Ohio Department of Commerce George V. Voinovich, Governor

Division of State Fire Marshal • Bureau of Underground Storage Tank Regulations Nancy S. Chiles, Director
9221 Ravenna Road, Suite D7-D8 • Twinsburg, OH 44087 • (216) 425-9848

April 9, 1992

Sue McCauslin
Ravenna Arsenal, Inc.
8451 State Route 5
Ravenna, OH 44266-9297

RE: Ravenna Army Ammunition Plant
tank RV11 (15,000 gallon diesel fuel UST)
Railroad Yard
South Service Road
8451 State Route 5
Ravenna, OH 44266-9297
Portage County
Incident #679298-02

Dear Ms. McCauslin:

The State Fire Marshal, Bureau of Underground Storage Tank Regulations, (SFM, BUSTR) has received all required information regarding corrective actions of an underground storage tank (UST) release at the aforementioned location. Upon review of the analytical results and required reports, at this time BUSTR is not requiring further corrective actions of any contamination resulting from petroleum UST activity at the facility.

Due to information potentially not discovered or revealed, nothing in this letter should be interpreted as a guarantee or warrantee that no problems exist at the aforementioned location. In addition, this letter does not release the responsible party from future responsibility and liability under sections 3737.88 through 3737.89 of the Ohio Revised Code and other state laws and regulations or under the Federal Clean Water Act, Resource Conservation and Recovery Act, or Comprehensive Environmental Response, Compensation, and Liability Act for remedying conditions resulting from any release of contaminants to the environment.

If you have any questions about this determination, you can write to us at 9221 Ravenna Road, Suite D7, Twinsburg, Ohio 44087-2443, or telephone us at (216) 425-9848.

Sincerely,

Michelle Tarka

Michelle Tarka
Site Coordinator

MT/sk

cc: File #679298-02
Virginia Black, Ravenna Health Department

Sue M./Chanda
File

Ravenna Arsenal, Inc.
FWD FOR
☐ Information
☐ Compliance as applicable
☐ Reply NLT

Ohio Department of Commerce

George V. Voinovich, Governor

Division of State Fire Marshal • Bureau of Underground Storage Tank Regulations
9221 Ravenna Road, Suite D7-D8 • Twinsburg, OH 44087 • (216) 425-9848

Nancy S. Chiles, Director

April 9, 1992

Sue McCauslin
Ravenna Arsenal, Inc.
8451 State Route 5
Ravenna, OH 44266-9297

RE: Ravenna Army Ammunition Plant
tank RV23 (Building 1045)
8451 State Route 5
Ravenna, OH 44266-9297
Portage County
Incident #679298-11

Dear Ms. McCauslin:

The State Fire Marshal, Bureau of Underground Storage Tank Regulations, (SFM, BUSTR) has received all required information regarding corrective actions of an underground storage tank (UST) release at the aforementioned location. Upon review of the analytical results and required reports, at this time BUSTR is not requiring further corrective actions of any contamination resulting from petroleum UST activity at the facility.

Due to information potentially not discovered or revealed, nothing in this letter should be interpreted as a guarantee or warrantee that no problems exist at the aforementioned location. In addition, this letter does not release the responsible party from future responsibility and liability under sections 3737.88 through 3737.89 of the Ohio Revised Code and other state laws and regulations or under the Federal Clean Water Act, Resource Conservation and Recovery Act, or Comprehensive Environmental Response, Compensation, and Liability Act for remedying conditions resulting from any release of contaminants to the environment.

If you have any questions about this determination, you can write to us at 9221 Ravenna Road, Suite D7, Twinsburg, Ohio 44087-2443, or telephone us at (216) 425-9848.

Sincerely,

Michelle Tarka

Michelle Tarka
Site Coordinator

MT/sk

cc: File #679298-11
Virginia Black, Ravenna Health Department

RECEIVED
APR 10 1992

Olin
ORDNANCE

RAVENNA ARSENAL, INC.
8451 STATE ROUTE 5, RAVENNA, OHIO 44266-9297
TELEPHONE: (216) 358-7111 • FAX: (216) 297-3216

February 21, 1992

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Division of State Fire Marshal
Bureau of Underground Storage Tank Regulations
ATTN: Michelle Tarka, Site Coordinator
9221 Ravenna Road, Suite D7-D8
Twinsburg, Ohio 44087

Subject: Incidents 679298-00 (RV-23) and 679298-02 (RV-11)

Dear Ms. Tarka:

As per your request during our telephone conversation on 2/10/92, the following information regarding removal of the above referenced tanks is provided with this letter:

1. Soil disposal receipts for soil removed during excavation
2. Sketch of tank areas showing location of soil samples

Please note that prior to removal of tank RV-23 a soil boring was done to check for possible contamination from a suspected line leak. The boring was located approximately 5 feet south of the tank. This area was subsequently excavated during tank removal.

If you have any questions or need further information regarding this subject, please contact Susan McCauslin at 297-3220. The Government point of contact is Robert J. Kasper, 297-3124.

Sincerely,

RAVENNA ARSENAL, INC.

H.R. Cooper
Plant Engineer

SMC/ade/92006

cc: N. Wulff
W. Carkido
B. Jenkins
T. Chanda
File

cf: AMCCOM
AMSMC-EQM (Cyril Onewokae)
Rock Island, IL w/att

NORTON CONSTRUCTION CO.
6200 ROCKSIDE WOODS BLVD.
INDEPENDENCE, OHIO 44131
447-0070

Date 3-9-90

TRUCK # 1

NOZZLE NEW
RAVENA ARSENAL
15 CU. YDS. @ $30.

Load of Rubbish $ 450.00

Signature [signature]

NORTON CONSTRUCTION CO.
6200 ROCKSIDE WOODS BLVD.
INDEPENDENCE, OHIO 44131
447-0070

Date 3-8-90

TRUCK # 1

NOZZLE NEW
RAVENNA ARSENAL
20 CU. YDS. @ $30.00

Load of Rubbish $ 600.00

Signature [signature]

NORTON CONSTRUCTION CO.
6200 ROCKSIDE WOODS BLVD.
INDEPENDENCE, OHIO 44131
447-0070

Date 3-9-90

TRUCK # 1

NOZZLE NEW
RAVENNA ARSENAL
15 CU. YDS. @ $30.

Load of Rubbish $ 450.00

Signature [signature]

RAVENNA ARSENAL, INC.

TELEPHONE CONVERSATION RECORD

November 19, 1990

PERSON CALLING: Michele Tarka - State Fire Marshal's Office
PHONE: 425-9848

PERSON CALLED: Susan McCauslin - RAI Environmental Engineering
PHONE: 297-3220

SUBJECT: Underground Storage Tanks

Following are the file numbers assigned by the Fire Marshal's Office to our removed tanks. Future correspondence should include reference to the appropriate numbers.

Number	Location
679298-00	RV23; Bldg. 1045
679298-01	RV33; Burning Grds
679298-02	RV11; RR Yard
679298-03	RV13, RV14; Bldg. U6
679298-04	RV15, RV16; Bldg. U3
679298-05	RV17, RV18, RV19; Bldg. A-6
679298-06	550 Gal; Bldg. A-6
679298-07	RV37; Bldg. A-1
679298-08	RV10; Post 24
679298-09	RV47; Post 32
679298-10	RV52; Old Atlas

S. McCauslin
Susan McCauslin

SMC/ade

SMC

RA-96,Rev. 1/88

IDO
SDB

PURCHASE ORDER CHANGE

RAVENNA ARSENAL, INC.
Ravenna, Ohio 44266
(216) 358-7111
Contract No. DAAA09-88-Z-0001

M.O. #55-2526

OR036X

R & R INTERNATIONAL, INC.
1234 S. CLEVELAND-MASSILLON RD.
AKRON, OHIO 44321

Date October 19,1990

P. O. No. 19723 CH-1

ACCT. No. 55-2526

Please amend our Purchase Order No. 19723 **, Dated** 2-2-90 **, as follows:**

CHANGE ITEM 3 TO REFLECT ACTUAL COSTS OF $5,895.60
(86.7 C.Y. @ $68.00 PER CUBIC YD.)

ADD ITEM 3A: TRANSPORTATION AND DISPOSAL OF SIX (6) ADDITIONAL
DRUMS OF PETROLEUM PRODUCT ($370.00 EA.)
EXTENDED COST OF: $2,220.00

TOTAL REVISED COST: $41,530.60
CONSIDER ORDER COMPLETE

ENGR/BJJ/co

This order, except as herein amended, shall in all other respects remain as before, unless completely cancelled.

RAVENNA ARSENAL, INC.

By _____
Contract/Procurement &
Purchasing

Approved By _____
For Contracting Officer

A TEAM...
Dedicated to serving your needs

FINAL REPORT FOR THE
REMOVAL OF
FOUR UNDERGROUND STORAGE TANKS

PREPARED FOR

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

APRIL, 1990

R&R
INTERNATIONAL, INC.

1234 S. CLEVELAND-MASSILLON ROAD
P.O. BOX 4383
AKRON, OHIO 44321
(216) 666-2200

April 16, 1990

Ravenna Arsenal, Inc.
8451 State Route 5
Ravenna, Ohio 44266-9297

Attention: Mr. Bill Jenkins, Administrator

Reference: Removal of Four (4) UST's
Ravenna Army Ammunition Plant
R & R Project No. 100214

Gentlemen:

Enclosed please find three (3) copies of our Underground Storage Tank Closure Report for the above referenced project. This report has been prepared as part of our services for Contract No. DAAA09-88-Z-0001.

R & R International appreciates the opportunity to have worked with you on this project and we look forward to a long and successful working relationship with Ravenna Arsenal, Inc. If you have any questions or need further assistance, please do not hesitate to contact our office.

Respectfully,

R & R INTERNATIONAL, INC.

Samuel C. Reed

Samuel C. Reed
Manager - Remediation Services

G. M. Rana, P.E.
President

SCR/GMR:mm
Enclosures

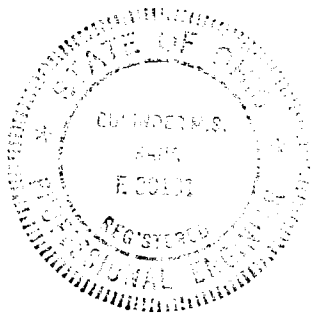
R&R
INTERNATIONAL, INC.

CERTIFICATION STATEMENT

I CERTIFY THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE "REQUIREMENTS FOR UNDERGROUND STORAGE TANK REMOVAL," AS PREPARED FOR THE RAVENNA ARSENAL, INCORPORATED. ALL REMOVAL, ABATMENT, RESTORATION AND REPORTING ACTIVITIES WERE CONDUCTED IN ACCORDANCE WITH THE "REQUIREMENTS FOR UNDERGROUND STORAGE TANK REMOVAL" AND APPLICABLE PROVISIONS OF 40 CFR PART 280, "EPA TECHNICAL STANDARDS AND CORRECTIVE ACTION REQUIREMENTS FOR OWNERS AND OPERATORS OF UNDERGROUND STORAGE TANKS;" ARTICLES 28, 35 AND 36 OF THE OHIO ADMINISTRATIVE CODE; AND AMERICAN PETROLEUM INSTITUTE (API) BULLETIN NO. 1604, "RECOMMENDED PRACTICE FOR ABANDONMENT OR REMOVAL OF USED UNDERGROUND SERVICE STATION TANKS."

G. M. Rana, P.E.

16 APRIL 1990
Date



R&R
INTERNATIONAL, INC.

CERTIFICATION STATEMENT

I CERTIFY THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE "REQUIREMENTS FOR UNDERGROUND STORAGE TANK REMOVAL," AS PREPARED FOR THE RAVENNA ARSENAL, INCORPORATED. ALL REMOVAL, ABATMENT, RESTORATION AND REPORTING ACTIVITIES WERE CONDUCTED IN ACCORDANCE WITH THE "REQUIREMENTS FOR UNDERGROUND STORAGE TANK REMOVAL" AND APPLICABLE PROVISIONS OF 40 CFR PART 280, "EPA TECHNICAL STANDARDS AND CORRECTIVE ACTION REQUIREMENTS FOR OWNERS AND OPERATORS OF UNDERGROUND STORAGE TANKS;" ARTICLES 28, 35 AND 36 OF THE OHIO ADMINISTRATIVE CODE; AND AMERICAN PETROLEUM INSTITUTE (API) BULLETIN NO. 1604, "RECOMMENDED PRACTICE FOR ABANDONMENT OR REMOVAL OF USED UNDERGROUND SERVICE STATION TANKS."

G. M. Rana, P.E.

April 16, 1990
Date

R&R
INTERNATIONAL, INC.

CLOSURE ASSESSMENT REPORT

I. OWNER

NAME: Ravenna Army Ammunition Plant

ADDRESS: 8451 State Rt. 5
Ravenna, Ohio 44266-9297

CONTACT: Mr. Wayne Carkido

TELEPHONE: (216) 297-3237

II. DATE(S) of Tank Removal: February 9, 12, and 13, 1990

III. FIRE INSPECTOR

NAME: Mr. Homer Myers

ADDRESS: 3702 State Rt. 183
Rootstown, Ohio 44272

TELEPHONE: (O) 614-864-5510
(R) 216-325-1375

IV. NEUTRAL THIRD PARTY

NAME: Mr. Homer Myers

AFFILIATION: State Fire Marshal's Office

V. SAMPLER(S)

NAME: Mr. Brad Kinzy

AFFILIATION: R & R International, Inc.

CLOSURE ASSESSMENT REPORT (Continued)

VI. VISUAL SITE EVALUATION - Tank #1 RA #33

1. Tank size 2,000 gallon - Diesel Fuel.
2. Tank under grass and soil mound, top one-half exposed.
3. Excavation did not indicate any visual or olfactory signs of contamination.
4. The tank was intact externally; no holes or visual signs of leaks. Contamination not found according to visual and olfactory inspection of tank exterior.
5. Approximately four (4) yards of contaminated soil removed from the fill pipe area.

VII. VISUAL SITE EVALUATION - Tank #2 RA #11

1. Tank size 15,000 gallon - Diesel fuel under a concrete vault.
2. Excavated pit did not indicate any visual or olfactory signs of contamination in any area..
3. The tank was intact externally; no holes or visual signs of leaks. Contamination not found according to visual and olfactory inspection of tank exterior.
4. Approximately 15 - 20 yards of contaminated soil removed from the suction line area near building.

VIII. VISUAL SITE EVALUATION - Tank #3 RA#22

1. Tank size 15,000 gallon - Diesel fuel under a concrete vault and grass.
2. Excavated pit did not indicate any visual or olfactory sign of contamination in any area.
3. The tank was intact externally; no holes or visual signs of leaks. Contamination not found according to visual and olfactory inspection of tank exterior.
4. Approximately 15 - 20 yards of contaminated soil removed from suction line area near building.

R&R
INTERNATIONAL,INC.

CLOSURE ASSESSMENT REPORT (Continued)

IX. VISUAL SITE EVALUATION - Tank #4 RA#23

1. Tank size 15,000 gallon - Diesel fuel under grass.

2. Excavated pit did not indicate any visual or olfactory signs of contamination in any area.

3. The tank was intact externally; no holes or visual signs of leaks. Contamination not found according to visual and olfactory inspection of tank exterior.

4. Approximately eight (8) to ten (10) yards of contaminated soil removed from fill pipe area.

X. SAMPLE COLLECTION PROCEDURE

Soil samples were collected in four (4) ounce teflon-lid glass sample jars using a stainless steel spoon. The sample locations are indicated on the attached site sketch. Samples were collected after scraping up to four (4) inches of soil from the surface. The sampling spoon was decontaminated in between each sample collection by a thorough rinsing with distilled water and wiping dry with a clean tissue. The samples obtained were immediately placed in a cooler, containing ice, for preservation. The samples were kept in the cooler until delivery to the laboratory. A Chain-of-Custody for all samples was started, a copy of which is attached to this report.

XI. LABORATORY

NAME: Holk Environmental Services, Inc.

ADDRESS: 7777 Wall Street
Valley View, Ohio 44125

TELEPHONE: (216) 524-0888

XII. LABORATORY RESULTS

A copy of the Analytical Report from the laboratory forms a part of this report.

XIII. SPECIAL COMMENTS

1. The tanks were cleaned on site by R & R International, Inc. personnel. The resultant sludges and rinsates were disposed of by Chemtron Corporation of Avon, Ohio. The waste analysis data forms a part of this report.

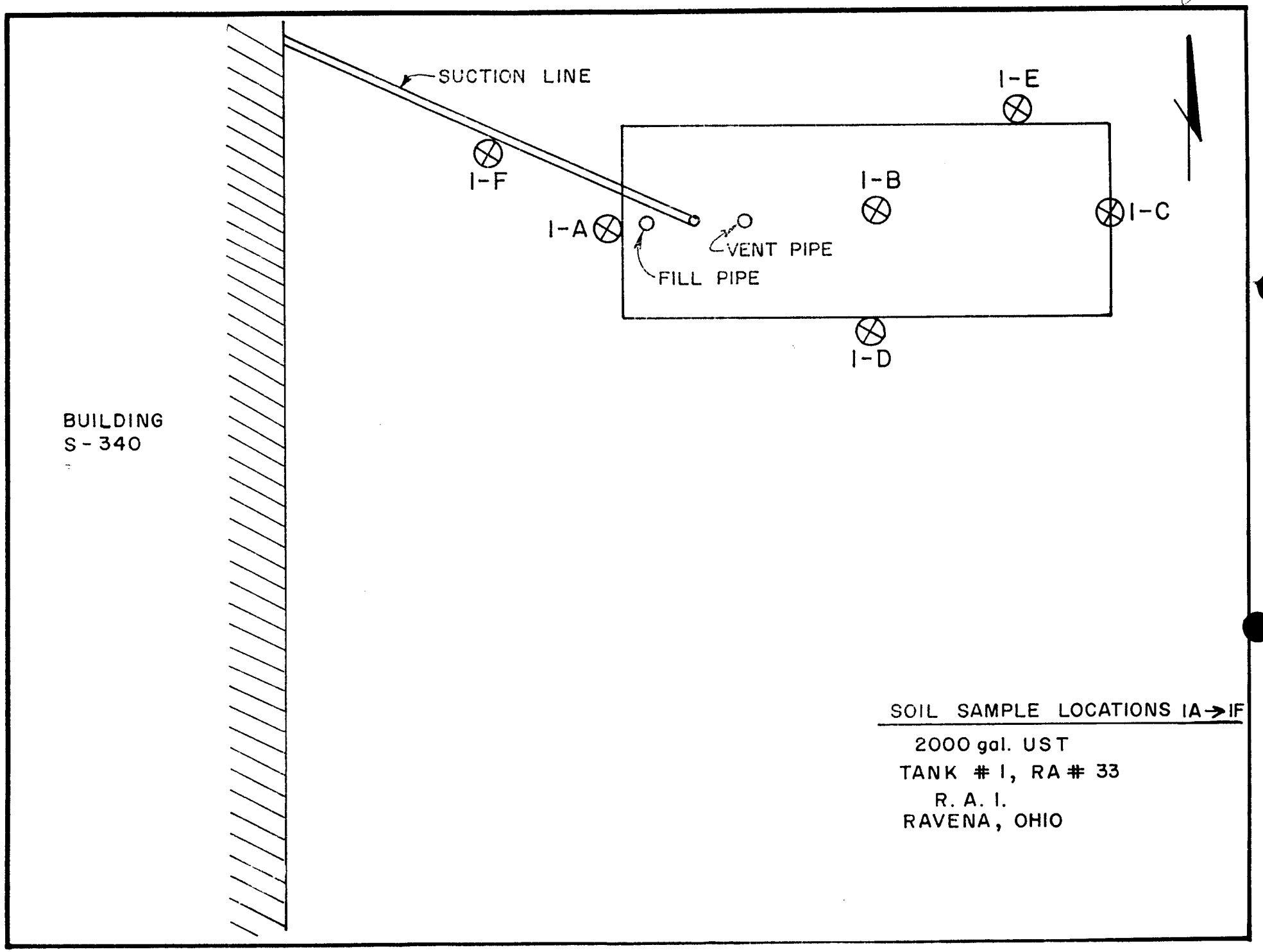
2. The 2,000 gallon tank was disposed of at the E. 79th Scrap and Auto Wrecking in Cleveland, Ohio; the three (3) 15,000 gallon tanks were taken to Holub Iron & Steel Co., Inc. in Akron, Ohio for disposal. Documentation of disposal forms a part of this report.

3. Approximately 50 cubic yards of contaminated soil, removed from the excavations, was disposed of at Norton Landfill A.K.A. Royalton Road Sanitary Landfill in Broadview Heights, Ohio.

4. Due to security restrictions, photographs of the tank removal operations were not obtained.

5. All laboratory test results, Chain-of-Custody records, and tank disposal receipts are presented in Appendix A of this report.

100214



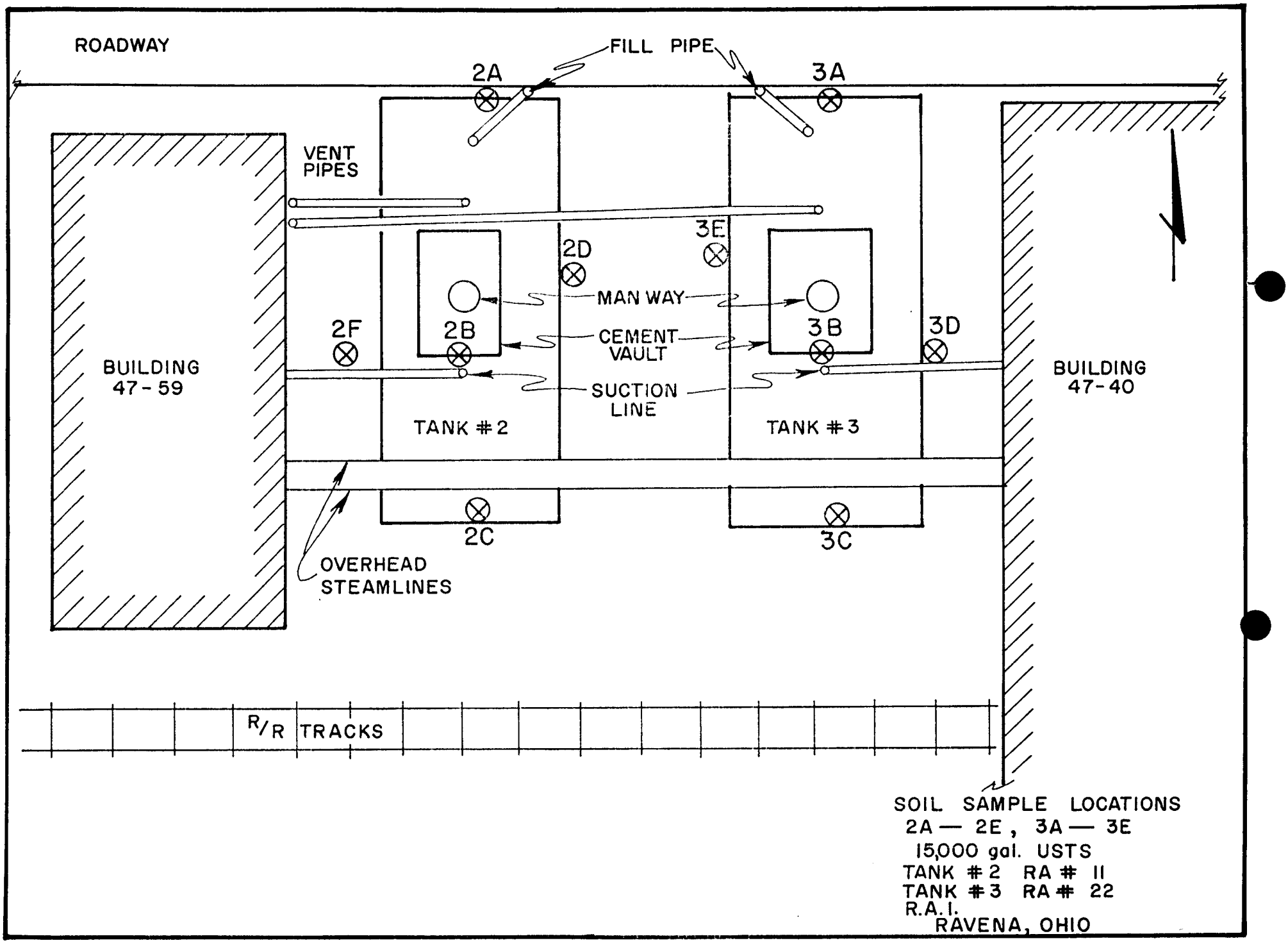
SOIL SAMPLE LOCATIONS IA→IF

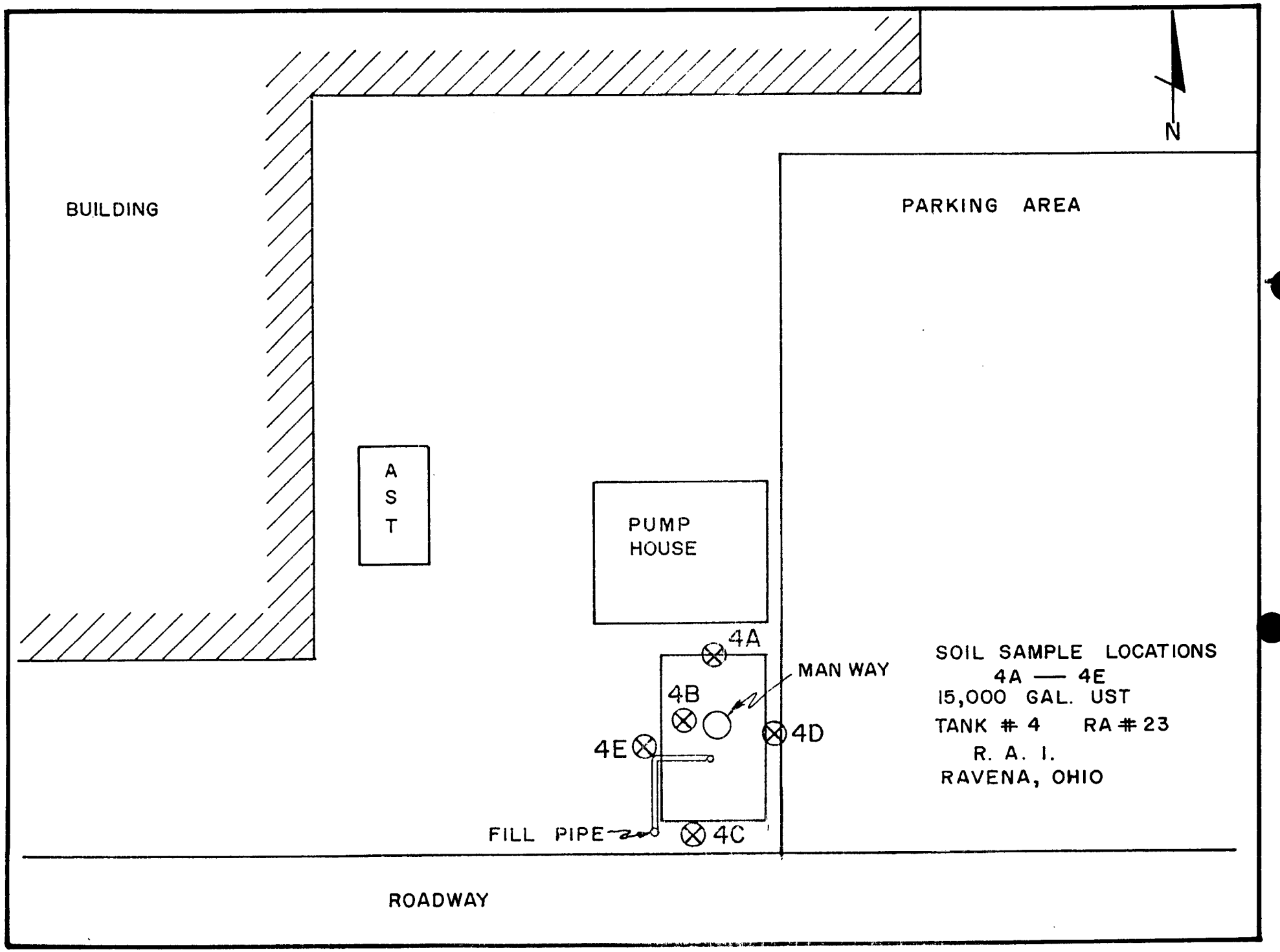
2000 gal. UST

TANK # 1, RA # 33

R. A. I.

RAVENA, OHIO


100214
ROADWAY
FILL PIPE
2A
3A
VENT PIPES
2D
3E
MAN WAY
2F
2B
CEMENT VAULT
3B
3D
BUILDING 47-59
SUCTION LINE
BUILDING 47-40
TANK #2
TANK #3
2C
3C
OVERHEAD STEAMLINES
R/R TRACKS
SOIL SAMPLE LOCATIONS
2A — 2E, 3A — 3E
15,000 gal. USTS
TANK #2 RA # 11
TANK #3 RA # 22
R.A.I.
RAVENA, OHIO


100214
N
BUILDING
PARKING AREA
A
S
T
PUMP
HOUSE
4A
MAN WAY
4B
4D
4E
FILL PIPE
4C
ROADWAY
SOIL SAMPLE LOCATIONS
4A — 4E
15,000 GAL. UST
TANK # 4 RA # 23
R. A. I.
RAVENA, OHIO

OHIO DEPARTMENT OF COMMERCE
DIVISION OF STATE FIRE MARSHAL

REGULATIONS PERTAINING TO PETROLEUM UNDERGROUND STORAGE TANK SUSPECTED RELEASE INVESTIGATIONS AND CORRECTIVE ACTIONS

OAC 1301:7-7-28 (A), (E), (I), (J), AND (K)
OAC 1301:7-7-36
Ohio Revised Code 3737.882 and 3737.99(I)

1301:7-7-28. Article 28: FLAMMABLE AND COMBUSTIBLE LIQUIDS

Note: This reproduction of the Ohio Administrative Code does not contain the full text of Article 28 of the Ohio Fire Code, OAC 1301:7-7-28. The text of this printing contains only those paragraphs of Article 28 that pertain directly to petroleum underground storage tank suspected and confirmed releases and the typical tank repair or replacement activities conducted during release investigations and corrective actions. Other sections of the Ohio Fire Code may apply.

