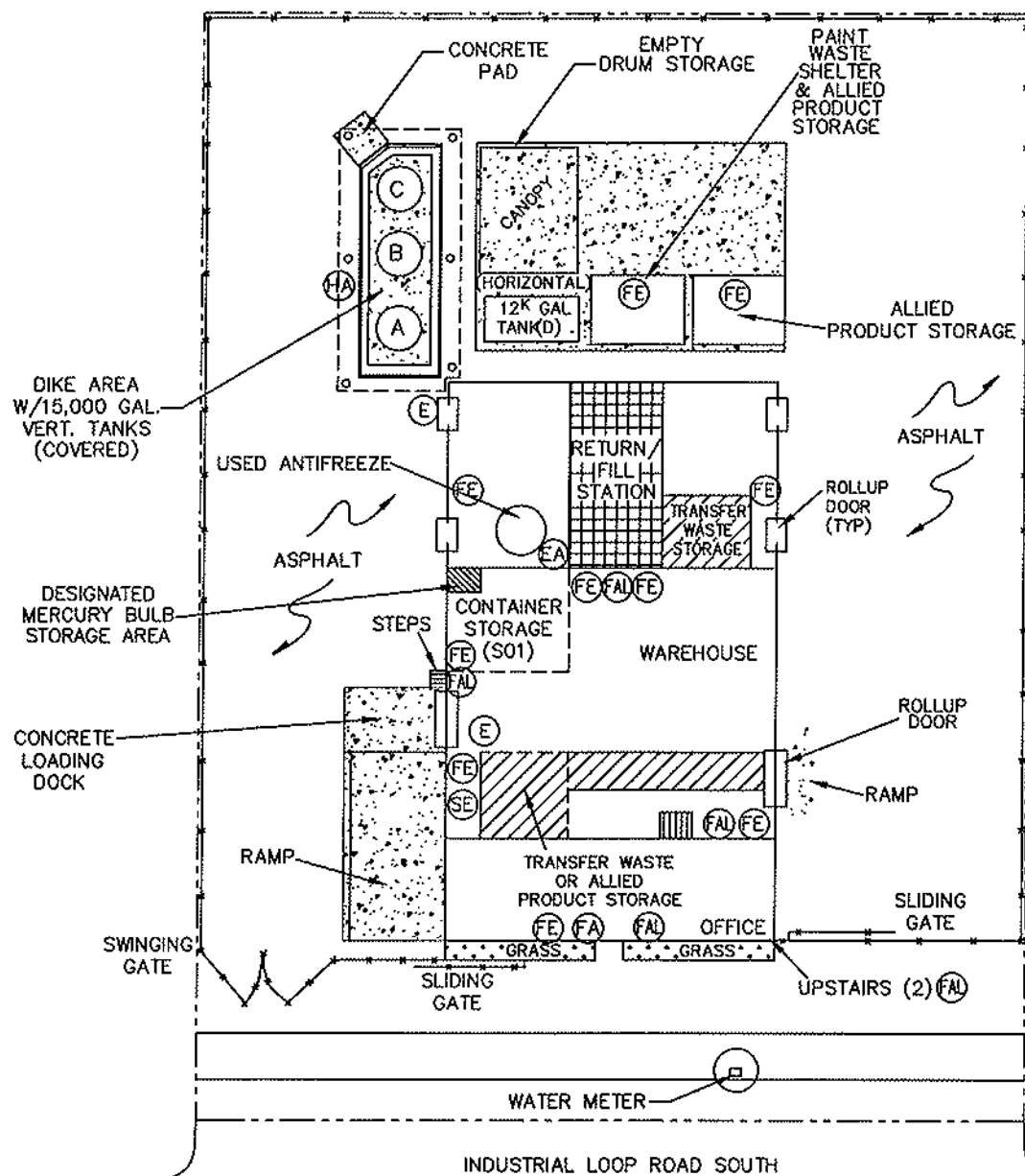
Description	Type/Capacity	Location	Quantity
Fire Extinguisher	ABC (10 lb)	Office	1
		Warehouse	5
		Return/Fill	2
		Paint Waste Shelter	1
		Allied Product Storage	1
Eyewash	Fountain	Warehouse	1
		Drum Return/Fill Area	1
First-Aid	OSHA Compliant	Warehouse	1
Telephones	Standard	Office	Min. 6
Telephones	Standard	Warehouse	1
Intercom	Explosion Proof	All Buildings	N/A
Gloves	Rubber	Emergency Equip Area	Min. 3
Boot covers	Rubber	Emergency Equip Area	Min. 3
Protective Clothing	Apron	Emergency Equip Area	Min. 2
Eye Protection	Goggles/Safety Glasses	Emergency Equip Area	Min. 3
Sorbent Material	Oil Absorbing	Emergency Equip Area	Min. 1 bag
Shovel	Standard	Emergency Equip Area	Min. 1
Mop and Bucket	Standard	Emergency Equip Area	Min. 1
Respirator	Air Purifiers	Emergency Equip Area	Min. 2
Pump	Hand-held, Electric	Return/Fill Area	Min. 1
Wet/Dry Vacuum	Portable, Electric	Emergency Equip Area	1
Empty Drums for Overpack	30, 55, 85 gal.	Container Storage Area	4
Fire Alarms	Manual-pull	Office/Warehouse	6
Emergency Alarm	Manual	Return/Fill Area	1
High Level Alarms	Automatic	Tank Farm	1

TABLE 5.8-1

DESCRIPTION AND USES OF EMERGENCY EQUIPMENT

Item	Location	Use/Description
Gloves	Locker Room/Emergency Equipment Area	The rubber of plastisol gloves sold by Safety-Kleen are to be used when handling the solvents.
Safety Glasses or Face Mask	Locker Room/Emergency Equipment Area	To be worn when loading or unloading solvent.
Plastic Aprons	Locker Room/Emergency Equipment Area	For situations where a solvent may get on the workers clothing.
Eyewash Stand	Container storage area and return/fill station	The workers should operate the stand and Become familiar with its operation
Showers	Office to return/fill dock exit	These are used for emergency and routine cleaning of employees
Fire Extinguisher	Points where solvent is transferred	An ABC extinguisher is a universal system used on paper, wood, and electrical, as well as solvent fires. The extinguishers must be full and carry an inspection tag.
Absorbent Material	Loading/Unloading Area/Warehouse	An adequate supply will be on hand to handle small spills. A 50 lb bag will also be kept in the warehouse to remediate and prevent spread of large spills
Portable Pumps Wet/Dry Vac	Warehouse	For use in picking up liquid spills in the container containment area, or other paved areas, and transfer materials associated with spills
Recovery Containers	Warehouse	Emergency storage of spilled product, cleaning fluids, or other materials associated with spills
Plastic	Warehouse	Used for containment of decontamination zones
Duct Tape	Warehouse	Taping of protective clothing, plastic, and other uses
First-aid	Locker Room	Minor first-aid needs and health problems
Shovels/Mops	Warehouse	Used to collect spills and residue
Communication Equip	Facility Wide	Phones with intercom systems in office/warehouse for internal and external communications
Decon. Equip.	Warehouse	2 brushes, box of detergent, rags, available for decon of clean up equip.
Fire Alarm	Office/Warehouse	To be pulled in the event of a fire at the facility that requires outside assistance
Emergency Alarm	Return/Fill Station	To notify personnel in the office of an emergency situation in the back of the facility
High-level Alarm	Tank Farm	Automatic alarm that will sound in the event tanks reach a certain level in order to prevent over-filling

FIGURE 5.6-1
LOCATIONS OF EMERGENCY EQUIPMENT
SAFETY-KLEEN SYSTEMS, INC. FACILITY
ORANGE PARK, FLORIDA



LEGEND

- PROPERTY BOUNDARY
- *-*- FENCE
- UTILITY EASEMENT
- .-.-.- TRUCK TRAFFIC PATTERNS
- [CONCRETE] CONCRETE

TANK CONTENTS

- (A) USED OIL
- (B) WASTE SOLVENT
- (C) USED OIL
- (D) VIRGIN SOLVENT

- (FE) FIRE EXTINGUISHER
- (E) EYE WASH AND SHOWER
- (FA) FIRST AID
- (SE) SPILL EQUIPMENT
- (HA) HIGH LEVEL ALARM
- (EA) EMERGENCY ALARM
- (FAL) FIRE ALARM



PERSONNEL TRAINING

This section of the permit application describes Safety-Kleen's training program. All position descriptions referenced may not be present at this facility. Training plan outlines, job descriptions, training content, frequency and techniques are described as well as the implementation of the training program. The information presented in this section is a representative example of employee training at Safety-Kleen. Variations in individual training may occur.

The purpose of Safety-Kleen's training program is to familiarize employees with environmental regulations, records, and emergency procedures so they will perform their activities in the safest and most efficient manner possible.

DESCRIPTION OF TRAINING PROGRAM

Each employee is trained to operate and maintain the service center safely, and to understand hazards unique to job assignments. New managers must complete a formal introductory training program before starting their jobs, with annual review and update thereafter. New Sales and Service Representatives and all other hazardous waste employees must undergo a combination of classroom and on-the-job training prior to working with hazardous waste. Personnel involved in direct handling of hazardous waste do not work unsupervised until they have completed the entire initial hazardous waste training course.

Outline of Training Program

An outline of the training program given initially to employees who manage or handle Hazardous at the Branch is presented in Table 6.1-1.

Job Title/Job Description

Job descriptions for employees who would be expected to manage or handle hazardous Wastes are provided in Tables 6.1-2 through 6.1-15.

Training Content, Frequency, and Techniques

Employee training is accomplished using classroom, online, videotape, written, and on-the-job methods. All new employees whose responsibilities require 24-Hour Hazardous Waste Operations and Emergency Response (Hazwoper) training will receive at least five days of instruction at the Safety-Kleen Training Center. This training program provides a consistent and quality hazardous waste operations training program.

The training that a new operations employee will receive is divided into two parts.

- Two weeks of employment will be spent at the Safety-Kleen Training Center. The new employee will receive a company orientation, including a review of company benefits, and hazardous waste operations training.
- The second part of new employee training is site specific training. When the new employee returns to the Branch, qualified individuals delegated by Branch management will complete facility specific training. This will include such things as permit requirements, emergency contingency plan training, location of emergency equipment, etc.

The job tasks a person performs will dictate the type of instruction required. Courses taught at the Safety-Kleen Training Center will include a company and benefit orientation, 24-hour Hazwoper training, Hazardous Materials Transportation Skills (HMTS) training, and Driver Safety training, as well as job specific training.

The following presents the specific training requirements for new Safety-Kleen employees who will manage or handle hazardous waste.

Training of New Branch General Managers: New Branch Managers are trained for several weeks before they begin their new positions. This training is given on-the-job. During this training, the new manager reviews environmental records and learns the recordkeeping requirements. These records include: manifests, personnel records, training records, service center inspection records, and spill reports. At least eight hours of this initial training consists of an introduction to environmental regulations, and a review of the Part B, including the Waste Analysis Plan, Preparedness and Prevention Plan, Contingency Plan, Training Plan, and Closure Plan.

Training of New Customer Service Manager: The Customer Service Manager is responsible for administrative operations at the Branch. Training is on location in the form of periodic training topics. This training includes an introduction to environmental regulations (including the Resource Conservation and Recovery Act), health and safety issues, emergency response and inventory (including waste) reconciliation methods. Additional time is spent reviewing past environmental compliance at the facility. Also, while being trained at the Branch where they will be stationed, a new Customer Service Manager will review environmental records and learn the recordkeeping and inspection requirements. These records include: manifests, personnel records, training records, service center inspection records, and spill reports.

Training of New Secretaries: Secretaries are trained in the proper recordkeeping procedures as soon as they begin working for Safety-Kleen. While they are not usually responsible for preparing the documentation, they must check it for accuracy and completeness and then process or file it as required. Additional training is overseen by Branch Manager and is done within six months of starting. This training is often presented in periodic training topics on emergency response, shipping documents (including manifests), drum labels, and other safety and environmental compliance issues.

Training of New Sales and Service Representatives, Market Sales Specialists: These personnel are trained on-the-job for two weeks during which they are introduced to manifests, service center inspection records, and training records. Additional training is in the form of periodic training topics and a review of the Contingency Plan.

Training of New Material Handlers: A Material Handler is trained to maintain the service center and assist the other Branch employees in their tasks. The Material Handler may be a designee to perform Branch inspections and must be trained by the Branch Manager.

Annual Training: On an annual basis, employees are trained using the programs prepared and updated annually by the EHS and Training Departments which contain the topics in Table 6.1-1. This training also includes updates on environmental regulations, review of the Contingency Plan and a review of RCRA inspection criteria. This review is in the form of classroom instruction, videotapes, and a review and discussion of the storage service center permit/application. In addition, periodic sessions on changes in environmental regulations are issued by the EHS Department and must be attended by all Branch personnel.

Training Director

The training is directed by Safety-Kleen's Training and Development and EHS Departments, which operate out of the Corporate Office in Richardson, Texas. Each Environmental Health and Safety Manager who works in this department is responsible for compliance of the service centers in a given geographic area of the country. The EHS Department, in coordination with the facility, must:

- Provide a training program which addresses the requirements of environmental regulations and corporate policy.

- Notify the proper authorities, oversee remedial actions, and submit a written report to the state after an emergency situation has occurred;
- Assure that environmental permits are submitted and updated as required;
- Manage any environmental compliance issues which exceed the resources available at the service center level; and
- Participate in training new Branch employees and conducting Annual Refresher Training.

Qualifications for individual staff members of the EHS Department who conduct training at the Branch are available upon request.

Relevance of Training to Job Position

Each employee is trained to operate and maintain the service center safely and to understand hazards unique to their job assignment. Safety-Kleen's training programs are designed to give employees appropriate instruction regarding the hazardous waste management procedures they will encounter in performing their respective duties. Since the handling of hazardous materials is a large part of the operations of the service center, all employees are given training in environmental regulations, transportation regulations, the Preparedness and Prevention Plan, and the Contingency Plan.

Training for Hazardous Waste Management

As described previously, all employees are trained in the aspects of hazardous waste management which are relevant to their position. This includes job-specific hazards and necessary precautions, emergency response, and proper recordkeeping. This training is given initially and updated annually.

Training for Contingency Plan Implementation

All employees are trained in Contingency Plan implementation, through initial training yearly refresher courses. Employees are trained on the contents of the Contingency Plan as well as criteria for implementation.

Training for Emergency Response

All employees are trained in emergency response procedures through both initial training and yearly refresher courses. The emergency training involves spill and fire prevention as well as remedial action procedures. Employees are also trained to recognize when evacuation and outside assistance may be necessary.

Training for Handling Mercury-Containing Lamps and Devices

As a registered transporter and storage facility for mercury-containing lamps and devices destined for recycling, the Branch has certified that employees handling spent lamps or devices are trained in the applicable proper handling and emergency cleanup and containment procedures, and that these emergency procedures will be kept at the Branch for inspection upon request by the FDEP.

Personnel Training Records

All personnel training is documented and the documentation is kept on file at the Branch until closure for active employees, and three years for employees that have terminated their employment with Safety-Kleen. Documentation includes the training received, employee name, and the date of training.

TABLE 6.1-1

OUTLINE OF TRAINING TOPICS

	Topic	Course
Monday	Welcome / Introductions	Orientation
	Overview/History/Products/Locations	Orientation
	Policies/Benefits	Orientation
	Orientation Activity and Quiz	Orientation
	Blood Borne Pathogens	24-Hour Hazwoper
	Regulatory Compliance	24-Hour Hazwoper
	Hazard Recognition	24-Hour Hazwoper
	Hazard Communication/WHMIS	24-Hour Hazwoper
Tuesday	Topic	
	Hazard Communication/WHMIS	24-Hour Hazwoper
	Test 1	24-Hour Hazwoper
	Personal Protective Equipment (PPE)	24-Hour Hazwoper
	Decontamination (Decon)	24-Hour Hazwoper
	PPE/Decon Practical	24-Hour Hazwoper
	Respiratory Protection	24-Hour Hazwoper
	Respiratory Protection Practical	24-Hour Hazwoper
	Toxicology	24-Hour Hazwoper
Wednesday	Topic	
	Toxicology	24-Hour Hazwoper
	Test 2	24-Hour Hazwoper
	Drum Handling	24-Hour Hazwoper
	Container Handling Practical	24-Hour Hazwoper
	Exposure Monitoring	24-Hour Hazwoper
	Medical Surveillance	24-Hour Hazwoper
	Hearing Conservation	24-Hour Hazwoper
	Ergonomics	24-Hour Hazwoper
	Fire Protection	24-Hour Hazwoper
	Confined Space/Lockout-Tagout	24-Hour Hazwoper
	Fall Protection	24-Hour Hazwoper
	Electrical Safety	24-Hour Hazwoper
Thursday	Topic	
	Site Health & Safety Plans	24-Hour Hazwoper
	Test 3	24-Hour Hazwoper
	HMTS Regulations/Trans. Cont. Plan	Hazardous Materials
	Hazard Classes	Transportation Skills
	Shipping Papers	↓
	Labeling & Marking	↓
	Placarding/Segregation	↓
	HMTS Test	HMTS
Friday	Topic	
	DDC Strategies	Driver Skills
	Professional Drivers Characteristics	

Friday		
	Lane Management	Driver Skills
	Driving Conditions	Driver Skills
	Backing/Conclusion/Trans. Cont. Plan	Driver Skills

Part II

A. General

5. WASTE INFORMATION

WASTE ANALYSIS AND WASTE CODES

In accordance with EPA's hazardous waste regulations, the following types of hazardous waste have been identified at the Branch:

- Used parts washer solvent, dumpster mud, and tank bottom sludge;
- Used immersion cleaner #699;
- Dry cleaning wastes;
- Paint wastes;
- Fluid Recovery Service (FRS) wastes;
- Used aqueous parts washer solvent;
- Used aqueous brake cleaner; and
- Branch generated liquids and solids (debris).

The typical composition and chemical/physical analysis for each of the waste streams listed above (except FRS) is shown in the chemical analyses reports in Appendix B. This information is based on existing data generated from similar processes within Safety-Kleen's current and/or potential customer base.

USED PARTS WASHER SOLVENT

The clean parts washer solvents are labeled under trade names. Flash points of the petroleum-based parts washer solvents range from 148°F (ignitable) to 212°F. Chemically, the solvent primarily consists of petroleum hydrocarbon fractions with boiling points between 310°F and 400°F. Impurities, such as light aromatic hydrocarbons (LAHC) and chlorinated hydrocarbons, usually constitute less than one percent of the total volume.

The used petroleum-based parts washer solvent consists primarily of parts washer solvent, solids, oil, and grease picked up in the various degreasing operations. In most instances, no water is associated with the used solvent; however at times, the water content may range from one percent to as much as 50 percent. The oily bottom solids may range from 2 percent to 10 percent, by volume, in the used solvent mixture. The substances that comprise the used parts washer solvent are compatible and are suitable for bulking.

Chemically, the composition of the solvent fraction in the used parts washer solvent is essentially the same as the clean solvent, as shown in analyses.

Containers of parts washer solvent that are returned from customers are poured into a drum washer (wet dumpster) at the return/fill station, which is piped into the used solvent 15,000-gallon aboveground storage tank located in the tank farm. Safety-Kleen has converted to 150 Premium Solvent for distribution to our customers for parts washer units and has discontinued the 105 solvent in the State of Florida. The mixture within the 15,000-gallon storage tank, therefore, may not exhibit the characteristic of ignitability, though it is managed as such. The used parts washer solvents also may be considered characteristic waste by toxicity characteristic leaching procedure (TCLP) and may carry the waste codes referred to in Table 7.1-1.

Used Immersion Cleaner

Safety-Kleen leases units containing “Immersion Cleaner and Carburetor and Cold Parts Cleaner #699”. This product is a heavy aromatic naphtha, N-methyl-2-pyrrolidinone, dipropylene glycol methyl ether, monoethanolamine and oleic acid, and may contain a maximum of 1 percent chlorinated compounds.

The used immersion cleaner #699 is returned from customers in separate containers and remains in these containers for shipment to a Safety-Kleen TSDF. The used

immersion cleaner is basically unchanged from its clean state, except oil, grease, and other solids may be picked up during the various degreasing operations. This spent solvent is not an ignitable waste. It is regarded as characteristic hazardous waste because of the presence of various metals and organic constituents. The waste codes that the used immersion cleaner may carry are listed in Table 7.1-1.

Used Parts Washer Solvent Bottom Sludge

Tank bottom sludge settles from used parts washer solvent in the aboveground tank. The sludge may contain soils, oil, grease, and water picked up in degreasing operations, together with a small amount of mineral spirits. Analyses have shown that the sludge may be considered characteristically hazardous with respect to TCLP standards. The sludge is removed from the aboveground storage tank periodically and shipped to a Safety-Kleen TSDF for reclamation/disposal.

Dumpster mud is accumulated in the wet dumpsters when emptying the used parts washer solvent from the containers. Filters from parts washers utilizing parts washer solvents also may be present along with small metal parts. The nature of this waste is similar to the used parts washer solvent tank bottom sludge, except with some small metal parts and less mineral spirits. It is regarded as an ignitable waste and often is characteristic for other contaminants using TCLP standards.

The mud in the dumpsters is cleaned out frequently. The waste is containerized and stored as a Branch-generated waste in the permitted waste storage area for later shipment to a Safety-Kleen TSDF for reclamation or disposal.

Parts washer solvent dumpster mud accumulated in the solvent return receptacles (wet dumpsters) is considered to be an ignitable waste (D001) and characteristic waste by TCLP and may carry the waste codes referred to in Table 7.1-1. Parts washer tank

bottoms may be considered characteristically hazardous with respect to TCLP and may carry the waste codes referred to in Table 7.1-1.

Dry Cleaning Wastes

Solvent used in dry cleaning of clothing is commonly tetrachloroethylene (perchloroethylene), mineral spirits, or trichlorotrifluoroethane. Hence, wastes generated are:

1. Filter Cartridges: In addition to the construction materials consisting of steel, paper, clay, and carbon, the used cartridge retains solvent, oil and grease, and undissolved elements such as lint and soil. Solvent retained in the filter cartridge generally amounts to less than 50 percent of the total cartridge weight.
2. Muck: At some dry cleaning facilities, a mixture of powdered materials is used as the filter medium for the dry cleaning solvent, in lieu of the cartridge filter. This filter medium normally consists of diatomaceous earth and carbon. In addition to lint, soil, and grease retained by this medium, between 40 and 50 percent by weight of the “muck” is absorbed solvent.
3. Still Residue: After filtration, the dry cleaning solvent is distilled by the dry cleaning machine to remove the dissolved materials from the used solvent. The dissolved materials (still residues) are in liquid form and consist of primarily detergent, oil and grease, vinyl acetate (a sizing compound), and 20 to 30 percent of solvent.

Approximately 80 percent of the dry cleaning solvent used is perchloroethylene (F002) and characteristic waste by TCLP that may carry the waste codes referred to in Table 7.1-1. Approximately 17 percent of the dry cleaning solvent is mineral spirits (naptha), and the remaining 3 percent of the dry cleaning solvent is trichlorotrifluoroethane. Analyses have shown these dry cleaning wastes may be characteristically hazardous by TCLP and may carry the waste codes referred to in Table 7.1-1.