(A) Section F-2800.0. General.

(1) FM-2800.1. Scope: This rule shall apply to the transportation, storage, handling and processing of flammable and combustible liquids and to any underground storage tank system as defined in paragraph (B) of rule 1301:7-7-02 of the Administrative Code (F-201.0). The provisions of NFiPA 30, NFiPA 30A, NFiPA 329, PEI RP 100-87, API 1604, API 1631 and ASTM G57-78 listed in rule 1301:7-7-34 of the Administrative Code shall apply where the provisions of this rule do not specifically cover conditions and operations.

(2) FM-2800.2. Permit required: A permit shall be obtained from the fire official for each of the following:

(a) To install, remove, repair or alter in any way a stationary tank for the storage of flammable or combustible liquids, or to modify or replace any line.

(b) To install, repair or alter in any way, an underground storage tank, to modify or replace any piping connected thereto, to take such tank system temporarily or permanently out of service, or to place an out-of-service tank system back into service. When such a permit is not required by the local fire official the permit shall be obtained from the fire marshal.

(c) For the storage, handling or use of class I liquids in excess of five gallons in a dwelling or other place of human habitation, or in excess of ten gallons in any other building or other occupancy, or in excess of sixty gallons outside of any building except that no permit shall be required for the following:

(i) For the storage or use of flammable liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant or mobile heating plant; or

(ii) For the storage or use of paints, oils, varnishes or similar mixtures when such liquids are stored for painting or maintenance, or similar purposes upon the premises, and which are not stored for a period exceeding thirty days.

(d) Storage, handling or use of class II combustible liquids or class III combustible liquids in excess of twenty-five gallons in a building, or in excess of sixty gallons outside of a building, except for fuel oil used in connection with oil burning equipment in single-family residential buildings.

(e) For the manufacture, processing, blending or refining of flammable or combustible liquids.

(f) For the storage of flammable or combustible liquids in stationary tanks.

(g) For placing any flammable or combustible liquid stationary tank temporarily or permanently out of service and to place said tank back into service (see paragraph (E)-(9) below [FM-2804.9]).

(h) Permits shall be obtained from the fire marshal for above-ground flammable and combustible liquid tank installations in bulk plants. This paragraph applies only

where a permit is not obtained from another officer mentioned in section 3737.14 of the Revised Code.

(3) FM-2800.3. Permit application: The application for a permit shall be submitted in such form as the fire official may prescribe and shall be accompanied by drawings and such additional information as may be required by the fire official. Permit and inspection fees which are required by ordinance shall accompany all applications. When a permit required by paragraph (A)(2)(b) of this rule is obtained from the fire marshal, an inspection fee in the amount of fifty dollars shall be paid to the fire marshal for each underground storage tank permit.

(4) F-2800.3.1. Stationary tank information: The application to install, remove, repair or alter any stationary tank for the storage of flammable or combustible liquids shall contain a general description of the proposed work and shall include two copies of a drawing indicating location, use, capacity and piping arrangement of all existing and proposed tanks located, or which are to be located, upon the premises and all adjacent buildings and property lines. Information which confirms that the tank meets the design requirements in paragraph (B)(2) below (F-2801.2) shall be attached to or made a part of the application.

(E) Section 2804.0. Underground storage tanks.

(1) FM-2804.1. Underground storage tank program compliance. All underground storage tank systems containing flammable or combustible liquids shall comply with the requirements of rule 1301:7-7-35 of the Administrative Code.

(2) FM-2804.2. Location: Underground storage tanks containing flammable or combustible liquids shall be located at least five feet from any wall, foundation or property line. The top of flammable liquid tanks shall be below the lowest floor level of any building within twenty feet of said tanks. Tanks shall not be located in or under any building unless said building and tank installation is constructed in accordance with the building code and NFiPA 30 listed in rule 1301:7-7-34 of the Administrative Code. A distance of at least one foot shall be maintained between underground tanks in multiple tank installations.

(3) FM-2804.3. Special conditions: The fire official may require greater separations or he may limit the storage capacity when the installation is subject to a severe exposure hazard or topographical conditions when necessary for the safety of the general public.

(4) FM-2804.4. Tank protection installation: Underground storage tanks containing flammable or combustible liquids shall comply with the following installation requirements:

(a) Steel tanks. Cathodically protected steel or approved noncorrosive coated steel underground storage tanks shall be set on a firm foundation and surrounded with at least six inches of noncorrosive inert material such as clean sand or gravel well tamped in place. Tanks, and the six inches of protective material, shall be covered with a minimum of two feet of earth or shall be covered with eighteen inches of earth, on top of which shall be placed a slab of reinforced concrete not less than four inches thick. When underground tanks are, or are likely to be, subjected to vehicular traffic, they shall be protected against damage by at least eighteen inches of earth, over the six inches of protective material, plus six inches of reinforced concrete or eight inches of asphaltic concrete. The reinforced concrete or asphaltic concrete protective cover shall extend at least one foot horizontally beyond the outline of the tank. When new tanks are located in an area that may be subjected to flooding or corrosion, applicable precautions shall be used in accordance with NFiPA 30 listed in rule 1301:7-7-34 of the Administrative Code.

(b) Fiberglass-reinforced plastic (FRP) tanks shall be installed in accordance with the manufacturer's specifications.

(5) FM-2804.5. Tank construction: Underground storage tanks containing flammable or combustible liquids shall meet the following requirements:

(a) Tanks shall be designed and built to prevent releases due to corrosion or structural failure for the operational life of the tank, using noncorrosive material or cathodi-

cally protected steel.

(b) The material used in constructing or lining the tank shall be compatible with the substance to be stored.

(c) Steel tank systems shall be cathodically protected by an impressed current cathodic protection system, sacrificial anodes, or some other type of equivalent protection. If a cathodic protection system is used, it shall be maintained in accordance with paragraph (e)(5)(d) below. Selection of the type of protection to be employed shall be based upon the corrosion history of the area and the judgment of a qualified engineer. If a soil test conducted in accordance with ASTM standard G57-78, or another standard approved by the fire marshal, indicates that soil resistivity in an installation location is twelve thousand ohms per centimeter or more (unless a more stringent standard is prescribed by the fire marshal by rule), a storage tank without corrosion protection may be installed in that location during the period until new standards are promulgated by the administrator of the United States environmental protection agency.

(d) If a cathodic protection system is installed, an ongoing preventative maintenance program shall be used. Where sacrificial anodes have been installed, their proper operation shall be confirmed by the installer within six to twelve months of installation and one year thereafter. If these tests confirm proper operation, subsequent inspection intervals can be extended to five years. However, if underground work is performed at a protected site, cathodic protection should be remonitored six to twelve weeks after work is completed and one year thereafter before again extending the inspection interval. If an impressed current cathodic protection system is installed, the operator shall verify, at least once a month, that it is operating, and a qualified person shall conduct an on-site test and inspection, at least once a year, to measure the structure to soil and structure-to-structure potentials and the rectifier voltage and current output.

(6) F-2804.6. Vent piping: Vent pipes from underground tanks containing flammable liquids shall be so located that the discharge point is outside of buildings, higher than the fill pipe opening and not less than twelve feet above the adjacent ground level. Vent pipes shall discharge only upward in order to disperse vapors. Each tank shall be vented through piping adequate in size as specified in the standards listed in rule 1301:7-7-34 of the Administrative Code, to prevent flow-back of vapor or liquid at the fill opening while the tank is being filled. Threaded joints and connections shall be liquid-tight with a suitable lubricant or piping compound.

(7) F-2804.7. Fill piping: Fill piping passing through concrete shall be located in sleeves, mastic or the equivalent to protect against settlement, frost action and vibration. Welded or screwed joints or approved connectors shall be used. Threaded joints and connections shall be made liquid-tight and shall be made tight with a suitable lubricant or piping compound. Fill pipes shall terminate within six inches of the bottom of the tank.

(8) FM-2804.8. Testing: All underground storage tanks containing flammable or combustible liquids shall be subjected to the following tests.

(a) All tanks shall be strength tested before they are placed in service in accordance with the applicable provisions of the code or standard under which they were built. The "American Society of Mechanical Engineers" (ASME) code stamp, "American Petroleum Institute" (API) monogram, the label of the "Under writer's Laboratories, Inc." (UL), or the "Underwriter's Laboratories of Canada" (ULC) or an approved equivalent identification label on a tank shall be evidence of compliance with the strength test.

(b) Before tanks are placed into the hole they shall be tested with not less than three psi or more than five psi air pressure. All leaks or deformations shall be corrected in a manner approved by the fire official before the tanks are placed into the hole. Mechanical caulking is not permitted for correcting leaks in welded tanks.

(c) After the tank is set in the excavation and all lines are connected another air test

shall be conducted. This test must be conducted before the lines and the tank are covered over and before the tank is filled with product.

(d) When the vertical length of the fill and vent pipes is such that when filled with liquid the static head imposed upon the bottom of the tank exceeds ten psig, the tank and related piping shall be tested hydrostatically to a pressure equal to the static head thus imposed. In special cases where the height of the vent above the top of the tank is excessive, the hydrostatic test pressure shall be specified by the fire official.

(e) Periodic tests of underground tank storage systems may be required by the fire official to determine that leakage has not occurred. Testing shall be done in accordance with NFiPA 329 listed in rule 1301:7-7-34 of the Administrative Code.

(9) FM-2804.9. Abandonment of tanks: A permit shall be obtained from the fire official to remove, abandon, place temporarily out of service or otherwise dispose of any underground storage tank containing flammable or combustible liquids. When such a permit is not required from the local fire official the permit shall be obtained from the fire marshal.

(a) Tanks "temporarily out of service" shall have the fill line, gauge opening and pump connection secured against tampering. Vent lines shall remain open and be maintained in accordance with the requirements of this rule for vent lines.

(b) Any tank not used for a period of ninety days shall be properly safeguarded or removed in a manner approved by the fire official.

(c) Any tank which has been abandoned for a period of one year shall be removed from the property in a manner approved by the fire official and the site restored in an approved manner. When the fire official determines that the removal of the tank is not necessary, he may permit the tank to be abandoned in place in accordance with API 1604 listed in rule 1301:7-7-34 of the Administrative Code, and including the following methods:

(i) Remove all flammable or combustible liquid from the tank and all connecting lines.

(ii) Disconnect the suction, inlet, gauge, and vent lines.

(iii) Fill the tank completely with an inert solid material. Cap remaining underground piping.

(iv) Keep a record of tank size, location, date of abandonment, and method used for placing the abandoned tank in a safe condition.

(d) Tanks which are to be reinstalled for flammable or combustible liquid service shall comply with all the provisions of this rule.

(e) Tanks which are to be returned to service shall be tested in accordance with NFiPA 329 listed in rule 1301:7-7-34 of the Administrative Code.

(I) Section FM-2808.0. Tank lining. Procedure for the interior coating and repair of leaking and/or deteriorated underground storage tanks containing flammable or combustible liquids (both steel and nonmetallic).

(1) FM-2808.1. The local fire official shall determine whether or not the repair of leaking and/or deteriorating underground storage tanks containing flammable or combustible liquids shall be permitted within its jurisdiction. If such repair is permitted by the local fire official, it shall be accomplished in the manner prescribed in paragraphs (I)(2) and (I)(5) below.

(2) FM-2808.2. Manufacturers desiring to have their product used in Ohio shall register the specifications for the internal coating system for the repair of underground storage tanks containing flammable or combustible liquids with the fire marshal. The specifications shall

clearly describe the composition of the product, strength, limitations on use, preparation procedures, application procedures, quality control techniques, curing times and temperatures, field thickness testing procedures, field hardness testing procedures, and a method for determining whether an existing tank is repairable. This information, along with the results of the standards tests, shall be signed and sealed by a registered professional engineer.

(3) FM-2808.3. Each manufacturer who has registered an internal coating system must submit to the fire marshal a list of qualified applicators. It is the responsibility of the manufacturer to keep this list current. The list shall indicate that the applicator is qualified to seal metal tanks, nonmetallic tanks or both. The internal coating procedure shall be in accordance with API 1631 listed in rule 1301:7-7-34 of the Administrative Code.

(4) FM-2808.4. The applicator shall inform the following officials of the location of each project in the following manner:

(a) The local fire authority shall have in its possession a written notice stating the location of the project and the applicator's anticipated timetable for each stage of the project, prior to the commencement of the project. A copy of such written notice shall be mailed to the fire marshal simultaneously with its delivery to the local fire authority.

(b) Any applicator failing to make proper notification of the project location will be removed, for a period of six months, from the qualified applicator list on file with the fire marshal. Reinstatement can be accomplished only by the manufacturer resubmitting the applicator's name after the six-month period has elapsed.

(c) A current "Certificate of Insurance" covering the liability of the applicator shall be filed with the fire marshal.

(d) A sample of the "Application for Tank Repairs" may be obtained from the fire marshal.

(5) FM-2808.5. A "Certificate of Performance" shall be utilized as follows:

(a) A "Certificate of Performance" on each field application shall be submitted to the local fire authority. The certificate (to be designed by the fire marshal and printed and supplied by the contractor) shall be signed by the qualified applicator and will confirm that the tank preparation and product application complies with the sealant manufacturer's specifications which are registered with the fire marshal.

(b) A sample of the "Certificate of Performance" may be obtained from the fire marshal.

(J) Section FM-2809.0. Leak detection. Inventory records for underground storage tanks containing flammable and combustible liquids shall be maintained by the owner or operator of such tank. The procedures for inventory control are as follows:

(1) FM-2809.1. Daily inventory records shall be kept for each tank at each location by the operator. Such records shall be available at the location for inspection at any time by a proper authority and shall cover at least ninety days prior to the date of inspection.

(2) FM-2809.2. The inventory referred to in paragraph (J)(1) above shall be based on the actual measurement of tank liquid levels daily. The written record of such testing shall include a computation of daily gain or loss. The operator of the location shall be responsible for taking action to correct any abnormal loss or gain not explainable by temperature variations or other causes. Such abnormal loss or gain shall be reported promptly by the operator to the local fire official and fire marshal pursuant to paragraph (K) of this rule (FM-2810.0).

(3) FM-2809.3. The mere recording of pump meter readings combined with shipment records shall not constitute adequate inventory records for the purpose of this rule.

(4) FM-2809.4. Exemptions. The requirements for daily inventory records shall not apply in the following situations:

(a) Daily inventories are not required to be maintained when an installation is not in operation, except that during such an operation when an inventory must be taken at least once every seven days.

(b) Daily inventories need not be maintained for storage tanks connected to oil burning equipment.

(c) Daily inventories need not be maintained for storage tanks connected to manufacturing equipment.

(5) FM-2809.5. The following actions shall be taken by the operator daily:

(a) The operator shall record all meter totalizer readings, immediately gauge and record all tank measurements and balance inventory and product transferred.

(b) The operator shall record and make adjustments for all transfers of product occurring during gauging period.

(c) The operator shall retain all of the aforementioned records.

(d) The operator shall check all tanks for water. Experience will indicate whether daily checks are required or if they can be made less frequently. In any circumstances, the check must be made once a week. Tanks should be checked for water after a thaw and after a delivery.

(K) Section FM-2810.0. Underground storage tank release reporting and confirmation.

(1) FM-2810.1. Suspected releases requiring reporting. All owners and operators of underground storage tank containing flammable or combustible liquids shall report within twenty-four hours to the fire official and the fire marshal any of the following conditions:

(a) Test, sampling, or monitoring results from a release detection method specified under paragraph (J) of this rule (FM-2809.0), Or any other release detection method used, that indicates a release may have occurred;

(b) Unusual operating conditions such as erratic behavior of product dispensing equipment, the sudden loss of product from a tank system, an unexplained presence of water in the tank or the physical presence of water in the tank, or the physical presence of the regulated substance or an unusual level of vapors on the site that are of an unknown origin;

(c) Impacts in the surrounding area, such as evidence of regulated substances or resulting vapors in soils, basements, sewer and utility lines, and nearby surface water;

(d) An indication from a gas chromatography or equivalent method that there is a concentration of at least one hundred parts per million of total hydrocarbons in a soil sample; and

(e) Any spill or overfill of petroleum that exceeds twenty-five gallons or causes a sheen on any surface water. Any spill or overfill of petroleum of twenty-five gallons or less must be contained and cleaned up immediately, and if such cleanup cannot be accomplished within twenty-four hours, the fire official and the fire marshal shall be notified within twenty-four hours of the spill or overfill.

(2) FM-2810.2. Release investigation and confirmation. Unless corrective action is initiated by the owner or operator under rule 1301:7-7-36 of the Administrative Code for releases of petroleum, or as otherwise directed by the fire marshal, all suspected releases requiring reporting under this paragraph must be immediately investigated by the owner or operator using one of the following applicable procedures of this paragraph. Confirmation of a petroleum release by one of these methods will require the owner and operator to comply with the requirements for corrective action under rule 1301:7-7-36 of the Administrative Code.

(a) In the case of an underground storage system having secondary containment, an investigation of a possible release into the interstitial area between the underground storage tank and the secondary barrier using procedures that will determine if the interstitial monitoring is working properly;

(b) In the case of a failed tank or piping tightness test, an investigation in the following manner:

(i) A check of inventory records to detect a discrepancy that indicates a release may have occurred in accordance with the requirements of paragraph (J) of this rule.

(ii) Isolation from the tank and retesting of the piping within seven days of the initial reporting to the fire marshal to determine if a release may have occurred in accordance with the requirements in paragraph (J) of this rule;

(iii) Isolation from the piping and retesting of the tank within seven days of the initial reporting to the implementing agency to determine if a release may have occurred in accordance with the requirements in paragraph (J) of this rule (after the top of the tank has been excavated and all loose fitting vent pipes or other equipment has been checked, replaced or tightened); and

(iv) Analysis of soil core samples for hydrocarbon and/or chemical contamination in the unsaturated zone under the underground storage tank system, or, when the ground water is no more than twenty feet from the ground surface, analysis of ground-water samples for hydrocarbon and/or chemical contamination.

(c) In the case of a discrepancy during inventory reconciliation in accordance with paragraph (J) of this rule, or any other suspected release, an investigation conducted in the following manner:

(i) A tightness test of the tanks and piping that is conducted within seven days of the initial reporting to the fire marshal to determine if a release may have occurred; and

(ii) Analysis of soil core samples for hydrocarbon and/or chemical contamination in the unsaturated zone under the underground storage tank system, or, when the ground water is no more than twenty feet from the ground surface, analysis of ground-water samples for hydrocarbon and/or chemical contamination.

(d) A site-specific investigation, under the direction of the fire marshal, of the suspected release incident to determine if a release has occurred and reached soils outside of the excavation zone or ground water;

(e) Any other investigation procedure that is no less stringent than any of the procedures in paragraphs (a) to (c) of this rule and is approved for that underground storage tank system by the fire marshal.

Effective: 5/9/88

Original Signed
Certification

April 29, 1988
Date

Promulgated Under: 119.03 + 3737.86
Authorized By: 3737.02 + 3737.82
Amplifies: 3737.82
Prior Effective Date: 7/1/79
6/1/85.

1301:7-7-36. CORRECTIVE ACTIONS AND COST RECOVERY STANDARDS FOR PETROLEUM UNDERGROUND STORAGE TANK RELEASES.

(A) General

(1) Purpose. For the purpose of prescribing rules pursuant to section 3737.88 of the Revised Code, the fire marshal hereby adopts this rule to establish standards for corrective actions for releases of petroleum from underground storage tanks and standards for the recovery of costs for undertaking corrective or enforcement actions with respect to such releases. This rule is adopted by the fire marshal in accordance with Chapter 119. of the Revised Code and shall not be considered a part of the "Ohio Fire Code."

(2) Scope. This rule shall apply to any suspected or confirmed release of petroleum from an underground storage tank as defined in paragraph (B) of rule 1301:7-7-35 of the Administrative Code.

(3) Requirement. All owners and operators of UST systems, in response to a suspected or confirmed release of petroleum from a UST system, shall comply with the requirements of this rule. These provisions apply to all UST systems containing petroleum as defined in paragraph (B) of rule 1301:7-7-35 of the Administrative Code.

(4) Fire marshal corrective actions. All corrective actions undertaken by the fire marshal or assistant fire marshal pursuant to division (A)(3) of section 3737.88 of the Revised Code shall be consistent with the requirements of this rule.

(B) Definitions. When used in this rule, the terms shall have the same meaning as those defined in paragraph (B) of rule 1301:7-7-35 of the Administrative Code.

(C) Initial abatement requirements, procedures, and evaluation.

(1) Suspected release confirmation. All suspected releases requiring reporting under paragraph (K) of rule 1301:7-7-28 of the Administrative Code shall be investigated and confirmed or disproved by the owner or operator in a manner consistent with paragraph (K) of rule 1301:7-7-28 of the Administrative Code to establish whether the corrective action requirements of this rule shall be followed.

(2) Upon confirmation of an actual release in accordance with paragraph (K) of rule 1301:7-7-28 of the Administrative Code, or discovery of a release in any other manner, the owners and operators shall:

(a) Report the release to the fire official and fire marshal within twenty-four hours pursuant to paragraph (K) of rule 1301:7-7-28 of the Administrative Code;

(b) Stop any further release from the UST system;

(c) Mitigate all fire, explosion, and safety hazards;

(d) Remove and properly dispose of all visibly contaminated soil and any associated groundwater from the excavation zone;

(e) Conduct an investigation to determine the possible presence of free product and initiate removal of any free product found as soon as practicable;

(f) Report all initial corrective action taken pursuant to this paragraph, including a verification of tank repair or closure if appropriate, to the fire official and the fire marshal within twenty days of the confirmation or discovery of the release.

(3) Site investigation. The owner and operator shall perform a site investigation for contaminated soil, groundwater, or free product and shall assemble from such an investigation, or from other sources (e.g., USGS maps, SCS soil maps, ODNR, OEPA, and other agencies), any information deemed necessary by the fire marshal. The site investigation and information shall include, but is not limited to, the following:

(a) Data on the nature and estimated quantity of the released substance;

(b) Data from surface and subsurface soil sampling and analyses;

(c) Data from groundwater and/or surface-water sampling and analyses; and

(d) Data from available sources and/or site investigations concerning background levels prior to the release, water quality and use, well locations, subsurface soil conditions, climatological conditions, land use, and surrounding populations.

(4) Reporting. The results of this site investigation and all required information shall be reported to the fire marshal within twenty days of the confirmation or discovery of the release unless otherwise directed by the fire marshal. The fire marshal may request the collection and submission of additional information and/or a corrective action plan for additional soil, surface-water, and groundwater cleanup.

(D) Free product removal. At sites where an owner or operator's investigations under paragraph (C)(2) of this rule indicate the presence of a free product, the owner or operator shall remove free-floating product to the maximum extent practicable while continuing, as necessary, any action initiated under paragraph (C) of this rule, and while preparing for subsequent actions required under paragraph (E) or (F) of this rule. In meeting the requirements of this paragraph, the owner or operator shall:

(1) Conduct free product recovery in such a manner that such actions do not spread contamination into previously uncontaminated areas through untreated discharge or improper disposal techniques.

(2) Conduct free product recovery in such a manner that such actions do not produce vapors in the atmosphere at levels such that they pose a health and safety threat to previously uncontaminated areas.

(3) Handle any flammable products in a safe and competent manner to prevent fires or explosions.

(4) Unless directed to do otherwise by the fire marshal, prepare and submit, within thirty days of the confirmation or discovery of the release, a free product removal report to the fire marshal. The report shall provide, but is not limited to, the following information:

(a) The name of the person(s) responsible for implementing the plan;

(b) The estimated quantity and type of product on site and the product thickness in wells, boreholes, and excavations;

(c) Details of the product recovery system;

(d) Whether any discharge will take place on or off site during the recovery operation;

(e) The type of treatment and expected effluent quality from any discharge; and

(f) The disposition of the recovered product.

(E) Site assessment. Whenever an investigation under paragraph (C)(3) of this rule indicates that there may be remnant soil contamination from the release, or that the released product or product from contaminated soil may have reached groundwater, or as otherwise directed by the fire marshal, the owners and operators shall:

(1) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release, to determine the full extent and location of the soils contaminated by the release.

(2) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release to determine the presence of dissolved contamination due to the release in the ground water.

(3) When directed by the fire marshal, conduct an exposure assessment to determine the extent of exposure of, or potential for exposure of, individuals to petroleum from the release. Such assessment shall be based on such factors as the nature and extent of contamination and the existence of or potential for pathways of human exposure, the size of the community within the likely pathways of exposure, and the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified contaminants and any available recommended exposure or tolerance limits for such contaminants.

(4) The information collected by the owners and operators during the course of the investigations under this paragraph shall be submitted in accordance with a schedule established by the fire marshal.

(5) The fire marshal may request the submission of a corrective action plan for additional soil and/or ground-water cleanup.

(F) Soil and ground-water cleanup.

(1) Owners and operators required by the fire marshal under this rule to develop and submit a corrective action plan for responding to any contaminated soils, surface waters, or ground waters shall submit such a plan according to a schedule established by the fire marshal.

(2) The fire marshal shall approve the corrective action plan only if it assures that implementation of the plan will provide adequate protection of human health, safety, and the environment. In making this determination, the fire marshal shall consider:

(a) The physical and chemical characteristics of the petroleum substance, including its toxicity, persistence, and potential for migration;

(b) The hydrogeologic characteristics of the facility and the surrounding land;

(c) The proximity, quality, and current and future uses of ground water and surface waters; and

(d) The results of an exposure assessment when such an assessment is required.

(3) Upon approval of the corrective action plan, the owners and operators shall implement the plan and monitor, evaluate, and report the results of implementation, as required by the fire marshal.

(G) Public participation.

(1) Corrective action plans. For each corrective action plan submitted to the fire marshal under paragraph (F) of this rule, and prior to the approval of such plan, the fire marshal shall provide an opportunity for public review and comment on the plan. The fire marshal shall provide notice to the public by means designed to reach those members of the public most directly affected by the release and the planned corrective action. Public notice shall provide adequate time for the review of the submitted plan by the affected public. Such notice may include, but is not limited to, public notice in local newspapers, including block advertisements, public service announcements, or letters to individual households.

(2) If there is sufficient public interest, or for any other reason, the fire marshal may hold a public meeting to consider comments on the corrective action plan. The fire marshal shall hold a public meeting in any case where implementation of an approved corrective action plan does not achieve the established cleanup levels and termination of that plan is under consideration by the fire marshal.

(3) In deciding whether to approve or modify the corrective action plan, the fire marshal shall consider and respond to the comments from the public.

(H) Owner or operator liable for costs. The owner or operator of an underground storage tank from which a release of petroleum has occurred is liable to the state for any costs incurred for any corrective or enforcement action undertaken by the fire marshal, assistant fire marshal, or attorney general, that

is conducted pursuant to section 3737.88 of the Revised Code. The liability under this paragraph shall be construed to be the standard of liability which obtains under section 311 of the Federal Clean Water Pollution Act.

(1) Cost recovery. In determining the equities for seeking the recovery of costs under this rule, the fire marshal may consider the amount of financial responsibility required to be maintained under subsections (C) and (D)(5) of section 9003 of the Resource Conservation and Recovery Act, as amended, and the factors considered in establishing such amount under subsection (D)(5) of such act.

(2) Effect on liability.

(a) No transfer of liability. No indemnification, hold harmless, or similar agreement or conveyance shall be effective to transfer from the owner or operator of any underground storage tank or from any person who may be liable for a release or threat of release under this paragraph, to any other person the liability imposed under this paragraph.

(b) No bar to cause of action. Nothing in this paragraph, including the provisions of paragraph (H)(2)(a) of this rule, shall bar a cause of action that an owner or operator or any person subject to liability under this rule, or a guarantor, has or would have, by reason of subrogation or otherwise against any person.

Effective: 5/9/88

ORIGINAL SIGNED
certification

APRIL 29, 1988
date

promulgated under:	119.03 + 3737.86
Authorized by:	3737.88
Amplifies:	3737.88
Prior effective date:	none.

Sec. 3737.882. (A) If, after an examination or inspection, the fire marshal or an assistant fire marshal finds that a release of petroleum is suspected, he shall take such action as he considers necessary to ensure that a suspected release is confirmed or disproved and, if the occurrence of a release is confirmed, to correct the release. These actions may include one or more of the following:

(1) Issuance of a citation and order requiring the responsible person to undertake, in a manner consistent with the requirements of section 9003 of the "Resource Conservation and Recovery Act of 1976," 98 Stat. 3279, 42 U.S.C.A. 699lb, as amended, applicable regulations adopted thereunder, and rules adopted under division (B) of this section, such actions as are necessary to protect human health and the environment, including, without limitation, the investigation of a suspected release.

(2) Requesting the attorney general to bring a civil action for appropriate relief, including a temporary restraining order or preliminary or permanent injunction, in the court of common pleas of the county in which a suspected release is located or in which the release occurred, to obtain the corrective action necessary to protect human health and the environment. In granting any such relief, the court shall ensure that the terms of the temporary restraining order or injunction are sufficient to provide comprehensive corrective action to protect human health and the environment.

(3) Entry onto premises and undertaking corrective action with respect to a release of petroleum if, in his judgment, such action is necessary to protect human health and the environment. Any corrective action undertaken by the fire marshal or assistant fire marshal under division (A)(3) of this section shall be consistent with the requirements of sections 9003 and 9005 of the "Resource Conservation and Recovery Act of 1976," 98 Stat. 3279, 42 U.S.C.A. 699lb, and 98 Stat. 3284, 42 U.S.C.A. 699le, respectively, as amended, applicable regulations adopted thereunder, and rules adopted under division (B) of this section.

(B) The fire marshal shall adopt, and may amend and rescind, such rules as he considers necessary to establish standards for corrective actions for suspected and confirmed releases of petroleum and standards for the recovery of costs incurred for undertaking corrective or enforcement actions with respect to such releases. The rules also shall include requirements for financial responsibility for the cost of corrective actions for and compensation of bodily injury and property damage incurred by third parties that are caused by releases of petroleum. Rules regarding financial responsibility shall, without limitation, require responsible persons to provide evidence that the parties guaranteeing payment of the deductible amount established under division (E) or (F) of section 3737.91 of the Revised Code are, at a minimum, secondarily liable for all corrective action and third-party liability costs incurred within the scope of the deductible amount. The rules shall be consistent with sections 9003 and 9005 of the "Resource Conservation and Recovery Act of 1976," 98 Stat. 3279, 42 U.S.C.A. 699lb, and 98 Stat. 3284, 42 U.S.C.A. 699le, respectively, as amended, and applicable regulations adopted thereunder.

(C)(1) No person shall violate or fail to comply with a rule adopted under division (A) of section 3737.88 of the Revised Code or division (B) of this section, and no person shall violate or fail to comply with the terms of any order issued under division (A) of section 3737.88 of the Revised Code or division (A)(1) of this section.

(2) Whoever violates division (C)(1) of this section or division (F) of section 3737.881 of the Revised Code shall pay a civil penalty of not more than ten thousand dollars for each day that the violation continues. The fire marshal may, by order, assess a civil penalty under this division, or he may request the attorney general to bring a civil action for imposition of the civil penalty in the court of common pleas of the county in which the violation occurred. If the fire marshal determines that a responsible person is in violation of division (C)(1) of this section or division (F) of section 3737.881 of the Revised Code, the fire marshal may request the attorney general to bring a civil action for appropriate relief, including a temporary restraining order or preliminary or permanent injunction, in the court of common pleas of the county in which the underground storage tank or, in the case of a violation of division (F)(3) of section 3737.881 of the Revised Code, the training program that is the subject of the violation is located. The court shall issue a temporary restraining order or an injunction upon a demonstration that a violation of division (C)(1) of this section or division (F) of section 3737.881 of the Revised Code has occurred or is occurring.

Any action brought by the attorney general under this division is a civil action, governed by the rules of civil procedure and other rules of practice and procedure applicable to civil actions.

(D) Orders issued under division (A) of section 3737.88 of the Revised Code and divisions (A)(1) and (C) of this section, and appeals thereof, are subject to and governed by Chapter 3745. of the Revised Code. Such orders shall be issued without the necessity for issuance of a proposed action under that chapter. For purpose of appeals of any such orders, the term "director" as used in Chapter 3745. of the Revised Code includes the fire marshal and an assistant fire marshal.

Sec. 3737.99

(I) Whoever knowingly violates division (C) of section 3737.882 of the Revised Code is guilty of an unclassified felony and shall be fined not more than twenty-five thousand dollars or imprisoned for not more than fourteen months, or both. Whoever recklessly violates division (C) of section 3737.882 of the Revised Code is guilty of a misdemeanor of the first degree.

OHIO DEPARTMENT OF COMMERCE
DIVISION OF STATE FIRE MARSHAL
BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS

CORRECTIVE ACTION GUIDANCE FOR PETROLEUM RELEASES

January 15, 1988

Section 3737.88 of the Ohio Revised Code requires that when the State Fire Marshal finds that a release of petroleum from an underground storage tank has occurred, he shall take actions necessary to protect human health and the environment.

This list of corrective action steps for petroleum releases from UST systems have been prepared to assist UST owners and operators in conducting the corrective action activities required by the State Fire Marshal when a release is discovered. Nothing in this guidance is intended to supercede any action taken by the Fire Marshal or any other local, state, or federal agency or regulation, nor does this list relieve the UST system owner or operator from compliance with any applicable local, state or federal regulations.

General Requirements

These requirements apply to any suspected or confirmed release of petroleum from an underground storage tank. All owners and operators of UST systems, in response to a suspected or confirmed release of petroleum from an UST system, shall comply with these requirements.

Unless otherwise indicated, all reports required by the State Fire Marshal must be submitted in writing to:

Ohio Division of State Fire Marshal
Bureau of Underground Storage Tank Regulation
7510 East Main Street
P.O. Box 525
Reynoldsburg, Ohio 43068-3395

Suspected Release Confirmation

(A) All suspected releases of petroleum from UST systems must be reported to the local fire department and the State Fire Marshal within 24 hours of their discovery. The report to the State Fire Marshal may be made by calling 614-752-7938 or 1-800-686-2878.

Any suspected release that affects surface or drinking water supplies must be reported to the Ohio Environmental Protection Agency at 1-800-282-9378.

Any suspected release that threaten's Ohio's wildlife must be reported to the Ohio Department of Natural Resources at 614-265-4300.

(B) Suspected releases must be immediately investigated and either confirmed or disproved by a method acceptable to the local fire department and the State Fire Marshal.

(C) If a suspected release is confirmed, the owners and operators of the UST system must undertake all required corrective actions.

Initial Corrective Actions

The following steps must be taken at all confirmed petroleum releases sites:

(A) Upon confirmation of an actual release, or discovery of a release in any other manner, the owners and operators of the UST system must:

(1) Report the confirmed releases to the local fire department and the State Fire Marshal within twenty-four hours.

(2) Stop any further release from the UST system;

(3) Mitigate all fire, explosion, and safety hazards;

(4) Remove and properly dispose of all visibly contaminated soil and any associated groundwater from the excavation zone. The disposal of contaminated soil or water must comply with all applicable local, state and federal regulations;

(5) Conduct an investigation to determine the possible presence of free product and initiate removal of any free product found as soon as practicable;

(6) Report all initial corrective action taken, including a verification of tank repair or closure if appropriate, to the local fire department and the State Fire Marshal within twenty days of the confirmation or discovery of the release.

(7) All UST system repairs, removals, abandonment, installation, and replacement must comply with the requirements of the Ohio Fire Code and all other local and state regulations. The Ohio Fire Code requires a permit from the fire official for all such actions.

(B) Site investigation. The owner and operator must perform a site investigation for contaminated soil, groundwater, or free product and assemble from the investigation, or from other sources (e.g., USGS maps, SCS soil maps, Ohio Department of Natural Resources Division of Water, Ohio Environmental Protection Agency, and other agencies), any information deemed necessary by the State Fire Marshal. The site investigation and information must include, but is not limited to, the following:

(1) Data on the nature and estimated quantity of the released substance;

(2) Data from surface and subsurface soil sampling and analyses;

(3) Data from groundwater and/or surface water sampling and analyses; and

(4) Data from available sources and/or site investigations concerning background levels prior to the release, water quality and use, well locations, subsurface soil conditions, climatological conditions, land use, and surrounding populations.

(C) Reporting. The results of this site investigation and all required information must be reported to the State Fire Marshal within twenty days of the confirmation or discovery of the release unless otherwise directed by the Fire marshal. The State Fire Marshal may request the collection and submission of additional information and/or a corrective action plan for additional soil, surface water, and groundwater cleanup.

Free Product Removal

The following steps must be taken at **all release sites where free product has been found:**

(A) At sites where an owner or operator's investigations indicate the presence of a free product, the owner or operator must remove free floating product to the maximum extent practicable while continuing, as necessary, all other corrective action steps initiated, and while preparing for subsequent long term corrective actions. In meeting this requirement, the owner or operator shall:

(1) Conduct free product recovery in such a manner that such actions do not:

(a) spread contamination into previously uncontaminated areas through untreated discharge or improper disposal techniques, or

(b) produce vapors in the atmosphere at levels such that they pose a health and safety threat to previously uncontaminated areas.

(2) Handle any flammable products in a safe and competent manner to prevent fires or explosions.

(B) Unless directed to do otherwise by the State Fire Marshal, prepare and submit, within thirty days of the confirmation or discovery of the release, a free product removal report to the State Fire Marshal. The report shall provide, but is not limited to, the following information:

(1) The name of the person(s) responsible for implementing the plan;

(2) The estimated quantity and type of product on site and the product thickness in wells, boreholes, and excavations;

(3) Details of the product recovery system;

(4) Whether any discharge will take place on or off site during the recovery operation;

(5) The type of treatment and expected effluent quality from any discharge; and

(6) The disposition of the recovered product.

Site Assessment

The following steps must be taken at all **release sites where remaining soil or groundwater contamination has been found:**

(A) Whenever an investigation indicates that there may be remaining soil contamination from the release, or that the released product or product from contaminated soil may have reached groundwater, or as otherwise directed by the State Fire Marshal, the owners and operators must:

(1) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release, to determine the full extent and location of the soils contaminated by the release; and

(2) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release to determine the presence of dissolved contamination due to the release in the groundwater.

(B) When directed by the State Fire Marshal, conduct an exposure assessment to determine the extent of exposure of, or potential exposure for exposure of, individuals to petroleum from the release. Such assessment shall be based on such factors as the nature and extent of contamination and the existence of or potential for pathways of human exposure, the size of the community within the likely pathways of exposure, and the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified contaminants and any available recommended exposure or tolerance limits for such contaminants.

(C) The information collected by the owners and operators during the course of this site assessment shall be submitted in accordance with a schedule established by the State Fire Marshal.

(D) The State Fire Marshal may request the submission of a corrective action plan for additional soil and/or groundwater cleanup.

Long Term Corrective Action

The following steps must be taken when **long term soil and/or groundwater cleanup** is required by the State Fire Marshal:

(A) Owners and operators must develop and submit a corrective action plan for responding to any contaminated soils, surface waters, or groundwaters shall submit such a plan according to a schedule established by the State Fire Marshal.

(B) The State Fire Marshal shall approve the corrective action plan only if it assures that implementation of the plan will provide adequate protection of human health, safety, and the environment. In making this determination, the State Fire Marshal shall consider:

(1) The physical and chemical characteristics of the petroleum substance, including its toxicity, persistence, and potential for migration;

(2) The hydrogeologic characteristics of the facility and the surrounding land;

(3) The proximity, quality, and current and future uses of groundwater and surface waters; and

(4) The results of an exposure assessment when such an assessment is required.

(C) Upon approval of the corrective action plan, the owners and operators shall implement the plan and monitor, evaluate, and report the results of implementation, as required by the State Fire Marshal.

(D) Public participation.

(1) Prior to the approval of each long term corrective action plan submitted, the State Fire Marshal will provide an opportunity for public review and comment on the plan.

(2) If there is sufficient public interest, or for any other reason, the State Fire Marshal may hold a public meeting to consider comments on the corrective action plan. A public meeting will be conducted in any case where implementation of an approved corrective action plan does not achieve the established cleanup levels and termination of that plan is under consideration.

(3) In deciding whether to approve or modify the corrective action plan, the fire marshal will consider and respond to the comments from the public.

Cost Recovery

The owner or operator of an underground storage tank from which a release of petroleum has occurred is liable to the state for any costs incurred for any corrective or enforcement action undertaken by the State that is conducted pursuant to section 3737.88 of the Ohio Revised Code.

cc: N. Wulff
W. Carkido
T. Chanda
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

February 8, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Commander
U. S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-PCG-B (Shirlene Wise)
Rock Island, IL 61299-6000

Subject: Specification For Removal of Four (4) Ea. Underground Storage Tanks (USTs)
(Ref. Phone Conversation on 1 Feb. 1990 @ 1400 Hrs. SAB)

Dear Sir:

Attached are the specifications for removal of the four (4) USTs which failed their required tank tightness tests. The four tanks are as follows:

1. Tank 33 DEAC
2. Tank 23 Bldg. 1045
3. Tank 22 Rail Yard
4. Tank 11 Rail Yard

The specifications were written by a consulting engineering firm registered in the State of Ohio. The specifications were originally drawn up for the removal of 12 registered USTs declared abandoned at the Ravenna Army Ammunition Plant, but may be used for the removal of any UST at the RVAAP.

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper
Plant Engineer

HRC/WAC/wt/wc90002

Attachment

2/8/90 @ 17:15 Hrs.

Sue,

I spoke To a Sam Reed Fm/ R&R last night. ChemTron their sludge disposer, requires a sludge characteristic profile be performed; which includes PCB analysis. He said we could sign a waiver To dispense Fm/ PCB Analysis if we would provide statement that there wasn't any PCBs in the Sludge. I said No, we would not sign such a waiver being that we really don't know what's been dumped into those tanks other than Fuel oil. The problem is that neither of us know if the tank removal specs. (he's got a copy) specifically call for PCB analyses or; if the specs. state the responsibility of the contractor To perform all required analysos upon the sludge To assure proper disposal. In any case, if the specs. in some manner don't put the responsibility of costs upon the contractor To test For PCBs then this will be interpreted as an additional cost. IF it's determined To be an additional cost, he's been advised To contact Jenkins before PCB Analysis is performed. I think!!! there is a general statement To the effect that the contractor is responsible For all required analyses upon the sludge. I've put the tank removal plan on your desk. LET Jenkins & Wayne know of this discussion in case Reed feels this is an additional cost.

Also, Reed said, since ChemTron wants To perform an analytical profile on the sludge, the 5 drums can't be taken off site for disposal. Reed assured me the drums were weather & spill protected — You or Wayne might want To Check this out

Have a Nice Day

Chenda Fm/ RABEWA ☺

Message 11

Date: FRI, 02 FEB 90 09:18:41 CST
From: Robert J. Kasper <ORVAAP@RIA-EMH1.ARMY.MIL>
To: op01@ria-emh1.army.mil, oppxpg@ria-emh1.army.mil, oincdr@ria-emh1.army.mil

SMCRV-CR (200) 2 February 1990

MEMORANDUM FOR Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-PL/Mr. Woodhouse, Rock Island, IL 61299-6000

SUBJECT: Update on Underground Storage Tanks Testing/Removal, RVAAP

1. Status of original project for removal of 12 abandoned USTs.

a. Ground cover removed and all tanks exposed.

b. Hazardous hauler to drain and remove any remaining material, 2 Feb 90.

c. State Fire Marshal to inspect 5 Feb 90.

d. If State Fire Marshal approves, cleaning of the tanks to begin.

e. State Fire Marshal to inspect after cleaning. Upon Fire Marshal's approval, removal will begin with a projected completion date of 30 Mar 90 for all tanks.

2. An additional 8 tanks that were in service were tested. 3 tanks were found to be leaking and were drained and required removal. A 4th tank requires removal with the 3 leaking tanks because it is adjacent to one of the leaking tanks and will have to be removed with the leaking tank. The 4th tank was considered in the cost estimate for removal. It was also drained. Status of removal of the 4 tanks is as follows.

a. $94,000 has been funded for removal of 4 tanks.

b. Subcontract to be let 2 Feb 90.

c. Same procedures with State Fire Marshal inspection/approval apply as for 12 tanks in paragraph 1 above.

d. Estimated completion for removal of additional 4 tanks is also 30 Mar 90.

3. Request for 20 day leniency extension from the Division of State Fire Marshal, Ohio Department of Commerce to complete removal was verbally approved 1 Feb 90.

4. POC is Mr. John Cicero, AUTOVON 346-3127.

FOR THE COMMANDER:

ROBERT J. KASPER
Commander's Representative

CF:
Cdr, INAAP

TELEPHONE CONVERSATION RECORD

DATE: February 1, 1990

PERSON CALLING: Michelle Tarka
Site Coordinator
Div. State Fire Marshal

PHONE:

PERSON CALLED: H. R. Cooper
Plant Engineer

PHONE: 297-3240

SUBJECT: Request For Extension of Time to Complete Investigation of Leaking UST
Ref. Ltr. Dated 30 Jan. 1990

Ms. Tarka called to say that there are no problems with our request for a 20 day extension.

H. R. Cooper

cc: COR RVAAP Office
N. Wulff
T. Chanda
W. Carkido
File

hcust.pr

cc: VT Chang, Bo W. Carkedo

FEB.01 '90 10:27 AMCCOM AMSMC-PC ROCK ISL IL P.02

UNCLAS

01 01 011520Z FEB 90 RR UUUU 0311400

CDR AMCCOM ROCK ISL IL//AMSMC-PCG-B (R)//

CDR RVAAP RAVENNA OH//SMCRV-CA//

FEB 01 1990
N. WULFF

UNCLAS (715K)

SGD EMIL E. MASLANKA, CONTRACTING OFFICER

SUBJ UNILATERAL OBLIGATION OF FUNDS

1. THE FOL IS UNIL OBLIG FOR PERFORMANCE UNDER CONTRACT DAAA09-88-Z-0001:

CLIN: 0046AE PRON: M10PF628M1G2/01

ACRN: UNK AMS-CD: 4211052910**4210052910

ACCTG CLASS: 21-02034-0658251P4210-2572-S11173

AMT OBLIG: $94,000.00 CUM CLIN AMT: $94,000.00

DESC: FY 90 ENVIRONMENTAL RESTORATION PROJECT 5902910-04, UNDERGROUND STORAGE TANK REMOVAL IAW RAI LETTERS OF 16, 19, AND 26 JAN 90.

2. THIS ACTION WILL BE FORMALIZED ON P00092.

3. REQUEST CONTRACTOR'S ACK OF RECEIPT OF THIS MSG.

4. POC IS SHIRLENE WISE, AMSMC-PCG-B (R), AUTOVON 793-3359. 2-1-90

TO	OFFICE	ACTION
C		
C		
	P&CA	
	SAF	
	CPM	
	RETURN	

AMSMC-PCG (R) AMSMC-CPF-LG (R)
AMSMC-PCG-B (R) AMSMC-BPA-P (R)
AMSMC-PDP-B (R)

RECEIVED FEB 01 1990

MS. WISE/CONTR SPEC/
AMSMC-PCG-B (R)/23359

EMIL E. MASLANKA, CONTR OFF, AMSMC-PCG-B (R), 26628

UNCLAS

cc: N. Wulff
T. Chanda
W. Carkido
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 30, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Ohio Department of Commerce
Division of State Fire Marshal
Bureau of Underground Storage Tank Regulations
ATTN: Michelle Tarka, Site Coordinator
7510 East Main Street
P.O. Box 525
Reynoldsburg, Ohio 43068-3395

Subject: Request For Extension Of Time To Complete Investigation Of Leaking UST

Dear Ms. Tarka:

Your office has been notified about three tanks which failed their tank tightness tests.

The tanks were drained as soon as the test results were known. The earth surrounding the tanks are generally low permeability clay.

These tanks were included in a project to test eight tanks at the Ravenna Army Ammunition Plant. After each of the first tanks failed, the plant requested funding from the Army Command Headquarters to remove the tanks to comply with the requirements of OAC Rule 1301:7-7-36.

The command waited for the results of the last leak test so that it could be included in the same project if it failed. It failed its test on January 26, 1990.

We hereby request a 20 day extension to the allowed time of 20 days to remove a tank. The extension is requested for each tank. This will allow for the time delay in funding the removal of the first tanks while waiting on the results of the third test. It will also allow for approximately one week to process a contract modification and for the fact that the contractor has three tanks to remove almost simultaneously. We expect to have the tanks removed and the required samples taken by the requested extended deadlines.

A summary of the proposed dates are as follows:

	Date Reported	20 Days	20 Day Extension
Tank No. 33	January 15	Feb. 4	February 24
Tank No. 23	January 19	Feb. 8	February 28
Tank No. 11	January 26	Feb. 15	March 7

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper
Plant Engineer

HRC/wt/hc90008

cf: AMCCOM
AMSMC-PCG-B (Shirlene Wise)

AMCCOM
AMSMC-ISE-M (Ms. Ronnie DePorter)

cc: N. Wulff
R. Holford
J. Melnik
T. Chanda
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 29, 1990

THRU Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266-9297

TO Commander
U.S. Army Armament, Munitions and Chemical Command
Attn: AMSMC-ISE-M (Mr. Dennis Versluys)
Rock Island, IL 61299-6000

Subject: Reporting of a #2 Fuel Oil Leak from RVAAP's Underground Storage Tank (UST), #RV22-Rail Yard Building 47-40; Following 26 January 1990 Failure to Pass State Required Tank Tightness Test

Dear Sir:

Attached is completed DARCOM Form 2647-R in response to subject leak incident.

This installation's point of contact will be Thomas M. Chanda, Environmental Engineer, Autovon 346-3221.

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper
Plant Engineer

HRC:TMC:ade:TMC90002
Attachment

cf: INAAP
Attn: Col. Miller

1 February 1983

DARCOM Suppl 1 to AR 200-1

TELEPHONIC NOTIFICATION OF POLLUTION INCIDENT

(ALL TIMES ARE LOCAL TIMES)

DATE/TIME REPORT RECEIVED: 26 January 1990

1. INSTALLATION: Ravenna Army Ammunition Plant

2. INSTALLATION COMMANDER: Mr. Robert J. Kasper, Commander's Rep.

3. PERSON REPORTING INCIDENT (Include Phone No. and Ext): T.M. Chanda AV 346-3221

4. PERSON RECEIVING REPORT (Include Office and Ext): Mr. Dennis Versluys AMSMC-ISE-M AV743-1870

5. INCIDENT DISCOVERY DATE AND TIME: 26 January 1990 At 1430 Hrs.

NATURE OF INCIDENT

6. TYPE AND AMOUNT OF MAT AND SOURCE: No. 2 Fuel Oil at 0.353 Gals./Hr (0.05 gals/Hr max allowable)

7. SEVERITY: ☐ MINOR ☐ REPORTABLE ☐ MEDIUM ☒ NON REPORTABLE ☐ MAJOR

8. PERSONNEL INJURIES/PROPERTY LOSS: None

9. CAUSE: Tank tightness test failure Administered under regulatory standards

10. EQUIP/FAC INVOLVED (Location and Specific area): Railroad yard at Bldg. 47-40 - 15000 gal. underground storage tank RV #22 - R.R. locomotive fueling station.

11. DURATION/MAGNITUDE OF POLLUTION PRODUCED/RELEASED

a. SOURCE OF RELEASE BEEN STOPPED. ☒ YES ☐ NO

b. RELEASED MATERIAL BEEN RETAINED. ☐ YES ☒ NO

c. REACH INTO NAVIGABLE WATERS. ☐ YES ☒ NO

d. NAME OF RECEIVING STREAM OR WATERS. N/A

e. PASS THE INSTALLATION BOUNDARY. ☐ YES ☒ NO

f. NPDES PERMIT POINTS INVOLVED. ☐ YES ☒ NO SPECIFY.

g. SAMPLE BEING TAKEN FOR LEGAL RECORD. ☒ YES ☐ NO

12. DAMAGE/IMPACT ON SURROUNDINGS (Ground water, wildlife, etc.)

Contamination of subsurface soils within immediate area of Underground Storage Tank; vertical & horizontal migrational path unknown till remedial action undertaken.

13. REMEDIAL ACTION TAKEN

Product removed from tank immediately following tank tightness test failure; submitted funding request to AMCCOM PCO to implement remedial action.

14. REMEDIAL ACTION PLANNED

Tank & comtaminated soil removal; soil sampling & analysis to determine extent of migrational path with subsequent abatement response.

15. DATE OF REMEDIAL ACTION COMPLETION (est or actual): By State 16 FEB 1990 STDS.

16. NOTIFICATIONS

a. REGIONAL EPA. ☐ YES ☒ NO WHEN?

b. STATE ☒ YES ☐ NO ☐ WHEN? 26 January 1990

c. COAST GUARD OR NATIONAL RESPONSE CENTER (800-424-8802) ☐ YES ☒ NO WHEN?

d. NEXT HIGHER HQ ☐ ☐ ☐ YES ☐ NO WHEN?

17. REACTION BY NEWS MEDIA/PUBLIC

None

18. DOLLAR VALUE OF MATERIAL SPILLED: Unknown due to discovery of leak only after administering leak.

19. TOTAL COST CLEANUP ACTIVITIES (Est or Actual): $59,000. (est.)

DISTRIBUTION: ☒ AMCCOM, AMSMC-ISE ☒ RVAAP Co. ☐ ☒ RVAAP COR ☒ RAI ☐

DARCOM Form 2647-R
1 Oct 82

Figure 8-1

TELEPHONE CONVERSATION RECORD

DATE: January 26, 1990

FROM: SUSAN MCCAUSLIN, ENVIRONMENTAL SPECIALIST **PHONE** 216-297-3220

TO: TODD PARFITT, STATE FIRE MARSHALL'S OFFICE **PHONE** 1-800-686-2878

SUBJECT: TANK TEST FAILURE, TANK #22 RAIL YARD

I called B.U.S.T. and spoke with Todd parfitt to report the tank leak test failure of Tank #22. Todd recorded all needed information and requested we mail him a map of the facility indicating the location of the leaking tanks.

Susan McCauslin

SM:ade:012690.PR

cc: N. Wulff
B. Jenkins
D. Kanavy
T. Chanda
W. Carkido
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 26, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Commander
U. S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-PCG-B (Shirlene Wise)
Rock Island, IL 61299-6000

Subject: Corrective Action - Leaking Underground Storage Tank
Ref. RAI Letter January 16, 1990, Same Subject
RAI Letter January 19, 1990, Same Subject

Dear Sir:

The referenced letter advised you of the failure of a tank tightness test on two tanks during the testing of eight underground Storage Tanks at Ravenna AAP.

On the afternoon of January 26, 1990 a third tank (the Railroad Yard #2 Fuel Oil Dispensing Station), failed the tightness test. The leakage rate was approximately 0.30 gallons per hour vs. criteria of 0.05 gallons per hour. Per Ohio guidelines for tanks failing a tightness test the #2 Fuel Oil contents in the tank was removed to another tank thus eliminating the possibility of further loss.

As with prior two tanks discussed in the reference letter, we recommend removal of the tank rather than attempting to repair. This tank is steel construction and 49 years old. If the tank is rusted extensively, as we assume it is due to its age, it would not be able to be repaired. The removal of the 15,000 gallon tank in accordance with Ohio EPA requirements is estimated to cost $59,000 depending upon the extent of ground contamination and assuming no ground water contamination. We believe these are reasonable assumptions because the sub surface soil is mostly clay. The reason for the higher cost is that a second tank of the same age is in the same excavation. Any attempt to remove the failed tank will affect the structural integrity of the other tank. In addition, these tanks have concrete vaults over part of them which will increase the subcontractors work. The work must be subcontracted because RAI is not certified by the State for tank removal.