Paint Wastes

Paint wastes consist of various lacquer thinners and paints. The waste is collected in containers at the customer's place of business. Upon receipt at the Branch, the manifest is terminated, and the waste paint containers are stored in Safety-Kleen's permitted container storage area. The paint wastes are then re-manifested and periodically sent to a Safety-Kleen TSDF. Paint wastes include such constituents as acetone, isopropyl alcohol, methyl ethyl ketone, methyl isobutyl ketone, toluene, xylenes, and acetate compounds. This waste stream may be an ignitable waste (D001) and characteristic for other contaminants by TCLP. Because of the solvent constituents, it also may be considered a listed waste (F003, F005) and may carry the waste codes referred to in Table 7.1-1.

Fluid Recovery Service Wastes

Fluid Recovery Services (FRS) is a program managed by the Safety-Kleen Branch. These wastes are handled as transfer wastes at the Branch. Examples of the types of wastes that may be received from FRS customers include:

- Spent hydrocarbon distillates, such as waste fuel, oil, petroleum, and naptha, etc.
- Lubricating oils, hydraulic oils, synthetic oils, and machine oils.
- Industrial halogenated solvents such as 1,1,1-trichloroethane, tetrachloroethylene, Freon, and trichloroethane.
- Photographic and x-ray related wastes.
- Paint, lacquer thinners, and paint wastes.
- Other hazardous and non-hazardous halogenated and non-halogenated wastes.

Due to the great variability in the composition of FRS wastes, their application or use, and the source industry, Safety-Kleen characterizes each waste stream from each generator separately.

Used Antifreeze

The spent antifreeze (ethylene glycol) is collected from automobile service stations. All antifreeze collected and managed by Safety-Kleen within Florida is recycled. At the customer's location, Safety-Kleen pumps waste ethylene glycol (antifreeze) into a Safety-Kleen used oil tanker truck. The trucks have more than one compartment so the antifreeze is picked up and stored in a separate compartment until off-load at the branch. This truck transports the used antifreeze (glycol) to the branch for off-loading into a tank for storage. The material is stored on-site until being sent to a recycler for processing into a pure product which is then sold on the open market. This procedure is in accordance with FDEP's *the Best Management Practices for Managing Used Antifreeze at Vehicle Repair Facilities*, dated May 22, 2012. In addition, Safety-Kleen sells its' own private label antifreeze in 55-gallon containers. Customers will then place used antifreeze in these containers to be shipped back to the branch. This material is shipped to SK distribution centers, and then shipped to 3rd party recyclers.

Aqueous Brake Cleaner

The Aqueous Brake Cleaner (ABC) is primarily an aqueous solution with approximately 10% nonorganic additives and detergents. The spent ABC is transported from the customers in containers. Spent ABC from customer's parts washers is managed as a 10-day transfer waste and is stored in the transfer waste storage area. The used aqueous parts washer solvent may or may not be considered characteristic waste by TCLP and may carry the waste codes referred to in Table 7.1-1.

Aqueous Parts Washer Solvent

The aqueous parts washer solvent is primarily an aqueous solution with a small amount of organic additives (alcohols). The spent aqueous parts washer solvent is transported to customers in containers and will be accumulated in the 15,000-gallon used solvent storage tank via the return/fill station. The used aqueous parts washer solvent may, or

may not be considered characteristic waste by TCLP and may carry the waste codes referred to in Table 7.1-1.

Mercury-Containing Lamps and Devices & Batteries

Mercury-containing lamps and devices are another type of waste handled by the Branch. These wastes are handled as non-regulated transfer wastes, and as such carry no waste codes. As part of its protocol for handling mercury-containing lamps and devices, the Branch provides customers with four-foot and eight-foot boxes which hold up to 39 lamps. The boxes are picked up at customer locations and are stored at the Branch in a designated area within the transfer waste storage area (Figure 8.1-1). These containers are labeled in accordance with 62-737.400(5)(b), Florida Administrative Code (FAC). The boxes are periodically shipped to a permitted mercury recovery or reclamation facility.

Safety-Kleen handles all types of batteries with the exception of lithium batteries. All applicable batteries, per 40 CFR Part 273.2 & 273.9, are managed in accordance with the Standards For Universal Waste Management found in 40 CFR Part 273. Batteries not meeting those standards may be managed as 10-day transfer waste.

Branch Generated Liquids and Solids (Debris)

In the course of conducting day-to-day business operations, the Branch may generate waste primarily associated with sampling customers' wastes. Such wastes may include wipes, gloves, etc. In addition, liquid wastes may be generated as a result of the decontamination of sampling equipment. The liquid and solid wastes are contained in drums which can be stored in the permitted container storage area. The waste codes associated with this waste stream will vary according to the type of waste being sampled. Branch debris (dumpster mud) is also generated when cleaning out the wet dumpsters. This material is made up of filters from parts washers, small metal parts, grease, sludge, etc. Branch-generated liquid and solids (debris) may carry the waste codes listed in Table 7.1-1.

6. WASTE ANALYSIS PLAN

General Waste Handling Procedures

Safety-Kleen provides solvent distribution, collection, and reclamation services to companies that are primarily engaged in automobile repair, industrial maintenance, and dry cleaning. Safety-Kleen operates a “closed loop” waste recovery service for the parts cleaning machines used by customers at their facilities. When the cleaning fluids become dirty and can no longer be used effectively, Safety-Kleen picks up the dirty fluids and replaces them with clean fluids. The dirty fluids are returned to Safety-Kleen where they are recycled and subsequently reused by customers. Approximately two-thirds of the cleaning fluids provided as product by Safety-Kleen have been use before and subsequently reclaimed. Safety-Kleen’s customers typically are small quantity generators who operate businesses which generate only a few hazardous waste streams. These factors help ensure that Safety-Kleen will receive a highly predictable and homogeneous waste stream.

Spent Solvents are the primary feedstocks for the generation of Safety-Kleen solvent products. As a result, quality control of the spent solvents is necessary to ensure that reclamation occurs in the safest and most efficient manner possible. Furthermore, the materials collected at the Branch are usually collected from a company with a single process. The composition and quality of these materials are known and Safety-Kleen’s operating experiences have shown that the collected materials rarely deviate from company specifications. As an additional safeguard, Safety-Kleen personnel are instructed to inspect certain materials before returning them to the Branch. This mode of operation has been proven to safeguard the recycling process and maintain a quality product.

It is Safety-Kleen's practice that suspected nonconforming material must not be accepted until a full analysis has been done or the material must be rejected. Procedures to verify waste characteristics occur at several check points in the management of the solvent, as described below.

Safety-Kleen controls the use and management of its solvents by:

- Limiting the solvents stored to those compatible with one another and their containers;
- Determining the customer's type of business (i.e., his/her SIC code may be recorded) and the purpose for which the machine will be used;
- Training customers to use the machines properly;
- Training employees to inspect spent solvent and determine whether it is acceptable;
- Marking each container with the customer's name, address, and EPA ID number (if required). This information remains on containerized waste until it is accepted at the Branch;
- Keeping a record of each incoming and outgoing shipment in the operating log at each facility;
- Demonstrating the chemical and physical homogeneity of the wastes by sampling and analyzing a representative portion of generator waste streams on an ongoing annual basis at the national level; and
- Routine analysis of the wastes received at the recycle centers.

Safety-Kleen's customers sign a service document containing the following information:

- Name, address, and EPA ID number of the facility to which the waste is being shipped;
- The customer's name, address, and EPA ID number (if required); and
- The description and amount of Safety-Kleen solvent waste generated.

Each incoming and outgoing shipment is recorded in the facility's operating log. In addition, each sales representative reviews acceptance criteria each time a waste is picked up. In accordance with Safety-Kleen's pre-printed documents, all generators sign a

statement with each shipment that there has been no material added to the closed-loop products supplied by Safety-Kleen since the last shipment. Finally, selected environmental reviews, such as periodic inspections of customer solvent containers by the Environmental manager and Branch management, may be utilized to guard against the addition of other wastes into the generator's wastes.

If a waste is rejected at the time of service based on the volume or consistency discrepancies, the customer will be given a choice as to whether they will dispose of the waste or will request Safety-Kleen's assistance. If a customer requests Safety-Kleen's assistance, a sales representative will contact the customer to see if they have direct knowledge of what may have been added during the process to make the waste non-conforming. If this cannot be determined, a properly trained sales person will obtain a representative sample using appropriate sampling equipment for the material in question. The sample will be sent to a certified laboratory and analyzed for flash point, volatile organic compounds, and other parameters to adequately define the constituents (e.g., for halogenated organic compounds, PCB's, flash point, etc.). If the waste is within the acceptable range for wastes permitted for storage, it will be relabeled and manifested, and then managed with the other wastes. If it is not acceptable, it will either be: (a) managed on a 10-day transfer basis and manifested to a properly permitted reclamation or disposal facility, or (b) manifested and shipped directly to a properly permitted reclamation or disposal facility.

Annual Re-Characterization Program

Every year Safety-Kleen randomly samples containers of re-occurring industry specific waste that it collects and manages on a daily basis (i.e., "Core Wastes"). Specifically these include: SK generated branch contaminated debris, solvent tank bottoms; and, customer spent aqueous brake cleaner, immersion cleaner, parts washer solvent, paint related waste, and dry cleaning waste (Perc/Naptha). Samples are taken with appropriate instruments depending on the nature of the waste stream (ex: liquids sampled with Coliwasa). These samples are sent to an independent accredited laboratory for analyses. The "statistically significant" waste codes derived from this analysis are the codes that SK expects to find from typical customers. SK provides these codes and information on

the AR process to generators so they can use their site specific information to determine the applicability of these codes to their wastes.

Qualitative Waste Analyses

General Inspection Procedures

Prior to acceptance, Safety-Kleen visually inspects each container of waste parts washer solvent at the customer's location. This inspection includes an evaluation of the waste volume, appearance, and consistency. Safety-Kleen personnel are familiar with the characteristics of all wastes described and managed at their facilities based on known characteristics. These criteria, described below, are used by Safety-Kleen personnel to aid in their visual inspections. These acceptance criteria enable Safety-Kleen to help ensure that the waste being picked up is an acceptable waste and does not contain unacceptable contaminants.

If a particular container of waste does not meet the established acceptance criteria, the Safety-Kleen service representative will reject the container at the customer's place of business. At the customer's request, a sample may be collected and analyzed by an accredited laboratory to determine whether it can be managed by Safety-Kleen. All Safety-Kleen personnel involved in sampling receive training on "Sampling Hazardous Materials and Wastes", which includes use of proper sampling equipment, preservation, labeling, chain- of-custody and other tasks associated with representative sampling. Depending on the source, the waste will be analyzed for parameters related to the suspected source of the waste. Alternately, the customer may choose to dispose of the material by using another (non-Safety-Kleen) facility.

If the waste is sampled for further analysis, the service representative will take a sample of the waste and then seal the container and label it as hazardous waste. The container is left with the customer pending the results of the laboratory tests. The laboratory testing involves analyzing the suspect waste for compounds related to the suspected source of the waste (e.g., volatile organics, halogenated organics, PCBs, etc.).

If the laboratory analysis reveals that the sampled waste is not contaminated, Safety-Kleen will accept the waste from the customer. If the laboratory confirms that the waste is contaminated, the customer will be given a choice as to whether they will dispose of the waste or will require Safety-Kleen's assistance.

Waste-Specific Criteria

The following is a description of the specific acceptance criteria for each waste stream.

Spent Parts Washer Solvent

Volume and color are the acceptance criteria for determining by visual inspection whether spent parts washer solvent has been contaminated, most significantly volume. Safety-Kleen places clean parts washer solvent in 16, and 30-gallon containers with the customer which, if no additional material has been added to the container, should not hold more than the 16, and 30 gallons of waste, respectively, at the time of waste pick-up since those volumes were equal to the respective virgin product amounts in the containers. If the volume of waste in a given container exceeds the specified level, the Safety-Kleen service representative may sample the waste for laboratory testing as described above, or he/she will reject the waste.

Some larger Safety-Kleen parts washers and some customer-owned machines will require manual pumping of the solvent out of the unit. In these cases, solvent volumes in drums may exceed the values presented above. Volume screening of solvent from these units will be conducted according to the total volume of liquid removed from the unit. If the quantity removed is larger than the quantity provided, the Safety-Kleen service representative may sample the waste for laboratory testing as described above, or he/she will reject the waste.

The spent parts washer solvent is also visually inspected for its color. Unused parts washer solvent (150 Premium Solvent) has a greenish tint or is clear. The aqueous parts cleaner is also clear. As the solvent is used, it changes color. The specific color which the solvent turns is dependent upon the type of equipment being cleaned. For example, solvent used at automotive shops changes to brown or black, while solvent used by silk screeners will change to the color of the inks (red, blue, pink, green, etc.). If the spent solvent color does not appear to be consistent with the type of equipment being cleaned, the service representative may sample the waste for possible contamination as described above, or he/she will reject the waste.

Immersion Cleaner

The criteria for the inspection of spent immersion cleaner are volume, color, and physical state. Clean immersion cleaner is delivered to the customer in containers. These containers each contain six gallons of immersion cleaner. Spent immersion cleaner is picked up from the customer in the same containers. If no additional material has been added to the spent immersion cleaner, the containers should contain no more than six gallons. If a container contains more than six gallons of waste, a sample may be collected and analyzed for contamination following the procedures described above or waste will be rejected. Unused immersion cleaner is amber in color. As the solvent is used, it turns brown in color. The more it is used, the darker it becomes, until it is almost black. Therefore, if the spent immersion cleaner does not appear to be amber, brown, or black, the service representative may sample the waste for possible contamination as described above, or he/she will reject the container of waste.

Dry Cleaner Wastes

Dry cleaner wastes consist of spent filter cartridges, powder residue, and still bottoms, each of which is discussed below.

Spent Filter Cartridges

Spent filter cartridges are placed in containers which hold one to three cartridges. It is readily apparent to the trained service representative whether the items in the containers are filter cartridges. The containers may also contain approximately one inch of liquid which should be either clear or light brownish tint. If the amount of the liquid is greater than approximately one inch or if the liquid is a color other than light brown, the service representative may sample the waste for contamination in accordance with the procedures described above, or he/she will reject the waste.

Powder Residue

The criteria for the acceptance of powder residue are consistency and color, the former

being the more significant criterion of the two. A container of powder residue should not contain more than one inch of liquid. The waste should be slightly wet, with a paste-like consistency. If there is too much liquid in the container, the waste may be sampled for contamination in accordance with the procedures described above, or the waste will be rejected. The powder residue is also inspected for color and should appear to be grayish-black. If the residue is not grayish-black in color, the service representative may sample the waste for contamination in accordance with the procedures described above, or he/she will reject the waste.

Still Bottoms

The criteria for the acceptance of dry cleaning still bottoms are consistency and color. The waste should have a highly viscous, tar-like consistency. If the consistency of the waste is too thin, the waste may be sampled for contamination in accordance with the procedures described above, or it will be rejected. In addition to the consistency, the still bottom waste is inspected for color. The waste should appear dark brown or black in color. If the waste is a different color, a service representative may sample the waste for contamination in accordance with the procedures described above, or he/she will reject waste.

Paint Wastes

Safety-Kleen handles both lacquer thinner waste generated from the paint gun cleaning process and paint waste, each of which is described below.

Lacquer Thinner Waste

The significant criteria for determining whether lacquer thinner waste will be accepted is volume. The solvent is provided to customers in 5-gallon containers. The paint gun cleaning machine operates as a closed system consisting of a 5-gallon container for fresh lacquer thinner and a 5-gallon container for spent lacquer thinner. The closed system is designed such that there should never be a combined volume of more than 7.5 gallons of solvent in the two 5-gallon containers. The fresh solvent container starts with 5 gallons

of clean solvent and the spent solvent starts with 2.5 gallons of clean solvent. As the machine is used to spray guns, the fresh solvent is pumped from a tube in the fresh solvent container through the machine and into the spent solvent container. This cleaning/degreasing process will continue until the volume of solvent in the fresh container reaches the 2.5-gallon mark. A tube in the fresh solvent extends half way down the container (i.e., to the 2.5-gallon mark). Any solvent above 2.5 gallons in the fresh solvent container at the time of servicing will be pumped through the machine into the spent solvent container by the Safety-Kleen service representative. Therefore, when the machine is serviced, the spent solvent container will always contain 5 gallons of solvent. If a service representative discovers more than a total of 7.5 gallons of solvent in the two containers or there is an overfill from the spent solvent container, the waste may be sampled for contamination in accordance with the procedures described above, or the waste will be rejected.

Paint Waste

The significant criterion for the inspection of paint waste is consistency. The waste should contain no more than 30 percent solids. The material should be a “free flowing” liquid, but should not contain a significant amount of water.

Mercury-Containing Lamps and Devices

As part of its protocol for handling mercury-containing lamps and devices destined for recycling, the Branch provides customers with 4-foot and 8-foot boxes which hold up to 39 lamps. Boxes are inspected prior to transport from the customer to the Branch. Boxes containing broken lamps are accepted only if the box is completely sealed and then sealed again with plastic shrink wrap. Surfaces that have come into contact with pieces from a broken lamp will be decontaminated using HgX (sodium thiosulfate and ethylene diaminetetraacetic acid), in accordance with manufacturer’s specifications.

Waste Sampling and Analyses

If, after inspecting a waste stream for volume, consistency, and or color, a service representative suspects the waste may be non-conforming he will reject the container. If authorized by the customer, a properly trained sales representative will sample the waste following the protocol found in Safety-Kleen's "ET_143 Sampling Hazardous Materials and Wastes". The sample will then be delivered to an accredited laboratory for analysis. Safety-Kleen's sales representative will have discussions with the generator to see if they have information regarding what may have been introduced to the waste stream. If information is not available the sample may be analyzed for pH, flash point, PCB's, volatile organic compounds, and semi-volatile organic compounds to properly characterize the waste stream. The tables listed below outline sampling methods, parameters, test methods, and frequency of analysis that may be used as part of this process:

- Table 7.2-1 Parameters and Rationale for Hazardous Waste Identification
- Table 7.2-2 Parameters and Test Methods
- Table 7.2-3 Methods Use to Sample Hazardous Wastes
- Table 7.2-4 Frequency of Analysis

In addition, analyses are performed at the Safety-Kleen recycle facilities to safeguard the recycling process and to assure the product quality. Each waste material is sampled and analyzed upon receipt of each waste load as required by their permit and associated waste analysis plan for the receiving recycle center. In order to properly and safely process waste generated by the Branch, the recycle center samples and analyzes each waste load as it is received from the branch.

In addition to the aforementioned analyses, TCLP analyses for all compounds, except pesticides, will be conducted every year on all characteristic hazardous waste streams (example: used parts washer solvent and immersion cleaner #699) as part of the Annual Re-Characterization Program.

7. REQUIRED RECORDS AND REPORTING

Waste Manifests

Appropriate shipping papers/manifests are used, based on the monthly quantity of hazardous waste generated by the customer. Safety-Kleen services all three categories of generators in Florida – Conditionally Exempt Small Quantity Generators (CESQGs), SQGs, and LQGs. CESQGs' spent solvent is removed via a service document and no manifest or Land Disposal Restrictions (LDR) form is required. Appropriate records are kept at the Branch as to the date of waste pick-up, quantity, and other data on the service document. SQGs' spent solvent is shipped under a tolling agreement in Florida, which means that a manifest is not used. An LDR form is completed for each SQG. LQGs' spent solvent is always manifested (if hazardous) and an LDR form completed.

Spent solvent (from each Safety-Kleen customer, regardless of generator status) is brought back to the Branch and dumped in the return/fill station and pumped to the waste solvent tank. This tank contains the spent solvent of many customers and is hazardous. The contents are regularly sent via tanker truck to the recycle center in Lexington, SC. These loads are always manifested and accompanied by a LDR form. Shipments of parts washer solvent dumpster mud are also manifested accordingly. Required records are kept at the Branch and the recycle center in accordance with regulatory timeframes.

In accordance with 40 CFR 264.71 through 77, Safety-Kleen will ensure that:

1. Customers who are required to provide a manifest do so;
2. The manifests are prepared and signed properly; and
3. Copies are distributed and kept on file, as required.

In addition, discrepancies must be remediated in accordance with 40 CFR 264.72 and unmanifested wastes will be reported as described under 40 CFR 264.76.

Required Notices

If Safety-Kleen arranges to receive hazardous waste from a foreign source, the Regional Administrator must be notified in writing at least four weeks in advance of the date the waste is expected to arrive at the facility. Notice of subsequent shipments of the same waste from the same foreign source is not required. Safety-Kleen informs its customers in writing (i.e., on each service document) that the facility has the appropriate permit(s) for, and will accept the waste the generator is shipping. Safety-Kleen keeps a copy of this written notice as part of the operating record.

Before transferring ownership or operation of this facility during its operating life, Safety-Kleen will notify the new owner or operator in writing of the requirements of Part 264 and Part 270 of Chapter 40 in the Code of Federal Regulations.

Biennial reports required by Chapter 62-730.180(4) FAC, will be prepared and submitted by Safety-Kleen, and these records will also be available at the facility for review. The biennial report will be submitted to the Regional Administrator and/or FDEP by March 1 during each even year (1990 being the first year) on EPA form 8700-13B. The report will cover facility activities during the previous calendar years and will include:

- The EPA identification number, and address of the facility;
- The calendar years covered by the report;
- The method of treatment, storage, and disposal for each hazardous waste; and
- A certification signed by the owner or operator of the facility or the authorized representative.

Operating Record

An operating record which contains the information required under 40 CFR 264.73 is maintained and all records and logs are available at the facility, in accordance with 40 CFR 264.74. A copy (paper) of the operating record is retained at the facility to comply with 40 CFR 264.73(b).

The following information will be maintained in writing in the operation record for the facility:

- A description and quantity of each hazardous waste received;
- The date and storage method for such hazardous waste;
- The location of each hazardous waste stored within the facility;
- Records and results of waste analyses performed;
- Summary reports and details of all incidents that require implementation of the contingency plan;
- Monitoring, testing, or analytical data, and corrective action where required by Subpart F and other applicable sections of 40 CFR 264;
- All closure cost estimates under 40 CFR 264.142 and all contingent post-closure cost estimates under 40 CFR 264.144;
- Records of quantities and date of placement for each shipment of hazardous waste placed in land disposal units under an extension to the effective date of any land disposal restriction granted; and
- For any restricted waste generated that can be land disposed without further treatment, and is sent to a land disposal facility, a notice and certification will be sent to the treatment, storage, or land disposal facility with the waste. The notice will state that the waste meets the applicable treatment standards set forth in Subpart D of 40 CFR 268 and applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d). The notice will include the following information:
 1. EPA Hazardous Waste Number; and
 2. The corresponding treatment standards and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d).
- Training records, inspection reports, waste minimization certifications, closure plan, and Corrective Action Documents.

Further, the LDR certification will be signed by an authorized representative and will state the following:

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

Section 264.74 requires that all records, including plans, must be furnished upon request to duly designated representative of the Regional Administrator, and this requirement will be honored. A copy of all records of waste disposal locations and quantities will be submitted to the Regional Administrator and/or FDEP upon closure of the facility, if applicable.

As a registered transporter and storage facility for mercury-containing lamps and devices destined for recycling, the Branch complies with the record keeping requirements of FAC 62-737.

Land Ban Notification/Certification Forms

In accordance with 40 CFR 268.7, Safety-Kleen will provide notification/certification for wastes banned from landfills as follows:

1. Special forms for each regularly handled wastes types (e.g., parts washer solvent, immersion cleaner, and percholoroethylene); or
2. A general form that must be completed for unique or nonstandard waste streams.