Request that additional funds in the amount of $59,000 be provided in the same way as the $35,000 requested in the referenced letters for the Deactivation Furnace and Building 1045 Tanks. The total requirement is now $94,000.

As explained in the referenced letter, the tank must be removed within 20 days from January 26, 1990 or by February 15, 1990. We will request an extension of 20 days (the maximum allowed) to March 7, 1990. To complete the physical work prior to March 7, 1990, we must be authorized to proceed by February 13, 1990. Failure to complete the removal of this tank by March 7, 1990 will result in the plant being in non-compliance with Ohio regulations.

As a reminder, the funding requested in the prior letters must be received by February 8, 1990 to avoid a non-compliance violation for those tanks.

Of the original eight tanks all have now been tested.

A 1383 Exhibit-1 and a DD Form 319-R are attached for the project. Also a DD Form 319-R for the first two tanks is attached.

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper
Plant Engineer

HRC/wt/hc90003

cf: AMCCOM
AMSMC-ISE (Ms. Ronnie DePorter)

AMCCOM
AMSMC-BPA-P

Attachment

Exhibit 1

1383 REPORT EXHIBIT 1

AMCCOM SUPPLEMENTAL INFORMATION SHEET

Installation Name: Ravenna Army Ammunition plant
Project Name: Underground Storage Tank Removal - 2 Leaking Tanks (Second group)

1. FUNDED: NO
2. PRON:
3. AMS CODE/PROGRAM ELEMENT (PE):
4. EXECUTING AGENCY: RVAAP OPERATING CONTRACTING
5. PRIORITY: HIGH
6. 319R #:
7. HAZMIN: YES
8. SOURCE STATUS: ACTIVE
9. TECH/ADMIN APPROVAL: YES
10. PERCENT CMPL: -0-
11. a. SUPPORTS PRODUCTION: NO

    b. IF YES, SPECIFY:
12. TYPE EFFORT: CLOSURE
13. CORRECT NOV: NO
14. ON COMPLIANCE SCHEDULE/AGREEMENT: YES
15. NEPA DOCUMENTATION:

    A. Prepared; Record of Environmental Consideration

    B. Approved: YES, Installation Level Only
16. IMPACT IF NOT FUNDED: Ravenna Army ammunition Plant will not be in compliance with Ohio Administration Code Rule 1301-7-7-36(C)(2) which applies to UST's which fail a tightness test.

1383 REPORT EXHIBIT 1

SUPPLEMENTAL INFORMATION SHEET

DATE PREPARED: 1/25/90
GSA INVENTORY CONTROL NO: 20736

1. PROJECT NARRATIVE DESCRIPTION:

This project is to remove two leaking underground storage tanks 15,000 gallon capacities). The project includes abandonment of the tanks by removal according to an approved closure plan, removal and disposal of all visibly contaminated soils, testing of remaining soil, and completion of a closure report.

FUNDING TYPE: PAA INSTALLATION STATUS: Inactive
REQUIRED FOR MOBILIZATION: No; however, the removal of these tanks must be fully coordinated with revisions to the mobilization plan.

2. SPECIFIC TYPE OF POLLUTION/CONTAMINATION:

The tanks failed routine tank tightness tests on January 26, 1990. The subject tanks contained No. 2 fuel oils.

3. AMOUNT OF POLLUTION/CONTAMINATION:

The two (2) tanks to be removed have a combined capacity of 30,000 gals. Inventory checks have not indicated extensive product loss. Extent of contamination will be assessed during removal process.

4. POLLUTION SOURCE AND DISCHARGE, EMISSION OR DEPOSIT POINT:

Discharge is to the soil around the tanks.

5. EXISTING TREATMENT & OTHER CONTROL MEASURES: None

6. EFFECTIVENESS OF EXISTING TREATMENT CONTROL: Not applicable

7. REMEDIAL MEASURES PROPOSED & ESTIMATED EFFECT IN CORRECTING PROBLEMS: None

Tanks have been emptied of most fluid. The tanks remain in violation until removed or repaired and contamination is cleaned up.

8. APPLICABLE STANDARD: OAC 1301:7-7-36 (C)(2)

*9. OTHER RELEVANT INFORMATION:

The tanks must be removed within 40 days of discovery and contamination of the leak. (20 days per regulation plus the maximum extension allowed of 20 days). One tank was determined leaking January 26, 1990. Time to complete removal of both tanks is two weeks. Both tanks must be removed since they are in the same excavation and are 49 years old. One can't be removed without disturbing the other. Funding is needed by February 10, 1990.

United States Environmental Protection Agency
Washington, DC 20460

EPA Federal Agency Pollution Abatement Plan — Project Report

I. Facility Information

1. State Alpha	2. Agency/ Bureau	3. GSA Installation	4. EPA Region	5. Country	6. New Installation
OH	2138	20736	05	USA	[ ] Yes [X] No

7. Name of the Installation: RAVENNA ARMY AMMUNITION PLANT

8. Street Address: 8451 STATE ROUTE 5

9. City Name	10. ZIP Code, if known	11. Ownership Type
RAVENNA OHIO	- 44266 - 9297	C

II. Basic Project Information

1. Agency Project Number	2. Various Locations	3. Media	4. Pollutant Category	5. Funding Account	6. Year Funding Required
	[ ] Yes [X] No	S W	LUST	04	90

7. Project Name (Brief description): UNDERGROUND STORAGE TANK REMOVAL (2 TANKS) 2ND

8. Project Contact Name	9. Contact Telephone	10. Total Cost Estimate (in $1,000's)
TOM CHANDA	216-297-3221	

11. Project Assessment

- [X] High (H) — Project critical to Agency programs and/ or cleanup of local environments
- [ ] Med (M) — Project important to Agency programs and/ or cleanup of local environments
- [ ] Low (L) — Project desirable to Agency programs and/ or cleanup of local environments

12. Compliance Status

- [X] ESOP Does not meet established standard and compliance deadline has passed
- [ ] ESOF Does not meet established standard and compliance deadline is in the future
- [ ] PSOF Does not meet pending standard and compliance deadline is in the future
- [ ] ESRO Meets established standard but need replacement due to obsolescence
- [ ] ESRE Meets established standard but need replacement due to need for expansion
- [ ] ESOL Meets established standards but need demonstrate leadership
- [ ] OTHR Other

13. Project Cost

Fiscal Year	Budgeted ($1,000)	Funded ($1,000)
90	590	[redacted]

14. Project Milestones/ Progress (All dates are month/ y

Design/ Plan Completion	Construction/ Work Start	Construction/ Work Complet
0190	0190	0290

First Compliance Required	Progress Code	Fiscal Ye Complet
0290	[redacted]	

For DOE Use Only

Program ID	Field Office
	[redacted]

15. Project Narrative (including description of legal requirement and pollutants to be controlled)

SEE ATTACHED 1383 EXHIBIT 1

RAVENNA ARMY AMMUNITION PLANT

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Ravenna Arsenal, Inc. January 26, 1990

I. PROJECT TITLE/PROPOSED PROJECT

Underground Storage Tank Removal - 2 Leaking Tanks (Second Group)

II. PROJECT DESCRIPTION

RVAAP has 2 USTs which have failed tank tightness tests. In compliance with State and Federal EPA regulations said USTs and their appurtenances must be removed or repaired immediately. Due to the age of the tanks this project proposes removal.

III. ANTICIPATED DATE AND/OR DURATION OF PROPOSED ACTION

Expected to be performed in February 1990.

IV. REASON FOR USING RECORD OF ENVIRONMENTAL CONSIDERATION

The proposed action is categorically excluded under the provisions of Categorical Exclusion A-7, AR200-2, Appendix A (and no extraordinary circumstances exist as defined in paragraph 4-3) because subject action is in compliance with State and Federal EPA regulations pertaining to the removal of leaking USTs.

T. M. CHANDA — DATE 1-26-90
Environmental Engineer/Proponent

H. R. COOPER — DATE 1-26-90
Plant Engineer

ROBERT J. KASPER — DATE 26 Jan 90
Commander's Representative Installation
Environmental Engineer

hc90rec.rpt

CURRENT OR BACKLOG OF DEFICIENCY IDENTIFICATION AND INDUSTRIAL PREPAREDNESS MEASURE (IPM)
(AMCCOM Suppl 1 to AR 700-90)

1. INSTALLATION NAME/PIN: Ravenna Army Ammunition Plant / PIN 995282

2. DATE OF SUBMISSION: ORIGINAL: Jan. 26, 1990; REVISED:

REQUIREMENT CONTROL SYMBOL FEEDER FOR RCS CSCAB-205

3. ACTION OFFICE:

4. LINE/AREA	5. LINE/AREA STATUS CODE	6. IPM NUMBER	7. REASON CODE	8. PROG FUNDING CODE	12. TIME TO COMP DESIGN	13. TIME TO COMP PHY WORK	14. STATE OF READ	
							WITHOUT IPM	WITH IPM
General	A		C1	PAA(ENVIR)	0	2 WKS	N/A	N/A
	9. IMPACT CODE: E	10. IMPLEMENTATION CODE: G	11. TIME IPM REQ AFTER M-DAY					

	15. ITEM/COMPONENT MANUFACTURED	16. ISN	17. PROD CAP (MAX) WITHOUT IPM	17. PROD CAP (MAX) WITH IPM	18. PROD LEVEL OFF TIME WITHOUT IPM	18. PROD LEVEL OFF TIME WITH IPM	19. RELATED IPMS
a.							
b.	N/A	N/A	N/A	N/A	N/A	N/A	
c.							
d.							
e.							
f.							
g.							
h.							
i.							
j.							
k.							
l.							
m.							
n.							
o.							
p.							

20. OPERATIONAL IMPACT
- [X] MISSION SUPPORT
- [ ] GENERAL SUPPORT
- [ ] PROD SUPPORT
- [ ] ADMIN SUPPORT

21. LOCAL CONTROL NUMBER:

22. PROGRAM CONTROL NUMBER:

25. COST DATA ($000)

a. REAL PROPERTY		b. EQUIPMENT	
(1)	LABOR COST	(1)	LABOR COST
(2)	MATERIAL COST	(2)	MATERIAL COST
(3)	SUBCONTRACT 35.0	(3)	SUBCONTRACT
(4)	G&A COST 0	(4)	G&A COST
(5)	FEE 0	(5)	FEE
(6)	TOTAL EST COST 35.0	(6)	TOTAL EST COST

26. DD FORM 1391 PROCESSOR NUMBER:

27. AMCCOM PROJECT IDENTIFICATION NUMBER:

23. DEFICIENCY PROJECT TITLE

P.O.C. R.J. Kasper COR AV 346-3124
W.A. Carkido AV346-3237

DESCRIPTION: (Bldg no, equipment, sq ft, length, quantity, etc.)

- [X] a. REAL PROPERTY FAC CAT CODE NUMBER 12450
- [ ] b. EQUIPMENT

Remvoe two (2) underground storage tanks which failed their required tank tightness tests.
1. Tank #33 DEAC Furnance - 2000 Gal. # 2 Fuel Oil
2. Tank #23 Bldg. 1045 - 15000 Gal. #2 Fuel Oil
The tanks must be removed within 40 days of discovery of leak(20 days/regulations plus 20 days maximum extention granted). The tanks were determined leaking on 1/15/90 and 1/18/90. Time to complete removal of both tanks is 2 weeks. Funding is needed by February 8, 1990.

24. JUSTIFICATION (Includes impact on mobilization planning, effort, economics, etc.)

Ravenna Army Ammunition Plant will not be in compliance with Ohio Administration Code Rule 1301:7-7-36(c)(2) which applies to USTs which fail a tightness test.

28. VERIFIED [ ] YES [ ] NO CODE _____
OFFICE _____ DATE _____
SIGNATURE

29. VALIDATED [ ] YES [ ] NO CODE _____
OFFICE _____ DATE _____
SIGNATURE

CURRENT OR BACKLOG OF DEFICIENCY IDENTIFICATION AND INDUSTRIAL PREPAREDNESS MEASURE (IPM)

(AMCCOM Suppl 1 to AR 700-90)

1. INSTALLATION NAME/PIN: Ravenna Army Ammunition Plant /Pin 995282

2. DATE OF SUBMISSION: ORIGINAL: Jan. 26, 1990; REVISED:

REQUIREMENT CONTROL SYMBOL FEEDER FOR RCS CSCAB-205

3. ACTION OFFICE:

4. LINE/AREA	5. LINE/AREA STATUS CODE	6. IPM NUMBER	7. REASON CODE	8. PROG FUNDING CODE	12. TIME TO COMP DESIGN	13. TIME TO COMP PHY WORK	14. STATE OF READ	
							WITHOUT IPM	WITH IPM
General	A		C1	T	0	2 WKS	N/A	N/A
	9. IMPACT CODE	10. IMPLEMENTATION CODE	11. TIME IPM REQ AFTER M-DAY	PAA (ENVIR)				
	E	G						

	15. ITEM/COMPONENT MANUFACTURED	16. ISN	17. PROD CAP (MAX) WITHOUT IPM	17. PROD CAP (MAX) WITH IPM	18. PROD LEVEL OFF TIME WITHOUT IPM	18. PROD LEVEL OFF TIME WITH IPM	19. RELATED IPMS
a.							
b.	N/A	N/A	N/A	N/A	N/A	N/A	
c.							
d.							
e.							
f.							
h.							
i.							
j.							
k.							
l.							
m.							
n.							
o.							
p.							

20. OPERATIONAL IMPACT

- [X] MISSION SUPPORT
- [ ] GENERAL SUPPORT
- [ ] PROD SUPPORT
- [ ] ADMIN SUPPORT

21. LOCAL CONTROL NUMBER

22. PROGRAM CONTROL NUMBER

25. COST DATA ($000)

a. REAL PROPERTY	b. EQUIPMENT
(1) LABOR COST	(1) LABOR COST
(2) MATERIAL COST	(2) MATERIAL COST
(3) SUBCONTRACT 54.0	(3) SUBCONTRACT
(4) G&A COST 0	(4) G&A COST
(5) FEE 0	(5) FEE
(6) TOTAL EST COST 54.0	(6) TOTAL EST COST

26. DD FORM 1391 PROCESSOR NUMBER

27. AMCCOM PROJECT IDENTIFICATION NUMBER

23. DEFICIENCY PROJECT TITLE

P.O.C. R.J. KASPER
AV346-3124

W.A. Carkido
AV346-3237

DESCRIPTION: (Bldg no, equipment, sq ft, length, quantity, etc.)

- [X] a. REAL PROPERTY FAC CAT CODE NUMBER 12450
- [ ] b. EQUIPMENT

To remove one (1) underground storage tank (UST) which failed it required tightness test and one (1) UST adjacent to said UST (within 3 ft.) of the same size, age, and construction.

1. Tank #22 Rail YD - 15000 Gal. - #2 Fuel Oil
2. Tank #11 Rail YD - 15000 Gal. - #2 Fuel Oil

The tanks must be removed within 40 days of discovery of leak (20 days/regulations plus 20 days maximum extension granted) The tank was determined leaking on January 26, 1990. Time to complete removal of both tanks is 2 weeks. Funding is needed by February 10, 1990.

24. JUSTIFICATION (Includes impact on mobilization planning, effort, economics, etc.)

Ravenna Army Ammunition Plant will not be in compliance with Ohio Administration Code 1301:7-7-36 (C) (2) which applies to USTs which fail a tightness test.

28. VERIFIED [ ] YES [ ] NO CODE _____

OFFICE _____ DATE _____

SIGNATURE

29. VALIDATED [ ] YES [ ] NO CODE _____

OFFICE _____ DATE _____

SIGNATURE

cc: N. Wulff
T. Chanda
W. Carkido
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 26, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

26 Jan 90

TO: Commander
U. S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-ISE-M (Ms. Ronnie DePorter)
Rock Island, IL 61299-6000

Subject: Corrective Action - Leaking Underground Storage Tank
Ref. RAI Letter January 16, 1990 - Same Subject
RAI Letter January 19, 1990 - Same Subject

Dear Sir:

Per your request, a 1383 Exhibit 1 and supporting documentation have been prepared for the removal of the two leaking tanks discussed in the referenced letters.

It is attached for further action.

Sincerely,

RAVENNA ARSENAL, INC.

H.R. Cooper

H. R. Cooper
Plant Engineer

HRC/wt/hc90005

Attachment

cf: AMCCOM
AMSMC-PCG-B

United States Environmental Protection Agency
Washington, DC 20460

EPA Federal Agency Pollution Abatement Plan — Project Report

I. Facility Information

1 State Alpha	2. Agency/Bureau	3. GSA Installation	4 EPA Region	5 Country	6. New Installation
O H	2 1 3 8	2 0 7 3 6	0 5	U S A	☐ Yes ☒ No

7 Name of the Installation: RAVENNA ARMY AMMUNITION PLANT

8 Street Address: 8451 STATE ROUTE 5

9 City Name	10 ZIP Code, if known	11 Ownership Type
RAVENNA OHIO	44266-9297	C

II. Basic Project Information

1 Agency Project Number	2. Various Locations	3. Media	4 Pollutant Category	5. Funding Account	6 Year Funding Required
	☐ Yes ☒ No	S W	L U S T	0 4	9 0

7 Project Name (Brief description): UNDERGROUND STORAGE TANK REMOVAL (2 TANKS)

8 Project Contact Name	9. Contact Telephone	10. Total Cost Estimate (in $1,000's)
TOM CHANDA	216-297-3221	[redacted]

11 Project Assessment

- ☒ High (H) — Project critical to Agency program and/or cleanup of local environment
- ☐ Med (M) — Project important to Agency program and/or cleanup of local environment
- ☐ Low (L) — Project desirable to Agency program and/or cleanup of local environment

12 Compliance Status

- ☒ ESDP Does not meet established standard and compliance deadline has passed
- ☐ ESDF Does not meet established standard and compliance deadline is in the future
- ☐ PSDF Does not meet pending standard and compliance deadline is in the future
- ☐ ESRO Meets established standard but needs replacement due to obsolescence
- ☐ ESRE Meets established standard but needs replacement due to need for expansion
- ☐ ESDL Meets established standards but needs to demonstrate leadership
- ☐ OTHR Other

13 Project Cost

Fiscal Year	Budgeted ($1,000)	Funded ($1,000)
90	35.0	

14 Project Milestones/Progress (All dates are month/year)

Design/Plan Completion	Construction/Work Start	Construction/Work Completion
0190	0190	0290

First Compliance Required	Progress Code	Fiscal Year Completed
0290	[redacted]	

For DOE Use Only

Program ID	Field Office

Project Narrative (including description of legal requirement and pollutants to be controlled)

SEE ATTACHED 1383 EXHIBIT 1

EPA Form 3500-7 (Rev. 8-85) Previous edition is obsolete.

1383 REPORT EXHIBIT 1

SUPPLEMENTAL INFORMATION SHEET

DATE PREPARED: 1/25/90
GSA INVENTORY CONTROL NO: 20736

1. PROJECT NARRATIVE DESCRIPTION:

This project is to remove two leaking underground storage tanks (2,000 and 15,000 gallon capacities). The project includes abandonment of the tanks by removal according to an approved closure plan, removal and disposal of all visibly contaminated soils, testing of remaining soil, and completion of a closure report.

FUNDING TYPE: PAA INSTALLATION STATUS: Inactive
REQUIRED FOR MOBILIZATION: No; however, the removal of these tanks must be fully coordinated with revisions to the mobilization plan.

2. SPECIFIC TYPE OF POLLUTION/CONTAMINATION:

The tanks failed routine tank tightness tests on January 15 and 18, 1990. The subject tanks contained No. 2 fuel oils.

3. AMOUNT OF POLLUTION/CONTAMINATION:

The two (2) tanks to be removed have a combined capacity of 17,000 gals. Inventory checks have not indicated extensive product loss. Extent of contamination will be assessed during removal process.

4. POLLUTION SOURCE AND DISCHARGE, EMISSION OR DEPOSIT POINT:

Discharge is to the soil around the tanks.

5. EXISTING TREATMENT & OTHER CONTROL MEASURES: None

6. EFFECTIVENESS OF EXISTING TREATMENT CONTROL: Not applicable

7. REMEDIAL MEASURES PROPOSED & ESTIMATED EFFECT IN CORRECTING PROBLEMS: None

Tanks have been emptied of most fluid. The tanks remain in violation until removed or repaired and contamination is cleaned up.

8. APPLICABLE STANDARD: OAC 1301:7-7-36 (C)(2)

*9. OTHER RELEVANT INFORMATION:

The tanks must be removed within 40 days of discovery and contamination of the leak. (20 days per regulation plus the maximum extension allowed of 20 days). The tanks were determined leaking January 15 and 18, 1990. Time to complete removal of both tanks is two weeks. Funding is needed by February 8, 1990.

Exhibit 1

1383 REPORT EXHIBIT 1

AMCCOM SUPPLEMENTAL INFORMATION SHEET

Installation Name: Ravenna Army Ammunition plant
Project Name: Underground Storage Tank Removal - 2 Leaking Tanks

1. FUNDED: NO
2. PRON:
3. AMS CODE/PROGRAM ELEMENT (PE):
4. EXECUTING AGENCY: RVAAP OPERATING CONTRACTING
5. PRIORITY: HIGH
6. 319R #:
7. HAZMIN: YES
8. SOURCE STATUS: ACTIVE
9. TECH/ADMIN APPROVAL: YES
10. PERCENT CMPL: -0-
11. a. SUPPORTS PRODUCTION: NO

    b. IF YES, SPECIFY:
12. TYPE EFFORT: CLOSURE
13. CORRECT NOV: NO
14. ON COMPLIANCE SCHEDULE/AGREEMENT: YES
15. NEPA DOCUMENTATION:

    A. Prepared; Record of Environmental Consideration

    B. Approved: YES, Installation Level Only
16. IMPACT IF NOT FUNDED: Ravenna Army ammunition Plant will not be in compliance with Ohio Administration Code Rule 1301-7-7-36(C)(2) which applies to UST's which fail a tightness test.

RAVENNA ARMY AMMUNITION PLA

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Ravenna Arsenal, Inc. January 25, 1990

I. PROJECT TITLE/PROPOSED PROJECT

Underground Storage Tank Removal - 2 Leaking Tanks

II. PROJECT DESCRIPTION

RVAAP has 2 USTs which have failed tank tightness tests. In compliance with State and Federal EPA regulations said USTs and their appurtenances must be removed or repaired immediately. Due to the age of the tanks this project proposes removal.

III. ANTICIPATED DATE AND/OR DURATION OF PROPOSED ACTION

Expected to be performed in February 1990.

IV. REASON FOR USING RECORD OF ENVIRONMENTAL CONSIDERATION

The proposed action is categorically excluded under the provisions of Categorical Exclusion (CX) A-5 and A-12, AR200-2, Appendix A (and no extraordinary circumstances exist as defined in paragraph 4-3) because subject action is in compliance with State and Federal EPA regulations pertaining to the removal of leaking USTs.

T. M. CHANDA
Environmental Engineer

1-26-90
DATE

H. R. COOPER

1-26-90
DATE

ROBERT J. KASPER
Commander's Representative Installation
Environmental Engineer

26 Jan 90
DATE

hc90rec.rpt

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE		1-25-90
SUBJECT OF CONVERSATION	Need 1383's on failed underground STG. TANKS	

INCOMING CALL

PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
S. Wise	AMSMC-PCG-B	793-3359
PERSON CALLED	**OFFICE**	**PHONE NUMBER AND EXTENSION**
J. Cicero	SMCRU-CA	346-3127

OUTGOING CALL

PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
PERSON CALLED	**ADDRESS**	**PHONE NUMBER AND EXTENSION**

SUMMARY OF CONVERSATION

Need RAI To submit 1383's on failed Underground STG. TANK – DATA fax To Ronnie Deporter + Shirlene Wise!

[signature]

CC: RVAAP COR (Cicero)
Wulff
Cooper
File

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE: 1/23/90

SUBJECT OF CONVERSATION: Extension Request For UST Remedial Action Following UST Tightness Failure

INCOMING CALL

PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION

PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION

OUTGOING CALL

PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
T.M. Chanda	RAI Environmental Engineering	216-297-3221

PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
Richard Sissler	State Fire Marshal's Office Site Coordinator Columbus, OH	1-800-686-2878

SUMMARY OF CONVERSATION

Mr. Sissler was posed with subject request in view of RVAAP's remedial action efforts being coordinated into one funded project. RVAAP still has one more UST to test; previously RVAAP had 2(ea) UST fail tightness testing which requires a Feb. 5th & Feb 9th 1990 (respectively) final corrective action. RVAAP would require an extension to finish UST testing, make funding requests, remove failed USTs, remove contaminated soil and/or product removal, and soil analysis.

Sissler said that the State cannot formally grant extensions; but can demonstrate a 20 day leniency period following regulated deadlines. After which enforcement action takes over to any irresponsiveness.

Sissler suggested RVAAP write an explanatory letter indicating inability to meet the initial 20 da. deadline; he cannot see any objection in allowing an additional 20 days to accomplish remediation under a One Project Scenario.

T.M. Chanda

DA FORM 751, 1 APR 66 — REPLACES EDITION OF 1 FEB 58 WHICH WILL BE USED.

★GPO: 1968 O — 313-775-84

12166667874

IMPORTANT FAX INFORMATION

R&R INTERNATIONAL INC.

1234 S. Cleveland-Massillon Rd.
Akron, Ohio 44321
(216) 666-2200
FAX: (216) 666-7874

Please deliver immediately to: Mr. Bill Jenkins

Company: Ravenna Arsenal, Incorporated

Fax #: (216) 297-3216

Reference:

Response Requested:	Y____	N____
Hardcopy to follow by mail:	Y____	N____

No. of pages (including cover sheet): 3 Date: 1-23-90

Please contact Mary if all pages not received.

Comments:

B. J. JENKINS
JAN 23 1990
cc: H. Cope

For Internal Use Only:

FILED
JAN 23 1990

Signed By:

Rev 3/9/89

Form 585

R&R
INTERNATIONAL, INC.

1234 S. CLEVELAND-MASSILLON ROAD
P.O. BOX 4383
AKRON, OHIO 44321
(216) 666-2200

January 23, 1990

B. J. JENKINS
JAN 23 1990

Mr. Bill Jenkins
Ravenna Arsenal, Incorporated
8451 State Route 5
Ravenna, Ohio 44266-9297

Reference: Removal of Two (2) 15,000 Gallon Tanks and Concrete Vault

Dear Mr. Jenkins:

Enclosed please find the following:

1. Cost Basis

2. Cost of Services

We are looking forward to working with you on this project. Please call us when we can be of assistance.

Respectfully,

R & R INTERNATIONAL, INC.

G. M. Rana, P.E.
President

GMR:mfp
Enclosure

R&R
INTERNATIONAL, INC.

B. J. JENKINS
JAN 23 1990

COST BASIS

Number of tanks to be removed:	2
Size	15,000 gallons

NOTE:

1. Ravenna Arsenal will pump out the water in the concrete vault and all contents (Number 2 fuel oil) from the tanks.
2. "Complete Removal of Tanks" - means excavation, transportation, disposal of the tanks and associated piping.
3. Included in the prices are cost of backfilling the hole with on-site soil, cost of analytical testing and closure report.

COST OF SERVICES

Two (2) tanks, 15,000 gallons, complete removal	$ 18,400.00
Concrete Vault removed	1,400.00
Contaminated soil removal	68.00 per yard

Sam Reed R&R

Pd up front $ / Landfill

Copy of soil analyses
- TPH
- PCB
- BETX
- Flash Pt.
- EP Tox.

Before material on-site
I.D. of Job on the day

TELEPHONE CONVERSATION RECORD

DATE: JANUARY 19, 1990, 8:15 A.M.

FROM: SUSAN MCCAUSLIN, ENVIRONMENTAL SPECIALIST **PHONE** 216-297-3220

TO: TODD PARFITT, STATE FIRE MARSHALL'S OFFICE **PHONE** 1-800-686-2878

SUBJECT: TANK TEST FAILURE, TANK #23 BUILDING 1045

I called B.U.S.T. and spoke to Todd Parfitt to report the tank leak test failure of Tank #23. Todd took down all required information and informed me that the Fire Marshall's Office would be sending us a letter outlining our requirements with regard to corrective action.

Susan McCauslin

SM:ade

cc: N. Wulff
B. Jenkins
D. Kanavy
T. Chanda
W. Carkido
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 19, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Commander
U. S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-PCG-B (Shirlene Wise)
Rock Island, IL 61299-6000

Subject: Corrective Action - Leaking Underground Storage Tank
Ref. RAI Letter January 16, 1990, Same Subject

Dear Sir:

The referenced letter advised you of the failure of a tank tightness test on Tank No. 33 during the testing of eight underground Storage Tanks at Ravenna AAP.

On the evening of January 18, 1990 a second tank at the #2 Fuel Oil Dispensing Station, Building 1045, failed the tightness test. The leakage rate was approximately 0.27 gallons per hour vs. criteria of 0.05 gallons per hour. Per Ohio guidelines for tanks failing a tightness test the 15,000 gallons of #2 Fuel Oil in the tank was removed to another tank thus eliminating the possibility of further loss.

As with the Deactivation Furnace tank discussed in the reference letter, we recommend removal of the tank rather than attempting to repair. This tank is steel construction and approximately 35 to 40 years old. The removal of the 15,000 gallon tank in accordance with Ohio EPA requirements is estimated to cost $25,000 depending upon the extent of ground contamination and assuming no ground water contamination. We believe these are reasonable assumptions because the sub surface soil is mostly clay.

Request that additional funds in the amount of $25,000 be provided in the same way as the $10,000 requested in the referenced letter for the Deactivation Furnace Tank.

As explained in the referenced letter, the tank must be removed within 20 days from January 18, 1990 or by February 7, 1990. To complete the physical work prior to February 7, 1990, we must be authorized to proceed by January 29, 1990. Failure to complete the removal of this tank by February 7, 1990 will result in the plant being in non-compliance with Ohio regulations.

As a reminder, the funding requested in the referenced letter must be received by January 26, 1990 to avoid a non-compliance violation for that tank.

Of the original eight tanks to be tested only one remains to be tested next week.

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper

H. R. Cooper
Plant Engineer

HRC/wt/hc90003

cf: AMCCOM
AMSMC-ISE (Ms. Ronnie DePorter)

OHIO DEPARTMENT OF COMMERCE
DIVISION OF STATE FIRE MARSHAL
BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS

CORRECTIVE ACTION GUIDANCE FOR PETROLEUM RELEASES

January 15, 1988

Section 3737.88 of the Ohio Revised Code requires that when the State Fire Marshal finds that a release of petroleum from an underground storage tank has occurred, he shall take actions necessary to protect human health and the environment.

This list of corrective action steps for petroleum releases from UST systems have been prepared to assist UST owners and operators in conducting the corrective action activities required by the State Fire Marshal when a release is discovered. Nothing in this guidance is intended to supercede any action taken by the Fire Marshal or any other local, state, or federal agency or regulation, nor does this list relieve the UST system owner or operator from compliance with any applicable local, state or federal regulations

General Requirements

These requirements apply to any suspected or confirmed release of petroleum from an underground storage tank. All owners and operators of UST systems, in response to a suspected or confirmed release of petroleum from an UST system, shall comply with these requirements.

Unless otherwise indicated, all reports required by the State Fire Marshal must be submitted in writing to:

Ohio Division of State Fire Marshal
Bureau of Underground Storage Tank Regulation
7510 East Main Street
P. O. Box 525
Reynoldsburg, OH 43068-3395

Suspected Release Confirmation

(A) All suspected releases of petroleum from UST systems must be reported to the local fire department and the State Fire Marshal within 24 hours of their discovery. The report to the State Fire Marshal may be made by calling 614-752-8200 or 1-800-282-1927.

Any suspected release that effects surface or drinking water supplies

must be reported to the Ohio Environmental Protection Agency at 1-800-282-9378.

Any suspected release that threatens Ohio's wildlife must be reported to the Ohio Department of Natural Resources 614-265-4300.

(B) Suspected releases must be immediately investigated and either confirmed or disproved by a method acceptable to the local fire department and the State Fire Marshal.

(C) If a suspected release is confirmed, the owners and operators of the UST system must undertake all required corrective actions.

Initial Corrective Actions

The following steps must be taken at **all confirmed petroleum releases sites:**

(A) Upon confirmation of an actual release, or discovery of a release in any other manner, the owners and operators of the UST system must:

(1) Report the confirmed releases to the local fire department and the State Fire Marshal within twenty-four hours.

(2) Stop any further release from the UST system;

(3) Mitigate all fire, explosion, and safety hazards;

(4) Remove and properly dispose of all visibly contaminated soil and any associated groundwater from the excavation zone. The disposal of contaminated soil or water must comply with all applicable local, state and federal regulations;

(5) Conduct an investigation to determine the possible presence of free product and initiate removal of any free product found as soon as practicable;

(6) Report all initial corrective action taken, including a verification of tank repair or closure if appropriate, to the local fire department and the State Fire Marshal within twenty days of the confirmation or discovery of the release.

(7) All UST system repairs, removals, abandonment, installation, and replacement must comply with the requirements of the Ohio Fire Code and all other local and state regulations. The Ohio Fire Code requires a permit from the fire official for all such actions.

(B) Site investigation. The owner and operator must perform a site investigation for contaminated soil, groundwater, or free product and assemble from the investigation, or from other sources (e.g., USGS maps, SCS soil maps, Ohio Department of Natural Resources Division of Water, Ohio Environmental Protection Agency, and other agencies), any information

deemed necessary by the State Fire Marshal. The site investigation and information must include, but is not limited to, the following:

(1) Data on the nature and estimated quantity of the released substance;

(2) Data from surface and subsurface soil sampling and analyses;

(3) Data from groundwater and/or surface water sampling and analyses; and

(4) Data from available sources and/or site investigations concerning background levels prior to the release, water quality and use, well locations, subsurface soil conditions, climatological conditions, land use, and surrounding populations.

(C) Reporting. The results of this site investigation and all required information must be reported to the State Fire Marshal within twenty days of the confirmation or discovery of the release unless otherwise directed by the fire marshal. The State Fire Marshal may request the collection and submission of additional information and/or a corrective action plan for additional soil, surface water, and groundwater cleanup.

Free Product Removal

The following steps must be taken at **all release sites where free product has been found:**

(A) At sites where an owner or operator's investigations indicate the presence of a free product, the owner or operator must remove free floating product to the maximum extent practicable while continuing, as necessary, all other corrective action steps initiated, and while preparing for subsequent long term corrective actions. In meeting this requirement, the owner or operator shall;

(1) Conduct free product recovery in such a manner that such actions do not:

(a) spread contamination into previously uncontaminated areas through untreated discharge or improper disposal techniques, or

(b) produce vapors in the atmosphere at levels such that they pose a health and safety threat to previously uncontaminated areas.

(2) Handle any flammable products in a safe and competent manner to prevent fires or explosions.

(B) Unless directed to do otherwise by the State Fire Marshal, prepare and submit, within thirty days of the confirmation or discovery of the release, a free product removal report to the State Fire Marshal. The report shall provide, but is not limited to, the following information:

(1) The name of the person(s) responsible for implementing the plan;

(2) The estimated quantity and type of product on site and the product thickness in wells, boreholes, and excavations;

(3) Details of the product recovery system;

(4) Whether any discharge will take place on or off site during the recovery operation;

(5) The type of treatment and expected effluent quality from any discharge; and

(6) The disposition of the recovered product.

Site Assessment

The following steps must be taken at all **release sites where remaining soil or ground water contamination has been found:**

(A) Whenever an investigation indicates that there may be remaining soil contamination from the release, or that the released product or product from contaminated soil may have reached groundwater, or as otherwise directed by the State Fire Marshal, the owners and operators must:

(1) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release, to determine the full extent and location of the soils contaminated by the release; and

(2) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release to determine the presence of dissolved contamination due to the release in the ground water.

(B) When directed by the State Fire Marshal, conduct an exposure assessment to determine the extent of exposure of, or potential exposure for exposure of, individuals to petroleum from the release. Such assessment shall be based on such factors as the nature and extent of contamination and the existence of or potential for pathways of human exposure, the size of the community within the likely pathways of exposure, and the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified contaminants and any available recommended exposure or tolerance limits for such contaminants.

(C) The information collected by the owners and operators during the course of this site assessment shall be submitted in accordance with a schedule established by the State Fire Marshal.

(D) The State Fire Marshal may request the submission of a corrective action plan for additional soil and/or ground water cleanup.

Long Term Corrective Action

The following steps must be taken when **long term soil and/or ground water cleanup** is required by the State Fire Marshal:

(A) Owners and operators must develop and submit a corrective action plan for responding to any contaminated soils, surface waters, or ground waters shall submit such a plan according to a schedule established by the State Fire Marshal.

(B) The State Fire Marshal shall approve the corrective action plan only if it assures that implementation of the plan will provide adequate protection of human health, safety, and the environment. In making this determination, the State Fire Marshal shall consider:

(1) The physical and chemical characteristics of the petroleum substance, including its toxicity, persistence, and potential for migration;

(2) The hydrogeologic characteristics of the facility and the surrounding land;

(3) The proximity, quality, and current and future uses of ground water and surface waters; and

(4) The results of an exposure assessment when such an assessment is required.

(C) Upon approval of the corrective action plan, the owners and operators shall implement the plan and monitor, evaluate, and report the results of implementation, as required by the State Fire Marshal.

(D) Public participation.

(1) Prior to the approval of each long term corrective action plan submitted, the State Fire Marshal will provide an opportunity for public review and comment on the plan.

(2) If there is sufficient public interest, or for any other reason, the State Fire Marshal may hold a public meeting to consider comments on the corrective action plan. A public meeting will be conducted in any case where implementation of an approved corrective action plan does not achieve the established cleanup levels and termination of that plan is under consideration.

(3) In deciding whether to approve or modify the corrective action plan, the fire marshal will consider and respond to the comments from the public.

Cost Recovery

The owner or operator of an underground storage tank from which a release of petroleum has occurred is liable to the state for any costs incurred for any corrective or enforcement action undertaken by the State that is conducted pursuant to section 3737.88 Of the Ohio Revised Code.

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER Property ☒ Tank(s) ☒

Name: RIVENNA ARSENAL | Address | Representative | Telephone

Name | Address | Representative | Telephone

2. OPERATOR

Name: SAME | Address | Telephone

3. REASON FOR TEST (Explain Fully)

NEW LAWS

4. WHO REQUESTED TEST AND WHEN

Name: WAYNE CARKido | Title | Company or Affiliation | Date

Address | Telephone

5. TANK INVOLVED Use additional lines for manifolded tanks

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
#11 R/R Yard	15,000		#2 Fuel oil	49 YRS	STEEL

Location	Cover	Fills	Vents	Siphones	Pumps
	EARTH	2" & 3"	2"	N/A	suction
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

6. INSTALLATION DATA

7. UNDERGROUND WATER

Depth to the Water table 125" | Is the water over the tank? ☐ Yes ☒ No

8. FILL-UP ARRANGEMENTS

Tanks to be filled _____ hr. _____ Date | Arranged by _____ Name | Telephone

Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead.

Terminal or other contact for notice or inquiry _____ Company | Name | Telephone

9. CONTRACTOR, MECHANICS, any other contractor involved

10. OTHER INFORMATION OR REMARKS

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.

11. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#11 R/R yard	NO	-.353 G.P.H.	1-26-90

12. SENSOR CERTIFICATION

3-89
Date

2408
Serial No. of Thermal Sensor

13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

Technicians

1. A.L. SEARS
Certification # 12210645

2. _____
Certification # _____

ALL OHIO PETRO TEST Inc.
Testing Contractor or Company. By: Signature

2507 4th ST. N.W. CANTON, OHIO 44708
Address

PN6827

1300		6	11.5	12	.225	.205	-.020	253	+1	+.023	-.043	-.215
1305		7	11.5	12	.985	.965	-.020	253	+0	+.000	-.020	-.235
1310		8	11.4	12	.965	.940	-.025	253	+0	+.000	-.025	-.260
1315		9	11.4	12	.940	.915	-.025	254	+1	+.023	-.048	-.308
1320		10	11.4	12	.915	.890	-.025	254	+0	+.000	-.025	-.333
1325		11	11.4	12	.890	.865	-.025	255	+1	+.023	-.048	-.381
1330		12	11.4	12	.865	.840	-.025	254	-1	-.023	-.002	-.383
1335		13	11.4	12	.840	.815	-.025	255	+1	+.023	-.048	-.431
1340		14	11.4	12	.815	.790	-.025	255	+0	+.000	-.025	-.456
1345		15	11.4	12	.790	.765	-.025	256	+1	+.023	-.048	-.504
1350		16	11.4	12	.765	.740	-.025	256	+0	+.000	-.025	-.529
1355		17	11.4	12	.740	.715	-.025	256	+0	+.000	-.025	-.554
1400		18	11.4	12	.715	.690	-.025	255	-1	-.023	-.002	-.556
1405		19	11.4	12	.690	.665	-.025	255	+0	+.000	-.025	-.581
1410		20	11.4	12	.665	.640	-.025	256	+1	+.023	-.048	-.629
1415		21	11.4	12	.640	.615	-.025	256	+0	+.000	-.025	-.645
1420		22	11.4	12	.615	.590	-.025	256	+0	+.000	-.025	-.679
1425		23	11.4	12	.590	.565	-.025	256	+0	+.000	-.025	-.704
1430		24	11.4	12	.565	.540	-.025	255	-1	-.023	-.002	-.706
	End Test										-.353	G.P.H.

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test -.353 gph

Signature of Tester: A.L. Sears

Date: 1-26-90

2. Statement:

☐ Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A. publication 329. This is not intended to indicate permission of a leak.

OR

☒ Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator _____

Date _____

27. Sensor Calibration 167301, 167311 — LOG OF TEST PROCEDURES			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGING EACH READING	39. ACCUMULATED CHANGE
28. DATE 1-26-90 TIME (24 hr)	Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Standpipe Level in Inches: Level to which Restored	32. Product in Graduate: Before Reading	32. Product in Graduate: After Reading	33. Product Replaced (-) / Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower - (c)	37. Computation (c) × (a) = Expansion + Contraction -	Temperature Adjustment: Volume Minus Expansion (+) or Contraction (-) #33(V) — #37(T)	At Low Level compute Change per Hour (NFPA criteria)
430	ARRIVE TEST LOCATION											
	MAKE MODIFICATION TO TANK TOP FOR EQUIP.											
	CHECK FOR GROUNDWATER TABLE											
	SETUP SCAFFOLDING											
	SETUP EQUIP											
	FILL EQUIP AND BLEED AIR FROM SYSTEM											
745	START CIRCULATION									.0231		
	DRAW SAMPLES											
915	START HIGH LEVEL TEST	1		42		.800		224				
930		2	38.5	42	.800	.570	-.230	222	+1	+.023	-.253	
945		3	37.8	42	.570	.270	-.300	223	+1	+.023	-.323	
1000		4	37.8	42	1.000	.700	-.300	226	+3	+.069	-.369	
1015	BLEED AIR FROM SYSTEM	5	37.0	42	.700	.355	-.345	228	+2	+.046	-.391	
1030	BL	6	37.9	42	.355	.070	-.285	228	+0	+.000	-.285	
1045		7	38.4	42	1.000	.755	-.245	229	+1	+.023	-.268	
1100		8	38.5	42	.755	.520	-.235	232	+3	+.069	-.294	
1115		9	38.5	42	.520	.285	-.235	234	+2	+.046	-.281	
1130		10	39.0	42	1.000	.800	-.200	237	+3	+.069	-.269	
1145		11	39.0	42	.800	.600	-.200	239	+2	+.046	-.246	
1200		12	39.0	42	.600	.400	-.200	241	+2	+.046	-.246	
1202	DROP TO LOW LEVEL TEST											
1215	PRELIM READING	13		12				245				
1230	" "	14		12				248				
1235	START LOW LEVEL TEST	1	11.9	12	.305	.300	-.005	249	+1	+.023	-.028	
1240		2	11.7	12	.300	.285	-.015	251	+2	+.046	-.061	-.089
1245		3	11.5	12	.285	.265	-.020	251	+0	+.000	-.020	-.109
1250		4	11.5	12	.265	.245	-.020	252	+1	+.023	-.043	-.152
1255		5	11.5	12	.245	.225	-.020	252	+0	+.000	-.020	-.172

14. Revenna Arsenal — Name of Supplier, Owner or Dealer
SK, 5 — Address No. and Street(s)
Kenmore — City
Ohio — State
1-66 [illegible] — Date of Test

15. TANK TO TEST

#11 R/R YARD
Identity by position

#2 fuel oil
Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY

Nominal Capacity 15,000 Gallons

By most accurate capacity chart available 15,546 Gallons

From
- ☐ Station Chart
- ☒ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☐ Charts supplied with
- ☐ Other ______

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up 0 in. to ⅛" — 0 Gallons — 126 in. Tank Diameter

		Gallons	Total Gallons ea. Reading
Inventory			15546
	ToPoff		20
	ToTAL		15,566

Transfer total to line 25a

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK

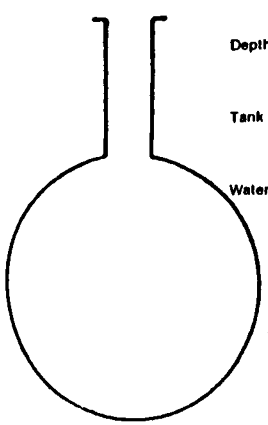
☒ Water in tank ☒ Line(s) being tested with LVLLT ☒ High water table in tank excavation

See manual sections applicable. Check below and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to doublewalled tanks.

Complete section below:

1. Is four pound rule required? Yes ☒ No ☐
2. Height to 12" mark from bottom of tank 270.7 in.
3. Pressure at bottom of tank 4.609 P.S.I.
4. Pressure at top of tank 4.485 P.S.I.



Depth of burial 121 in.
Tank dia. 126 in.
Water table 122 in.

NOTES:

23.7

x.036
41.392
+4
8.392
÷.031
270.7
− 247

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to grade* 247 in.
Add 30" for "T" probe assy. 30 in.
Total tubing to assemble — approximate 277 in.

20. EXTENSION HOSE SETTING

Tank top to grade* 121 in.
Extend hose on suction tube 6" or more below tank top 0 in.

*If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation 8221 digits
Between 46/47 °F

23. Digits per °F in range of expected change 312 digits

COEFFICIENT OF EXPANSION (Complete after circulation)

24a. Corrected A.P.I. Gravity

Observed A.P.I. Gravity ______
Hydrometer employed ______ H
Observed Sample Temperature ______ °F
Corrected A.P.I. Gravity @ 60°F, From Table A ______
Coefficient of Expansion for Involved Product From Table B ______
Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM ☐ Stage I ☐ Stage II

N/A

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD

Type of Product #2 fuel oil
Hydrometer Employed 4 H
Temperature in Tank After Circulation 46.4 °F
Temperature of Sample 41.0 °F
Difference (+/-) -5 °F
Observed A.P.I. Gravity 34.9
Reciprocal 2159 Page # 38

15,566 (Total quantity in full tank (16 or 17)) ÷ 2159 (Reciprocal) = 7.2098193 (Volume change in this tank per °F)
Transfer to Line 26a.

24c. FOR TESTING WITH WATER see Table C & D

Water Temperature after Circulation Table C ______ °F
Coefficient of Water Table D ______
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b.

25. (a) ______ Total quantity in full tank (16 or 17) × (b) ______ Coefficient of expansion for involved product = (c) ______ gallons Volume change in this tank per °F (0231)

26. (a) 7.2098193 Volume change per °F (25 or 24b) ÷ 312 Digits per °F in test Range (23) = .0231083 Volume change per digit. Compute to 4 decimal places. This is test factor (a)

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER Property ☒ Tank(s) ☒

RADFORD ARSENAL

Name | Address | Representative | Telephone

Name | Address | Representative | Telephone

2. OPERATOR

SAME

Name | Address | Telephone

3. REASON FOR TEST (Explain Fully)

NEW LAWS

4. WHO REQUESTED TEST AND WHEN

WAYNE CARKido ENG.

Name | Title | Company or Affiliation | Date

Address | Telephone

5. TANK INVOLVED Use additional lines for manifolded tanks

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
#23 B. 1045	15,000		#2 FUEL OIL	41 YRS	STEEL

6. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
SOUTHEAST CORNER OF BUILDING 1045	EARTH	4"	2"	N/A	SUCTION
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

7. UNDERGROUND WATER

Depth to the Water table 34"

Is the water over the tank? ☐ Yes ☒ No

8. FILL-UP ARRANGEMENTS

Tanks to be filled _____ hr. _____ Date Arranged by _____ Name Telephone

Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead.

Terminal or other contact for notice or inquiry _____ Company Name Telephone

9. CONTRACTOR, MECHANICS, any other contractor involved

10. OTHER INFORMATION OR REMARKS

SUCTION LINE disconnected FOR TEST with STATE FIRE MARSHALL

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.

11. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#23 B. 1045	NO	-.3005 G.P.H.	1-18-90

12. SENSOR CERTIFICATION

3-89
Date

2408
Serial No. of Thermal Sensor

13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

Technicians

1. AL. SEARS

Certification # 122110645

2. _____

Certification # _____

ALL OHIO PETRO TEST INC.
Testing Contractor or Company. By: Signature

2507 6TH ST. N.W. CANTON, OHIO 44708
Address

PN6827

1730		6	13.0	12	.270	.305	+.035	477	-1	-.022	+.057	
1735	START LOW LEVEL TEST	1		12				476				
1740		2	11.9	12	.315	.310	-.005	476	+0	+.000	-.005	
1745		3	11.7	12	.310	.300	-.010	477	+1	+.022	-.032	-.037
1750		4	11.7	12	.300	.290	-.010	477	+0	+.000	-.010	-.047
1755		5	11.5	12	.290	.270	-.020	478	+1	+.022	-.042	-.089
1800		6	11.5	12	.270	.250	-.020	478	+0	+.000	-.020	-.109
1805		7	11.5	12	.990	.970	-.020	478	+0	+.000	-.020	-.129
1810		8	11.5	12	.970	.950	-.020	479	+1	+.022	-.042	-.171
1815		9	11.5	12	.950	.930	-.020	480	+1	+.022	-.042	-.213
1820		10	11.5	12	.930	.910	-.020	480	+0	+.000	-.020	-.233
1825		11	11.5	12	.910	.890	-.020	480	+0	+.000	-.020	-.253
1830		12	11.5	12	.890	.870	-.022	480	+0	+.000	-.020	-.273
1835		13	11.5	12	.870	.850	-.020	481	+1	+.022	-.042	-.315
1840		14	11.5	12	.850	.830	-.020	482	+1	+.022	-.042	-.357
1845		15	11.5	12	.830	.810	-.020	482	+0	+.000	-.020	-.377
1850		16	11.5	12	.810	.790	-.020	482	+0	+.000	-.020	-.397
1855		17	11.5	12	.790	.770	-.020	481	-1	-.022	+.002	-.395
1900		18	11.5	12	.770	.750	-.020	481	+0	+.000	-.020	-.415
1905		19	11.5	12	.750	.730	-.020	482	+1	+.022	-.042	-.457
1910		20	11.5	12	.730	.710	-.020	483	+1	+.022	-.042	-.499
1915		21	11.5	12	.710	.690	-.020	483	+0	+.000	-.020	-.519
1920		22	11.5	12	.690	.670	-.020	484	+1	+.022	-.042	-.561
1925		23	11.5	12	.670	.650	-.020	484	+0	+.000	-.020	-.581
1930		24	11.5	12	.650	.630	-.020	484	+0	+.000	-.020	-.601

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test -.3005 gph

Signature of Tester: H. L. Seavo

Date: 1-18-90

2. Statement:

☐ Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A. publication 329. This is not intended to indicate permission of a leak.

OR

☒ Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator _____

Date _____

14. REUSNH ARSENAL — Name of Supplier, Owner or Dealer | 5R.5 — Address No and Street(s) | REUSNH — City | OHD — State | 1-18-90 — Date of Test

15. TANK TO TEST

#23 B.1045 — Identify by position

#2 fuel oil — Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY

Nominal Capacity 15,000 Gallons

By most accurate capacity chart available 15,546 Gallons

From
- [X] Station Chart
- [ ] Tank Manufacturer's Chart
- [ ] Company Engineering Data
- [ ] Charts supplied with
- [ ] Other

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up 2 1/4 to 1/8" in. | 62 Gallons | 126 Tank Diameter in.

	Gallons	Total Gallons ea. Reading
Inventory	126	15,546
Topoff		+ 20
WATER		- 62
TOTAL		15504

Transfer total to line 25a

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK

[X] Water in tank [ ] Line(s) being tested with LVLLT

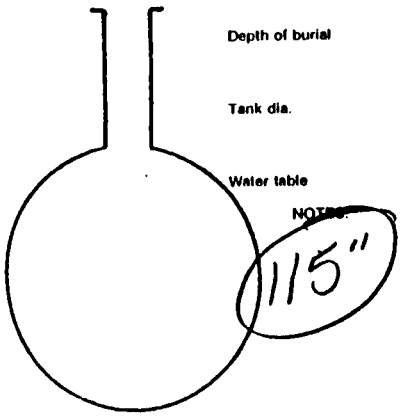
[X] High water table in tank excavation

See manual sections applicable. Check below and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to doublewalled tanks.

Complete section below:

1. Is four pound rule required? Yes [X] No [ ]
2. Height to 12" mark from bottom of tank 270.7 in.
3. Pressure at bottom of tank 4.609 P.S.I.
4. Pressure at top of tank 4.483 P.S.I.



122
x.036
4.392
+ 4.000
8.392
÷ .031
270.7
- 126
144.7

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to grade* 156 in.
Add 30" for "T" probe assy. 30 in.
Total tubing to assemble — approximate 186 in.

20. EXTENSION HOSE SETTING

Tank top to grade* 32 1/2 in.
Extend hose on suction tube 6" or more below tank top 10 in.
*If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation 74150 digits
49/45 °F Between

23. Digits per °F in range of expected change 320 digits

COEFFICIENT OF EXPANSION (Complete after circulation)

24a. Corrected A.P.I. Gravity

Observed A.P.I. Gravity
Hydrometer employed H
Observed Sample Temperature °F
Corrected A.P.I. Gravity @ 60°F. From Table A
Coefficient of Expansion for Involved Product From Table B
Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM [ ] ~~Stage I~~ [ ] Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD

Type of Product #2 fuel oil
Hydrometer Employed 4 H
Temperature in Tank After Circulation 44.0 °F
Temperature of Sample 43 °F
Difference (+/-) -1 °F
Observed A.P.I. Gravity 34.0
Reciprocal 2179 Page # 38

15,504 (Total quantity in full tank (16 or 17)) ÷ 2179 (Reciprocal) = 7.1151904 (Volume change in this tank per °F)

Transfer to Line 26a.

24c. FOR TESTING WITH WATER see Table C & D

Water Temperature after Circulation Table C °F
Coefficient of Water Table D
Added Surfactant? [ ] Yes [ ] No Transfer COE to Line 25b.

25. (a) _____ (Total quantity in full tank (16 or 17)) × (b) _____ (Coefficient of expansion for involved product) = (c) _____ (Volume change in this tank per °F) gallons (.0222)

26. (a) 7.1151904 (Volume change per °F (25 or 24b)) ÷ 320 (Digits per °F in test Range (23)) = .0222349 Volume change per digit Compute to 4 decimal places. This is test factor (a)

27. Sensor Calibration 16739 16732			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGING EACH READING	39. ACCUMULATED CHANGE
LOG OF TEST PROCEDURES												
28. DATE 1-18-90 TIME (24 hr.)	Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Standpipe Level in Inches: Level to which Restored	32. Product in Graduate: Before Reading	32. Product in Graduate: After Reading	33. Product Replaced (-) Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower - (c)	37. Computation (c) = (a) = Expansion + Contraction -	Temperature Adjustment: Volume Minus Expansion (+) or Contraction (-) #33(V) -- #37(T)	At Low Level computr Change per Hour (NFPA criteria)
815	ARRIVE TEST LOCATION STICK TANK FOR BURIAL DEPTH AND WATER											
	WAIT FOR TANK TO BE TOPPED OFF CHECK FOR GROUNDWATER											
1030	SETUP SCAFFOLDING											
	SETUP 2 SETS OF EQUIP											
	FILL EQUIP AND BLEED AIR FROM SYSTEM											
1130	START CIRCULATION									.0222		
1229	TAKE SAMPLE											
1230	START HIGH LEVEL TEST	1		4/2		.720		7450				
1245		2	39.2	4/2	.720	.620	-.100	4/50	+0	+.000	-.100	
1300		3	37.9	4/2	.620	.470	-.150	4/51	+1	+.022	-.172	
1315	BLEED AIR FROM SYSTEM	4	37.5	4/2	.470	.290	-.180	4/51	+0	+.000	-.180	
1330		5	37.5	4/2	1.000	.820	-.180	4/51	+0	+.000	-.180	
1345		6	37.7	4/2	.820	.660	-.160	4/52	+1	+.022	-.182	
1400		7	37.7	4/2	.660	.500	-.160	4/53	+1	+.022	-.182	
1415		8	38.0	4/2	.500	.350	-.150	4/55	+2	+.044	-.194	
1430		9	38.0	4/2	.350	.200	-.150	4/58	+3	+.067	-.217	
1445		10	38.0	4/2	.200	.050	-.150	4/60	+2	+.044	-.194	
500		11	38.0	4/2	.610	.460	-.150	4/63	+3	+.067	-.217	
1515		12	38.0	4/2	.460	.310	-.150	4/64	+1	+.022	-.172	
1517	DROP TO LOW LEVEL TEST AIR POCKET SHOWED IN DROP TO LOW LEVEL TEST											
	RE BLEED MANWAY LEFT CIRCULATING MOTORS RUNNING											
1600	RERUN 1 HOUR HIGH LEVEL READINGS											
1615		1		4/2		.725		7470				
1630		2	38.3	4/2	.725	.590	-.135	472	+2	+.044	-.179	
1645		3	38.3	4/2	.590	.455	-.135	476	+4	+.089	-.224	
1700		4	38.3	4/2	.455	.320	-.135	478	+2	+.044	-.179	
1702	DROP TO LOW LEVEL TEST											
1715		5	15.2	12	.600	.760	+.160	478	+0	+.000	+.160	

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER Property ☒ Tank(s) ☒

REGINA ARSENAL

Name | Address | Representative | Telephone

Name | Address | Representative | Telephone

2. OPERATOR

SAME

Name | Address | Telephone

3. REASON FOR TEST (Explain Fully)

NEW LINES

4. WHO REQUESTED TEST AND WHEN

WAYNE CARLSON ENG.