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The notice is required paperwork for the streams handled by Safety-Kleen. When a shipment with the notice is received, the notice is kept in the files of the receiving facility with the manifest or with the pre-print if a manifest is not used.

The facility will comply with the RCRA permitting conditions found in 40 CFR Part 270.30(l)(1), 270.30(l)(2), and 270.30(l)(6).

The facility will comply with the recordkeeping requirements found in 40 CFR Part 264.1064 and 264.1089.

Part II. General A.8

The Federal laws found in 40 CFR Part 270.3 do apply to Safety-Kleen although they do not appear to be applicable at this time.

TABLE 7.2-1
PARAMETERS AND RATIONALE
FOR HAZARDOUS WASTE IDENTIFICATION

Hazardous Waste	Parameter*	Rationale
1. Used Parts Washer Solvent	Flash Point TCLP	May exhibit ignitable characteristics (D001) may contain TCLP compounds
2. Parts Washer Solvent Machine Tank Bottom Sludge and Free Water	TCLP Flash Point	The sludge and free water may contain TCLP compounds
3. Used Immersion Cleaner (IC699)	TCLP	May contain TCLP compounds.
4. Dry Cleaning Wastes (Perchloroethylene)	TCLP	Contains ingredients of F002 and may contain TCLP compounds
5. Dry Cleaning Wastes (Naphtha)	TCLP	May contain TCLP compounds
6. Paint Wastes	Acetone Isopropyl Alcohol Methyl Ethyl Ketone Toluene, Xylenes Acetate Compounds Flash point, TCLP	Contains ingredients of F003 and F005 wastes, and may contain TCLP compounds. May exhibit ignitable characteristics (D001)
7. Aqueous Brake Cleaner	TCLP	May contain TCLP compounds

TABLE 7.2-3
METHODS USED TO SAMPLE HAZARDOUS WASTES

Hazardous Waste	Reference for Sampling	Sampler	Description of Sampling Method
1. Used Parts Washer Solvent	Sampling a tank "Samplers And Sampling Procedures For Hazardous Waste Streams," EPA/600/2-80/018	Test Methods for the Evaluation of Solid Waste Physical/ Chemical Methods, Sw-846, USEPA	For tanks-Bomb sampler (similar to Weighted bottle sampler) For drums - Coliwasa®
2. Parts Washer Solvent, Machine Bottom Sludge, And Free Water	Same as 1	Same as 1	For sludges - Trier sampler
3. Used Immersion Cleaner IC699	Same as 3	Same as 1	Coliwasa®
4. Dry Cleaning Wastes	Same as 3	Same as 1	For liquids - Coliwasa®
5. Paint Wastes	Same as 3	Same as 1	For liquids - Coliwasa® For sludges - Trier
6. Aqueous Brake Cleaner	Same as 3	Same as 1	Same as 3

TABLE 7.2-4
FREQUENCY OF ANALYSIS OF HAZARDOUS WASTES

Hazardous Waste	Frequency^a
1. Used Parts Washer Solvent	Gas chromatograph annually, Flash point annually, TCLP annually, as needed for suspected non-conforming waste
2. Parts Washer Solvent, Tank	Gas chromatograph annually, TCLP annually, as needed for suspected non-conforming waste
3. Used Immersion Cleaner 699	Gas chromatograph annually, TCLP annually, as needed for suspected non-conforming waste
4. Dry Cleaning Wastes	Gas chromatograph annually, TCLP annually, as needed for suspected non-conforming waste
5. Paint Wastes	Gas chromatograph annually, TCLP annually, as needed for suspected non-conforming waste
6. Aqueous Brake Cleaner	Gas chromatograph annually, TCLP annually, as needed for suspected non-conforming waste

NOTES:

- ^a In accordance with 40 CFR 264.13(a), Safety-Kleen will also perform physical and chemical analysis of a waste stream when it is notified or has reason to believe that the process or operation generating the waste has changed, or when the result of inspection indicates that the waste to be collected does not match the waste designated.

Part II

B. CONTAINERS

The hazardous waste container storage areas consist of two areas: the container storage area located in the warehouse and the waste/allied product storage shelter located north of the main warehouse building. These areas are shown in Figures 8.1-1 and 8.1-2.

CONTAINMENT SYSTEM

The container storage area (25' 5" x 24') shown in Figure 8.1-1 occupies the southwestern portion of the warehouse (67' 4" x 56' 11"). This warehouse area has concrete floors, and two central collection trenches to form a spill containment system within the area.

The containment volume is composed of the sloped concrete floor and the collection trenches. The containment calculations are illustrated in Figure 8-2. The total containment volume was measured at 255.3 gallons. Therefore, the maximum capacity permitted for waste storage is 2,553 gallons. Waste allowed for storage is immersion cleaner, dry cleaning solvent, parts washer solvent dumpster mud, tank bottoms, and oil filters. The types and number of each type of container may vary; however, the storage capacity will not be exceeded.

Paint Waste Shelter

The permitted paint waste shelter consists of a 45' X 68' concrete pad underlying a 15.5' X 20' shelter with metal containment pans. This shelter is divided into a paint waste storage area and an allied product storage area. Allied products are unused virgin materials. The storage shed consists of six metal containment pans each measuring 5' X 10'. The pans have overlapping lips which prevent liquids from migrating between the pans and onto the concrete. The total containment capacity is 1,222 gallons. Based on this, the maximum potential storage capacity is 11,220 gallons. Due to space constraints

External Factors

The design of the facility is such that a harmful spill is highly unlikely to occur from most external factors. The storage tanks are inaccessible to non-Safety-Kleen personnel and the pump switches are located inside. Also, the container storage area is in a building which is inaccessible to unauthorized personnel.

1. *Vandalism* – Only extreme vandalism would result in a solvent spill or fire.
Responses to spills and fires are described in the Contingency Plan (Section 5)
2. *Strikes* – A strike would not result in a solvent spill or fire.
3. *Power Failure* – A power failure would not result in a spill or fire. Should a power failure occur, all activities requiring electricity will cease.
4. *Flooding* – The site elevation is above the projected 100-year floodplain.
5. *Storms or Cold Weather* – The solvent return/fill station is covered to eliminate the possibility of rain or snow entering the dumpsters. No opportunity is foreseen to affect the facility with snow, cold weather, or storm weather.
6. *Hurricanes* – Facility will follow the procedures within the contingency plan.

Run On

The paint waste shelter is approximately 2' 4" above grade, and the container storage area is 2' above grade in order to prevent and manage run on per 40 CFR Parts 264.175(b)(4) & 270.15(a)(4).

CONTAINER MANAGEMENT

General Protocols

Container management is of paramount importance to Safety-Kleen. All containers are routinely inspected to ensure that the containers are in good condition.

If rusting or structural defects are visible, or if the container begins to leak, the contents of the container are immediately transferred to a new sound container. Overpack containers are commonly used for the management of containers whose integrity has been compromised.

Hazardous waste containers are always kept closed during storage except when adding or

removing waste. Containers are not handled or stored in a manner that could potentially cause a rupture or leak.

Specific Waste Stream Containers

Parts washer solvent is collected in containers and generally emptied into the wet dumpster at the return/fill station (which is piped to the tank farm). The containers are designed and constructed to be compatible with the stored material and to minimize the possibility of breakage and leaking, in accordance with DOT shipping container specifications.

The immersion cleaner is always contained in partially filled covered containers before, during, and after its use. Until received at the recycle center, the immersion cleaner is never transferred to another container. The containers of used immersion cleaner are returned to the facility and stored in the designated container storage area before shipment to a permitted Safety-Kleen TSDF.

Dry cleaning waste is stored in steel or polyethylene containers and consists of perchloroethylene-based waste and naptha-based waste. The contents of the dry cleaning waste containers are not removed or processed at the Orange Park Branch. It is stored as permitted waste prior to shipment to a permitted Safety-Kleen TSDF.

Paint wastes consist of various lacquer thinner and paints. The waste is collected in containers at the customer's location and the containers are then stored in the container storage area of the warehouse. The paint wastes are managed as permitted wastes.

FRS wastes are stored in steel or polyethylene containers that are compatible with the material in them. FRS wastes are managed as transfer wastes.

As part of its protocol for handling mercury-containing lamps and devices destined for recycling, the Branch provides customers with four-foot and eight-foot boxes which hold up to 39 lamps. Boxes are inspected prior to transport from the customer to the Branch. Boxes containing broken lamps are not accepted by Safety-Kleen. If the lamps are broken while in the custody of Safety-Kleen, the entire contents of the box are sealed in plastic shrink wrap or transferred to another container and closed. The boxes are picked up at customer locations and are stored at the Branch in a designated area within the container storage area (Figure 8.1-1). The boxes used to store mercury-containing lamps and devices are labeled in accordance with Florida Administrative Code (FAC) 62-737.400(5)(b). The boxes are periodically shipped to a permitted mercury recovery or reclamation facility.

Safety-Kleen sells its' own private label antifreeze in 55-gallon containers. Customers will then place used antifreeze in these containers to be shipped back to the branch. These containers are stored in the warehouse until being is shipped to SK distribution centers. From there the used antifreeze is shipped to 3rd party recyclers.

Safety-Kleen handles all types of batteries with the exception of lithium batteries. Batteries are stored in 5- and 16-gallon poly containers. Lead acid batteries may be stored on pallets secured by plastic straps. All applicable batteries, per 40 CFR Part 273.2 & 273.9, are managed in accordance with the Standards For Universal Waste Management found in 40 CFR Part 273. Batteries not meeting those standards may be managed as 10-day transfer waste.

CONTAINER INSPECTION

The purpose of the container inspection plan is to establish a procedure and schedule for the systematic monitoring and inspection of hazardous waste management and other material management facilities to ensure proper operation, maintain compliance, and prevent the release of hazardous wastes to the environment. The Branch Manager or designee is responsible for carrying out the inspections of all hazardous waste management facilities in accordance with the following procedure and schedule.

An example of the Daily Inspection Log for the container storage area and associated loading/unloading areas is presented in Figure 8.4-1. This Daily Inspection Log, or equivalent, will be used during daily inspections. Weekly container storage area inspections include the following:

- Verify that total volume is within permitted limits.
- Physically examine the condition of containers to verify that leaks have not occurred since the last inspection;
- Verify that all container identification, dates, and hazardous waste labels are attached and current;
- inspect container placement and stacking such as aisle space, height, and stability of stacks; and
- Examine containment areas to detect signs of deterioration and failure of the containment system such as cracks, breakage, settlement, and spillage.

As deficiencies are detected, the Branch Manager will ensure that they are remedied promptly. Any deficiencies which could create an environmental or human health hazard will be rectified immediately.

Other inspections at the facility include those performed on a weekly basis for the security systems. These inspections are described in the contingency plan.

CONTAINER STORAGE AREA CLOSURE PLAN

The container storage area closure plan and closure cost estimates are provided as part of the overall closure plan for the facility in Part II K.

Part II

C. TANK SYSTEM

ENGINEERING ASSESSMENT OF TANK SYSTEM

An engineering assessment of the tank system was conducted in May 2013. The report is provided in Appendix C.

TANK SYSTEM SPECIFICATIONS

The facility includes four aboveground steel tanks and one poly tank. Three 15,000-gallon steel tanks in the above ground storage tank farm, one 12,000-gallon double walled steel tank adjacent to the tank farm (Figure 9.2-1), and one 6,000-gallon poly tank in the return/fill area (Figure 9.3-1). Hazardous waste used parts washer solvent is returned from Safety-Kleen's customers in containers and the solvent is transferred via the wet dumpsters into a 15,000-gallon tank, prior to bulk shipment to Safety-Kleen recycle center. The other four tanks, include two 15,000-gallon tanks (Used Oil), and one 12,000-gallon tank (Clean Solvent), and one 6,000 gallon tank (Used Antifreeze). The four steel tanks are grounded. These four tanks are not considered RCRA tanks.

Material Compatibility

Waste stored in the RCRA tank at this facility is used parts washer solvent. The parts washer solvent is compatible with the mild steel tank structure. As with all petroleum storage vessels, water will accumulate over time due to condensation and the water will accumulate in the bottom of the tank.

Tank Operation Procedures and Design

Used solvent is returned from customers via containers and poured into the wet dumpsters which have barrel washers enclosed within them. The container is then placed on roller brushes within the barrel washer. As the machine is turned on, the container rotates on the brush and the outside of the container is cleaned. A nozzle in the barrel washer sprays a stream of solvent into the bottom of the container to flush the inside of

the container. The machine is then turned off and the container is removed. This process takes several seconds per container. The container is then refilled with clean solvent using a pump and nozzle assembly similar to a gasoline dispenser. The waste is transferred to the tank via piping and a pump.

The used solvent is fed to a sump in the bottom of the wet dumpster and automatically pumped to the used parts washer solvent storage tank. A basket within the sump collects sludge from the cleaning operations. Periodically, this basket is removed and sludge is removed and placed into a sludge drum for disposal. The wet dumpsters are located in the return/fill station, which is underlain by a secondary containment structure.

The used solvent storage tank is designed and constructed to be compatible with the materials stored. The tank has an emergency vent and pressure/vacuum vent that were installed in accordance with National Fire Protection Association (NFPA) standards, and is equipped with a high-level alarm. A 3" internal emergency valve is located at the base of the tank where the outgoing piping is threaded into the tank. The tank seams are lapped with full fillet welds. The weld was performed with an E70 electrode and can withstand a 4-psi air pressure test (which is performed by the manufacturer). The used solvent tank was installed new in 1985. The tank is aboveground, supported by a carbon steel skid placed on the 6-inch concrete foundation slab. Therefore, no surface run-on will contact the wastes stored at the site and no run-off collection system is required. To minimize the amount of precipitation that may collect inside the containment area, a canopy has been installed over the tank farm. If rainwater does accumulate in the containment area and it has been verified that no spill has occurred, the rainwater will be discharged to the ground surface. Only the Branch Manager or someone operating under his/her direct orders may discharge to the ground surface. If it is not possible to verify that a spill has not occurred, the rainwater will be disposed of in the wet dumpsters.

Controls and Spill Prevention

The tank farm dike and the return/fill station have been sealed with a chemical resistant

coating. The hazardous waste solvent tank has been fitted with a Moormann Analog Automatic Tank Gauge (information on the gauge is provided at the end of this section). Level gauges are used to measure liquid levels in tanks. Float switch-activated automatic high level alarms (which consist of a strobe light and siren) signal the tanks being 95% full. This alarm allows an operator more than two minutes to stop operations and avoid overfilling the tank. The gauges of the tank are read before filling the tank with additional material. Tank level readings are also taken prior to the filling of a tanker truck to prevent overfilling of the truck or tank. A tanker truck provided with a suction pump is used to withdraw used parts washer solvent from the tank. No other equipment or standby equipment is used in the operation of the above-ground tanks. The tank should be operated at a maximum volume of 14,250 gallons (95% of capacity). The secondary containment under the tanks and return/fill station is cleaned within 24 hours of a spill, or in as timely a manner as possible, to prevent harm to human health and the environment.

2" single-walled steel piping from the wet dumpsters in the return/fill area to the top of the hazardous waste solvent tank is connected by threaded connectors. This piping runs under the dock and leaves the warehouse building on the north side of the return/fill station. At that point the piping system turns west towards the tank farm and is outside secondary containment (this part of the system has welded connectors). Once it reaches tank farm secondary containment the piping runs vertical to the top of the tank. The piping system leaving the tank is constructed of 3" single-walled steel and is inside secondary containment. Figure 9.1-1 details the system.

Leak Detection System

The Safety-Kleen Orange Park branch will be installing an automatic leak detection system at the above ground storage tank farm for the hazardous waste solvent tank. This system will enable detection of leaks, or releases, to the secondary containment 24-hours a day. The system consists of an Intellipoint sensor, which is placed beside the tank at

the base of the secondary containment structure. The sensor detects the presence or absence of liquids. It will be monitored 24-hours a day, seven days a week, by a 3rd party (Protection One). If the sensor detects liquid it will immediately send a warning notice to Protection One, who will then immediately call the emergency coordinator for the Orange Park branch. This system will allow continuous leak detection monitoring when the facility is not occupied. Information on this system can be found at the end of Part II.C. We anticipate the system to be installed by December 31, 2013.

IGNITABLE OR REACTIVE WASTE REQUIREMENT (40 CFR PART 264.198(b))

The owner or operator of a facility where ignitable or reactive waste is stored or treated in a tank must 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 Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code," (1977 or 1981), (incorporated by reference, see Sec. 260.11) (264.198(b)).

TANK SYSTEM SECONDARY CONTAINMENT

Tank Containment

The three tanks in the above ground storage tank farm are underlain by a 49'7" x 18'8" concrete slab, surrounded by a 4' high concrete wall. The wall height in the containment varies with the floor slope and directs flow toward an approximately 16-gallon blind sump. No surface run-on or precipitation will contact with the wastes stored in the tank farm and no run-off collection and management system is deemed necessary. A metal canopy installed over the tank farm minimizes the chance of precipitation accumulating inside the containment area. The layout of the tank farm is shown in Figure 9.2-1. Tank farm containment calculations are shown in Figure 9.2-2. Containment volume was estimated to be approximately 20,000 gallons. This volume represents greater than 100 percent of the capacity of the largest tank within the containment area.

The containment system in the tank farm is free of cracks and is sufficiently impervious to prevent seepage into and through the concrete. Concrete is fully compatible with the waste stored. Studies performed with the Canadian Portland Cement Association revealed that the average permeability of concrete is .000000001 cm/s, which should prevent infiltration should a release occur.

Return/Fill Containment

The return/fill station is a 40' x 25' structure (Figure 9.3-1) located between the warehouse and paint waste shelter. It contains two wet dumpsters which handle the flow of waste solvent to the hazardous waste storage tank. These dumpsters are not intended for storage but can hold a maximum of 216 gallons (108 gallons per dumpster).

The area is designed such that the route trucks can be backed into the containment area. The roof extends over the truck unloading area so that no precipitation can get into the return/fill station containment area. The containment for the return/fill station is provided by two blind sumps, with a total capacity of approximately 35-gallons. The floor in the return/fill station is sloped to direct flow toward the two sumps. The total containment was estimated to be 3,952-gallons, as shown in Figure 9.2-2.

TANK SYSTEM INSPECTIONS

The purpose of the inspection plan is to establish a procedure and schedule for the systematic monitoring and inspection of hazardous waste management and other material management facilities to ensure proper operation and maintain compliance. The Branch Manager or that person's designee is responsible for carrying out the inspections of all hazardous waste management facilities in accordance with the following procedure and schedule. Figure 9.4-1 is an example Daily Inspection Log for the tank system. This Daily Inspection Log, or equivalent, will be used during daily inspections. Daily inspections of the tank and dumpsters will consist of the following:

- Note volume in tank.
- Observe tank exterior for loose anchoring, wet spots, leaks.

- Check the automatic high level alarm. In addition, measure the depth of used solvent in the tanks to confirm the proper functioning of the automatic alarm system and to determine unexpected deviations in tank measuring data, or a sudden drop in liquid level, which may indicate leakage.
- Inspect secondary containment walls and piping (All piping is above ground).
- Inspect transfer pumps for leaking seals and overheated motors.
- Inspect the solvent dispensing hose, fittings, and valve for any leaks, damage, or wear that could cause a leak to develop.
- Inspect the valves for evidence of leaking. Stem leaks from worn glands and warped valve bodies should be repaired. If the valve cannot be repaired, replace the unit.

Also, the tanks will be visually inspected and tested periodically. The period of time between tank inspections, including shell thickness testing, will not exceed ten years. This time frame for tank inspection is adequate based on Safety-Kleen's experience at its other facilities in Florida.

Daily inspection of the solvent return receptacle (wet dumpster) will consist of an inspection for leaks and excess dumpster mud build-up.

TANK SYSTEM CLOSURE AND CONTINGENT POST-CLOSURE PLAN

The tank system closure plan is provided as part of the overall closure plan for the facility in Part II K. As discussed below, a contingent post-closure plan for the tanks is not required.

TANK SYSTEM CONTINGENT POST-CLOSURE PLAN

The tank system at the Orange Park facility meets the secondary containment requirements of 40 CFR 264.193, and is, therefore, not required to have a contingent post-closure plan under 40 CFR 264.197(c). In addition, Safety-Kleen intends to remove

or decontaminate all tank system components, associated containment systems, and contaminated soils (if any) at the time of closure. However, should future conditions indicate that all contaminated soils and tank system components cannot practicably be decontaminated or removed, then a plan to perform post-closure care in accordance with the post-closure care requirements that apply to landfill (40 CFR 264.310) will be prepared for implementation upon FDEP approval.

RESPONSE TO LEAKS AND DISPOSITION OF UNFIT-FOR-USE TANK SYSTEMS

In the event that a leak or spill were to occur from a tank system or secondary containment system, the actions identified herein will be undertaken.

Immediate Response

All waste flow to the tank system in question will be ceased immediately. An inspection will be undertaken to identify the cause of the release. Waste flow to the tank system will not resume until the tank system has been inspected, repaired, and declared fit for use. In order to prevent further released, or to allow inspection and a repair of the system, it may be necessary to remove the waste from the tank system. This waste removal will occur within 24 hours after detection of the leak, or at the earliest practicable time.

All material released to the secondary containment area will be removed within 24 hours, or in as timely a manner as possible, to prevent harm to human health and the environment. Every reasonable effort will be made to prevent migration of the release to soils or surface water. If necessary, visible contamination of surface water and soil will be removed and properly disposed of.

Notifications

Spills less than, or equal to one pound are exempt from reporting requirements per 40 CFR Part 264.196(d)(2). All other releases require notification as described in the Contingency Plan.