Name | Title | Company or Affiliation | Date

Address | Telephone

5. TANK INVOLVED Use additional lines for manifolded tanks

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
#33 DOAC FURNACE	2000		#2 FUEL OIL		STEEL

6. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
EAST SIDE OF BURN PAD	EARTH	3"	2"	N/A	SUCTION
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

7. UNDERGROUND WATER

Depth to the Water table 69"

Is the water over the tank? ☐ Yes ☒ No

8. FILL-UP ARRANGEMENTS

Tanks to be filled _____ hr. _____ Date Arranged by _____ Name Telephone

Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead.

Terminal or other contact for notice or inquiry _____ Company Name Telephone

9. CONTRACTOR, MECHANICS, any other contractor involved

10. OTHER INFORMATION OR REMARKS

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.

11. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#33 DOAC FURNACE	NO	.0825 G.P.H.	1-15-90

12. SENSOR CERTIFICATION

3-87
Date

24JK
Serial No. of Thermal Sensor

13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

Technicians

1. A.L. SEARS

Certification # 122110645

2. _____

Certification # _____

ALL OHIO PETROTEST INC.
Testing Contractor or Company. By: Signature

2307 4TH STREET CANTON, OHIO 44708
Address

PN6827

1415		12	12.5	12	.265	.285	±.020	686	+7	±.022	-.002	-.061
1450		13	12.5	12	.285	.305	±.020	696	+10	±.032	-.012	-.073
1455		14	12.5	12	.305	.325	±.020	704	+8	±.026	-.006	-.079
1500		15	12.5	12	.325	.345	±.020	711	+7	±.022	-.002	-.081
1505		16	12.5	12	.345	.365	±.020	721	+10	±.032	-.012	-.093
1510		17	12.5	12	.365	.385	±.020	731	+10	±.032	-.012	-.105
1515		18	12.5	12	.385	.405	±.020	739	+8	±.026	-.006	-.111
1520		19	12.5	12	.405	.425	±.020	749	+10	±.032	-.012	-.123
1525		20	12.5	12	.425	.445	±.020	757	+8	±.026	-.006	-.129
1530		21	12.5	12	.445	.465	±.020	765	+8	±.026	-.006	-.135
1535		22	12.5	12	.465	.485	±.020	774	+9	±.029	-.009	-.144
1540		23	12.5	12	.485	.505	±.020	783	+9	±.029	-.009	-.153
1645		24	12.5	12	.505	.525	±.020	793	+10	±.032	-.012	-.165
	DROP PRODUCT DISCONNECT COPPER PRODUCT LINE AND RETEST TANK ONLY										-.0825	G.P.H.

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test -.0825 gph

Signature of Tester: A.L. Sears

Date: 1-15-90

2. Statement:

☐ Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A. publication 329. This is not intended to indicate permission of a leak.

OR

☒ Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator _____

Date _____

14. KEVENNA ARSENAL | SR 5 | KEVENNA | OHIO | 1-15-90
Name of Supplier, Owner or Dealer | Address No. and Street(s) | City | State | Date of Test

15. TANK TO TEST
#33 DRAC FURNACE
Identity by position
#2 Fuel oil
Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY
Nominal Capacity 2000 Gallons
By most accurate capacity chart available 2005 Gallons

From
- ☐ Station Chart
- ☐ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☒ Charts supplied with PETROTITE Equip
- ☐ Other SLIDE CHART

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up 1/8 to 1/4" in. | 1 Gallons | 64 Tank Diameter in.

	Gallons	Total Gallons ea. Reading
Inventory	64"	2003
TOPOFF		+ 5
WATER		- 1
TOTAL		2009

Transfer total to line 25a

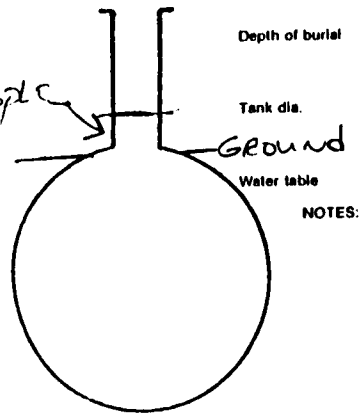
18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK ☒ Water in tank ☒ Line(s) being tested with LVLLT ☒ High water table in tank excavation

See manual sections applicable. Check below and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to doublewalled tanks.

Complete section below:

1. Is four pound rule required? Yes ☐ No ☒
2. Height to 12" mark from bottom of tank 100 in.
3. Pressure at bottom of tank 3,100 P.S.I.
4. Pressure at top of tank 1,116 P.S.I.



Depth of burial 6 in.
Tank dia. 64 in.
Water table 0 in.

NOTES:

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY
Bottom of tank to grade* 69 in.
Add 30" for "T" probe assy. 30 in.
Total tubing to assemble — approximate 99 in.

20. EXTENSION HOSE SETTING
Tank top to grade* 6 in.
Extend hose on suction tube 6" or more below tank top 20 in.
*If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation 4412 digits
34/35 °F Between
23. Digits per °F in range of expected change 288 digits

COEFFICIENT OF EXPANSION (Complete after circulation)
24a. Corrected A.P.I. Gravity
Observed A.P.I. Gravity
Hydrometer employed H
Observed Sample Temperature °F
Corrected A.P.I. Gravity @ 60°F, From Table A
Coefficient of Expansion for Involved Product From Table B
Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM ☐ Stage I ☐ Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD
Type of Product #2 Fuel oil
Hydrometer Employed 4 H
Temperature in Tank After Circulation 34.2 °F
Temperature of Sample 37 °F
Difference (+/-) +3 °F
Observed A.P.I. Gravity 34.4
Reciprocal 2178 Page # 38
2009 (Total quantity in full tank (16 or 17)) × .2178 (Reciprocal) = .9224058 (Volume change in this tank per °F)
Transfer to Line 26a.

24c. FOR TESTING WITH WATER see Table C & D
Water Temperature after Circulation Table C °F
Coefficient of Water Table D
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b.

25. (a) Total quantity in full tank (16 or 17) × (b) Coefficient of expansion for involved product = (c) Volume change in this tank per °F gallons
26. (a) .9224058 Volume change per °F (25 or 24b) × 288 Digits per °F in test Range (23) = .0032027 Volume change per digit Compute to 4 decimal places. .0032 This is test factor (a)

27. Sensor Calibration 16730, 16732 — LOG OF TEST PROCEDURES			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGING EACH READING	39. ACCUMULATED CHANGE
28. DATE 4-15-90 TIME (24 hr.)	Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Standpipe Level in Inches: Level to which Restored	32. Product in Graduate: Before Reading	32. Product in Graduate: After Reading	33. Product Replaced (-): Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower - (c)	37. Computation (c) × (a) = Expansion + Contraction -	Temperature Adjustment: Volume Minus Expansion (+) or Contraction (-) #33(V) − #37(T)	At Low Level compute Change per Hour (NFPA criteria)
740	ARRIVE TEST SITE WAIT FOR PERSON TO UNLOCK AREA TO TANK TO BE TESTED											
	WAIT FOR MAINT. TO COME TURN ON ELECT.											
	REMOVE 4" BUSHING FROM TANK CLEAN AND PROBE REINSTALLED											
										,0032		
1130	START CIRCULATION											
1200	START HIGH LEVEL TEST	1		42		,245		4412				
1215		2	43.1	42	,245	,295	+.050	4138	+26	+.083	-.033	
1230	TIGHTEN 4" BUSHING	3	43.1	42	,295	,340	+.045	464	+26	+.083	-.038	
1245		4	43.1	42	,340	,390	+.050	490	+26	+.083	-.033	
1300		5	43.1	42	,390	,440	+.050	516	+26	+.083	-.033	
1315		6	42.9	42	,440	,475	+.035	543	+27	+.086	-.051	
1317	DROP TO LOW LEVEL TEST											
1330		7	13.7	12	,475	,540	+.065	567	+24	+.077	-.012	
1345		8	13.2	12	,540	,580	+.040	590	+23	+.074	-.034	
1350		1	12.5	12	,580	,600	+.020	597	+7	+.022	-.002	
1355		2	12.5	12	,600	,620	+.020	604	+7	+.022	-.002	-.004
1400		3	12.5	12	,620	,640	+.020	613	+9	+.029	-.009	-.013
1405		4	12.5	12	,640	,660	+.020	620	+7	+.022	-.002	-.015
1410		5	12.5	12	,120	,140	+.020	628	+8	+.026	-.006	-.021
1415		6	12.5	12	,140	,160	+.020	637	+9	+.029	-.009	-.030
1420		7	12.5	12	,160	,180	+.020	647	+10	+.032	-.012	-.042
1425		8	12.5	12	,180	,200	+.020	656	+9	+.029	-.009	-.051
1430		9	12.5	12	,200	,220	+.020	663	+7	+.022	-.002	-.053
1435		10	12.5	12	,220	,245	+.025	672	+9	+.029	-.004	-.057
1440		11	12.5	12	,245	,265	+.020	679	+7	+.022	-.002	-.059

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER Property ☒ Tank(s) ☒

Name	Address	Representative	Telephone
REGINNA ARSENAL			
Name	Address	Representative	Telephone

2. OPERATOR

Name	Address	Telephone
SAME		

3. REASON FOR TEST (Explain Fully)

RETEST AFTER DISCONNECTING COOPER LINE

4. WHO REQUESTED TEST AND WHEN

Name	Title	Company or Affiliation	Date
WAYNE CARLSON	Eng.	SAME	1-15-90

Address: _____ Telephone: _____

5. TANK INVOLVED (Use additional lines for manifolded tanks)

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
#33 DEAC. FURNACE	2000		#2 FUEL OIL		STEEL

6. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
EAST SIDE OF BURN UNIT	EARTH	3"	2"	N/A	DISCONNECTED
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

7. UNDERGROUND WATER

Depth to the Water table 6T

Is the water over the tank? ☐ Yes ☒ No

8. FILL-UP ARRANGEMENTS

Tanks to be filled _____ hr. _____ Date Arranged by _____ Name _____ Telephone

Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead.

Terminal or other contact for notice or inquiry _____ Company _____ Name _____ Telephone

9. CONTRACTOR, MECHANICS, any other contractor involved

10. OTHER INFORMATION OR REMARKS

DISCONNECTED PRODUCT LINE TEST TANK ONLY

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.

11. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#33 DEAC FURNACE	NO	-.065 G.P.H.	1-15-90

12. SENSOR CERTIFICATION

3-89
Date

2428
Serial No. of Thermal Sensor

13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 328.

Technicians

1. AL SEARS
Certification # 122110645

2. _____
Certification # _____

ALL OHIO PETRO TEST INC.
Testing Contractor or Company. By: Signature

2507 4TH ST. N.W. CANTON, OHIO 44708
Address

PN6827

1940		14	12.2	12	.1270	.1280	±.010	0608	±5	±.016	±.006	±.067
1945		15	12.2	12	.1280	.1290	±.010	014	±6	±.019	±.019	±.076
1950		16	12.2	12	.1290	.1300	±.010	018	±4	±.013	±.003	±.079
1955		17	12.2	12	.1300	.1310	±.010	024	±6	±.019	±.009	±.088
2000		18	12.2	12	.1310	.1320	±.010	028	±4	±.013	±.003	±.091
2005		19	12.2	12	.1320	.1330	±.010	033	±5	±.016	±.006	±.097
2010		20	12.2	12	.1330	.1340	±.010	037	±4	±.013	±.003	±.100
2015		21	12.2	12	.1340	.1350	±.010	043	±6	±.019	±.009	±.109
2020		22	12.2	12	.1350	.1360	±.010	049	±6	±.019	±.009	±.118
2025		23	12.2	12	.1360	.1370	±.010	055	±6	±.019	±.019	±.127
2030		24	12.2	12	.1370	.1380	±.010	059	±4	±.013	±.003	±.130
	End Test										±.065	G.P.H.
	Tank only does NOT PASS Test											

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test ±.065 gph

Signature of Tester: A.L. Sears

Date: 1-15-90

2. Statement:

[ ] Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A publication 329. This is not intended to indicate permission of a leak.

OR

[X] Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator _____

Date _____

14. REVENNA ARSENAL | SR5 | REVENNA | OHO | FEB-90
Name of Supplier, Owner or Dealer | Address No. and Street(s) | City | State | Date of Test

15. TANK TO TEST
#33 DAK. FURNACE
Identity by position
#2 FUEL OIL
Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY
Nominal Capacity 2000 Gallons
By most accurate capacity chart available 2005 Gallons
From
- ☐ Station Chart
- ☐ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☒ Charts supplied with PETROTITE EQUIP
- ☒ Other SLIDE CHART

TEST B TANK ONLY

17. FILL-UP FOR TEST
Stick Water Bottom before Fill-up 1/8' to ¼" in. | 1 Gallons | 64 Tank Diameter in.

	Gallons	Total Gallons as. Reading
Inventory	64	2005
To/off		+ 3
WATER		- 1
TOTAL		2007

Transfer total to line 25a

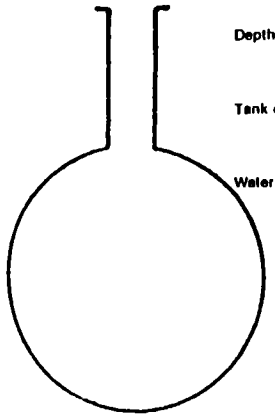
18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK
☒ Water in tank ☒ Line(s) being tested with LVLLT ☒ High water table in tank excavation

See manual sections applicable. Check below and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to doublewalled tanks.

Complete section below:

1. Is four pound rule required? Yes ☐ No ☒
2. Height to 12" mark from bottom of tank 100 in.
3. Pressure at bottom of tank 3,100 P.S.I.
4. Pressure at top of tank 1,116 P.S.I.



NOTES:

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY
Bottom of tank to grade* 69 in.
Add 30" for "T" probe assy 30 in.
Total tubing to assemble — approximate 99 in.

20. EXTENSION HOSE SETTING
Tank top to grade* 4 in.
Extend hose on suction tube 6" or more below tank top 20 in.
*If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation 4831 digits
35/36 °F Between
23. Digits per °F in range of expected change 292 digits

COEFFICIENT OF EXPANSION (Complete after circulation)
24a. Corrected A.P.I. Gravity
Observed A.P.I. Gravity
Hydrometer employed H
Observed Sample Temperature °F
Corrected A.P.I. Gravity @ 60°F, From Table A
Coefficient of Expansion for Involved Product From Table B
Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM ☐ Stage I ☒ Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD
Type of Product #2 FUEL OIL
Hydrometer Employed 2 H
Temperature in Tank After Circulation 35.6 °F
Temperature of Sample 39 °F
Difference (+/-) +3 °F
Observed A.P.I. Gravity 34.5
Reciprocal 2176 Page # 38
2007 Total quantity in full tank (16 or 17) × 2176 Reciprocal = .9223345 Volume change in this tank per °F
Transfer to Line 26a.

24c. FOR TESTING WITH WATER see Table C & D
Water Temperature after Circulation Table C °F
Coefficient of Water Table D
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b.

25. (a) ____ Total quantity in full tank (16 or 17) × (b) ____ Coefficient of expansion for involved product = (c) ____ Volume change in this tank per °F gallons
26. (a) .9223345 Volume change per °F (25 or 24b) ÷ 292 Digits per °F in test Range (23) = .0031586 Volume change per digit Compute to 4 decimal places. (.0032) This is test factor (a)

27. Sensor Calibration 16730 16131			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGING EACH READING	39. ACCUMULATED CHANGE
LOG OF TEST PROCEDURES												
28. DATE 1-15-90 TIME (24 hr)	Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches		32. Product in Graduate		33. Product Replaced (-)	35. Thermal Sensor Reading	36. Change Higher + Lower - (c)	37. Computation (c) × (a) = Expansion + Contraction -	Temperature Adjustment Volume Minus Expansion (+) or Contraction (-) #33(V) — #37(I)	At Low Level compute Change per Hour (NFPA criteria)
			Beginning of Reading	Level to which Restored	Before Reading	After Reading	Product Recovered (+)					
	DISCONNECT COPPER PRODUCT LINE, PLUG OFF TO RETEST TANK ONLY											
	FILL EQUIP BLEED AIR FROM SYSTEM									.0032		
1630	RESTART CIRCULATION											
1645	START HIGH LEVEL TEST	1		42		.540		4831				
1700		2	42.7	42	.510	.570	+.030	857	+26	+.083	-.048	
1715		3	42.6	42	.570	.595	+.025	868	+11	+.035	-.010	
1730	CHANGE JET TUBE DIRECTION	4	42.6	42	.595	.620	+.025	884	+16	+.051	-.026	
1745		5	42.4	42	.620	.640	+.020	902	+18	+.058	-.038	
1800		6	42.4	42	.640	.660	+.020	917	+15	+.048	-.028	
1802	DRY TO LOW LEVEL TEST											
1815		7	13.6	12	.660	.730	+.070	929	+12	+.038	+.032	
1830		8	13.0	12	.095	.135	+.040	942	+13	+.042	-.002	
1835	START LOW LEVEL TEST	1	12.3	12	.135	.150	+.015	948	+6	+.019	-.004	
1840		2	12.2	12	.150	.160	+.010	951	+3	+.010	+.000	-.004
1845		3	12.2	12	.160	.170	+.010	955	+4	+.013	-.003	-.007
1850		4	12.2	12	.170	.180	+.010	960	+5	+.016	-.006	-.013
1855		5	12.2	12	.180	.190	+.010	965	+5	+.016	-.006	-.019
1900		6	12.2	12	.190	.200	+.010	970	+5	+.016	-.006	-.025
1905		7	12.2	12	.200	.210	+.010	974	+4	+.013	-.003	-.028
1910		8	12.2	12	.210	.220	+.010	981	+7	+.022	-.012	-.040
1915		9	12.2	12	.220	.230	+.010	986	+5	+.016	-.006	-.046
1920		10	12.2	12	.230	.240	+.010	989	+3	+.010	+.000	-.046
1925		11	12.2	12	.240	.250	+.010	993	+4	+.013	-.003	-.049
1930		12	12.2	12	.250	.260	+.010	998	+5	+.016	-.006	-.055
1935		13	12.2	12	.260	.270	+.010	003	+5	+.016	-.006	-.061

HOLK ENVIRONMENTAL SERVICES, INC.
7777 WALL STREET
VALLEY VIEW, OHIO 44125
(216) 524-0888

CHAIN OF CUSTODY RECORD

GENERATOR/CUSTOMER R&R INT'L	CONTACT VINCE MAUCK - NOBELE NEW
ADDRESS 1234 S. CLEVE-MASSILLON RD.	PHONE NUMBER 248-5552
CITY, STATE, ZIP AKRON, OHIO 44321	TITLE OWNER
SAMPLE I.D. UST SOIL SAMPLES	SAMPLED BY BRAD KINSEY
SAMPLING LOCATION RAVENNA ARSENAL	DATE AND TIME OF SAMPLING 2-13-90 11:00 AM TANK#1 SMPLS. 2-14-90 2:00 PM TANK#2-4 SMPLS

SAMPLE DESCRIPTION BROWN SOIL SAMPLES

TYPE OF SAMPLE COMPOSITE (1 OF 13) GRAB (12 OF 13) AIR OTHER

NUMBER OF CONTAINERS THIRTEEN(13)

SALES CUSTODY

	SIGNATURE		SIGNATURE	DATE	TIME
RELINQUISHED BY	Brad L Kinsey	RECEIVED BY	Vincent D Mauck	2/14	4PM
RELINQUISHED BY	Vincent D Mauck	RECEIVED BY	Joe OB	2-15-90	11:30A
RELINQUISHED BY	Joe OB	RECEIVED BY TECH SERVICE		DATE	TIME
RELINQUISHED BY TECH SERVICE		RECEIVED BY LABORATORY	J Hyman	2-15-90	12 PM

LABORATORY CUSTODY

RECEIVED FROM SAMPLE ROOM			RETURNED TO SAMPLE ROOM		
ANALYST	DATE	TIME	SUPERVISOR	DATE	TIME
ANALYST	DATE	TIME	SUPERVISOR	DATE	TIME
ANALYST	DATE	TIME	SUPERVISOR	DATE	TIME
ANALYST	DATE	TIME	SUPERVISOR	DATE	TIME
ANALYST	DATE	TIME	SUPERVISOR	DATE	TIME

ANALYTICAL WORK REQUIRED

HOLK I.D. #'S 39015-1 THRU 13
39015-1 COMPOSITE OF TANKS #1-#4
" -2,3,4 TANK #2: EAST, CENTER, WEST
" -5,6,7 TANK #3: NORTH, " , SOUTH
" -8,9,10 TANK #1: N , C , SOUTH
" -11,12,13 TANK #4: N , C , SOUTH

R&R
INTERNATIONAL, INC.

SAMPLE IDENTIFICATION CORRELATION

LAB SAMPLE I.D.	ACTUAL SAMPLE I.D.
#1	
North	1E
Center	1B
South	1D
#2	
East	2D
Center	2B
West	2F
#3	
North	3A
Center	3B
South	3C
#4	
North	4A
Center	4B
South	4C

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-8-13

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	TPH
Tank #1 (North)	B9015-8	149 ppm
Tank #1 (Center)	B9015-9	305 ppm
Tank #1 (South)	B9015-10	158 ppm
Tank #4 (North)	B9015-11	37 ppm
Tank #4 (Center)	B9015-12	67 ppm
Tank #4 (South)	B9015-13	394 ppm

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-2-7

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	TRH
Tank #2 (East)	B9015-2	22 ppm
Tank #2 (Center)	B9015-3	18 ppm
Tank #2 (West)	B9015-4	17 ppm
Tank #3 (North)	B9015-5	23 ppm
Tank #3 (Center)	B9015-6	18 ppm
Tank #3 (South)	B9015-7	44 ppm

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb, VH/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-8-13

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	BTEX*
Tank #1 (North)	B9015-8	<2 ppb
Tank #1 (Center)	B9015-9	<2 ppb
Tank #1 (South)	B9015-10	<2 ppb
Tank #4 (North)	B9015-11	<2 ppb
Tank #4 (Center)	B9015-12	<2 ppb
Tank #4 (South)	B9015-13	<2 ppb

* Benzene, Toluene, Ethylbenzene, Xylene.

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-2-7

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	BTEX*
Tank #2 (East)	B9015-2	<2 ppb
Tank #2 (Center)	B9015-3	<2 ppb
Tank #2 (West)	B9015-4	<2 ppb
Tank #3 (North)	B9015-5	<2 ppb
Tank #3 (Center)	B9015-6	<2 ppb
Tank #3 (South)	B9015-7	<2 ppb

* Benzene, Toluene, Ethylbenzene, Xylene.

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-1

Description: Composite of Tanks #1 - #4

Nozzle Now, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Flash Point (PMCC)	>140 F
Paint Filter Test	No Free Liquid Present
TPH	71 ppm

EP TOXIC EXTRACTION PROCEDURE (SW-846; Method 1310)

	Results (mg/l)	EP Tox Standard (mg/l)
Arsenic	<0.01	5.0
Barium	0.09	100.0
Cadmium	<0.01	1.0
Chromium	<0.01	5.0
Lead	<0.01	5.0
Meroury	<0.01	0.2
Selenium	<0.01	1.0
Silver	<0.01	5.0

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

END

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-1

Description: Composite of Tanks #1 - #4

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Benzene	<2 ppb
Toluene	<2 ppb
Ethylbenzene	<2 ppb
Xylene	<2 ppb

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

R&R INTERNATIONAL, INC.

CHAIN OF CUSTODY RECORD

RECEIVED
FEB 21 1990

PROJECT NO.: 100214

SITE NAME: RAVENNA ARSENAL

SAMPLERS (SIGNATURE): BRAD KINZY

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	FLASHPOINT	BTU	E.P. TOXICITY				REMARKS
—	2/7	12:40			TANK #1 (2000 gal)	1	X	X	X				
	2/7				" #2 (15,000 gal)	1	X	X	X				
	2/7				" #3 "	1	X	X	X				
	2/7				" #4 "	1	X	X	X				

RELINQUISHED BY (SIGNATURE):	DATE / TIME	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME	RECEIVED BY (SIGNATURE):
[signature]	2/9/90 2:54 PM	[signature]	[signature]	2-16-90 4:30 PM	
RELINQUISHED BY (SIGNATURE):	DATE / TIME	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME	REMARKS:	

FORM 577

CHEMTRON
TECHNICAL SERVICE DIVISION
Chemtron Corporation
35850 Schneider Court
Avon, Ohio 44011

Cleveland: 216-871-8048
Lorain: 216-937-6348

Date Received: 2-16-90

Date Reported: 2-27-90

Customer ID#: Tank #1 12:40 Sludge 2-7-90 - 2,000 Gals.

PO#: 2616

Lab: A900216-1

Description: Dark Brown Liquid

R & R International, Inc.
1234 S. Cleveland-Massillon Road
P.O. Box 4383
Akron, OH 44321

Attn: Mr. Sam Reed

SITE NAME: Ravenna Arsenal, Project No. 100214

Reference: Partially Completed W.P.S.

The following parameters and detection limits were determined for disposal at Chemtron Corp.

As Received:

pH 10% H_2O Extract	7
Color	Dark Brown
Texture	Thick Viscous
Odor	Moderate
Layers	None
Flash Point	185°F
NVM (105°C 24 Hrs.)	18.38%
Ash (900°C to Constant Wt.)	8.65%
BTU	8,070/Lb.
Halogens as Chlorine	.28%
Cyanide (Total)	<1 ppm
Sulfide (Total)	<100 ppm
Density g/cc	Not Applicable

GC Scan for Matrix: Static Pressure/Direct GC Technique

Methanol	<.1%
Ethanol	
Acetone	
Isopropanol	
Tertiary Butanol	
Methyl Ethyl Ketone	
n-Butanol	
Benzene	
Hexane	
Methyl Isobutyl Ketone	<.1%

Date Received: _____

Date Reported: _____

Customer ID#: _____

PO#: _____

R & R International, Inc.

Lab: A900216-1

Description: _____

_____

_____

GC Scan for Matrix - Cont'd.

Butyl Acetate	<.1%
Toluene	
Xylene	
Cresols	
Cresylic Acid	
Phenols	
Nitrobenzene	
Carbon Disulfide	
Isobutanol	
Pyridine	
2-ethoxy-ethanol	
2-nitropropane	
Methylene Chloride	
1,1,1 Trichloroethane	
Carbon Tetrachloride	
Trichloroethylene	
Tetrachloroethylene	
Chlorobenzene	
1,1,2 Trichloro-1,2,2 Trifluoroethane	
Orthodichlorobenzene	
Trichlorofluoromethane	
1,1,2 Trichloroethane	
Chlorinated Fluorocarbons	<.1%
Diesel Fuel	80.0%

PCB's	<1 ppm

Date Received: _____

Date Reported: _____

Customer ID#: _____

PO#: _____

R & R International, Inc.

Lab: A900216-1

Description: _____

_____

_____

EP Toxic Extraction Procedure (SW-846; Method 1310)	Reported as mg/l
Arsenic	0.02
Barium	1.05
Cadmium	0.03
Chromium	2.26
Lead	0.28
Mercury	<0.01
Selenium	0.01
Silver	<0.01

Robert D. Haddad
Technical Administrator

RDH:lw

CHEMTRON
TECHNICAL SERVICE DIVISION
Chemtron Corporation
35850 Schneider Court
Avon, Ohio 44011

Cleveland: 216-871-8048
Lorain: 216-937-6348

Date Received: 2-16-90

Date Reported: 2-27-90

Customer ID#: Tank #2

PO#: 2616

Lab: A900216-2

Description: Liquid In Amber Bottle

R & R International, Inc.
1234 S. Cleveland-Massillon Road
P.O. Box 4383
Akron, OH 44321

Attn: Mr. Sam Reed

SITE NAME: Ravenna Arsenal, Project No. 100214

Reference: Partially Completed W.P.S.

The following parameters and detection limits were determined for disposal at Chemtron Corp.

As Received:

pH 10% H_2O Dispersion	7
Color	Dark Brown - Black
Texture	Thick Viscous
Odor	Moderate
* Layers	See Below
Flash Point	180°F
NVM (105°C 24 Hrs.)	25.37%
Ash (900°C to Constant Wt.)	13.43%
BTU	7,060/Lb.
Halogens as Chlorine	.14%
Cyanide (Total)	<1 ppm
Sulfide (Total)	<100 ppm
Density g/cc	Not Applicable

Layers: None visible, appears to be emulsions. Sample contains appreciable water.

GC Scan for Matrix: Static Pressure/Direct GC Technique

Methanol	<.1%
Ethanol	
Acetone	
Isopropanol	
Tertiary Butanol	
Methyl Ethyl Ketone	
n-Butanol	
Benzene	
Hexane	
Methyl Isobutyl Ketone	<.1%

Date Received: _____

Date Reported: _____

Customer ID#: _____

PO#: _____

R & R International, Inc.

Lab: A900216-2

Description: _____

GC Scan for Matrix - Cont'd.

Butyl Acetate	<.1%
Toluene	
Xylene	
Cresols	
Cresylic Acid	
Phenols	
Nitrobenzene	
Carbon Disulfide	
Isobutanol	
Pyridine	
2-ethoxy-ethanol	
2-nitropropane	
Methylene Chloride	
1,1,1 Trichloroethane	
Carbon Tetrachloride	
Trichloroethylene	
Tetrachloroethylene	
Chlorobenzene	
1,1,2 Trichloro-1,2,2, Trifluoroethane	
Orthodichlorobenzene	
Trichlorofluoromethane	
1,1,2 Trichloroethane	
ChlorinatedFluorocarbons	<.1%
Diesel Fuel	35.0%

PCB's	<1 ppm

Date Received: _____

Date Reported: _____

Customer ID#: _____

PO#: _____

R & R International, Inc.

Lab: A900216-2

Description: _____

EP Toxic Extraction Procedure (SW-846; Method 1310)	Reported as mg/l
Arsenic	0.05
Barium	0.13
Cadmium	0.02
Chromium	0.04
Lead	2.92
Mercury	<0.01
Selenium	<0.01
Silver	<0.01

Robert D. Haddad
Technical Administrator

RDH:lw

CHEMTRON
TECHNICAL SERVICE DIVISION
Chemtron Corporation
35850 Schneider Court
Avon, Ohio 44011

Cleveland: 216-871-8048
Lorain: 216-937-6348

Date Received: 2-16-90

Date Reported: 2-17-90

Customer ID#: Tank #3

PO#: 2616

Lab: A900216-3

Description: Liquid In Amber Bottle

R & R International, Inc.
1234 S. Cleveland-Massillon Road
P.O. Box 4383
Akron, OH 44321

Attn: Mr. Sam Reed

SITE NAME: Ravenna Arsenal, Project No. 100214

Reference: Partially Completed W.P.S.

The following parameters and detection limits were determined for disposal at Chemtron Corp.

As Received:

pH 10% H_2O Extract	5
Color	Brown
Texture	Viscous Liquid
Odor	Moderate
* Layers	See Below
Flash Point	183°F
NVM (105°C 24 Hrs.)	25.57%
Ash (900°C to Constant Wt.)	3.41%
BTU	11,530/Lb.
Halogens as Chlorine	.42%
Cyanide (Total	<1 ppm
Sulfide (total)	<100 ppm
Density g/cc	Not Applicable

* Layers: None visible, appears to be emulsions. Sample contains appreciable water.

GC Scan for Matrix: Static Pressure/Direct GC Technique

Methanol	<.1%
Ethanol	
Acetone	
Isopropanol	
Tertiary Butanol	
Methyl Ethyl Ketone	
n-Butanol	
Benzene	
Hexane	
Methyl Isobutyl Ketone	<.1%

Date Received: _____

Date Reported: _____

Customer ID#: _____

PO#: _____

R & R International, Inc.

Lab: A900216-3

Description: _____

GC Scan for Matrix - Cont'd.

Butyl Acetate	<.1%
Toluene	
Xylene	
Cresols	
Cresylic Acid	
Phenols	
Nitrobenzene	
Carbon Disulfide	
Isobutanol	
Pyridine	
2-ethoxy-ethanol	
2-nitropropane	
Methylene Chloride	
1,1,1 Trichloroethane	
Carbon Tetrachloride	
Trichloroethylene	
Tetrachloroehtylene	
Chlorobenzene	
1,1,2 Trichloro-1,2,2 Trifluoroethane	
Orthodichlorobenzene	
Trichlorofluoromethane	
1,1,1 Trichloroethane	
Chlorinated Fluorocarbons	<.1%
Diesel Fuel	30.0%

PCB"s	< 1 ppm

Date Received: _____

Date Reported: _____

Customer ID#: _____

PO#: _____

R & R International, Inc.

Lab: A900216-3

Description: _____

EP Toxic Extraction Procedure (SW-846; Method 1310)	Reported as mg/l
Arsenic	0.07
Barium	0.10
Cadmium	<0.01
Chromium	0.02
Lead	0.19
Mercury	<0.01
Selenium	<0.01
Silver	<0.01

Robert D. Haddad
Technical Administrator

RDH:lw

CHEMTRON
TECHNICAL SERVICE DIVISION
Chemtron Corporation
35850 Schneider Court
Avon, Ohio 44011

Cleveland: 216-871-8048
Lorain: 216-937-6348

Date Received: 2-16-90
Date Reported: 2-27-90
Customer ID#: Tank #4
PO#: 2616
Lab: A900216-4
Description: Liquid In Amber Bottle

R & R International, Inc.
1234 S. Cleveland-Massillon Road
P.O. Box 4383
Akron, OH 44321

Attn: Mr. Sam Reed

SITE NAME: Ravenna Arsenal, Project No. 100214

Reference: Partially Completed W.P.S.

The following parameters and detection limits were determined for disposal at Chemtron Corp.

As Received:

pH 10% H_2O Extract	6
Color	Dark Brown
Texture	Viscous Liquid
Odor	Moderate
* Layers	See Below
Flash Point	>200° F
NVM (105°C 24 Hrs.)	21.64%
Ash (900°C to Constant Wt.)	5.26%
BTU	9,870/Lb.
Halogens as Chlorine	.28%
Cyanide (Total	<1 ppm
Sulfide (total)	<100 ppm
Density g/cc	Not Applicable

* Layers: None visible, appears to be emulsions. Sample contained appreciable water.

GC Scan for Matrix: Static Pressure/Direct GC Technique

Methanol	<.1%
Ethanol	
Acetone	
Isopropanol	
Tertiary Butanol	
Methyl Ethyl Ketone	
n-Butanol	
Benzene	
Hexane	<.1%

Date Received: _____

Date Reported: _____

Customer ID#: _____

PO#: _____

R & R International, Inc.

Lab: A900216-4

Description: _____

_____

_____

GC Scan for Matrix - Cont'd.

Methyl Isobutyl Ketone	<.1%
Butyl Acetate	
Toluene	
Xylene	
Cresols	
Cresylic Acid	
Phenols	
Nitrobenzene	
Carbon Disulfide	
Isobutanol	
Pyridine	
2-ethoxy-ethanol	
2-nitropropane	
Methylene Chloride	
1,1,1 Trichloroethane	
Carbon Tetrachloride	
Trichloroethylene	
Tetrachloroethylene	
Chlorobenzene	
1,1,2 Trichloro-1,2,2 Trifluoroethane	
Orthodichlorobenzene	
Trichlorofluoromethane	
1,1,2 Trichloroethane	
Chlorinated Fluorocarbons	<.1%
Diesel Fuel	21.0%

PCB's	<1 ppm

Date Received: _____

Date Reported: _____

Customer ID#: _____

PO#: _____

R & R International, Inc.

Lab: A900216-4

Description: _____

EP Toxic Extraction Procedure (SW-846; Method 1310)	Reported as mg/1
Arsenic	0.04
Barium	0.26
Cadmium	<0.01
Chromium	0.02
Lead	0.07
Mercury	<0.01
Selenium	<0.01
Silver	<0.01

Robert D. Haddad
Technical Administrator

RDH:lw

holub iron & steel co., inc.
470 NORTH ARLINGTON STREET/AKRON, OHIO 44305/216-253-3165

April 5, 1990

R & R International
1234 South Cleveland-Massillon Road
Akron, Ohio 44231

Dear Sir:

On February 13 and 14, 1990 R & R International delivered three(3) clean 15,000 gallon underground storage tanks to the Holub Iron & Steel Company, 470 N. Arlington Street Akron, Ohio for scrap.

On the same two (2) days above mentioned tanks were cut into 2'x5' scrap material.

Sincerely,

THE HOLUB IRON & STEEL COMPANY

Calvin Cartier
Supervisor

CC:cf

E. 79th Scrap & Auto Wrecking

Cutting & Disposing

3205 E. 79th Street Cleveland, Ohio

Received 1-2,000 gallon steel oil storage tank for R & R International from Ravenna Arsenal. Cut up and scrap.

Jack Rose

Olin
ORDNANCE

RAVENNA ARSENAL, INC.
8451 STATE ROUTE 5, RAVENNA, OHIO 44266-9297
TELEPHONE: (216) 358-7111 • FAX: (216) 297-3216

March 29, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Commander
U.S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-ISE (Mr. Cyril Onewokae)
Rock Island, IL 61299-6000

Subject: Underground Storage Tanks Progress Report

Dear Sir:

Of the 17 registered underground storage tanks at Ravenna Army Ammunition Plant, nine were delcared abandoned and were designated for removal. The remaining tanks were tested for tightness in accordance with regulatory requirements in January, 1990. Test results indicated three of the eight were leaking. The three leaking tanks were immediately emptied and designated for removal; the non-leaking tanks remain in service.

FY89 Environmental Restoration Project 5892910-007 (CLIN 46AD, MOD 88)provided $186,100 for the removal of 12 underground storage tanks (including the nine abandoned registered tanks) at Ravenna AAP. FY90 Environmental Restoration Project 5902910-04 (CLIN 46AE, MOD92) provided $94,000 to remove four underground storage tanks (including the three registered tanks) which were found to be leaking by tank tightness tests.

All tanks on both projects have been removed, cleaned, and disposed. All contaminated soil with the exception of Tank No. 10 at the Charlestown Gate has been excavated and the confirmatory soil analysis from the walls of the excavations appear to be acceptable based on comments from the State Fire Marshal's Office. The State Fire Marshal's Office has not formally accepted the tank removals yet so there is a remote chance that additional work may be required.

Tank No. 10 soil analysis indicated the hole is still contaminated with the contamination extending under a large floor slab and foundation of the old gate house. In order to determine the limits of the contamination and to remove the contaminated soil, it is necessary to remove the concrete. A request for additional funding to complete this project was submitted to AMSMC-PCG-B on March 26, 1990.

Point of contact concerning this subject at this installation is Susan McCauslin, AV346-3220.

Sincerely,

RAVENNA ARSENAL, INC.

H.R. Cooper
Plant Engineer

HRC/SM/ade/90009

cc: N. Wulff
W. Carkido
T. Chanda
S. McCauslin
File

7 FEB 1990

AMSMC-ISE
SUBJECT: Underground Storage Tanks (USTs)

6. The point of contact for this action is Mr. Cyril Onewokae, AMSMC-ISE-E, AUTOVON 793-1350.

FOR THE COMMANDER:

RONALD T. SHINBORI
Chief, Environmental Quality Div

DISTRIBUTION:
Commander, Holston Army Ammunition Plant, ATTN: SMCHO-EN, Kingsport, TN 37660-9982
Commander, Kansas Army Ammunition Plant, ATTN: SMCKA-OR, Parsons, KS 67357-9107
Commander, Louisiana Army Ammunition Plant, ATTN: SMCLA-SF, P.O. Box 30058, Shreveport, LA 71130-0058
Commander, Newport Army Ammunition Plant, ATTN: SMCNE-EN, Newport, IN 47966-0121
Commander, Pine Bluff Arsenal, ATTN: SMCPB-EM, Pine Bluff, AR 71602-9500
Commander, Sunflower Army Ammunition Plant, ATTN: SMCSU-EV, P.O. Box 640, DeSoto, KS 66018-0640
Commander's Representative, Alabama Army Ammunition Plant, ATTN: SMCAL, 110 Highway No. 235, Childersburg, AL 35044-1021
Commander's Representative, Joliet Army Ammunition Plant, ATTN: SMCJO-EN, Joliet, IL 60436-5000
Commander's Representative, Ravenna Army Ammunition Plant, ATTN: SMCRV, 8451 State Route 5, Ravenna, OH 44266-9297

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
ROCK ISLAND, ILLINOIS 61299-6000

REPLY TO
ATTENTION OF

cc

S: 2 April 1990

AMSMC-ISE (200-1a)

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Underground Storage Tanks (USTs)

1. Reference, HQ, AMCCOM, AMSMC-ISE, 28 Nov 89, subject: Verification of Underground Storage Tanks Report (USTR) and Release Detection Update.

2. As of 22 December 1989, for a variety of reasons, the following installations and the number of regulated USTs, in parenthesis, did not satisfy the release detection requirements:

S: 4/2

a. Alabama Army Ammunition Plant (AAP) (3 USTs)

b. Holston AAP (1 UST)

c. Joliet AAP (6 USTs)

d. Kansas AAP (8 USTs)

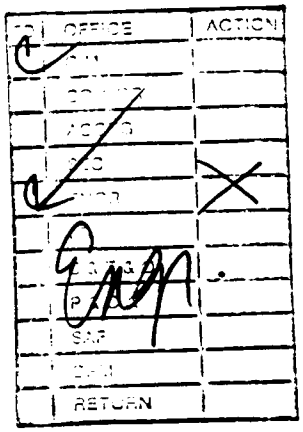
e. Louisiana AAP (4 USTs)

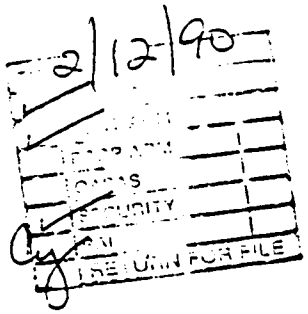
f. Newport AAP (2 USTs)

g. Pine Bluff Arsenal (31 USTs)

h. Ravenna AAP (17 USTs)

i. Sunflower AAP (1 UST)

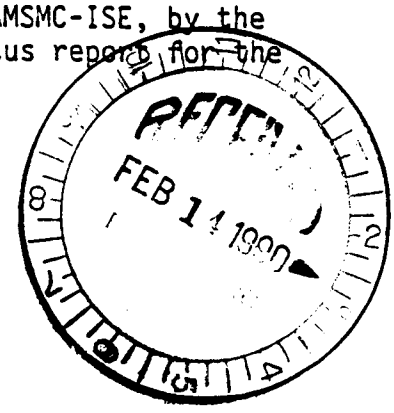




3. This headquarters, AMSMC-ISE, is aware of some efforts in progress at some of these installations to bring these USTs to compliance. Request that appropriate upgrading efforts be carried out expeditiously. If additional funding is required for the intended purpose, guidance or fund cites must be obtained from the PCO prior to incurrence of costs.

4. Request that you forward to this headquarters, ATTN: AMSMC-ISE, by the suspense date, a progress report and/or the compliance status report for the UST(s) that did not satisfy the milestone requirements.

5. This action has AMSMC-PL and AMSMC-PCG (R) concurrence.



THIS SHIPPING ORDER must be legibly filled in, In Ink, In Indelible Pencil, or In Carbon, and retained by the Agent.

DESIGNATE WITH AN (X) BY TRUCK [X] FREIGHT [ ]

RECEIVE, subject to the classifications and tariffs in effect on the date of issue of this Shipping Order.

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

From RAVENNA ARSENAL
At 8451 STATE ROUTE 5
RAVENNA, OH, 44266-9792

DATE MARCH 21 19 90

SHIPPER'S NO.

CARRIER ↓

CARRIER'S NO.

BY CHEMTRON CORP

CONSIGNEE AND DESTINATION CHEMTRON CORP.
35850 SCHNIEDER CT.
AVON, OH. 44011

ROUTE

DELIVERING CARRIER

CAR OR VEHICLE INITIALS & NO. 2 - 50C829 OH.

NO. PACKAGES	HAZARDOUS MATERIALS	DESCRIPTION OF ARTICLES, SPECIAL MARKS AND EXCEPTIONS	* WEIGHT (SUBJECT TO CORR.)	CLASS OR RATE	✓
16 Dms		Fuel Oil Sludge, #2 UN1993	8000 #		
		NON-HAZARDOUS WASTE			

Subject to Section 7 of conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

Per ______
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Received $ ______ to apply in prepayment of the charges on the property described hereon.

Agent or Cashier.

Per ______

(The signature here acknow[ledges] only the amounts prepaid.)

Charges Advanced:

$ ______

SHIPPERS CERTIFICATION: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

SIGNATURE S McCaush TITLE Env. Spec.

* If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."
† **Shipper's imprints in lieu of stamp; not a part of Bill of Lading approved by the Interstate Commerce Commission.**
Note — Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding ______

THIS SHIPMENT IS CORRECTLY DESCRIBED.

CORRECT WEIGHT IS ______ LBS.

† The fibre boxes used for this shipment conform to the specifications set forth in the box makers certificate thereon, and all other requirements of the Consolidated Freight Classification.

Shipper

Per ______

C.O.D. SHIPMENT

C.O.D. Amt ______

Collection Fee ______

Total Charges ______

Shipper, Per [signature]

Agent must detach and retain this Shipping Order and must sign the Original Bill of Lading. Chemtron Corp.

2

Permanent post office address of shipper

FORM 12003 RAPIDFORMS, INC., THOROFARE, NJ 08086-9499

RAVENNA ARSENAL INC.
8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297
Telephone (216) 358-7111
Autovon 346-3210

March 19, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Ohio Department of Commerce - Division of State Fire Marshal
Bureau of Underground Storage Tank Regulations
ATTN: Michelle Tarka, Site Coordinator
7510 East Main Street
P.O. Box 525
Reynoldsburg, Ohio 43068-3395

Subject: Incident 679298-02, RVAAP Tank #11, Total Lead Results

Dear Ms. Tarka:

As a follow up to our February 23, 1990 site investigation report for leaking underground storage tanks enclosed you will find total lead results for samples taken in the excavated tank pit RV11 after tank removal.

This submission will complete our Site Investigation Report for the subject incident. Please feel free to contact Susan McCauslin, Environmental Specialist at (216)297-3220 if you have any questions or require further information regarding this subject.

Sincerely,

Ravenna Arsenal, Inc.

H.R. Cooper
Plant Engineer

HRC:SM:ade:90005

cc: N. Wulff
W. Carkido
S. McCauslin
File

cf: Commander
AMCCOM
AMSMC-ISE

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2/15/90
Date Reported: 3/14/90

Client Sample I.D.: Ravenna Arsenal
HOLK Sample I.D.: B9015-2-8,10-13
Sampled By: Client
P.O.#: vb, VM/JO
Sample Description: brown soils

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139

	CLIENT SAMPLE I.D.	HOLK SAMPLE I.D.	TOTAL LEAD (ppm)	REAGENT BLANK (mg/l)	STANDARD RECOVERY (%)
RV #11	Tank #2 East	B9015-2	6.74	<0.01	101
	Tank #2 Center	B9015-3	5.69	<0.01	101
	Tank #2 West	B9015-4	5.84	<0.01	101
RV #22	Tank #3 North	B9015-5	3.47	<0.01	101
	Tank #3 Center	B9015-6	2.62	<0.01	101
	Tank #3 South	B9015-7	2.92	<0.01	101
RV #33	Tank #1 North	B9015-8	15.0	<0.01	101
	Tank #1 South	B9015-10	10.8	<0.01	101
RV #23	Tank #4 North	B9015-11	37.0	<0.01	86
	Tank #4 Center	B9015-12	23.4	<0.01	86
	Tank #4 South	B9015-13	28.1	<0.01	86

Ronald A. Baracona
Ronald A. Baracona
LABORATORY MANAGER

RAB/tlg

The foregoing is limited to findings based upon material received fo analysis and/or information furnished by client. Samples received will b disposed of after 30 days.

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

March 19, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Ohio Department of Commerce - Division of State Fire Marshal
Bureau of Underground Storage Tank Regulations
ATTN: Michelle Tarka, Site Coordinator
7510 East Main Street
P.O. Box 525
Reynoldsburg, Ohio 43068-3395

Subject: Incident 679298-00, RVAAP Tank #23, Total Lead Results

Dear Ms. Tarka:

As a follow up to our February 23, 1990 site investigation report for leaking underground storage tanks enclosed you will find total lead results for samples taken in the excavated tank pit RV23 after tank removal.

This submission will complete our Site Investigation Report for the subject incident. Please feel free to contact Susan McCauslin, Environmental Specialist at (216)297-3220 if you have any questions or require further information regarding this subject.

Sincerely,

Ravenna Arsenal, Inc.

H.R. Cooper

H.R. Cooper
Plant Engineer

HRC:SM:ade:90005

cc: N. Wulff
W. Carkido
S. McCauslin
File

cf: Commander
AMCCOM
AMSMC-ISE

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2/15/90
Date Reported: 3/14/90

Client Sample I.D.: Ravenna Arsenal
HOLK Sample I.D.: B9015-2-8,10-13
Sampled By: Client
P.O.#: vb, VM/JO
Sample Description: brown soils

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139

	CLIENT SAMPLE I.D.	HOLK SAMPLE I.D.	TOTAL LEAD (ppm)	REAGENT BLANK (mg/l)	STANDARD RECOVERY (%)
RV #11	Tank #2 East	B9015-2	6.74	<0.01	101
	Tank #2 Center	B9015-3	5.69	<0.01	101
	Tank #2 West	B9015-4	5.84	<0.01	101
RV #22	Tank #3 North	B9015-5	3.47	<0.01	101
	Tank #3 Center	B9015-6	2.62	<0.01	101
	Tank #3 South	B9015-7	2.92	<0.01	101
RV #33	Tank #1 North	B9015-8	15.0	<0.01	101
	Tank #1 South	B9015-10	10.8	<0.01	101
RV #23	Tank #4 North	B9015-11	37.0	<0.01	86
	Tank #4 Center	B9015-12	23.4	<0.01	86
	Tank #4 South	B9015-13	28.1	<0.01	86

Ronald A. Baraona
Ronald A. Baraona
LABORATORY MANAGER

RAB/tlg

The foregoing is limited to findings based upon material received fo analysis and/or information furnished by client. Samples received will b disposed of after 30 days.

RAVENNA ARSENAL INC.
8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297
Telephone (216) 358-7111
Autovon 346-3210

March 19, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Ohio Department of Commerce - Division of State Fire Marshal
Bureau of Underground Storage Tank Regulations
ATTN: Michelle Tarka, Site Coordinator
7510 East Main Street
P.O. Box 525
Reynoldsburg, Ohio 43068-3395

Subject: Incident 679298-01, RVAAP Tank #33, Total Lead Results

Dear Ms. Tarka:

As a follow up to our February 23, 1990 site investigation report for leaking underground storage tanks enclosed you will find total lead results for samples taken in the excavated tank pit RV33 after tank removal.

This submission will complete our Site Investigation Report for the subject incident. Please feel free to contact Susan McCauslin, Environmental Specialist at (216)297-3220 if you have any questions or require further information regarding this subject.

Sincerely,

Ravenna Arsenal, Inc.

H.R. Cooper
Plant Engineer

HRC:SM:ade:90005

cc: N. Wulff
W. Carkido
S. McCauslin
File

cf: Commander
AMCCOM
AMSMC-ISE

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2/15/90
Date Reported: 3/14/90

Client Sample I.D.: Ravenna Arsenal
HOLK Sample I.D.: B9015-2-8,10-13
Sampled By: Client
P.O.#: vb, VW/JO
Sample Description: brown soils

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139

	CLIENT SAMPLE I.D.	HOLK SAMPLE I.D.	TOTAL LEAD (ppm)	REAGENT BLANK (mg/l)	STANDARD RECOVERY (%)
RV #11	Tank #2 East	B9015-2	6.74	<0.01	101
	Tank #2 Center	B9015-3	5.69	<0.01	101
	Tank #2 West	B9015-4	5.84	<0.01	101
RV #22	Tank #3 North	B9015-5	3.47	<0.01	101
	Tank #3 Center	B9015-6	2.62	<0.01	101
	Tank #3 South	B9015-7	2.92	<0.01	101
RV #33	Tank #1 North	B9015-8	15.0	<0.01	101
	Tank #1 South	B9015-10	10.8	<0.01	101
RV #23	Tank #4 North	B9015-11	37.0	<0.01	86
	Tank #4 Center	B9015-12	23.4	<0.01	86
	Tank #4 South	B9015-13	28.1	<0.01	86

Ronald A. Baraona
Ronald A. Baraona
LABORATORY MANAGER

RAB/tlg

The foregoing is limited to findings based upon material received f analysis and/or information furnished by client. Samples received will disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7 Wall Street
Valley View, Ohio 44125
(216) 524-0888
(216) 524-2090

Date Received: 2/15/90
Date Reported: 3/14/90

Client Sample I.D.: Ravenna Arsenal
HOLK Sample I.D.: B9015-2-8,10-13
Sampled By: Client
P.O.#: vb, VB/JO
Sample Description: brown soils

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139

	CLIENT SAMPLE I.D.	HOLK SAMPLE I.D.	TOTAL LEAD (ppm)	REAGENT BLANK (mg/l)	STANDARD RECOVERY (%)
RV #11	Tank #2 East	B9015-2	6.74	<0.01	
	Tank #2 Center	B9015-3	5.69	<0.01	101
	Tank #2 West	B9015-4	5.84	<0.01	101
RV #22	Tank #3 North	B9015-5	3.47	<0.01	
	Tank #3 Center	B9015-6	2.62	<0.01	
	Tank #3 South	B9015-7	2.92	<0.01	
RV #33	Tank #1 North	B9015-8	15.0	<0.01	101
	Tank #1 South	B9015-10	10.8	<0.01	101
RV #23	Tank #4 North	B9015-11	37.0	<0.01	86
	Tank #4 Center	B9015-12	23.4	<0.01	86
	Tank #4 South	B9015-13	28.1	<0.01	86

Ronald A. Baraona
Ronald A. Baraona
LABORATORY MANAGER

RAB/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 3-5-90

Customer I.D.: Ravenna Arsenal
Tank #1 Center

P.O.#: vb, VM/JO

Date Reported: 3-6-90

HOLK-Lab #: B9015-9

Description: soil sample

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Lead (Total)	5.02 ppm

Ronald A. Baraona

Ronald A. Baraona
LABORATORY MANAGER

RAB/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

IMPORTANT FAX INFORMATION

R&R INTERNATIONAL, INC.

1234 S. Cleveland-Massillon Rd.
Akron, Ohio 44321
(216) 666-2200
FAX: (216) 666-7874

Please deliver immediately to: SUSAN M.

Company: RAVENNA ARSENAL

Fax #: 1-297-3216

Reference: LEAD TEST RESULT

Response Requested:	Y ___	N ✓
Hardcopy to follow by mail:	Y ✓	N ___

No. of pages (including cover sheet): 2 Date: 9 MARCH 1990

Please contact _____ if all pages not received.

Comments: SUSAN

THIS IS THE ONLY SAMPLE WE HAD TESTED.

IF YOU NEED MORE, LET ME KNOW

For internal Use Only: _____

B. J. JENKINS
MAR 9 1990

Signed By: JOHN REED

Rev 3/9/89 Form 585

Notified Sam Reed that specification requires additional sample. R+R has material; will sample, result first of the week. 3/12/90.