Subsequent Reporting

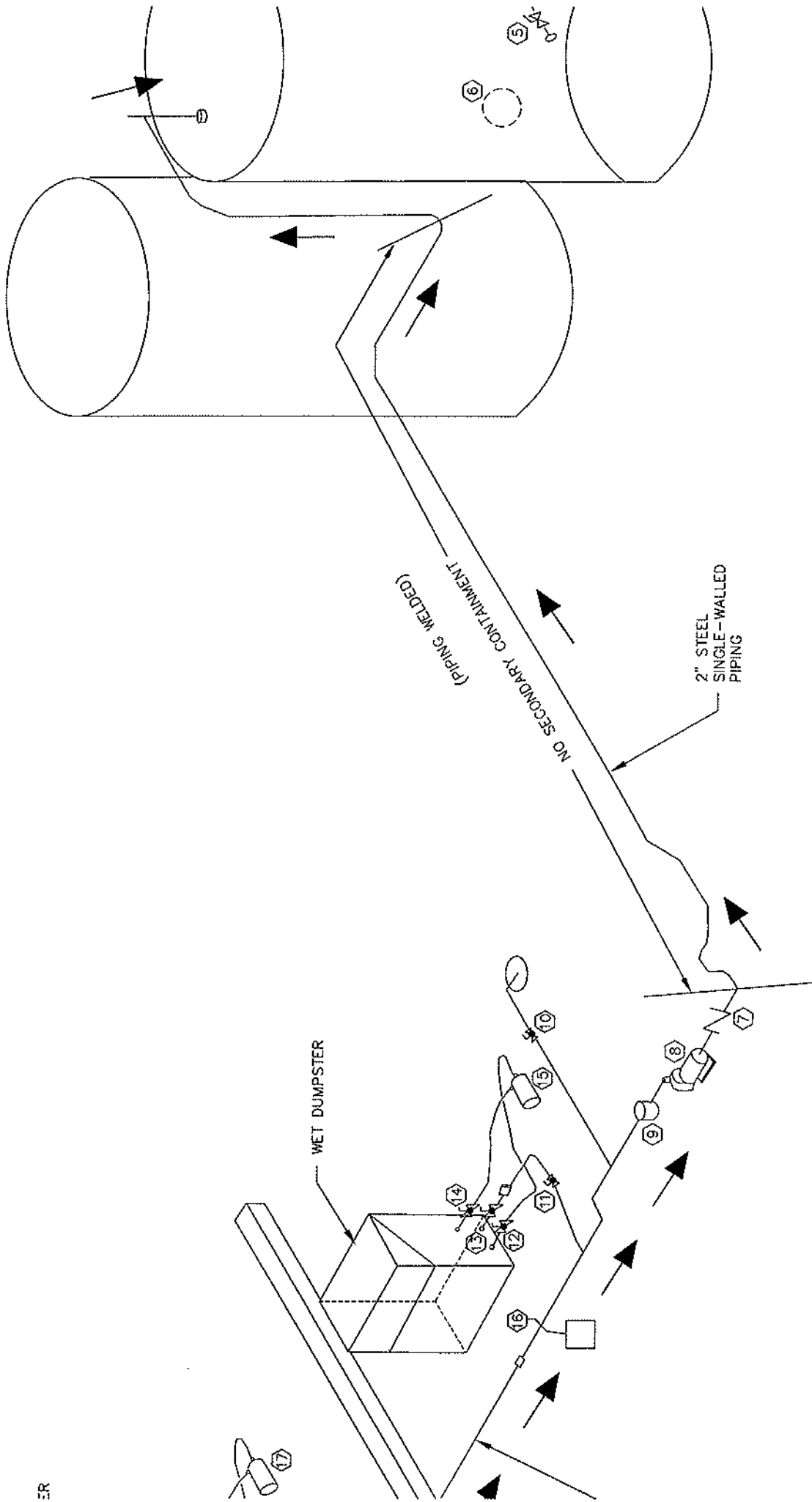
Subsequent reporting will be completed as referenced in the facility Contingency Plan.

Repair or Closure

If the integrity of the containment system has not been damaged, the system may be returned to service as soon as the released waste is removed and repairs, if necessary, are made. If the tank was the source of the release, the tank must be repaired prior to returning the tank system to service. If the release was from a tank system component which did not have secondary containment, then secondary containment must be provided for this component before the system can be returned to service. The exception to this is if the component can be visually inspected. In this instance, the component may be repaired and returned to service. If a component is replaced, the component must satisfy the requirements for new tank systems and components.

All major repairs must be certified by an independent, registered, professional engineer in accordance with 40 CFR 270.11(d). The engineer must certify that the repaired system is capable of handling hazardous wastes without release for the intended life of the system. This report must be filed with the Agency within seven days after returning the tank system to use.

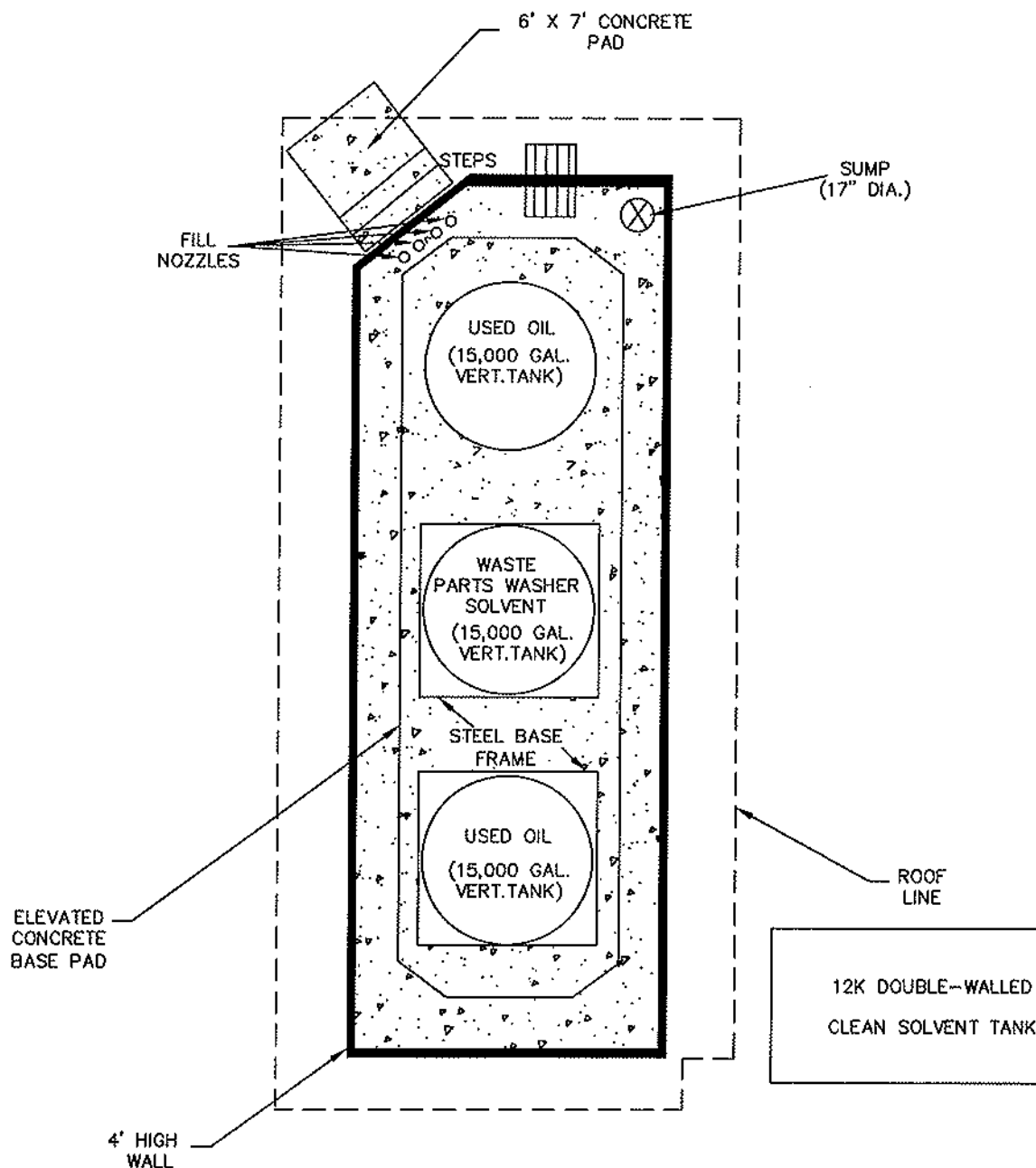
If repairs that meet these requirements cannot be performed, the tank system must be closed in accordance with the closure plan.



ENT SCHEDULE

MARK	EQUIPMENT DESCRIPTION
(12)	2" BALL VALVE
(13)	2" BALL VALVE
(14)	2" BALL VALVE
(15)	WASTE MINERAL SPIRITS RECIRCULATION PUMP
(16)	1" BALL VALVE ON CATCH CAN
(17)	WASTE MINERAL SPIRITS RECIRCULATION PUMP
(18)	2" BALL VALVE

FIGURE 9.2-1 TANK STORAGE AREA SAFETY-KLEEN SYSTEMS, INC. FACILITY ORANGE PARK, FLORIDA



LEGEND





-  CONCRETE
-  CONCRETE WALL (4')
-  STAIRS
-  ROOF (CORRUGATED METAL)



FIGURE 9.2-2
TANK FARM & RETURN/FILL STATION
SECONDARY CONTAINMENT CALCULATIONS

$$V = (49' 6\frac{1}{2}")(18' 8")(4') = (\frac{1}{2})(18.67-13.83)(18.67-13.83)(4')$$

$$(49.54)(18.67)(4) = 46.85 = 3652.8 \text{ ft}^3 \left(\frac{7.48 \text{ gal}}{\text{ft}^3} \right) = 27,323 \text{ gallons}$$

Узгаче сачегаје рад:

$$\begin{aligned} & (1'') (49'6\frac{1}{2}'' - 3'1\frac{1}{2}'' - 3'2'') (18'8'' - 2'1\frac{1}{2}'' - 2'1\frac{1}{2}'') - (4)(\frac{1}{2})(5'8'' - 2'1\frac{1}{2}'') (6'8'' - 3'1\frac{1}{2}'') (1'') \\ & (.05) (49.54 - 3.04 - 3.04) (18.67 - 2.04 - 2.04) - (2) (5.67 - 2.04) (6.67 - 3.04) (.03) \\ & (.03) (43.46) (14.59) - (2) (3.63) (3.63) (.08) \\ & ! (50.73) - (2.1) = 48.63 \text{ ft}^3 \left(\frac{7.48 \text{ gal}}{\text{ft}^3} \right) = 363.5 \text{ gallons} \end{aligned}$$

Tank (15k) polymer inside containment (Mineral Spirits)

$$V = \frac{\pi d^3}{4} (h) = \frac{(3.14)(10.5')^2 (4' - 7")}{4} = \frac{(3.14)(10.5)^2 (3.42')}{4} = 296 \text{ ft}^3$$

$$2 \text{ tanks @ } 296 \text{ ft}^3 = 592 \text{ ft}^3 \left(\frac{7.48 \text{ gallons}}{\text{ft}^3} \right) = 4428 \text{ gallons}$$

- Total volume (15K Ethylene Glycol):

$$V = \frac{\pi d^2}{4} h = \frac{(3.14)(10.15)^2 (4' - 1'')}{4} = \frac{(3.14)(10.15)^2 (3.87')}{4} = 339.3 \text{ ft}^3 \left(\frac{71.42 \text{ lb/ft}^3}{1.57} \right) = 2537.7 \text{ lb}$$

ΣΥΝΑΡ ΚΟΛΥΜΑ :

$$V = \frac{\pi d^2(h)}{4} = \frac{(3.14)(12'')^2(16'')}{4} = 2.11 \text{ ft}^3 \left(\frac{7.48 \text{ gallons}}{\text{ft}^3} \right) = 15.7 \text{ gallons}$$

Volume 25 year 24 hour rainfall event:

$$V = (49.54)(18.67)(9\frac{1}{2}') - \left(\frac{46.85}{4}\right)\left(\frac{9}{12}\right) = 693.7 - 8.78 = 684.9 \text{ ft}^3 \left(\frac{7.48 \text{ gal}}{\text{ft}^3}\right) = 5123.2 \text{ gallons}$$

TOTAL CONTAINMENT VOLUME = 27,323

+ 15.7 (sump)
- 363.5 (concrete pad)
- 4428.0 (2 MS tanks)
- 2537.7 (EG tank - ANTIFRZ)
- 5123.2 (rainfall)

14,886.3 gallons (20000 GAL
EXCLUDING
RAINFALL)

Rupture of 1 tank would release 15,000 - 2214 gal (already within the containment) = 12786 gal < 14,886.3 gal (20,000 GAL)

∴ Containment volume is satisfactory

Project SK-ORANGE PARKSubject CONTAINMENT CALLSBy ERMDate 22 DEC 97

Chkd by _____

Date _____

RETURN/FILL STATION (SEE ATT. FIG)

- COMPRISED OF 2 SEPARATE CONTAINMENT STRUCTURES (NORTH & SOUTH)
- NORTH HAS 1 RECTANGULAR SUMP; ASSUME THAT ONE INACTIVE DUMPSTER IS PRESENT
- SOUTH HAS 1 CIRCULAR SUMP AND 2 DUMPSTERS
- EACH DUMPSTER SITS ON THE CONCRETE FLOOR, WITH AN AREAL FOOTPRINT OF 5.42' x 3.17' (HOUSING HEADS URENTS)
- EACH DUMPSTER RESERVOIR MAY CONTAIN 108 GAL OF SOLVENT. FOR THE PURPOSES OF CALCULATING CONTAINMENT VOLUMES, THIS VOLUME WAS EXCLUDED; I.E. WE ASSUMED THAT A SPILL OCCURRED ADJACENT TO THE DUMPSTER.

NORTH SIDE

$$V_{\text{CONC}} = 18.42' \times 25' \times 0.33' \times \frac{7.48 \text{ GAL}}{\text{FT}^3} = 1136.7 \text{ GAL}$$

$$V_{\text{S1}} = 2' \times 2' \times 1' \times \frac{7.48 \text{ GAL}}{\text{FT}^3} = 29.9 \text{ GAL}$$

$$V_{\text{DUMP}} = 5.42' \times 3.17' \times 0.33' \times \frac{7.48 \text{ GAL}}{\text{FT}^3} = 42.4 \text{ GAL}$$

$$V_{\text{NORTH}} = V_{\text{CONC}} + V_{\text{S1}} - V_{\text{DUMP}} = 1136.7 + 29.9 - 42.4$$

$$V_{\text{NORTH}} = \underline{1124 \text{ GAL}} \gg V_{\text{CONTAINED SINGLE DUMPSTER (108 GAL)}}$$

SOUTH SIDE

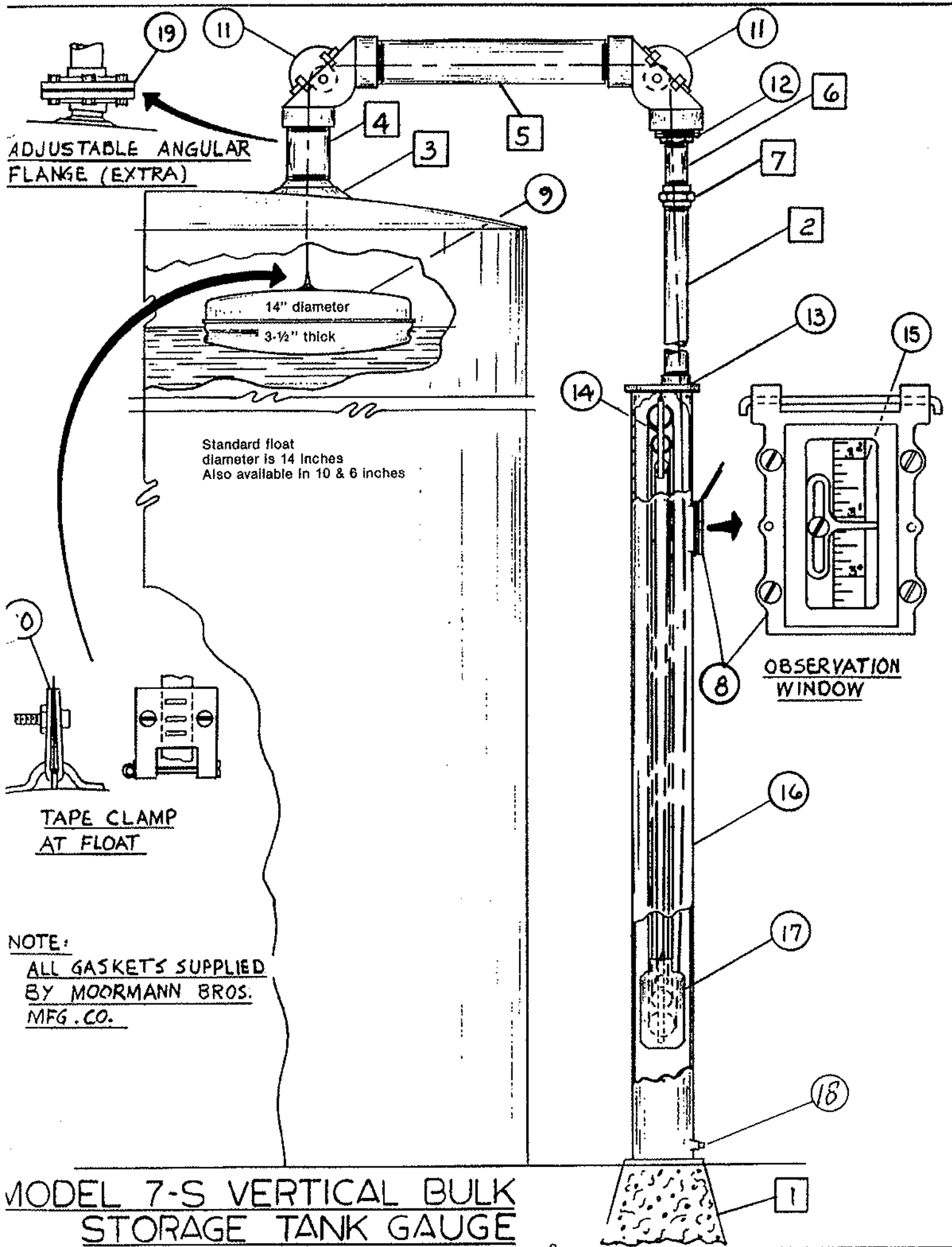
$$V_{\text{CONC}} = 20.17' \times 25' \times 0.42' \times \frac{7.48 \text{ GAL}}{\text{FT}^3} = 1584.2 \text{ GAL}$$

$$V_{\text{S2}} = \pi \frac{(1')^2}{4} \times 1' \times \frac{7.48 \text{ GAL}}{\text{FT}^3} = 5.9 \text{ GAL}$$

$$V_{\text{DUMP (2)}} = 2 \times 5.42' \times 3.17' \times 0.42' \times \frac{7.48 \text{ GAL}}{\text{FT}^3} = 108 \text{ GAL}$$

$$V_{\text{SOUTH}} = V_{\text{CONC}} + V_{\text{S2}} - V_{\text{DUMP}} = 1584.2 + 5.9 - 108$$

$$V_{\text{SOUTH}} = \underline{1482 \text{ GAL}} \gg V_{\text{CONTAINED IN 2 DUMPSTERS (2 \times 108 GAL)}}$$



MATERIAL LIST

Model 7-S

For All Vertical Tanks Up To & Including 35'



Material Supplied by Customer.

1. Gauge Housing Base Support.
2. 1" Galvanized Pipe (cut to length).
3. Tank Roof Flange.
4. 2" Tank Opening Pipe.
5. 2" Galvanized Pipe (cut to length).
6. 1" Galvanized Nipple (any length).
7. 1" Galvanized Union.



Material Supplied by Moormann Bros.

	PART NAME	PART No.	QUANTITY Per Unit
	8. Observation Window Assembly (frame & lid)	A-34—A-38	1
	9. Float - Aluminum or Stainless Steel	V-75	1
	10. Stainless Steel Tape Clamp & Screws	V-93	1
	11. Elbow Assembly Complete	A-30, A-33	2
	12. 2" to 1" Reducing Bushing		1
	13. Eccentric Cap Complete with Nuts & Bolts	V-71	1
	14. Pulley Rack Assembly	V-73	2
	15. Lufkin Stainless Steel High Visibility Tape	V-49	1
	16. Rust-Proofed Steel Gauge Housing	V-77	1
	17. Counterweight	A-72	2
	18. Condensation Drain Plug		1
	Gaskets - Set for Observation Window	V-81, V-82	1
	Gasket - Elbow Cap	V-83	2
	Gasket - V-71 Eccentric Cap	V-84	1
	Glass - Window	V-86	1
	Stainless Steel Indicator Finger for Observation Window	V-94	1
	Wire Pin - Stainless Steel	V-96	4
PE-7 Parts Envelope	19. Alignment Flange (optional)	A-48	

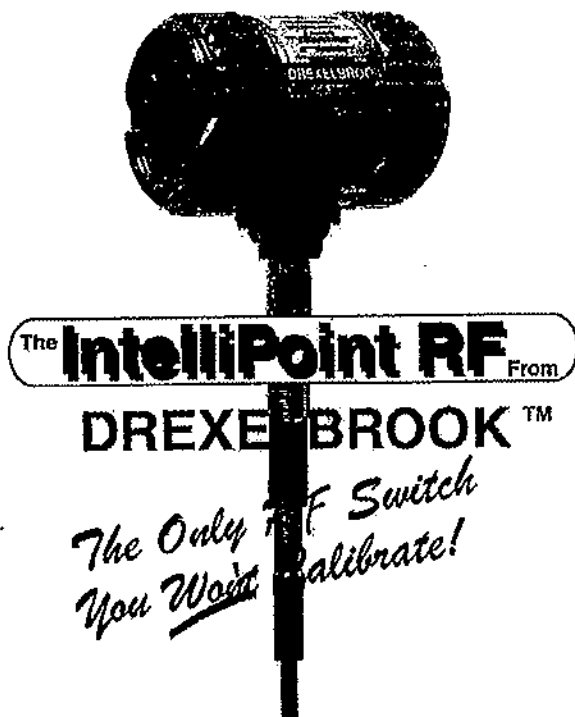
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AMETEK®
DREXELBROOK

A Leader in Level Measurement

IntelliPoint RF™ Series

Two-Wire Point Level Switch



Intelligent Electronics

- No calibration or setpoint adjustments.
- Ignores changes in dielectric or conductivity.
- Automatically recognizes and ignores coatings to prevent false alarms.
- Continuous self-test monitors circuits and sensing elements for faults.

Diverse Applications

- Detects the absence or presence of liquids, slurries, interfaces and granulars.

Output

- 8mA (Alarm) 16mA (Normal) or 8mA (Normal) and 16 mA (Alarm)

No Calibration

The only RF switch you won't calibrate. Simply install the IntelliPoint RF Series into the tank and apply power...that's it! Unlike other RF or capacitance systems that require calibration via setpoint potentiometers, jumpers, magnets, or pushbuttons, the IntelliPoint RF Series reliably detects the absence or presence of material without any adjustments.

The IntelliPoint RF Series software continuously monitors the application for changes in composition, dielectric or conductivity, and maintains a repeatable trip point on the probe. Other RF and capacitance systems require calibration adjustments when the process material is changed. Since the IntelliPoint RF Series recognizes changes in material, it is ideal for non-dedicated tanks that are used for a wide variety of products.

Self-Test Feature

Automatic and manual self-test functions ensure proper system operation. An AutoVerify™ self-check circuit continuously monitors that the complete system is functioning properly. The Manual Certify not only checks the function of the system, but also checks the AutoVerify self-test circuits to make sure that they are also working properly.

Dual Compartment Housing

New dual compartment housing separates the customer wiring from the sensing element and operating circuits. The encapsulated power supply/terminal block design eliminates the possibility of damage caused by moisture in the conduit.

Specifications

Technology:
RF Admittance.

Calibration:
None.

Modes Of Operation:
High and Low Level.

Repeatability:
2 mm (0.08 inch) conductive liquids.

Response Time:
less than one second.

Ambient Electronic Temperature:
-30 to 70°C (-28 to 158°F)

Storage Temperature:
-40 to 85°C (-40 to 185°F).

Indicators:
LEDs: Green Power, Red Alarm.

Self-Check:
AutoVerify automatically and continuously checks electronics and sensing element for faults. Manual Certify checks that the AutoVerify circuits are functioning.

Time Delay:
0-60 seconds, forward or reverse-acting.

Supply Voltage:
13-30 Vdc

Power Consumption:
2 watts maximum.

Output:
8 mA - Alarm.
16 mA - Normal.
22 mA - Fault.
or
8 mA - Normal.
16 mA - Alarm.
5 mA - Fault.

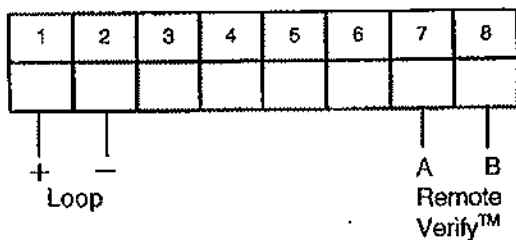
Housing:
Dual Compartment, Powder-Coated aluminum with two cable entries.

Cable Entry:
M20 x 1.5 CENELEC
¾-inch NPT FM/CSA.

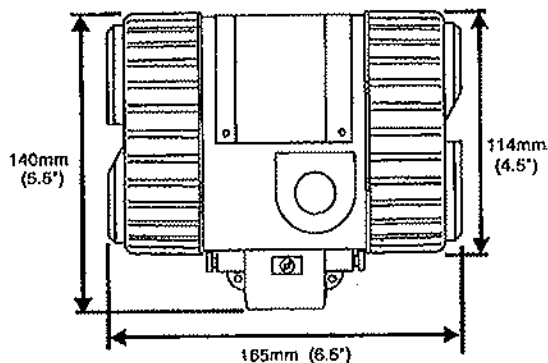
Ingress Protection:
IP66 NEMA 4X.

Approvals:
FM and CSA pending.

Wiring



Dimensions



Model Numbering

IntelliPoint RF™

Technology

R RF Admittance

Measurement Type

N No Calibration, Point Level

Input

T Two wire Power Supply, 13-30 Vdc

Housing

0 No Approvals, Dual Compartment NEMA 4X/IP66, M20 x 1.5 conduit entries

1 No Approvals, Dual Compartment NEMA 4X/IP66 ¾" NPT conduit entries

2 N/A

3 FM/CSA Approved, Dual Compartment NEMA 4X/IP66 ¾" NPT conduit entries

Electronics

0 Integral

1 Remote, no cable

2 Remote with 3 m (10 feet) cable

3 Remote with 7.6 m (25 feet) cable

4 Remote with 10.6 m (35 feet) cable

5 Remote with 15.2 m (50 feet) cable

6 Remote with 23 m (75 feet) cable

Output

0 8-16 mA Output

Sensing Element

continued on next page

00 Application
General purpose

700-1202-001 remote
700-1202-021 integral

13.8 bar @ 232°C (200 PSI @ 450°F)

316SS and PEEK

01 Floating roof with
cable attachment
and brass bottom weight

700-1202-012 remote
700-1202-022 integral

13.8 bar @ 177°C (200 PSI @ 350°F)

316SS, Brass,
and PEEK

02 General purpose,
longer insertion lengths
with cable attachment
and 316SS bottom weight

700-1202-014 remote
700-1202-024 integral

13.8 bar @ 177°C (200 PSI @ 350°F)

316SS and PEEK

03 Proximity

700-1202-018 remote
700-1202-028 integral

13.8 bar @ 232°C (200 PSI @ 450°F)

316SS and PEEK
with 76 mm (3)
316SS proximity plate

04 General purpose,
high temperature
and pressure

700-1202-041 remote
700-1202-042 integral

69 bar @ 121°C (1000 PSI @ 250°F)
20.7 bar @ 232°C (300 PSI @ 450°F)

316SS and PEEK

10 Corrosive liquids (2)(4)(9)

700-0001-018

3.4 bar @ 149°C (50 PSI @ 300°F)

PFA

11 General purpose,
higher pressure
TFE compatibility required

700-0201-005

69 bar @ 38°C (1000 PSI @ 100°F)
13.8 bar @ 232°C (200 PSI @ 450°F)

316SS and TFE

12 Corrosive material,
higher pressure

700-0201-005
Hastelloy C

69 bar @ 38°C (1000 PSI @ 100°F)
13.8 bar @ 232°C (200 PSI @ 450°F)

Hastelloy C and TFE

13 Sanitary (3)

700-0201-036

69 bar @ 38°C (1000 PSI @ 100°F)
13.8 bar @ 232°C (200 PSI @ 450°F)

316/316L SS and TFE

14 General Purpose,
low pressure

700-0202-002

3.4 bar @ 149°C (50 PSI @ 300°F)
1.4 bar @ 232°C (20 PSI @ 450°F)

316SS and TFE

15 Heavy duty, agitated
tanks or material
with high bulk density (1)

700-0202-043

69 bar @ 38°C (1000 PSI @ 100°F)
13.8 bar @ 232°C (200 PSI @ 450°F)

316SS and TFE

16 High integrity seal
for hazardous material (8)

700-0002-360
(Seal Tyle™)

34.5 bar @ 149°C (500 PSI @ 300°F)

PFA
(flange mounting only)

18 Corrosive material,
higher pressure with
waterlike viscosity (4)

700-0001-022

69 bar @ 38°C (1000 PSI @ 100°F)
34.5 bar @ 149°C (500 PSI @ 300°F)

TFE

20 Miniature Pilot
Plant Sensor (1)(7)

700-0209-002

6.9 bar @ 121°C (100 PSI @ 250°F)
0 bar @ 232°C (0 PSI @ 450°F)

316 SS and TFE

60 Highest pressure
and temperature (1)

700-0204-030

138 bar @ 93°C (2000 PSI @ 200°F)
69 bar @ 260°C (1000 PSI @ 500°F)

316SS and Ceramic

R N T D

continued on next page

R N T 0

Model Numbering (cont.)

Sensing Element (continued from previous page)

Fly Ash Precipitators, Baghouse, and Economizers (1) (6)

Application	Sensing Element	Pressure/Temperature	Wetted Parts
31 No hopper installation	700-0029-001	0.1 bar @ 260°C (2 PSI @ 500°F)	316SS and TFE (CS inactive)
32 Hopper installation up to 200mm (8 inches)	700-0029-002	0.1 bar @ 260°C (2 PSI @ 500°F)	316SS and TFE (CS inactive)
33 Hopper installation up to 250mm (10 inches)	700-0029-003	0.1 bar @ 260°C (2 PSI @ 500°F)	316SS and TFE (CS inactive)
35 Hopper installation up to 400mm (16 inches)	700-0029-005	0.1 bar @ 260°C (2 PSI @ 500°F)	316SS and TFE (CS inactive)

Plugged Chute Detection (1) (6)

Application	Sensing Element	Pressure/Temperature	Wetted Parts
50 Flush Mount Sensor 305mm ² (12 inches ²) heavy duty	700-0207-001	0.1 bar @ 82°C (1 PSI @ 180°F)	304 SS and Polyurethane
51 Flush Mount Sensor 305mm ² (12 inches ²) higher temperature	700-0207-002	0.1 bar @ 149°C (1 PSI @ 300°F)	304 SS and TFE
52 Flush Mount Sensor 305mm ² (12 inches ²) with curved radius 153, 229, 305 mm (6, 9, or 12 inches)	700-0207-003	0.1 bar @ 82°C (1 PSI @ 180°F)	304 SS and Neoprene
53 Flush Mount Sensor 305mm ² (12 inches ²) extra heavy duty	700-0207-004	0.1 bar @ 82°C (1 PSI @ 180°F)	410 SS and UHMW Polyethylene
55 Flush Mount Sensor 203mm ² (8 inches ²) heavy duty	700-0207-006	0.1 bar @ 82°C (1 PSI @ 180°F)	304 SS and Polyurethane

Mounting Type (See separate Mounting Chart for first three digits)

	IL	CSL		IL	CSL
xxxA	152 mm (6")	51 mm (2")	xxxH	914 mm (36")	254 mm (10")
xxxB	305 mm (12")	51 mm (2")	xxxJ	914 mm (36")	0 mm (0")
xxxC	305 mm (12")	89 mm (3.5")	xxxK	1219 mm (48")	254 mm (10")
xxxD	457 mm (18")	51 mm (2")	xxxL	1524 mm (60")	254 mm (10")
xxxE	457 mm (18")	89 mm (3.5")	P00X	IL/CSL factory set for Plugged Chute	
xxxF	457 mm (18")	254 mm (10")	A1BX	IL/CSL factory set for Fly Ash	
xxxG	457 mm (18")	0 mm (0")	xxxZ	Other	



- Notes:
- (1) Available with remote electronics only
 - (2) Use A1P mounting option
 - (3) Choose from sanitary mounting options only
 - (4) Available with 0-inch CSL only
 - (5) Use P00X mounting option

- (6) Use A1B mounting option
 - (7) Use A8B mounting option (1/4-inch NPT)
 - (8) Choose from flange mounting only
 - (9) FM approved with remote electronics only
- Not all mounting options available with all sensing elements

NPT Thread		
A1B 1/4" NPT	316SS	
A1C 1/4" NPT	Hastelloy C	
A1P 1/4" NPT	PFA	
A2B 1" NPT	316SS	
A2C 1" NPT	Hastelloy C	

Sanitary TriClamp		
C2B 1" TriClamp	316SS	
C3B 1 1/2" TriClamp	316SS	
C4B 2" TriClamp	316SS	

DIN Flanges		
E01 25 mm 16 bar	RF 316/316L SS	
EP1 25 mm 40 bar	RF 316/316L SS	
EQ1 50 mm 16 bar	RF 316/316L SS	
ER1 50 mm 40 bar	RF 316/316L SS	
ES1 80 mm 16 bar	RF 316/316L SS	
ET1 80 mm 40 bar	RF 316/316L SS	
EU1 100 mm 16 bar	RF 316/316L SS	
EV1 100 mm 40 bar	RF 316/316L SS	
EW1 150 mm 16 bar	RF 316/316L SS	
EX1 150 mm 40 bar	RF 316/316L SS	

DIN Flanges (cont.)		
E02 25 mm 16 bar	RF Carbon Steel	
EP2 25 mm 40 bar	RF Carbon Steel	
EQ2 50 mm 16 bar	RF Carbon Steel	
ER2 50 mm 40 bar	RF Carbon Steel	
ES2 80 mm 16 bar	RF Carbon Steel	
ET2 80 mm 40 bar	RF Carbon Steel	
EU2 100 mm 16 bar	RF Carbon Steel	
EV2 100 mm 40 bar	RF Carbon Steel	
EW2 150 mm 16 bar	RF Carbon Steel	
EX2 150 mm 40 bar	RF Carbon Steel	

ANSI Flanges		
DA1 1" 150#	RF 316/316L SS	
DB1 1 1/2" 150#	RF 316/316L SS	
DC1 2" 150#	RF 316/316L SS	
DD1 2 1/2" 150#	RF 316/316L SS	
DE1 1" 300#	RF 316/316L SS	
DF1 1 1/2" 300#	RF 316/316L SS	
DG1 2" 300#	RF 316/316L SS	
DH1 2 1/2" 300#	RF 316/316L SS	
DI1 3" 150#	RF 316/316L SS	

ANSI Flanges (cont.)		
DJ1 3" 300#	RF 316/316L SS	
DK1 4" 150#	RF 316/316L SS	
DL1 4" 300#	RF 316/316L SS	
DM1 6" 150#	RF 316/316L SS	
DN1 6" 300#	RF 316/316L SS	
DA2 1" 150#	RF Carbon Steel	
DB2 1 1/2" 150#	RF Carbon Steel	
DC2 2" 150#	RF Carbon Steel	
DD2 2 1/2" 150#	RF Carbon Steel	
DE2 1" 300#	RF Carbon Steel	
DF2 1 1/2" 300#	RF Carbon Steel	
DG2 2" 300#	RF Carbon Steel	
DH2 2 1/2" 300#	RF Carbon Steel	
DJ2 3" 150#	RF Carbon Steel	
DK2 4" 150#	RF Carbon Steel	
DL2 4" 300#	RF Carbon Steel	
DM2 6" 150#	RF Carbon Steel	
DN2 6" 300#	RF Carbon Steel	

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CLOSURE PROCEDURES

Container Storage Areas

- At closure, all containers present at the facility will be sent to a Safety-Kleen TSDF, or third party facility where the contents in the containers will be reclaimed and the containers cleaned for reuse. The containers will be removed and transported with proper packaging, labeling, and manifesting.
- The concrete floor, spill containment area, and walls will be scrubbed with a detergent solution and rinsed with clean water to remove waste residuals from the surface. A final rinsate sample will be collected and analyzed to determine the effectiveness of decontamination. Unless otherwise designated in the formal closure plan, one rinsate sample will be collected from the container storage area. The rinsate sample will be analyzed by EPA method 6010 for petroleum constituents, the eight RCRA metals and nickel, and for volatile and semi-volatile organics by EPA methods 8015, 8260, and 8270. The area will be decontaminated to meet FDEP's guidance at the time of closure. The pans, grating, and floor beneath the pans in the paint waste shelter will be cleaned by appropriate means to remove visible contamination. Safety-Kleen intends to recycle the metal components (e.g., pans and grating) in accordance with 40 CFR 261.6(a)(3)(ii) or to reuse them at another Safety-Kleen facility. Accordingly, decontamination of these components is required only to the extent necessary for safe demolition, storage, and transportation of the scrap. Decontamination of the mercury-containing lamps and devices storage area will be conducted at the time of closure as part of the overall decontamination of the container storage areas. No additional, special decontamination of the mercury-containing lamps and devices storage area will be conducted at the time of closure, because any decontamination associated with releases from mercury-containing lamps and devices will be conducted at the time of release.

- Final disposition of the concrete containment system where the waste tank is located will depend in part upon the presence or absence of underlying soil contamination. To make that determination, the upper six inches of soil immediately below the concrete slab will be sampled at the following locations, as follows:
 1. Under the waste tank, and at the containment system pumps;
 2. Beneath the most prominent of any cracks observed in the slab, and under the tanker connections.
- Sampling locations, and the number of samples required will ultimately be determined after consultation with the Department
- These sample locations may be adjusted as actual field conditions warrant, but a minimum of two samples will be retrieved. These samples will be analyzed for petroleum constituents, and by EPA Method 6010 for the eight RCRA metals and nickel, and for volatile and semi-volatile organics by EPA Methods 8015, 8260, and 8270.
- The perimeter walls and foundation slab of the secondary containment area will be scrubbed with a detergent solution and rinsed with clean water to remove waste residuals from the surface. A final rinsate sample will be collected and analyzed to determine the effectiveness of decontamination. Unless otherwise designated in the formal closure plan, the rinsate sample will be analyzed for the same constituents as the container storage area rinsate sample. The area will be decontaminated to meet FDEP's guidance at the time of closure. Safety-Kleen anticipates that proper maintenance of the concrete containment system will allow the slab to remain in place at closure.
- Safety-Kleen will proceed with demolition of the perimeter walls. If it is determined that soil contamination exists beneath the foundation slab, Safety-Kleen will demolish the entire concrete structure and complete a further delineation of the extent of soil contamination to be removed to complete closure. Any site assessment, interim measures, or corrective action that may be required will be conducted in accordance with Chapter 62-780, F.A.C. and permit requirements.

FACILITY CLOSURE SCHEDULE AND CERTIFICATION

- Safety-Kleen may amend the closure plan at any time during the active life of the facility. The active life of the facility is that period from initial receipt of hazardous waste to certification of final closure. Safety-Kleen will amend the plan any time changes in operating plans or facility design affect the closure plan or whenever a change occurs in the expected year of closure of the facility. The plan will be amended within 60 days of the changes.
- Safety-Kleen will notify the FDEP of its intent to close the facility in accordance with Chapter 62-730.240, F.A.C.
- Safety-Kleen will remove from the site all hazardous wastes in accordance with the approved closure plan. The Regional Administrator may approve a longer period if Safety-Kleen demonstrates that:
 1. The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or
 2. The following requirements are met:
 - a) The facility has the capacity to receive additional wastes;
 - b) There is a reasonable likelihood that a person other than Safety-Kleen will recommence operation of the site;
 - c) Closure of the facility would be incompatible with continued operation of the site; and
 - d) Safety-Kleen has taken and will continue to take all steps to prevent threats to human health and the environment.
- Safety-Kleen will complete closure activities in accordance with the approved closure plan within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, whichever is later. When closure is completed, all facility equipment and structures shall have been properly disposed of, or decontaminated by removing all hazardous waste and residues.
- Within 60 days of closure completion, Safety-Kleen will submit certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

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3. On separate sheet(s) of paper, describe all data available on all prior or current releases of hazardous wastes or constituents to the environment that may have occurred in the past or may still be occurring, for each unit noted in 1. above and also for each hazardous waste unit in your Part B application [40 CFR 270.14(d)(1)].

Provide the following information for each SWMU:

- a. Date of release.
 - b. Specifications of all wastes managed at the unit, to the extent available.
 - c. Quantity or volume of waste released.
 - d. Describe the nature of the release (i.e., spill, overflow, ruptured pipe or tank, etc.)
 - e. Location of the unit on the topographic map provided under 40 CFR 270.14(b)(19).
 - f. Designate the type of unit.
 - g. General dimensions and structural description (supply any available drawings).
 - h. Dates of operation.
4. On separate sheet(s) of paper, provide for each unit all analytical data that may be available which would describe the nature and extent of the environmental contamination that exists as a result of the prior releases described in 3. above. Focus on the concentrations of hazardous wastes or constituents present in contaminated soil or groundwater [40 CFR 270.14(d)(3)].

Part II

**P. #2 INFORMATION REQUIREMENTS REGARDING SOLID WASTE
MANAGEMENT UNITS**

SWMU-1(Warehouse Container Storage Area) is described within the permit application in section Part II B.

SWMU-2 (Paint Wastes Building) is described within the permit application in section Part II B.

SWMU-3 (FRS Waste Building) is the former 10-day transfer waste area. This building is now identified as the Allied Product Storage area.

SWMU-4 (Former Restaurant Filter Building) is no longer in service. This SWMU was in service from 1988-1989.

SWMU-5 (Return and Fill Area) is described in Part II C.

SWMU-6 (Spent Mineral Spirits Tank) is located within the tank farm and is described in Part II C.

SWMU-7 (Spent Ethylene Glycol Tank) was changed to storage of Used Oil in June of 2007. In addition, the tank identified as “A” in figure Part II-Q was changed to used oil service in approximately July 2011. SWMU-7 now consists of two 15,000 gallon used oil tanks.

SWMU-8 (Loading/Unloading Areas) are located as follows:

- 8a – Inside Warehouse
- 8b – Tank Farm Area
- 8c – Warehouse Dock
- 8d – Eastern side of Return/Fill Dock.

SWMU-9 (Pallet Accumulation Area) is located on the south side of the Return/Fill area in a small alley way in between the R/F and Paint Waste Shelter

SWMU-10 (BFI Dumpster) is a municipal dumpster located on the south side of the concrete loading dock-which is located on the west side of the facility.

SWMU-11 (Above Ground Storage Tank Farm) is located in the northwest corner of the facility. It houses two 15,000 gallon Used Oil tanks, and one 15,000 hazardous waste solvent tank.

SWMU-12 (10-Day Transfer Waste Area) is located on the southeast dock of the return/fill area, and in the warehouse building..

SWMU-13(Mercury Lamps Storage Area (Inside SWMU-1)) is located in the northwest corner of SWMU-1.

SWMU-14 (Used Antifreeze Tank (Inside SWMU-5)) is a 6,000 gallon tank located in the southwest bay of the Return/Fill Area.

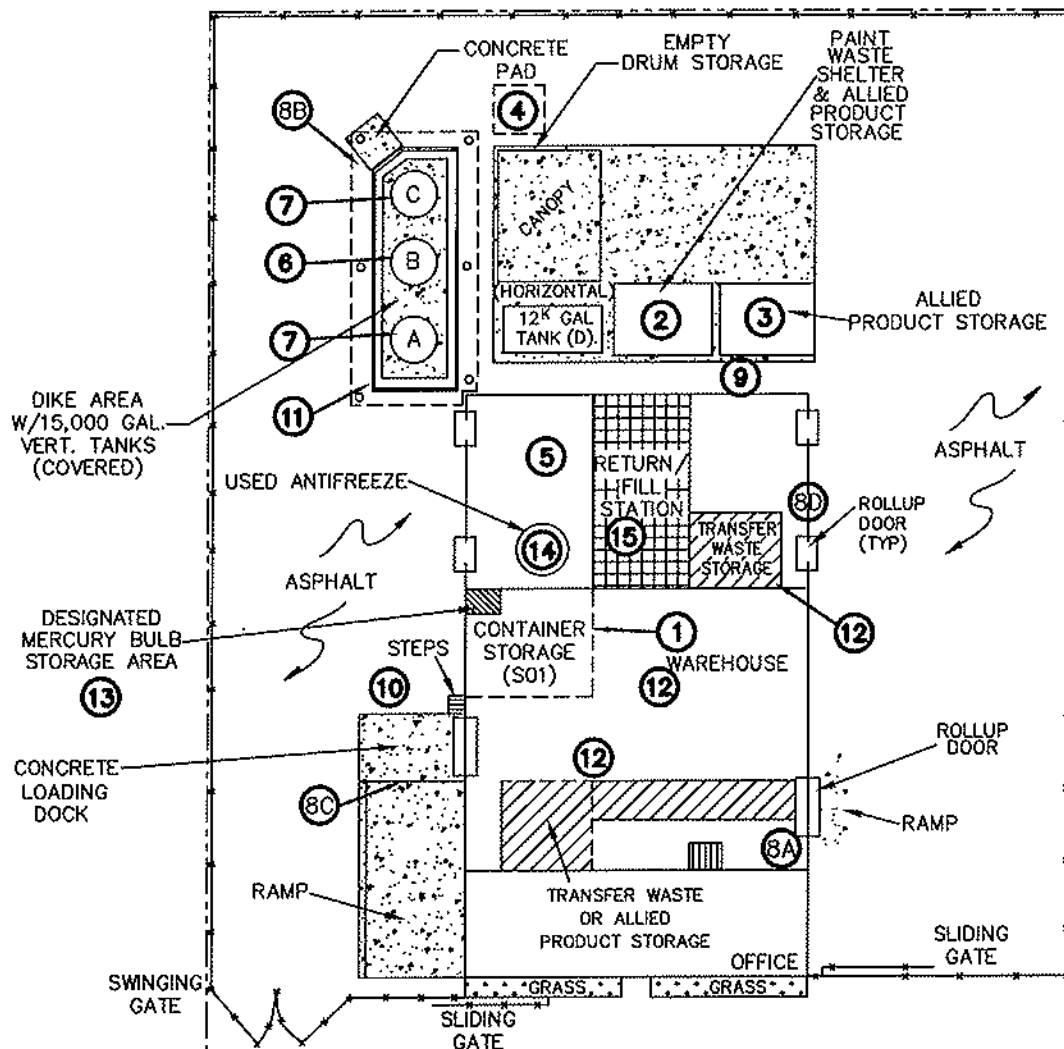
SWMU-15 (Satellite Container (Inside SWMU-5)) is two 55-gallon containers near the wet dumpster in the Return/Fill Area.

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Part II P.3 Prior/Current Releases

Date	Material	Amt. (gallons)	Explanation
7/25/90	Perc	50	A product drum of perchloroethylene turned over while being unloaded at the warehouse dock (SWMU 8c). The material was released onto the pavement, and soaked up with absorbent material. The spilled material was contained inside.

FIGURE PART II - Q **LOCATIONS OF SOLID WASTE MANAGEMENT UNITS (SWMU)** **SAFETY-KLEEN SYSTEMS, INC. FACILITY** **ORANGE PARK, FLORIDA**



SWMU #	DESCRIPTION
1	WAREHOUSE/CONTAINER STORAGE AREA
2	PAINT WASTE BUILDING
3	FRS WASTE BUILDING
4	FORMER RESTAURANT FILTER BUILDING
5	RETURN AND FILL AREA
6	SPENT MINERAL SPIRITS TANK
7	USED OIL TANKS
8	LOADING/UNLOADING AREAS
8A	INSIDE WAREHOUSE
8B	TANK FARM AREA
8C	WAREHOUSE DOCK
8D	RETURN/FILL DOCK
9	PALLET ACCUMULATION AREA
10	BFI DUMPSTER
11	ABOVE GROUND STORAGE TANK FARM
12	10-DAY TRANSFER WASTE AREA
13	MERCURY LAMPS STORAGE AREA (INSIDE SWMU-1)
14	USED ANTIFREEZE TANK (INSIDE SWMU-5)
15	SATELLITE CONTAINER AREA (INSIDE SWMU-5)

LEGEND

- PROPERTY BOUNDARY
- FENCE
- UTILITY EASEMENT
- CONCRETE



Part II

S. AIR EMISSION STANDARDS

AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

The requirements of 40 CFR 264 Subpart BB – Air Emission Standards for Equipment Leaks apply to certain equipment associated with the used parts washer solvent storage tanks system. Figure 2.2-6 plots the facility layout with the location of the hazardous waste management units that utilize equipment subject to Subpart BB. Equipment subject to Subpart BB requirements is included in the “above ground storage tank farm” shown in Figure 2.2-6. This equipment contains or contacts hazardous wastes with VOC concentrations > 10% by weight. The Subpart BB requirements apply to pumps, valves, flanges, etc., which are part of the used parts washer solvent storage tank system. Figure 11.1-1 shows the specific equipment items, which are considered to be in “heavy liquid service” for the purposes of Subpart BB. Compliance with the applicable sections of 40 CFR 264.1052 thru 1063 has been achieved by the implementation of the procedures outlined in Appendix D and other procedures detailed below.

Implementation Schedule

All facilities subject to these regulations were required to be in compliance by the date specified in the final rule.

Schedule and Procedures For Inspections

Pursuant to Subpart BB of 40 CFR Part 264 and 40 CFR 270.25, Safety-Kleen inspects all regulated units for leaks each business day. An inspection checklist (example shown in Figure 11.1-2) is utilized for this purpose. All valves, pumps, and flanges are visually inspected. The inspection items have been properly tagged in accordance with 40 CFR 264.1050(d) and are inventoried on the environmental piping schematic diagrams included in Figure 11.1-1. In the event that a leak is detected, repairs will be implemented in accordance with the applicable provisions of Subpart BB (first attempt at repair within 5 days; repair completed or equipment placed “out of service” within 15 days. For such repairs, a “Leak Detection and Repair Record” will be completed (see Figure 11.1-3 for an example.

Pumps and Valves in Heavy Liquid Service, Pressure Relief Devices in Light Liquid or Heavy Liquid Service, and Flanges and Other Connectors (40 CFR 264.1058)

At the present time, the pumps, valves, flanges, and other connectors at the Orange Park facility are used for heavy liquid service. As defined in 40 CFR 264.1031, the mineral spirits solvents managed at the facility are considered to be heavy liquid because the solvents have a vapor pressure less than 0.3 kilopascals at 20° C. Furthermore, no single contaminant is present in the wastes that has vapor pressure greater than 0.3 kilopascals in concentrations in excess of 20% by weight. In addition, the wastes presently managed in the equipment at the Orange Park facility have a maximum of 2,000 ppm concentration in the vapor phase. Therefore, a portable organic vapor analyzer will not detect leaks at 10,000 ppm and a leak will be observed based on a visible liquid leak rather than by a portable organic analyzer. The first attempt at repair will be made no later than five calendar days after each leak is detected. Pursuant to the requirements of 40 CFR 264.1058, if a visual leak is observed, the affected equipment will be repaired no later than 15 days after it is detected. Whenever a leak is detected as specified in 40 CFR 264.1064 the following will apply:

- A weatherproof and readily visible identification attached to the leaking equipment shall be marked with the following information: equipment identification number, date that evidence of a potential leak was found in accordance with 264.1058(a), and date leak was detected.
- The identification on equipment, except on a valve, may be removed after it has been repaired.
- The identification on a valve may be removed after it has been monitored for two successive months as specified in 264.1057(c) and no leak has been detected during those two months.

- Removing hazardous waste from the container:
When discrete quantities of hazardous waste are removed from the container, covers shall be promptly secured upon completion of a batch removal after which no additional material will be removed from the container within 15 minutes or the person performing the unloading operation leaves the immediate vicinity of the container. RCRA empty containers may be open to the atmosphere at any time.
- Sampling wastes, measuring depth or quantity of wastes:
Containers may be opened when sampling and/or measuring hazardous wastes, as well as adding or removing hazardous wastes from them. Covers must be replaced and secured on containers once such activities are completed.

Level 1 Container Inspection Requirements

All Level 1 Containers that are not emptied upon receipt at the facility, are inspected upon arrival and each day thereafter until the container is transferred to a recycle center. Each Level 1 Container and its cover and closure devices are inspected for visible cracks, holes, gaps, or other open spaces. No container remains at the facility over 1 year. If a defect is detected for a container, cover, or closure devices, a repair shall be attempted within 24 hours after detection, and repair shall be completed as soon as possible, but no later than 5 calendar days. The container will be over-packed in a DOT approved container as a means of repair. A description of the types of inspections and example logs for containers can be found in Part II B.

Level 2 Containers (264.1086(d))

Hazardous waste containers with design capacity greater than 119 gallons and that are in light material service are subject to Level 2 container standards. These include totes, roll-off boxes that are greater than 119 gallons in capacity, and bulk tankers and rail car tankers. Level 2 containers are not stored at this facility, therefore 40 CFR 264.1087(d) does not apply at this location. However, these types of containers may undergo 10-day transfer at the facility, but since they will be considered “still in the course of transportation” Subpart CC will not be applicable.

TABLE 11.2-2
SUMMARY OF CONTAINER MANAGEMENT UNITS SUBJECTED TO SUBPART CC
SAFETY-KLEEN SYSTEMS, INC. Orange Park, FL
EPA ID NUMBER: FLD 980 847 214

Hazardous Waste Management Unit	Location of Hazardous Waste Unit	EPA Hazardous Waste Codes Managed	Brief Waste Description	Average Volatile Organic Concentration of Hazardous Waste	Container Type	Subpart CC Status	Control Option (See Table 11.2-3)
Container Storage Area Paint Waste Shelter	See Figure 2.1-6	D001, F001, F002, F003, F005 and codes listed in Note 1 below	Waste Parts Washer Solvent (Petroleum Naptha), Dry Cleaner Wastes	> 500	Type A	Container Level 1 Controls per 264.1086(c)	11
Return and Fill Area	See Figure 2.1-6	D001 and codes listed in Note below	Waste Parts Washer Solvent (Petroleum Naptha)	> 500	Type A	Container Level 1 Controls per 264.1086(c)	11

Note: D004 thru D011, D018, D019, D021 thru D030, and D032 thru D043

Table 11.2-3

Subpart CC Control Options

Tanks

1. These tanks shall comply with Tank Level 1 controls which require tanks to have a fixed roof with no visible cracks, holes, gaps, or other spaces in accordance with 40 CFR 264.1084(c). The tank shall be visually inspected for defects prior to the tank becoming subject to these requirements and at least once a year thereafter [40 CFR 264.1084(c)].
2. These tanks are fixed roof tanks equipped with an internal floating roof and shall comply with Tank Level 2 controls in accordance with 40 CFR 264.1084(e). The internal floating roof shall be visually inspected for defects at least once every twelve months after initial fill unless complying with the alternative inspection procedures in 40 CFR 264.1084(e)(3)(iii). [40 CFR 264.1084.(d)(1)]
3. These tanks are equipped with an internal floating roof and shall comply with Tank Level 2 controls in accordance with 40 CFR 264.1084(f). The external roof seal gaps shall be measured in accordance with procedures contained in 40 CFR 264.1084(f)(3)(I) within 60 days and at least once every 5 years thereafter. The external floating roof shall be visually inspected for defects at least once every 12 months after initial fill. [40 CFR 264.1084(d)(2)]
4. These tanks are vented through a closed-vent system to control device and shall comply with Tank Level 2 controls in accordance with 40 CFR 264.1084(g). The tank shall be equipped with a fixed roof and closure devices which shall be visually inspected for defects initially and at least once every year. The closed-vent system and control device shall be inspected and monitored in accordance with 40 CFR 264.1087. [40 CFR 264.1084(d)(3)]
5. These tanks are pressure tanks which shall comply with Tank Level 2 controls in accordance with 40 CFR 264.1084(h). [40 CFR 264.1084(d)(4)]
6. These tanks are located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device and shall comply with Tank Level 2 controls in accordance with 40 CFR 264.1084(i). The closed-vent system and control device shall be inspected and monitored in accordance with 40 CFR 264.1087 [40 CFR 264.1084(d)(5)]
7. These tanks have covers which have been specified as “unsafe to inspect and monitor” and shall comply with the requirements of 40 CFR 264.1084(l)(1) [40 CFR 264.1084(f) & (g)]

Table 11.2-3

Subpart CC Control Options

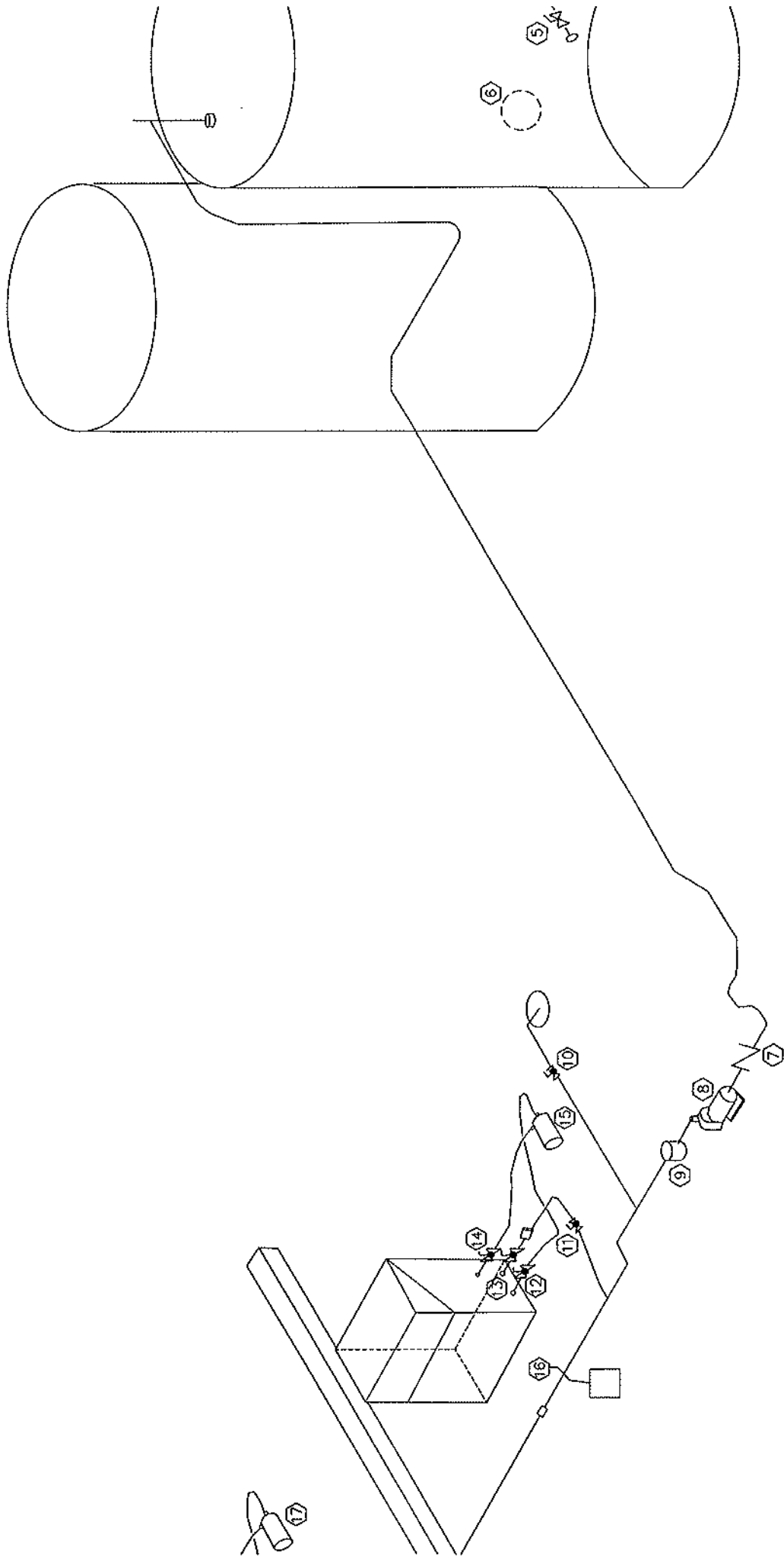
Containers

8. These containers have a design capacity greater than 0.1 m³ and less than or equal to 0.46 m³ and meet the applicable US DOT regulations under the Container Level 1 standards. The container shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every twelve months. [40 CFR 264.1086(b)(1) & (c)(1)(i)]
9. These containers have a design capacity greater than 0.1 m³ and less than or equal to 0.46 m³ and are equipped with a cover and closure devices which form a continuous barrier over container openings. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every twelve months. [40 CFR 264.1086(b)(1)(i) & (c)(1)(i)]
10. These containers have a design capacity greater than 0.1 m³ and less than or equal to 0.46 m³ and are open-top containers in which an organic-vapor surpressing is placed on or over the hazardous waste in a container. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is inspected for defects at least once every twelve months. [40 CFR 264.1086(b)(1)(i) & (c)(1)(iii)]
11. These containers have a design capacity greater than 0.46 m³, are not in light material service and meet the applicable US DOT regulations under Container Level 1 standards. The container shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every twelve months. [40 CFR 264.1086(b)(1)(ii) & (c)(1)(i)]
12. These containers have a design capacity greater than 0.46 m³, are not in light material service and are equipped with a cover and closure devices which form a continuous barrier over container openings. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every twelve months. [40 CFR 264.1086(b)(1)(ii) & (c)(1)(ii)]
13. These containers have a design capacity greater than 0.46 m³, are not in light material service and are open-top containers in which an organic-vapor surpressing is placed on or over the hazardous waste in a container. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every twelve months. [40 CFR 264.1086(b)(1)(ii) & (c)(1)(iii)]
14. These containers have a design capacity greater than 0.46 m³, are in light material service and meet the applicable US DOT regulations under Container Level 2 standards. The container shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every twelve months. [40 CFR 264.1086(b)(1)(iii) & (d)(1)(i)]

Table 11.2-3

Subpart CC Control Options

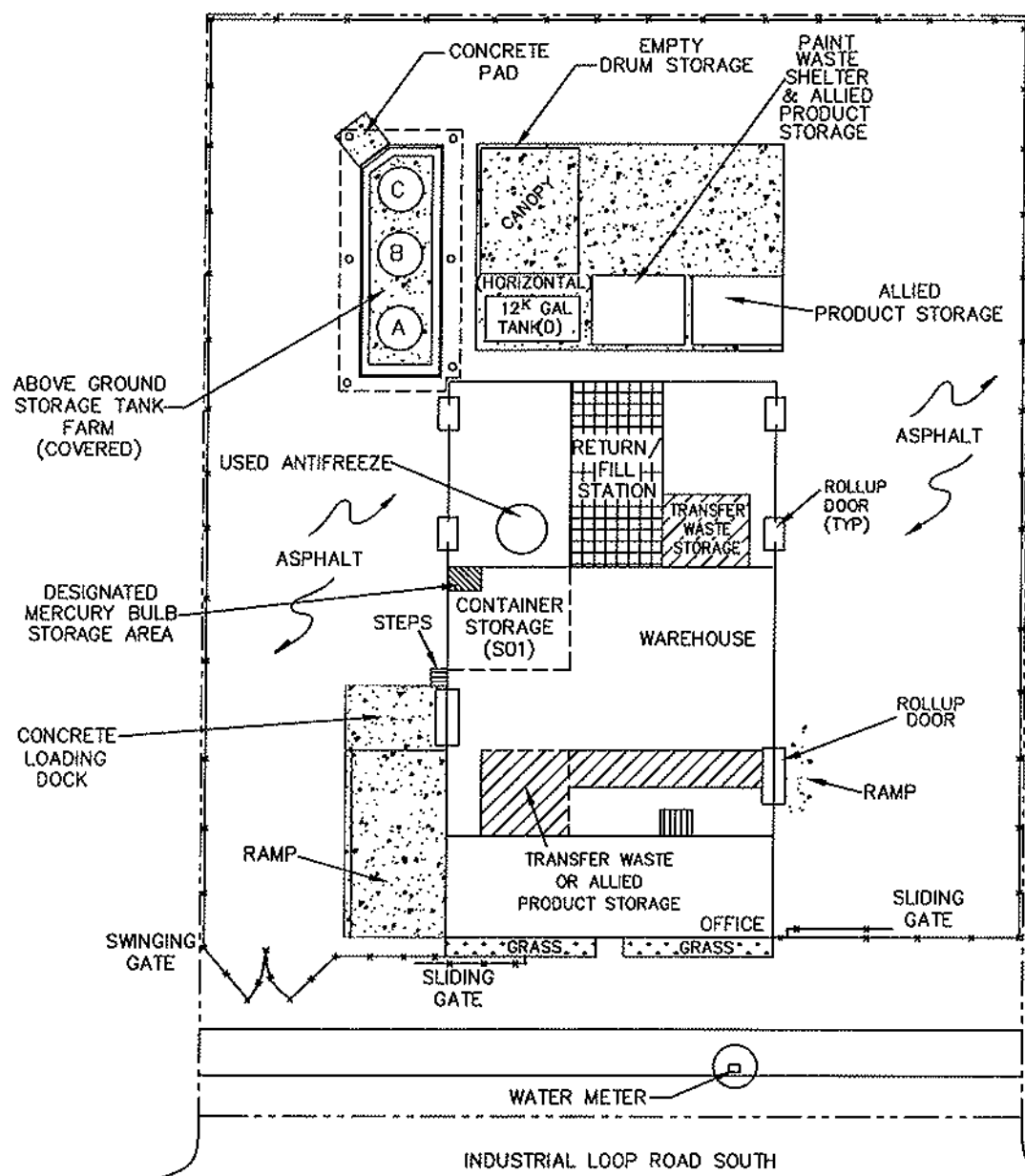
15. These containers have a design capacity greater than 0.46 m³, are in light material service and operate with no detectable organic emissions as defined in 40 CFR 265.1081. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every twelve months. [40 CFR 264.1088(b)(1)(iii) & (d)(1)(ii)]
16. These containers have a design capacity greater than 0.46 m³, are in light material service and that have been demonstrated within the preceding 12 months to be vapor tight using 40 CFR Part 60, Appendix A, Method 27. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every twelve months. [40 CFR 264.1088(b)(1)(ii) & (c)(1)(i)]
17. These containers have a design capacity greater than 0.1 m³ that are used for treatment of a hazardous waste by a waste stabilization process and are vented directly through a closed-vent system to a control device in accordance with 40 CFR 264.1086(e)(2)(ii). The closed-vent system and control devices shall be inspected and monitored as specified in 40 CFR 264.1087. [40 CFR 264.1088(b)(2) & (e)(1)(i)]
18. These containers have a design capacity greater than 0.1 m³ that are used for treatment of a hazardous waste by a waste stabilization process and are vented inside an enclosure which is exhausted through a closed-vent system to a control device in accordance with 40 CFR 264.1086(a)(2)(i) & (ii).). The closed-vent system and control devices shall be inspected and monitored as specified in 40 CFR 264.1087. [40 CFR 264.1088(b)(2) & (e)(1)(ii)]



WATER SCHEDULE

MARK	EQUIPMENT DESCRIPTION
12	2" BALL VALVE
13	2" BALL VALVE
14	2" BALL VALVE
15	WASTE MINERAL SPIRITS RECIRCULATION PUMP
16	1" BALL VALVE ON CATCH CAN
17	WASTE MINERAL SPIRITS RECIRCULATION PUMP
18	2" BALL VALVE
19	2" BALL VALVE

FIGURE 2.2-6
LOCATIONS OF HAZARDOUS WASTE STORAGE AREAS
SAFETY-KLEEN SYSTEMS, INC. FACILITY
ORANGE PARK, FLORIDA



LEGEND

----- PROPERTY BOUNDARY

--- FENCE

----- UTILITY EASEMENT

--- TRUCK TRAFFIC PATTERNS

CONCRETE

TANK CONTENTS

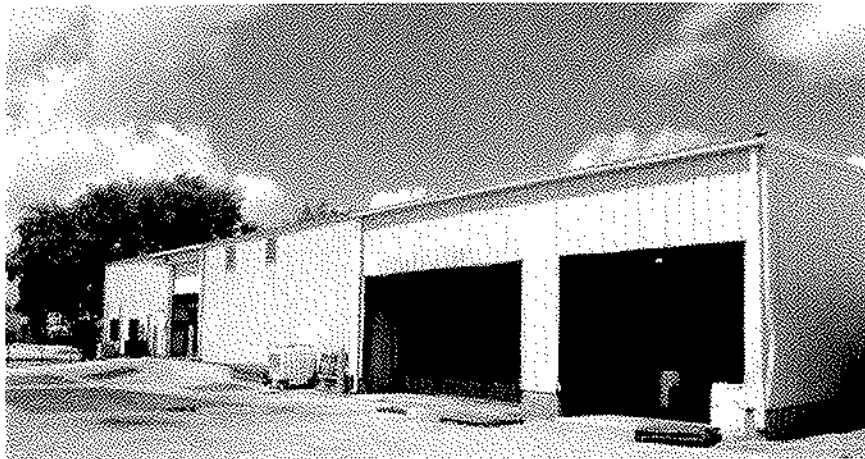
(A) USED OIL

(B) WASTE SOLVENT

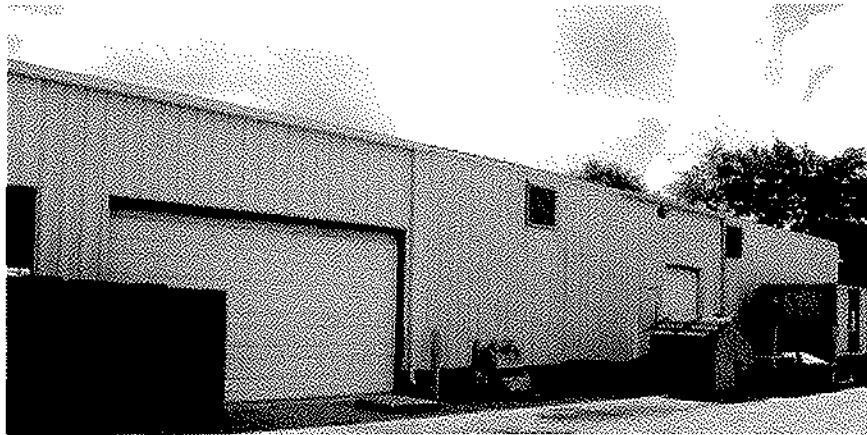
(C) USED OIL

(D) VIRGIN SOLVENT





Orange Park East Side 5-31-13



SK Orange Park West Side
5-31-13

RECEIVED
MAR 17 1995

MEMORANDUM

SUBJECT: Epoxy Coatings on Concrete Containment Systems

DEPOT/OFFICE: Breslau

TO: Dan Dowling

DATE: March 2, 1995
HAENGWORD95CRICRMEMS.DOC

FROM: Chris Riehl *CR*

cc: Peter Dwan
David Flahaut
Frank Wagner

Following continuous problems with the maintenance and high capital cost of epoxy coatings on the concrete containment areas in the branches, I began questioning the need to install these products.

I discussed this issue with the three regional environmental engineers and found the following. In Eastern Canada, only Québec has regulations regarding the requirements for containment areas. Québec Hazardous Waste regulations specify that containment systems have a permeability less than 1×10^{-7} cm/s. In Ontario (Central Region), there are no specific regulations regarding the specifications of containment systems. In Western Region, only B.C. has specific requirements for containment systems, which are the same as Québec. The regulation in B.C. (as attached), also states that the permeability of the containment system must be less than 1×10^{-7} cm/s. Therefore, there are no provincial regulations specifically requiring an epoxy coating system on the concrete containment. However, there are certain branches with permit conditions requiring the coatings.

Preliminary investigations with the Canadian Portland Cement Association (CPCA) revealed the average permeability of concrete is from 1×10^{-10} cm/s (see attached), or one thousand times less permeable than the quantified requirements of Québec and B.C. Following discussions with Peter Dwan, I decided to have laboratory tests done to document this for the files and provide proof for other facilities. The lab tests were done on three core samples taken from the Langley, B.C. branch, and the results are attached. The permeability of the samples ranged from 4.830×10^{-9} cm/s to 1.063×10^{-8} cm/s, falling within the range estimated by CPCA.

In an effort to reduce immediate capital costs and future maintenance cost, I am planning on using this documentation to aggressively fight any agency's requests for the epoxy coatings. I hope this information will also prove useful for the branches in the U.S.

CR/cd

The moisture content of thin concrete elements after drying in air with a relative humidity of 50% to 90% for several months is about 1% to 2% by weight of the concrete depending on the concrete's constituents, original water content, drying conditions, and the size of the concrete element (refer to Chapter 13 for more information).

Size and shape of a concrete member have an important bearing on the rate of drying. Concrete elements with large surface area in relation to volume (such as floor slabs) dry faster than large concrete volumes with relatively small surface areas (such as bridge piers).

Many other properties of hardened concrete also are affected by its moisture content; these include elasticity, creep, insulating value, fire resistance, abrasion resistance, electrical conductivity, and durability.

Strength

Compressive strength may be defined as the measured maximum resistance of a concrete or mortar specimen to axial loading. It is generally expressed in pounds per square inch (psi) at an age of 28 days and is designated by the symbol f'_c . To determine compressive strength, tests are made on specimens of mortar or concrete; in the United States, unless otherwise specified, compression tests of mortar are made on 2-in. cubes, while compression tests of concrete are made on cylinders 6 in. in diameter and 12 in. high (see Fig. 1-6).

Compressive strength of concrete is a primary physical property and one frequently used in design calculations for bridges, buildings, and other structures. Most general-use concrete has a compressive strength between 3000 psi and 5000 psi. High-strength concrete has a compressive strength of at least 6000 psi. Compressive strengths of 20,000 psi have been used in building applications.

In designing pavements and other slabs on ground, the flexural strength of concrete is generally used.

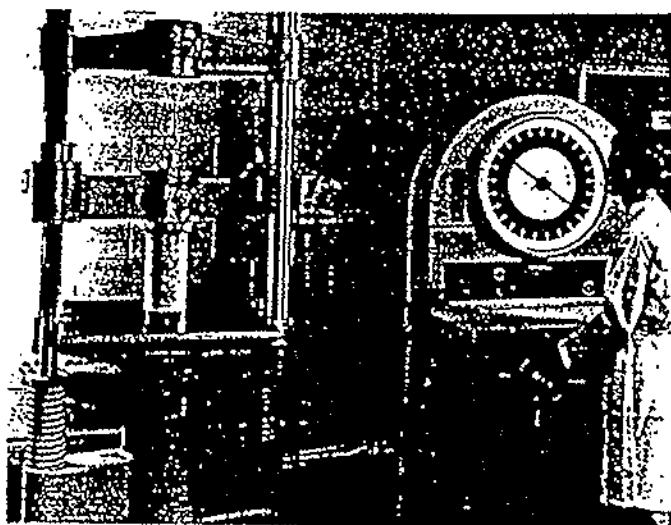


Fig. 1-6. Testing a 6x12-in. concrete cylinder in compression. The load on the test cylinder is registered on the scale.

Compressive strength can be used as an index of flexural strength, once the empirical relationship between them has been established for the materials and the size of the member involved. The flexural strength or modulus of rupture of normal-weight concrete is often approximated as 7.5 to 10 times the square root of the compressive strength.

The tensile strength of concrete is about 8% to 12% of the compressive strength and is often estimated as 5^* to 7.5 times the square root of the compressive strength.**

The torsional strength for concrete is related to the modulus of rupture and the dimensions of the concrete element.†

The shear strength of concrete can vary from 35% to 80% of the compressive strength. The correlation between compressive strength and flexural, tensile, torsional, and shear strength varies with concrete ingredients and environment.

Modulus of elasticity, denoted by the symbol E , may be defined as the ratio of normal stress to corresponding strain for tensile or compressive stresses below the proportional limit of a material. For normal-weight concrete, E ranges from 2 to 6 million psi and can be approximated as 57,000 times the square root of the compressive strength.††

The principal factors affecting strength are water-cement ratio and age, or the extent to which hydration has progressed. Fig. 1-7 shows compressive strengths for a range of water-cement ratios at different ages. Tests were made on 6-in.-diameter cylinders that were 12 in. in height. Note that strengths increase with age and increase as the water-cement ratios decrease. These factors also affect flexural and tensile strengths and bond of concrete to steel.

The age-compressive strength relationships in Fig. 1-7 are for typical air-entrained and non-air-entrained concretes. When more precise values for concrete are required, curves should be developed for the specific materials and mix proportions to be used on the job.

For a given workability and a given amount of cement, air-entrained concrete requires less mixing water than non-air-entrained concrete. The lower water-cement ratio possible for air-entrained concrete tends to offset the somewhat lower strengths of air-entrained concrete, particularly in lean-to-medium cement content mixes.

Unit Weight

Conventional concrete, normally used in pavements, buildings, and other structures, has a unit weight in the range of 140 to 150 lb per cubic foot (pcf). The unit weight (density) of concrete varies, depending on the amount and relative density of the aggregate, the amount of air that is entrapped or purposely entrained, and the water and cement contents, which in turn are

*Reference 1-11.

**ACI 207.2R estimates tensile strength as $6.7\sqrt{f'_c}$.

†Torsional strength correlations are presented in Reference 1-11.

††See Section 8.5 of ACI 318.

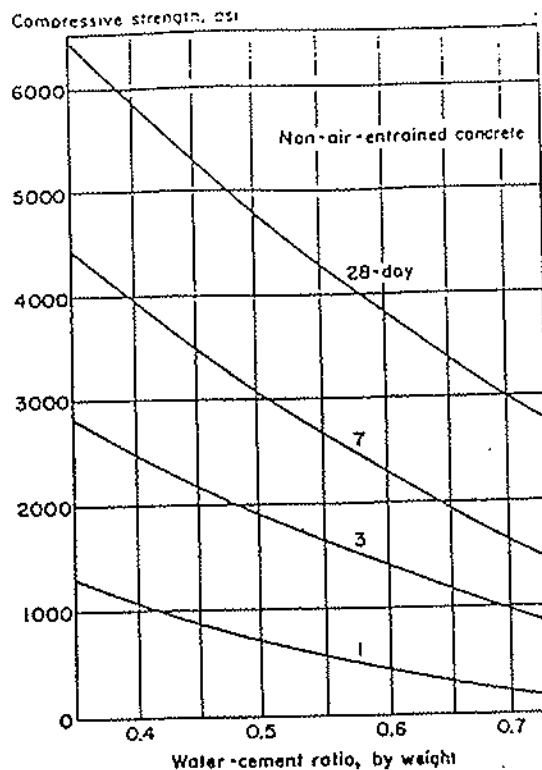
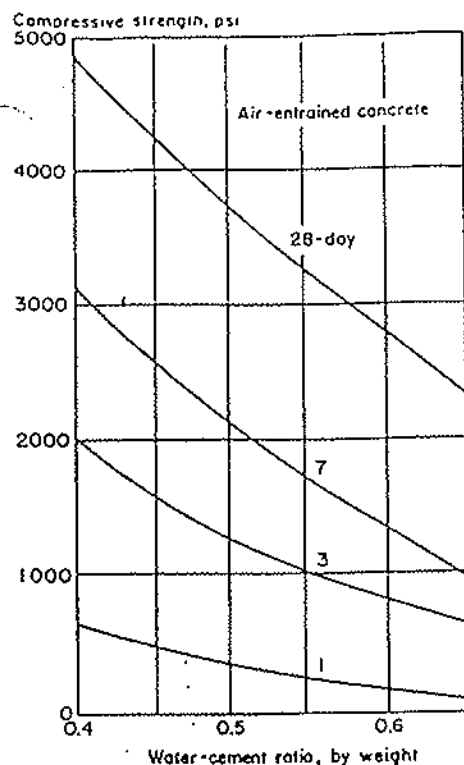


Fig. 1-7. Typical age-strength relationships of concrete based on compression tests of 6x12-in. cylinders, using Type I portland cement and moist-curing at 70°F.

influenced by the maximum-size aggregate. Values of the unit weight of fresh concrete are given in Table 1-1. In the design of reinforced concrete structures, the combination of conventional concrete and reinforcing bars is commonly assumed to weigh 150 pcf.

The weight of dry concrete equals the weight of freshly mixed concrete less the weight of evaporable water. Some of the mix water combines chemically with the cement during the hydration process, converting the cement into cement gel. Also, some of the water remains tightly held in pores and capillaries and does not evaporate under normal conditions. The amount of water that will evaporate in air at 50% relative humidity is about 2% to 3% of the concrete weight, depending on initial water content of the concrete, absorption characteristics of the aggregates, and size of the structure.

Aside from conventional concrete, there is a wide spectrum of other concretes to meet various needs,

ranging from lightweight insulating concretes with a unit weight of 15 pcf to heavyweight concrete with a unit weight of up to about 400 pcf used for counterweights or radiation shielding (see Chapter 15, "Special Types of Concrete").

Resistance to Freezing and Thawing

Concrete used in structures and pavements is expected to have long life and low maintenance. It must have good durability to resist anticipated exposure conditions. The most destructive weathering factor is freezing and thawing while the concrete is wet, particularly in the presence of deicing chemicals. Deterioration is caused by the freezing of the water in the paste, the aggregate particles, or both.

With air entrainment, concrete is highly resistant to this deterioration as shown in Fig. 1-8. During freezing,

Table 1-1. Observed Average Weight of Fresh Concrete*

Maximum size of aggregate, inches	Air content, percent	Water, pounds per cubic yard	Cement, pounds per cubic yard	Unit weight, pounds per cubic foot**				
				Specific gravity of aggregate†				
				2.55	2.60	2.65	2.70	2.75
¾	6.0	283	566	137	139	141	143	145
1½	4.5	245	490	141	143	146	148	150
3	3.5	204	408	144	147	149	152	154
6	3.0	164	282	147	149	152	154	157

*Source: Reference 1-15, Table 4.

**Air-entrained concrete with indicated air content.

†On saturated surface-dry basis.

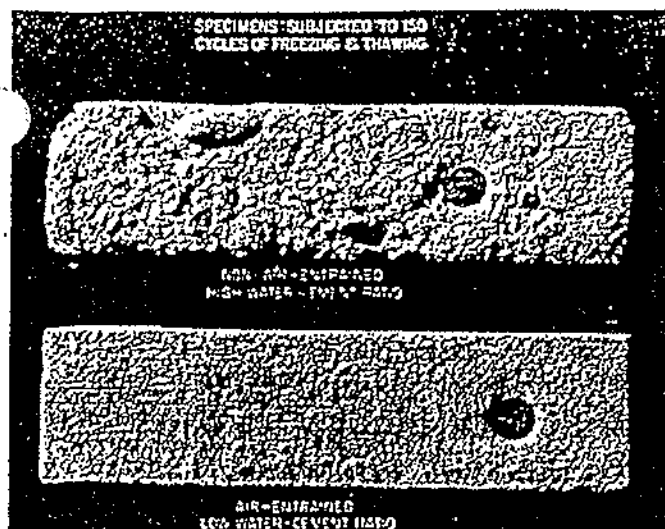


Fig. 1-8. Air-entrained concrete is highly resistant to repeated freeze-thaw cycles.

the water displaced by ice formation in the paste is accommodated so that it is not disruptive; the air bubbles in the paste provide chambers for the water to enter and thus relieve the hydraulic pressure generated.

When freezing occurs in concrete containing saturated aggregate, disruptive hydraulic pressures can also be generated within the aggregate. Water displaced from the aggregate particles during the formation of ice cannot escape fast enough to the surrounding paste to relieve pressure. However, under nearly all exposure conditions, a paste of good quality (low water-cement ratio) will prevent most aggregate particles from becoming saturated. Also, if the paste is air-entrained, it will accommodate the small amounts of excess water that may be expelled from aggregates, thus protecting the concrete from freeze-thaw damage.

Fig. 1-9 illustrates, for a range of water-cement ratios, that (1) air-entrained concrete is much more resistant to freeze-thaw cycles than non-air-entrained concrete, (2) concrete with a low water-cement ratio is more durable than concrete with a high water-cement ratio, and (3) a drying period prior to freeze-thaw exposure substantially benefits the freeze-thaw resistance of air-entrained concrete but does not significantly benefit non-air-entrained concrete.* Air-entrained concrete with a low water-cement ratio and an air content of 4% to 8% will withstand a great number of cycles of freezing and thawing without distress.

Freeze-thaw durability can be determined by laboratory test procedure ASTM C 666, Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing. From the test, a durability factor is calculated that reflects the number of cycles of freezing and thawing required to produce a certain amount of deterioration. Deicer-scaling resistance can be determined by ASTM C 672, Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals.

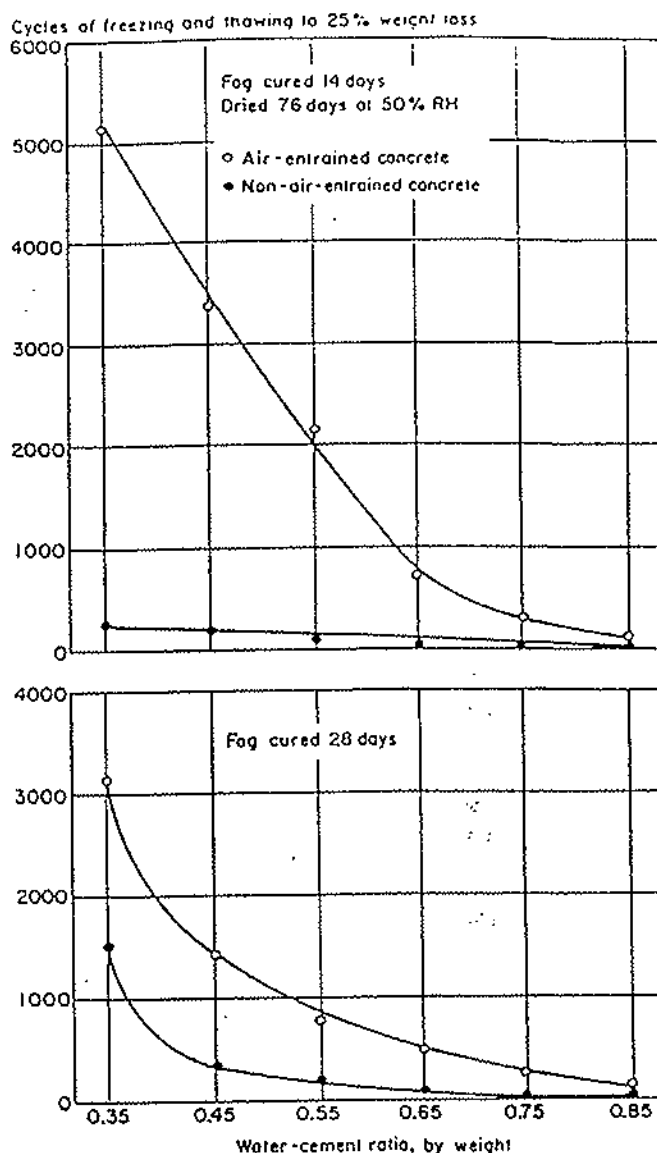


Fig. 1-9. Relationship between freeze-thaw resistance, water-cement ratio, and drying for air-entrained and non-air-entrained concretes made with Type I cement. High resistance to freezing and thawing is associated with entrained air, low water-cement ratio, and a drying period prior to freeze-thaw exposure. Reference 1-5.

Permeability and Watertightness

Concrete used in water-retaining structures or exposed to weather or other severe exposure conditions must be virtually impermeable or watertight. Watertightness is often referred to as the ability of concrete to hold back or retain water without visible leakage. Permeability refers to the amount of water migration through concrete when the water is under pressure or to the ability of concrete to resist penetration of water or other substances (liquid, gas, ions, etc.). Generally,

*See References 1-5 and 1-6.

the same properties of concrete that make concrete less permeable also make it more watertight.

The overall permeability of concrete to water is a function of the permeability of the paste, the permeability and gradation of the aggregate, and the relative proportion of paste to aggregate. Decreased permeability improves concrete's resistance to resaturation, sulfate and other chemical attack, and chloride-ion penetration.

Permeability also affects the destructiveness of saturated freezing. Here the permeability of the paste is of particular importance because the paste envelops all constituents in the concrete. Paste permeability is related to water-cement ratio and the degree of cement hydration or length of moist curing. A low-permeability concrete requires a low water-cement ratio and an adequate moist-curing period. Air entrainment aids watertightness but has little effect on permeability. Permeability increases with drying.*

The permeability of mature hardened paste kept continuously moist ranges from 0.1×10^{-12} to 120×10^{-12} cm per sec. for water-cement ratios ranging from 0.3 to 0.7.* The permeability of rock commonly used as concrete aggregate varies from approximately 1.7×10^{-9} to 3.5×10^{-13} cm per sec. The permeability of mature, good-quality concrete is approximately 1×10^{-10} cm per sec.

The relationship between permeability, water-cement ratio, and initial curing for 4x8-in. cylindrical concrete specimens tested after 90 days of air drying and subjected to 3000 psi of water pressure is illustrated in Fig. 1-10. The test apparatus is shown in Fig. 1-11.

Although permeability values would be different for other liquids and gases, the relationship between water-cement ratio, curing period, and permeability would be similar.

Test results obtained by subjecting 1-in.-thick non-air-entrained mortar disks to 20-psi water pressure are given in Fig. 1-12. In these tests, there was no water leakage through mortar disks that had a water-cement

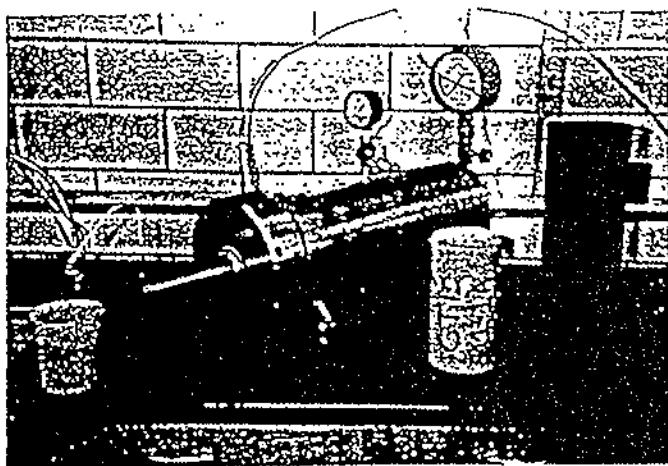


Fig. 1-11. Hydraulic permeability test apparatus used to obtain data illustrated in Fig. 1-10.

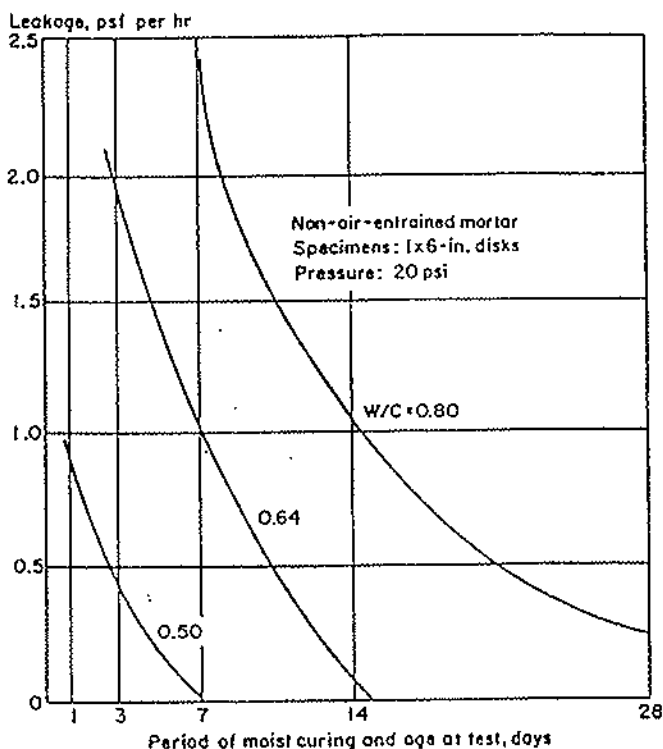


Fig. 1-12. Effect of water-cement ratio (w/c) and curing duration on permeability of mortar. Note that leakage is reduced as the water-cement ratio is decreased and the curing period increased. Reference 1-1 and PCA Major Series 227.

ratio of 0.50 by weight or less and were moist-cured for seven days. Where leakage occurred, it was greater in mortar disks made with high water-cement ratios. Also, for each water-cement ratio, leakage was less as the length of the moist-curing period increased. In disks with a water-cement ratio of 0.80, the mortar still

*Reference 1-4.

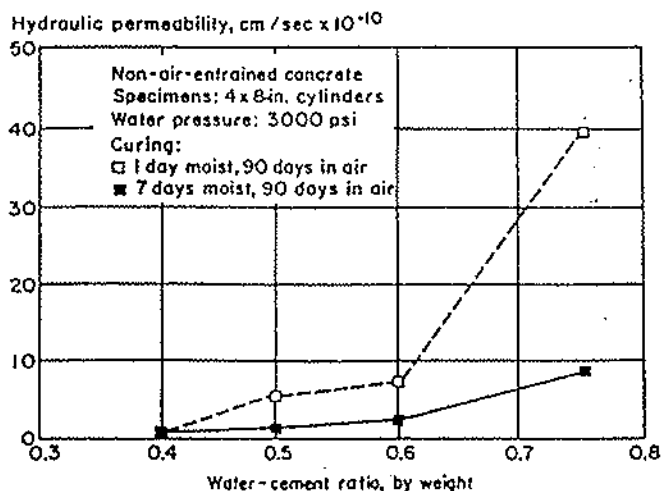


Fig. 1-10. Relationship between hydraulic (water) permeability, water-cement ratio, and initial curing on concrete specimens. Reference PCA HM1170.

permitted leakage after being moist-cured for one month. These results clearly show that a low water-cement ratio and a period of moist curing significantly reduce permeability.

A low water-cement ratio also reduces segregation and bleeding, further contributing to watertightness. To be watertight, concrete must also be free from cracks and honeycomb.

Occasionally, porous concrete—no-fines concrete that readily allows water to flow through—is designed for special applications. In these concretes, the fine aggregate is greatly reduced or completely removed producing a high volume of air voids. Porous concrete has been used in tennis courts, pavements, parking lots, greenhouses, and drainage structures. No-fines concrete has also been used in buildings because of its thermal insulation properties. Additional information on porous concrete is given in Chapter 15, "Special Types of Concrete."

Abrasion Resistance

Floors, pavements, and hydraulic structures are subjected to abrasion; therefore, in these applications concrete must have a high abrasion resistance. Test results indicate that abrasion resistance is closely related to the compressive strength of concrete. Strong concrete has more resistance to abrasion than does weak concrete. Since compressive strength depends on water-cement ratio and curing, a low water-cement ratio and adequate curing are necessary for abrasion resistance. The type of aggregate and surface finish or treatment used also have a strong influence on abrasion resistance. Hard aggregate is more abrasion resistant than soft aggregate and a steel-troweled surface resists abrasion more than a surface that is not troweled.

Fig. 1-13 shows results of abrasion tests on concretes of different compressive strengths and aggregate types.

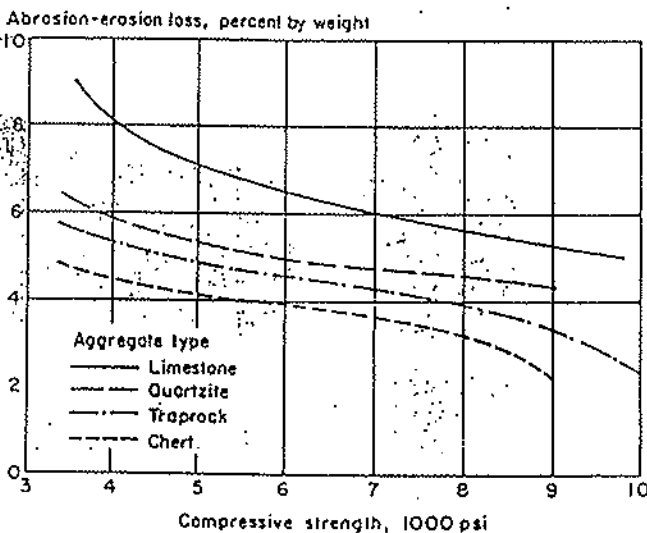


Fig. 1-13. Effect of compressive strength and aggregate type on the abrasion resistance of concrete. High-strength concrete made with a hard aggregate is highly resistant to abrasion. Reference 1-16.

Fig. 1-14 illustrates the effect hard steel troweling and surface treatments have on abrasion resistance. Abrasion tests can be conducted by rotating steel balls, dressing wheels, or disks under pressure over the surface (ASTM C 779). One type of test apparatus is pictured in Fig. 1-15. Other types of abrasion tests are also available (ASTM C 418 and C 944).

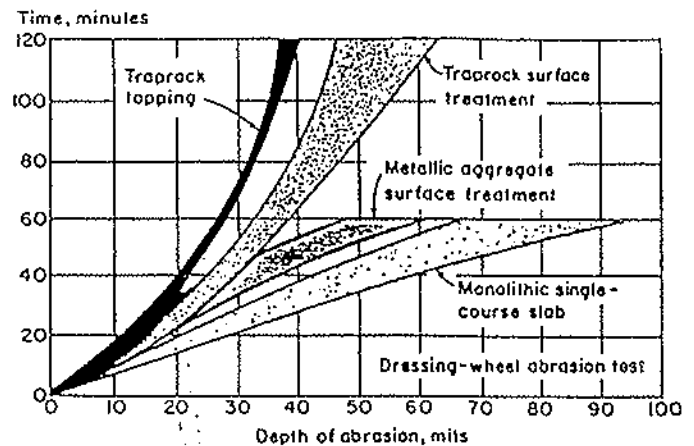


Fig. 1-14. Effect of hard steel troweling and surface treatments on the abrasion resistance of concrete. Base slab compressive strength was 6000 psi at 28 days. All slabs were steel troweled. Reference 1-12.

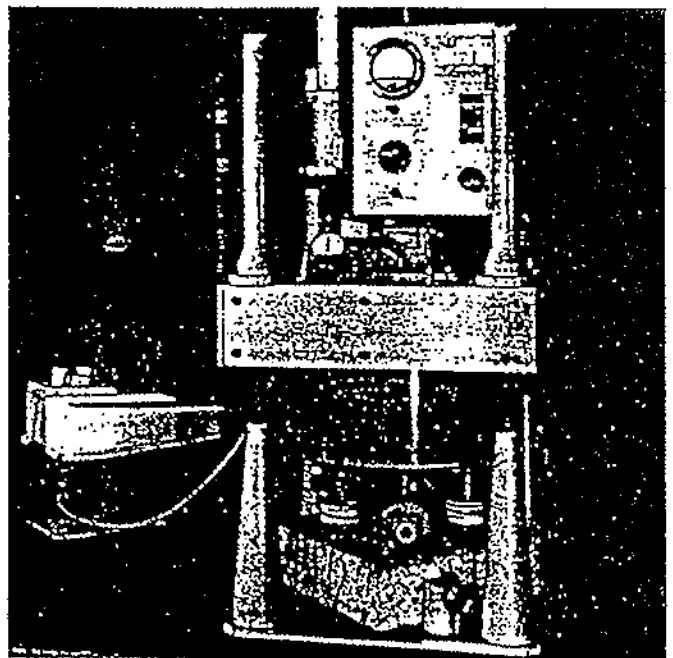


Fig. 1-15. Test apparatus for measuring abrasion resistance of concrete. The machine can be adjusted to use either revolving disks or dressing wheels. With a different machine, steel balls under pressure are rolled over the surface of the specimen. The tests are described in ASTM C 779, Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.

Volume Stability

Hardened concrete changes volume slightly due to changes in temperature, moisture, and stress. These volume or length changes may range from about 0.01% to 0.08%. Thermal volume changes of hardened concrete are about the same as those for steel.

Concrete kept continually moist will expand slightly. When permitted to dry, concrete will shrink. The primary factor influencing the amount of drying shrinkage is the water content of the freshly mixed concrete. Drying shrinkage increases directly with increases in this water content. The amount of shrinkage also depends upon several other factors, such as amounts of aggregate used, properties of the aggregate, size and shape of the concrete mass, relative humidity and temperature of the environment, method of curing, degree of hydration, and time. Cement content has little to no effect on shrinkage of concrete with cement contents between 5 and 8 bags per cu yd.

Concrete under stress will deform elastically. Sustained stress will result in additional deformation called creep. The rate of creep (deformation per unit of time) decreases with time.

The magnitude of volume changes and factors influencing them are discussed in Chapter 13, "Volume Changes of Concrete."

Control of Cracking

Two basic causes of cracks in concrete are (1) stress due to applied loads and (2) stress due to drying shrinkage or temperature changes in restrained conditions.

Drying shrinkage is an inherent, unavoidable property of concrete; therefore, properly positioned reinforcing steel is used to reduce crack widths, or joints (Fig. 1-16) are used to predetermine and control the location of cracks. Thermal stress due to fluctuations in temperature can cause cracking, particularly at an early age.

Concrete shrinkage cracks occur because of restraint. When shrinkage occurs and there is no restraint, the concrete does not crack. Restraint comes from several sources. Drying shrinkage is always greater near the surface of concrete; the moist inner portions restrain the concrete near the surface, which can cause cracking. Other sources of restraint are reinforcing steel embedded in concrete, the interconnected parts of a concrete structure, and the friction of the subgrade on which concrete is placed.

Joints are the most effective method of controlling unsightly cracking. If a sizable expanse of concrete (a wall, slab, or pavement) is not provided with properly spaced joints to accommodate drying shrinkage and temperature contraction, the concrete will crack in a random manner.*

Control joints are grooved, formed, or sawed into sidewalks, driveways, pavements, floors, and walls so that cracking will occur in these joints rather than in a

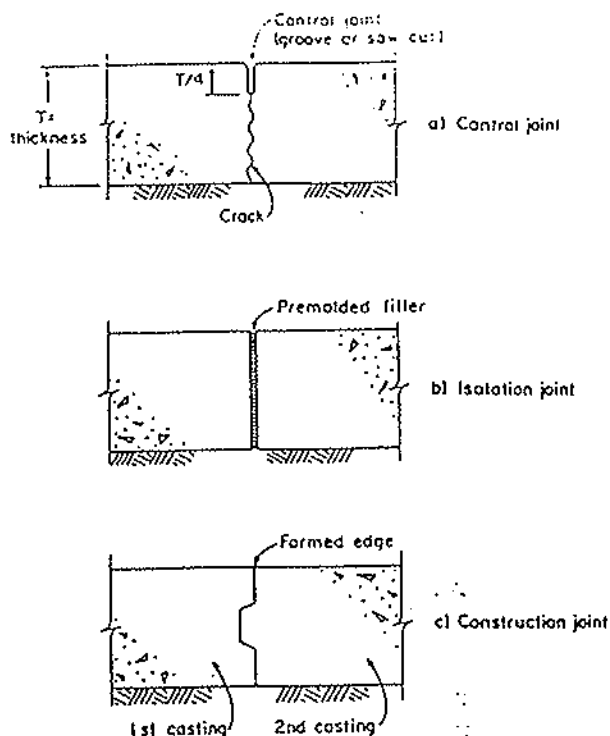


Fig. 1-16. The three basic types of joints used in concrete slab-on-ground construction.

random manner. Control joints permit movement in the plane of a slab or wall. They extend to a depth of approximately one-quarter the concrete thickness.

Isolation joints separate a slab from other parts of a structure and permit horizontal and vertical movements of the slab. They are placed at the junction of floors with walls, columns, footings, and other points where restraint can occur. They extend the full depth of the slab and include a premolded joint filler.

Construction joints occur where concrete work is concluded for the day; they separate areas of concrete placed at different times. In slabs-on-ground, construction joints usually align with and function as control or isolation joints.

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*Refer to Chapter 9 for more information.

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Caution: Avoid prolonged contact between unhardened (wet) cement or concrete mixtures and skin surfaces. To prevent such contact, it is advisable to wear protective clothing. Skin areas that have been exposed to wet cement or concrete, either directly or through saturated clothing, should be thoroughly washed with water.

PORTLAND CEMENT  ASSOCIATION

An organization of cement manufacturers to improve and extend the uses of portland cement and concrete through market development, engineering, research, education, and public affairs work.

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Reprinted from *Design and Control of Concrete Mixtures* (EB001.13T), Chapter 1.

Fundamentals of Concrete

Concrete is basically a mixture of two components: aggregates and paste. The paste, comprised of portland cement and water, binds the aggregates (sand and gravel or crushed stone) into a rocklike mass as the paste hardens because of the chemical reaction of the cement and water.*

Aggregates are generally divided into two groups: fine and coarse. Fine aggregates consist of natural or manufactured sand with particle sizes ranging up to $\frac{3}{8}$ in.; coarse aggregates are those with particles retained on the No. 16 sieve and ranging up to 6 in. The most commonly used maximum aggregate size is $\frac{3}{4}$ in. or 1 in.

The paste is composed of portland cement, water, and entrapped air or purposely entrained air. Cement paste ordinarily constitutes about 25% to 40% of the total volume of concrete. Fig. 1-1 shows that the absolute volume of cement is usually between 7% and 15% and the water between 14% and 21%. Air content in air-entrained concrete ranges up to about 8% of the volume of the concrete, depending on the top size of the coarse aggregate.

Since aggregates make up about 60% to 75% of the total volume of concrete, their selection is important. Aggregates should consist of particles with adequate strength and resistance to exposure conditions and should not contain materials that will cause deterioration of the concrete. A continuous gradation of particle sizes is desirable for efficient use of the cement and water paste. Throughout this text, it will be assumed that suitable aggregates are being used, except where otherwise noted.

The quality of the concrete depends to a great extent upon the quality of the paste. In properly made concrete, each particle of aggregate is completely coated with paste and all of the spaces between aggregate particles are completely filled with paste, as illustrated in Fig. 1-2.

For any particular set of materials and conditions of curing, the quality of hardened concrete is determined

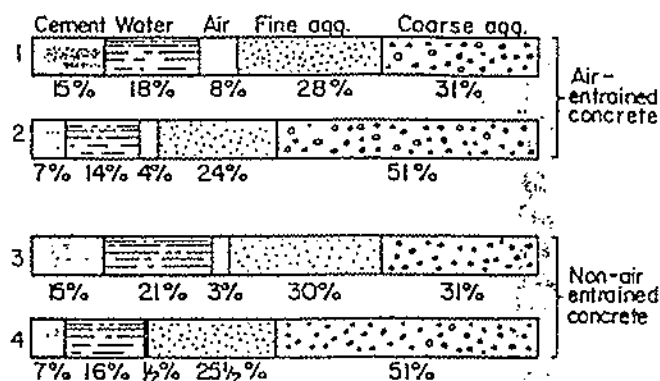


Fig. 1-1. Range in proportions of materials used in concrete, by absolute volume. Bars 1 and 3 represent rich mixes with small aggregates. Bars 2 and 4 represent lean mixes with large aggregates.

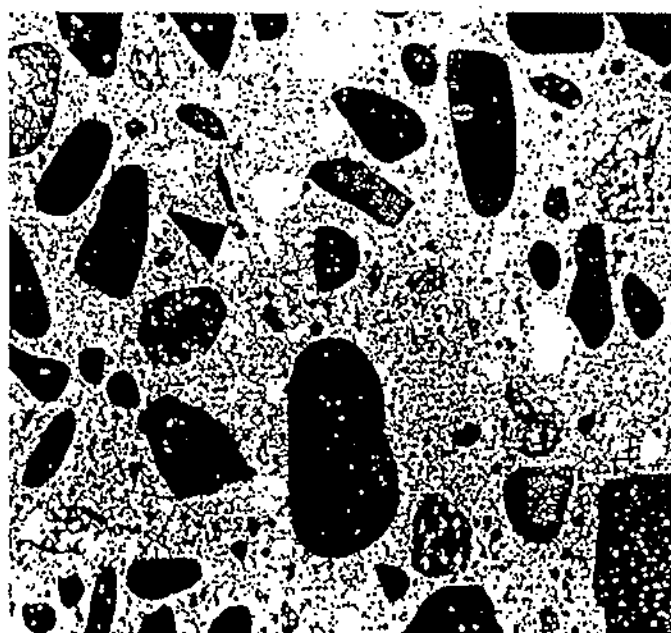


Fig. 1-2. Cross section of hardened concrete. Cement-and-water paste completely coats each aggregate particle and fills all spaces between particles.

*This text addresses the utilization of portland cement in the production of concrete. The term "portland cement" pertains to a calcareous hydraulic cement produced by heating the oxides of silicon, calcium, aluminum, and iron. The term "cement" used throughout the text pertains to portland cement unless otherwise stated.

by the amount of water used in relation to the amount of cement. Following are some advantages of reducing water content:

- Increased compressive and flexural strength
- Lower permeability, thus increased watertightness and lower absorption
- Increased resistance to weathering
- Better bond between successive layers and between concrete and reinforcement
- Less volume change from wetting and drying
- Reduced shrinkage cracking tendencies

The less water used, the better the quality of the concrete—provided it can be consolidated properly. Smaller amounts of mixing water result in stiffer mixtures; but with vibration, the stiffer mixtures can be used. For a given quality of concrete, stiffer mixtures are more economical. Thus consolidation by vibration permits improvement in the quality of concrete and in economy.

The freshly mixed (plastic) and hardened properties of concrete may be changed by adding admixtures to the concrete, usually in liquid form, during batching. Admixtures are commonly used to (1) adjust setting time or hardening, (2) reduce water demand, (3) increase workability, (4) intentionally entrain air, and (5) adjust other concrete properties. Admixtures are discussed in Chapter 6.

After completion of proper proportioning, batching, mixing, placing, consolidating, finishing, and curing, hardened concrete becomes a strong, noncombustible, durable, abrasion-resistant, and practically impermeable building material that requires little or no maintenance. Concrete is also an excellent building material because it can be formed into a wide variety of shapes, colors, and textures for use in almost unlimited number of applications.

FRESHLY MIXED CONCRETE

Freshly mixed concrete should be plastic or semifluid and generally capable of being molded by hand. A very wet concrete mixture can be molded in the sense that it can be cast in a mold, but this is not within the definition of "plastic"—that which is pliable and capable of being molded or shaped like a lump of modeling clay.

In a plastic concrete mixture all grains of sand and pieces of gravel or stone are encased and held in suspension. The ingredients are not apt to segregate during transport; and when the concrete hardens, it becomes a homogeneous mixture of all the components. Concrete of plastic consistency does not crumble but flows sluggishly without segregation.

Slump is used as a measure of the consistency of concrete. A low-slump concrete has a stiff consistency.

In construction practice, thin concrete members and heavily reinforced concrete members require workable, but never soupy, mixes for ease of placement. A plastic mixture is required for strength and for maintaining homogeneity during handling and placement.

While a plastic mixture is suitable for most concrete work, superplasticizing admixtures may be used to make concrete more flowable in thin or heavily reinforced concrete members.

Mixing

In Fig. 1-1, the five basic components of concrete are shown separately. To ensure that they are combined into a homogeneous mix requires effort and care. The sequence of charging ingredients into the mixer plays an important part in the uniformity of the finished product. The sequence, however, can be varied and still produce a quality concrete. Different sequences require adjustments in the time of water addition, the total number of revolutions of the mixer drum, and the speed of revolution. Other important factors in mixing are the size of the batch in relation to the size of the mixer drum, the elapsed time between batching and mixing, and the design, configuration, and condition of the mixer drum and blades. Approved mixers, correctly operated and maintained, ensure an end-to-end exchange of materials by a rolling, folding, and kneading action of the batch over itself as the concrete is mixed.

Workability

The ease of placing, consolidating, and finishing freshly mixed concrete is called workability. Concrete should be workable but should not segregate or bleed excessively. Bleeding is the migration of water to the top surface of freshly placed concrete caused by the settlement of the solid materials—cement, sand, and stone—within the mass. Settlement is a consequence of the combined effect of vibration and gravity.

Excessive bleeding increases the water-cement ratio near the top surface and a weak top layer with poor durability may result, particularly if finishing operations take place while bleed water is present. Because of the tendency of freshly mixed concrete to segregate and bleed, it is important to transport and place each load as close as possible to its final position. Entrained air improves workability and reduces the tendency of freshly mixed concrete to segregate and bleed.

Consolidation

Vibration sets into motion the particles in freshly mixed concrete, reducing friction between them and giving the mixture the mobile qualities of a thick fluid. The vibratory action permits use of a stiffer mixture containing a larger proportion of coarse and a smaller proportion of fine aggregate. The larger the maximum-size aggregate in concrete with a well-graded aggregate, the less volume there is to fill with paste and the less aggregate surface area there is to coat with paste; thus less water and cement are needed. With adequate consolidation, harsher as well as stiffer mixtures can be used, resulting in improved quality and economy.

If a concrete mixture is workable enough to be readily consolidated by hand rodding, there may not be an

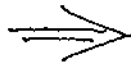
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WASTE MANAGEMENT ACT
SPECIAL WASTE

(c) flammable solids, substances liable to spontaneous combustion or substances that on contact with water emit flammable gases as defined and regulated in Divisions 1, 2 and 3 of Class 4

of the Federal Regulations;



"impervious" means having a permeability not greater than 1×10^{-7} cm per second when subjected to a head of 0.305 m of water;

"incinerator" means a thermal treatment facility using controlled flame combustion;

"incompatible special waste" means a special waste which, when in contact with another special waste or substance and under normal conditions of storage or transportation, may react to produce

- (a) heat,
- (b) a gas,
- (c) a corrosive substance, or
- (d) a toxic substance;

"indoor" means enclosed and protected from precipitation and wind as in a building but does not include a shipping container used for passive storage;

"in situ management facility" means a facility used to

- (a) prevent or control the movement or release of special waste contaminants, or
- (b) treat or destroy special waste contaminants in soil or groundwater

at an historical special waste contaminated site in such a way that the physical location of the special waste contaminants and the soil is not substantially altered.

"labpack" means an outer packaging as defined by the Federal Regulations which has a maximum capacity of 454 l and which is used to transport multiple small inside containers of special waste;

"land treatment" means the treatment of special waste by applying it to land;

"leachate" means any liquid, including suspended materials which it contains, which has percolated through or drained from a special waste facility;

"leachable toxic waste" means waste which when subjected to the Leachate Extraction Procedure described in Part 1 of Schedule 4 produces an extract with a contaminant concentration greater than those prescribed in Table 1 of Schedule 4;

"liner" means a continuous layer of synthetic or natural clay or earth materials, placed beneath and at the sides of a secure landfill, a

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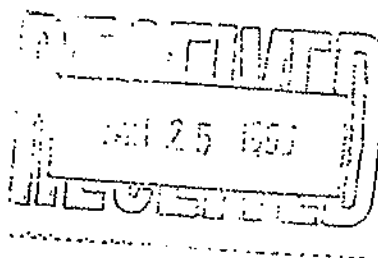
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January 23, 1995

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Attention : Mr. Chris Riehl

Re : **Hydraulic Conductivity Study**
Our File: 94RE1256

Dear Chris,

Enclosed please find a copy of our report entitled *Hydraulic Conductivity Study* that you requested. Also enclosed is our Invoice #67763 for the amount of \$1,363.59.

If you have any questions regarding this study, please do not hesitate to contact us at (403) 299-2000.

Sincerely yours,

AGAT Laboratories

M. Pankalla

Marianna Pankalla, M.Sc.
Reservoir Analyst
Reservoir Engineering Division

299-2105

Graham McLeod

Graham McLeod, P.Geol., B.Sc.
Manager, Special Core
Reservoir Engineering Division



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<input type="checkbox"/> Preventive Maintenance	<input type="checkbox"/> International	<input type="checkbox"/> Other

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HYDRAULIC CONDUCTIVITY STUDY

Prepared for:

SAFETY - KLEEN

Prepared by:

AGAT Laboratories
3801 - 21st Street N.E.
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SUMMARY

For the current study, three (2.5 cm in diameter) cement samples from the West Wall location were subjected to hydraulic conductivity testing.

Prior to testing, samples' petrophysical properties (gas permeability, Boyle's Law porosity and grain density) were determined. The samples were then pressure-saturated with Deionized Water. Each saturated sample was placed in a coreholder and a nominal pressure was applied to the samples to prevent fluid bypass during testing. A hydraulic head of approximately 2.989 kPa (equivalent of 0.305 m of water) was applied to the samples to determine their permeability. The water permeability was calculated from the measured flowrate and hydraulic head applied to the sample. The permeability was then converted to a hydraulic conductivity using a multiplication factor of 9.66×10^{-7} cm/s/md.

The hydraulic conductivities of the samples were found to range from 4.830×10^{-9} cm/s to 1.063×10^{-8} cm/s (refer to Table 1).

SAFETY - KLEEN

FILE 94RE1245

3 Cement Samples - Hydraulic Conductivity Testing

**TABLE 1
SAMPLE SUMMARY**

Sample #	Length (cm)	Diameter (cm)	Porosity (%)	Grain Dens (kg/m ³)	Gas Perm. (md)	Water Perm. (md)	Hydraulic Conductivity (cm/s)
1	4.673	2.515	22.06	2.584	0.838	0.011	1.06E-08
2	4.936	2.513	16.98	2.596	0.684	0.007	6.80E-09
3	4.711	2.518	13.88	2.712	0.610	0.005	4.83E-09

AGAT Laboratories would like to acknowledge the following employees for their contributions to this report:

Marianna Pankalla, M.Sc.
Reservoir Analyst, Reservoir Engineering Division

Graham McLeod, P.Geol., B.Sc.
Manager, Reservoir Engineering Division

and all Laboratory Technologists

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Report Prepared by : *M. Pankalla*
Marianna Pankalla, M.Sc.