B. Jenkins
3/9/90.

IMPORTANT FAX INFORMATION

R&R INTERNATIONAL INC.

1234 S. Cleveland-Massillon Rd.
Akron, Ohio 44321
(216) 666-2200
FAX: (216) 666-7874

Please deliver immediately to: SUSAN M.

Company: RAVENNA ARSENAL

Fax #: 1-297-3216

Reference: SLUDGE DISPOSAL

Response Requested:	Y ✓	N
Hardcopy to follow by mail:	Y	N ✓

No. of pages (including cover sheet): 14 Date: 8 MARCH 1990

Please contact MARY if all pages not received.

Comments: SUSAN,

LET ME KNOW A.S.A.P. IF THE ENCLOSED WASTE PROFILE FORM IS ACCEPTABLE TO YOU. ALSO, FOR ITEM "G", I WILL NEED THE D.O.T. SHIPPING DESCRIPTION.

For Internal Use Only:

Signed By:

SAM REED

Rev 3/9/88 Form 585

WHITE/OFFICE YELLOW/CUSTOMER PINK/LAB GOLD/CUSTOMER ACCEPTANCE COPY

CHEMTRON CORPORATION

WASTE PROFILE DATA FORM

WASTE PROFILE NO: Q

A GENERATOR NAME: Ravenna Army Ammunition Plant | B GENERATOR EPA ID NO: OH5210020736

C FACILITY ADDRESS: 8451 State Route 5 - Ravenna | STATE: OH | ZIP: 44266-9297

BILLING ADDRESS: 1234 S. Cleveland-Massillon Rd. - Akron | STATE: OH | ZIP: 44321

D BUSINESS CONTACT: Mr. Bill Jenkins | TITLE: Purchasing Manager | PHONE: (216) 297-3107

E TECHNICAL CONTACT: Mr. Wayne CArkido | TITLE: Project Engineer | PHONE: (216) 297-3237

F GENERATOR'S COMMON NAME FOR THE WASTE	EPA HAZARDOUS WASTE NUMBER(S)
Diesel Fuel	D001

G DOT SHIPPING DESCRIPTION: Fuel Oil, [illegible] | DOT HAZARDOUS CLASS: Combustible Liquid | UN/NA#: 1993

H PROCESS GENERATING WASTE: Sludges from tank cleaning operations

I ANNUAL QUANTITY: 22 | UNIT OF MEASURE: | WILL BE SHIPPED PER:

☐ WEEK ☐ MONTH ☐ QUARTER ☐ YEAR ☒ ONE TIME ☐ OTHER, Specify:

J CHEMICAL COMPOSITION

CONSTITUENT	ANALYSIS (%)	RANGE (%)
WATER	30	
Diesel	30	
Dirt, Grease & Oil	40	

INORGANIC METALS

(Complete in mg/kg, mg/l or ppm) ☐ Extraction Procedure (mg/l) ☐ Total (ppm)

BARIUM	1.05 mg/l	SILVER	<0.01 mg/l
CADMIUM	0.03 mg/l	ALUMINUM	
CHROMIUM	2.26 mg/l	BERYLLIUM	
LEAD		COPPER	
MERCURY	<0.01 mg/l	NICKEL	
SELENIUM	2.92 mg/l	ZINC	
VANADIUM	.01 mg/l	THALLIUM	

NON METALS:

(Complete in mg/kg, mg/l or ppm) ☐ Extraction Procedure (mg/l) ☐ Total (ppm)

ARSENIC	0.07 mg/l	TOTAL PHOSPHOROUS	
HALOGENS AS CHLORINE	0.42%	TOTAL SULFUR	
FLUORINE		PCB/OIL	<100 ppm
CYANIDE	<1 ppm	PHENOLATES	

K PHYSICAL PROPERTIES

COLOR: Brown to Black | ODOR ☐ NONE ☐ STRONG ☒ MILD DESCRIBE:

PHYSICAL STATE AT 70°F: ☐ SOLID ☐ LIQUID ☒ SEMI-SOLID ☐ POWDER

PHASE LAYERING: ☒ NONE ☐ BILAYERED ☐ MULTILAYERED

pH: ☐ 0 ☐ 2-4 ☐ 7-9 ☐ >12.5 ☐ N/A ☐ <2 ☒ 4-7 ☐ 9-12.5 ☐ EXACT

FLASH POINT: ☐ 70°F-100°F ☒ [illegible] ☐ <70°F ☐ 101°F-140°F ☐ NO FLASH ☐ EXACT ☐ CLOSED CUP ☐ OPEN CUP

SPECIFIC GRAVITY: ☒ <0.8 ☐ 0.8-1.0 ☐ 1.1-1.2 ☐ 1.3-1.4 ☐ 1.5-1.8 ☐ >1.8

HAZARDOUS CHARACTERISTICS

REACTIVITY ☒ NONE ☐ PYROPHORIC ☐ SHOCK SENSITIVE ☐ EXPLOSIVE ☐ WATER REACTIVE ☐ OTHER

SOLIDS: | BY WEIGHT 30-50% | BY VOLUME

BTU/GAL | BTU/LB 7060

L Does the waste contain any of the following: Halogenated Aromatics (e.g. PCB, PBB); Aromatic Amines; Pesticides; Ureas; Thioureas; Cyclic Nitrogen (e.g. Pyridine); Phenols; Quinones; Phosphorous Compounds; Polycyclic Organics; Asbestos; Radioactive Materials; Biological Materials; Infectious Agents.

☐ YES ☒ NO

If YES Attach Detailed Analysis

M Special Handling Procedures:

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete to the best of my knowledge and that all known and suspected hazards have been disclosed in accordance with 40 CFR 261.

SIGNATURE | TITLE | DATE

WHITE/OFFICE YELLOW/CUSTOMER PINK/LAB GOLD/CUSTOMER ACCEPTANCE COPY

CHEMTRON
TECHNICAL SERVICE DIVISION

Date Received: 2-16-90
Date Reported: 2-27-90
Customer ID#: Tank #1 12:40 Sludge 2-7-90 - 2,000 Gals.
PO#: 2616
Lab: A900216-1
Description: Dark Brown Liquid

R & R International, Inc.
1234 S. Cleveland-Massillon Road
P.O. Box 4381
Akron, OH 44321

Attn: Mr. Sam Reed

SITE NAME: Ravenna Arsenal, Project No. 100214

Reference: Partially Completed W.P.S.

The following parameters and detection limits were determined for disposal at Chemtron Corp.

As received:

pH 10% H_2O Extract	7
Color	Dark Brown
Texture	Thick Viscous
Odor	Moderate
Layers	None
Flash Point	180°F
NVM (105°C 24 Hrs.)	18.38%
Ash (900°C to Constant Wt.)	8.65%
BTU	8,070/Lb.
Halogens as Chlorine	.28%
Cyanide (Total)	<1 ppm
Sulfide (Total)	<100 ppm
Density g/cc	Not Applicable

GC Scan for Matrix: Static Pressure/Direct GC Technique

Methanol	<.1%
Ethanol	
Acetone	
Isopropanol	
Tertiary Butanol	
Methyl Ethyl Ketone	
n-Butanol	
Benzene	
Hexane	
Methyl Isobutyl Ketone	<.1%

Date Received:

Date Reported:

Customer ID#:

PO#:

Lab: A900216-1

Description:

B & K International, Inc.

QC Scan for Matrix - Cont'd.

Butyl Acetate	<.1%
Toluene	
Xylene	
Cresols	
Cresylic Acid	
Phenols	
Nitrobenzene	
Carbon Disulfide	
Isobutanol	
Pyridine	
2-ethoxy-ethanol	
2-nitropropane	
Methylene Chloride	
1,1,1 Trichloroethane	
Carbon Tetrachloride	
Trichloroethylene	
Tetrachloroethylene	
Chlorobenzene	
1,1,2 Trichloro-1,2,2 Trifluoroethane	
Orthodichlorobenzene	
Trichlorofluoromethane	
1,1,2 Trichloroethane	<.1%
Chlorinated Fluorocarbons	80.0%
Diesel Fuel	

PCB's <1 ppm

Date Received:

Date Reported:

Customer ID#:

PO#:

R & R International, Inc.

Lab: A900216-1

Description:

EP Toxic Extraction Procedure (SW-846; Method 1310)

	Reported as mg/l
Arsenic	0.02
Barium	1.05
Cadmium	0.03
Chromium	2.26
Lead	0.28
Mercury	<0.01
Selenium	0.01
Silver	<0.01

Robert D. Haddad
Technical Administrator

RDH:lw

CHEMTRON
TECHNICAL SERVICE DIVISION

Date Received: 2-16-90
Date Reported: 2-27-90
Customer ID#: Tank #2
PO#: 2616
Lab: A900216-2
Description: Liquid In Amber Bottle

R & R International, Inc.
1234 S. Cleveland-Massillon Road
P.O. Box 4381
Akron, OH 44321

Attn: Mr. Sam Reed

SITE NAME: Ravenna Arsenal, Project No. 100214

Reference: Partially Completed W.P.S.

The following parameters and detection limits were determined for disposal at Chemtron Corp.

As Received:

pH 10% H_2O Dispersion	7
Color	Dark Brown - Black
Texture	Thick Viscous
Odor	Moderate
* Layers	See Below
Flash Point	180°F
NVM (105°C 24 Hrs.)	25.37%
Ash (900°C to Constant Wt.)	13.43%
BTU	7,060/Lb.
Halogens as Chlorine	.14%
Cyanide (Total)	<1 ppm
Sulfide (Total)	<100 ppm
Density g/cc	Not Applicable

Layers: Non-visible, appears to be emulsions. Sample contains appreciable water.

GC Scan for Matrix: Static Pressure/Direct GC Technique

Methanol	<.1%
Ethanol	
Acetone	
Isopropanol	
Tertiary Butanol	
Methyl Ethyl Ketone	
n-Butanol	
Benzene	
Hexane	
Methyl Isobutyl Ketone	<.1%

Date Received:

Date Reported:

Customer ID#:

PO#:

R & R International, Inc.

Lab A900216-2

Description:

GC Semi-Int Matrix - Cont'd.

Butyl Acetate	<.1%
Toluene	
Xylene	
Cresols	
Cresylic Acid	
Phenols	
Nitrobenzene	
Carbon Disulfide	
Isobutanol	
Pyridine	
2-ethoxy-ethanol	
2-nitropropane	
Methylene Chloride	
1,1,1 Trichloroethane	
Carbon Tetrachloride	
Trichloroethylene	
Tetrachloroethylene	
Chlorobenzene	
1,1,2 Trichloro-1,2,2, Trifluoroethane	
Orthodichlorobenzene	
Trichlorofluoromethane	
1,1,2 Trichloroethane	
ChlorinatedFluorocarbons	<.1%
Diesel Fuel	35.0%

PCB's <1 ppm

Date Received:

Date Reported:

Customer ID#:

PO#:

R & R International, Inc.

Lab: A900216-2

Description:

EP Toxic Extraction Procedure (SW-846; Method 1310)	Reported as mg/l
Arsenic	0.05
Barium	0.13
Cadmium	0.02
Chromium	0.04
Lead	2.92
Mercury	<0.01
Selenium	<0.01
Silver	<0.01

Robert D. Haddad
Technical Administrator

RDH:lw

CHEMTRON
TECHNICAL SERVICE DIVISION

Date Received: 2-16-90
Date Reported: 2-17-90
Customer ID#: Tank #3
PO#: 2616
Lab: A900216-3
Description: Liquid In Amber Bottle

R & R International, Inc.
1234 S. Cleveland-Massillon Road
P.O. Box 4683
Akron, OH 44321

Attn: Mr. Sam Reed

SITE NAME: Ravenna Arsenal, Project No. 100214

Reference: Partially Completed W.P.S.

The following parameters and detection limits were determined for disposal at Chemtron Corp.

As Received:

pH 10% H_2O Extract	5
Color	Brown
Texture	Viscous Liquid
Odor	Moderate
* Layers	See Below
Flash Point	183°F
NVM (105°C 24 Hrs.)	25.57%
Ash (900°C to Constant Wt.)	3.41%
BTU	11,530/Lb.
Halogens as Chlorine	.42%
Cyanide (Total	<1 ppm
Sulfide (total)	<100 ppm
Density g/cc	Not Applicable

* Layers: None visible, appears to be emulsions. Sample contains appreciable water.

GC Scan for Matrix: Static Pressure/Direct GC Technique

Methanol	<.1%
Ethanol	
Acetone	
Isopropanol	
Tertiary Butanol	
Methyl Ethyl Ketone	
n-Butanol	
Benzene	
Hexane	<.1%
Methyl Isobutyl Ketone	

Results based solely on analysis of the sample and information furnished by client. Samples received will be discarded after 30 days. Reproduction of this report for other than client's internal use is prohibited without written consent.

Date Received:

Date Reported:

Customer ID#:

PO#:

R & R International, Inc.

Lab: A900216-3

Description:

GC Scan for Matrix - Cont'd.

Butyl Acetate	<.1%
Toluene	
Xylene	
Cresols	
Cresylic Acid	
Phenols	
Nitrobenzene	
Carbon Disulfide	
Isobutanol	
Pyridine	
2-ethoxy-ethanol	
2-nitropropane	
Methylene Chloride	
1,1,1 Trichloroethane	
Carbon Tetrachloride	
Trichloroethylene	
Tetrachloroehtylene	
Chlorobenzene	
1,1,2 Trichloro-1,2,2 Trifluoroethane	
Orthodichlorobenzene	
Trichlorofluoromethane	
1,1,1 Trichloroethane	
Chlorinated Fluorocarbons	<.1%
Diesel Fuel	30.0%

PCB's	< 1 ppm

Date Received:

Date Reported:

Customer ID#:

PO#:

Lab A900216-3

Description:

R & K International, Inc.

EP Toxic Extraction Procedure (SW-846; Method 1310)	Reported as mg/l
Arsenic	0.07
Barium	0.10
Cadmium	<0.01
Chromium	0.02
Lead	0.19
Mercury	<0.01
Selenium	<0.01
Silver	<0.01

Robert D. Haddad
Technical Administrator

RDH:lc

CHEMTRON
TECHNICAL SERVICE DIVISION

Date Received: 2-16-90
Date Reported: 2-27-90
Customer ID#: Tank #4
PO#: 2616
Lab: A900216-4
Description: Liquid In Amber Bottle

R & R International, Inc.
1234 S. Cleveland-Massillon Road
P.O. Box 4383
Akron, OH 44321

Attn: Mr. Sam Reed

SITE NAME: Ravenna Arsenal, Project No. 100214

Reference: Partially Completed W.P.S.

The following parameters and detection limits were determined for disposal at Chemtron Corp.

As Received:

pH 10% H_2O Extract	6
Color	Dark Brown
Texture	Viscous Liquid
Odor	Moderate
* Layers	See Below
Flash Point	>200° F
NVM (105°C 24 Hrs.)	21.64%
Ash (900°C to Constant Wt.)	5.26%
BTU	9,870/Lb.
Halogens as Chlorine	.28%
Cyanide (Total	<1 ppm
Sulfide (total)	<100 ppm
Density g/cc	Not Applicable

* Layers: None visible, appears to be emulsions. Sample contained appreciable water.

GC Scan for Matrix: Static Pressure/Direct GC Technique

Methanol	<.1%
Ethanol	
Acetone	
Isopropanol	
Tertiary Butanol	
Methyl Ethyl Ketone	
n-butanol	
Benzene	
Hexane	<.1%

Date Received:	
Date Reported:	
Customer ID#:	
PO#:	
Lab:	A900216-4
Description	

R & R International, Inc.

GC Scan for Matrix - Cont'd.

Methyl Isobutyl Ketone	<.1%
Butyl Acetate	↓
Toluene	↓
Xylene	↓
Cresols	↓
Cresylic Acid	↓
Phenols	↓
Nitrobenzene	↓
Carbon Disulfide	↓
Isobutanol	↓
Pyridine	↓
2-ethoxy-ethanol	↓
2-nitropropane	↓
Methylene Chloride	↓
1,1,1 Trichloroethane	↓
Carbon Tetrachloride	↓
Trichloroethylene	↓
Tetrachloroethylene	↓
Chlorobenzene	↓
1,1,2 Trichloro-1,2,2 Trifluoroethane	↓
Orthodichlorobenzene	↓
Trichlorofluoromethane	↓
1,1,2 Trichloroethane	↓
Chlorinated Fluorocarbons	<.1%
Diesel Fuel	21.0%
PCB's	<1 ppm

Date Received:

Date Reported:

Customer ID#:

PO#:

R & R International, Inc.

Lab. A900216-4

Description:

EP Toxic Extraction Procedure (SW-846; Method 1310)

	Reported as mg/l
Arsenic	0.04
Barium	0.26
Cadmium	<0.01
Chromium	0.02
Lead	0.07
Mercury	<0.01
Selenium	<0.01
Silver	<0.01

Robert D. Haddad
Technical Administrator

RDH:[illegible]

... furnished by client. Samples received will be discarded after 30 days. ... other than client's internal use is prohibited without written consent.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

March 2, 1990

Mr. Paul Felice
Norton Landfill
9100 Market Place
Broadview Hts., Ohio 44147

Dear Paul,

Enclosed are the analytical results for the composite of soils from Tanks #1 - #4 removed from Ravenna Arsenal. This soil was removed in the excavation of underground storage tanks. Please note that this soil is non-hazardous in that it does not exhibit the characteristic of ignitability nor does it exhibit the characteristic of EP Toxicity.

Mr. Vince Marek of Nozzle New is the contractor on this project. He will call you to confirm approval for landfilling and a date to transport it to your disposal site.

Thank you for your assistance.

Sincerely,

Joseph A. O'Brien /tlg

Joseph A. O'Brien
Director, Sales and Marketing

JAO/tlg

Enclosure

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb, VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-1

Description: Composite of Tanks #1 - #4

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Flash Point (PMCC)	>140 F
Paint Filter Test	No Free Liquid Present
TPH	71 ppm

EP TOXIC EXTRACTION PROCEDURE (SW-846; Method 1310)

	Results (mg/l)	EP Tox Standard (mg/l)
Arsenic	<0.01	5.0
Barium	0.09	100.0
Cadmium	<0.01	1.0
Chromium	<0.01	5.0
Lead	<0.01	5.0
Mercury	<0.01	0.2
Selenium	<0.01	1.0
Silver	<0.01	5.0

Thomas H. Richert
Director of Analytical Services

HR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb, VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-1

Description: Composite of Tanks #1 - #4

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Benzene	<2 ppb
Toluene	<2 ppb
Ethylbenzene	<2 ppb
Xylene	<2 ppb

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

TELEPHONE CONVERSATION RECORD

MARCH 6, 1990

TO: MS. MICHELLE TARKA, STATE FIRE MARSHALL'S OFFICE, B.U.S.T.
PHONE: (614)752-7938

FROM: SUSAN MCCAUSLIN, ENVIRONMENTAL ENGINEERING
PHONE: (216)297-3220

SUBJECT: MS. TARKA'S LETTER DATED MARCH 1, 1990

I called Ms. Tarka to ask her why we received subject letter when we have already accomplished the required tasks set out in the letter. She indicated that the letter was sent after the fact and can be simply filed and ignored at this point.

Note: The incident number on the letter refers to Tank #23 Bldg. 1045 not the railroad yard.

Susan McCauslin

SM:ade:030690.pr

cc: COR
N. Wulff
H.R. Cooper
W. Carkido
File

TELEPHONE CONVERSATION RECORD

MARCH 2, 1990

TO: BILL BLACK, OEPA, NEDO, DIVISION SOLID & HAZARDOUS WASTE MANAGEMENT PHONE: 425-9171

FROM: SUSAN MCCAUSLIN, ENVIRONMENTAL ENGINEERING PHONE: 297-3220

SUBJECT: REMOVAL OF EXCAVATED SOIL FROM R&R UST REMOVAL PROJECT

I called Mr. Black to see if he wanted copies of the laboratory results for subject solid waste prior to removal from RVAAP for disposal. He indicated that he would not need to review the results and that if Norton Landfill agreed to accept the soil it could be removed for disposal.

Susan McCauslin

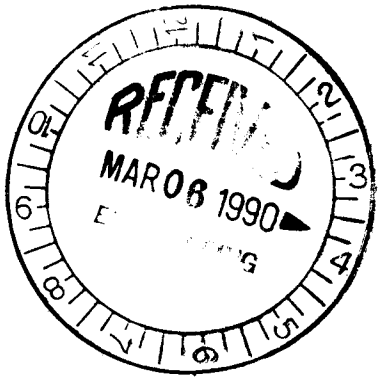
SM:ade
cc: W. Carkido
B. Jenkins
H. Cooper
File

Ohio Department of Commerce

Richard F. Celeste, Governor

Division of State Fire Marshal • Bureau of Underground Storage Tank Regulations
7510 E. Main St., P.O. Box 525 • Reynoldsburg, OH 43068-3395 • (614) 752-8200

Linda K. Page, Director



NOTICE OF VIOLATION

March 1, 1990

Ravenna Army Ammunition Plant
Attn: Sue McCuaslin
8451 State Rt. 5
Ravenna, OH 44266-9297

RE: Ravenna Army Ammunition Plant, Railroad yard
South Service Road
8451 State Rt. 5
Ravenna, OH 44266-9297
Portage County
Incident 679298-00

Dear Ms. McCauslin:

Section 3737.882 of the Ohio Revised Code authorizes the State Fire Marshal to implement the corrective action program for releases of petroleum from underground storage tank systems within the state. Under the program, the owner/operator of the underground storage tank system is responsible for investigating suspected releases of petroleum from the tank system so as to either confirm or disprove that a release of petroleum has actually occurred. This office has been notified of a suspected release at the aforementioned facility.

As the owner and/or operator of the underground storage tank system you are subject to the state and federal regulations governing such systems. Rule 1301:7-7-28 (K) (1) of the Ohio Administrative Code (OAC) specifically lists testing, monitoring, or sampling results indicate a release may have occurred as constituting a suspected release of petroleum from underground storage tank systems. Pursuant to OAC Rule 1301:7-7-36 (C) (1), you are required to investigate the suspected release at the aforementioned site in a manner consistent with OAC Rule 1301:7-7-28 (K) so as to either confirm or disprove whether a release has actually occurred. Specifically, in order to comply with OAC Rules 1301:7-7-28 and 1301:7-7-36, you need to undertake the following activities:

1. On or before March 9, 1990, conduct a tightness test (precision test) of the tanks and piping which comprise the system to determine if a release may have occurred. The precision testing shall be done in accordance with the criteria listed in the National Fire Protection Association (NFiPA) pamphlet No. 329.

2. On or before March 22, 1990, conduct an analysis of soil core samples for hydrocarbon and/or chemical contamination in the unsaturated zone under the underground storage tank system, or, if the groundwater is no more than twenty (20) feet from the ground surface, an analysis of groundwater samples for hydrocarbon and/or chemical contamination shall be conducted. Sampling shall be done in accordance with the enclosed "Sampling Guidelines". If any obvious signs of contamination (visual and/or odors) are found during the investigation the local fire official and State Fire Marshal, Bureau of Underground Storage Tank Regulations shall be immediately notified and corrective actions shall be initiated in accordance with OAC 1301:7-7-36.

3. Within three days of your receiving the results of the tightness tests and sample analysis, submit copies of the results to the State Fire Marshal, Bureau of Underground Storage Tank Regulations.

As an alternative to the requirements described in items 1 through 3 above, the owner/operator may elect to remove and replace, or close the underground storage tank system. In this case the owner/operator shall follow the enclosed "Closure Site Assessment Requirements" and, perform such activities under the following deadlines and conditions:

1. On or before April 1, 1990, the underground storage tank system shall be removed and sampling shall be conducted.

2. If any obvious signs of contamination (visual and/or odors) are present during closure, the local Fire Official and the State Fire Marshal, Bureau of Underground Storage Tank Regulations shall be notified immediately, and corrective actions shall be initiated in accordance with OAC 1301:7-7-36.

3. Within three days of receipt of written sample results the owner/operator shall submit the Closure Site Assessment report and all associated sample results to the State Fire Marshal and local Fire Official.

Depending on the closure deadline indicated, the owner/operator may have a short time period in which to obtain the written closure or change in service permit. If the permit is to be obtained from the State Fire Marshal, the owner/operator must contact the State Fire Marshal, Bureau of Underground Storage Tank Regulations and Inspection Bureau. Arrangements can then be made to expedite the permitting process in order to help the owner/operator comply with the deadline line given.

When soil and groundwater samples are to be collected the owner/operator shall follow the protocols described in the enclosed Sampling Guidelines or Closure Site Assessment Guidelines. At a minimum these guidelines shall be followed in order for the sample results to be considered valid.

To assist you in understanding your responsibilities, I have enclosed a copy of OAC Rules 1301:7-7-28 and 1301:7-7-36. I have also enclosed copies of Sections 3737.882 and 3737.99 (I) of the Ohio Revised Code. Please note that failure to comply with the requirements of OAC Rules 1301:7-7-28 and 1301:7-7-36 could subject you to civil penalties under Section 3737.882 (C) of the Ohio Revised Code and the criminal penalties under Section 3737.99 (I) of the Ohio Revised Code.

To assist our office in expediting a review of your correspondence, reference the incident number (679298-00) and place it in the upper right hand corner of all of your correspondence. Thank you for your cooperation, and if you have any questions regarding this matter, please contact me at (614) 752-7938.

Sincerely,

Michelle Tarka
Site Coordinator
Bureau of Underground
Storage Tank Regulations

MT:ag

Enclosures

cc: File #679298-00
Dwayne Porter, Portage County Health Dept.

TELEPHONE CONVERSATION RECORD

FEBRUARY 28, 1990

TO: MICHELLE TARKA, B.U.S.T./STATE FIRE MARSHALL
PHONE: (614)752-7938

FROM: SUSAN MCCAUSLIN, ENVIRONMENTAL ENGINEERING
PHONE: 297-3220

SUBJECT: SITE INVESTIGATION REPORT FOR LEAKING TANKS RV #11, RV #23, AND RV #33

Ms. Tarka had received the subject report. Upon looking at the lab results provided with the report, Ms. Tarka indicated that no further work would be necessary at Tank #11, and probably no further work would be needed at Tank #23. She wants to see our report on all tanks being removed before a definite decision is made regarding further corrective action that may be needed. Tank #33 has been turned over to OEPA jurisdiction, P.O.C. Harley Bowers.

Ms. Tarka also provided the following incident numbers for the leaking tanks: #679298-00 for Tank #23; #670298-01 for Tank #33; and 679298-02 for Tank #11.

Susan McCauslin

SM:ade
cc: RVAAP COR Office
W. Carkido
B. Jenkins
H. Cooper
File

RAVENNA ARSENAL INC.
8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297
Telephone (216) 358-7111
Autovon 346-3218

February 23, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

23 Feb 90

TO: Ohio Department of Commerce
Division of State Fire Marshal
Bureau of Underground Storage Tank Regulations
ATTN: Michelle Tarka, Site Coordinator
7510 East Main Street
P.O. Box 525
Reynoldsburg, Ohio 43068-3395

Subject: Site investigation report for leaking underground storage tanks.

Dear Ms. Tarka:

Pursuant to Rule 1303:7-7-36 of the Ohio Administrative Code, following is the Site Investigation Report for leaking underground storage tanks at the Ravenna Army Ammunition Plant (RVAAP).

Your office was notified that three underground storage tanks at RVAAP failed their tank tightness tests. Tank #11 contained #2 fuel oil; leakage indicated by the test was .353 gph. Tank #23 contained #2 fuel oil; leakage indicated by the test was .3005 gph. Tank #33 contained #2 fuel oil; leakage indicated by the test was .065 gph.

The tanks were drained immediately upon learning of the test results. Quantity of product released is unknown, however, it is believed to be minimal. Soils surrounding the tanks are generally a low permeability silty clay loam. No free product was observed in the surrounding soils.

R&R International Inc. has cleaned, removed and disposed of the tanks. Any visibly contaminated soils, or soils suspected to be contaminated based on PID screening, were excavated. R&R collected samples from the sidewalls and bottom of the excavated pits for Tanks #23 and #33. Bedrock was encountered during the excavation

of Tank #11, and samples were taken from soils in two sidewalls and the excavation pit bottom. The two remaining sidewalls were excavated to bedrock, no samples were taken from these areas. Groundwater was not encountered in any of the excavations. Samples collected from the excavated areas were tested for benzene, ethyl benzene, toluene, and xylene (BTEX), total lead, and total petroleum hydrocarbons (TPH), using methods set forth in SW-846. Analytical results for TPH and BTEX have been received and are enclosed. The remaining results are expected to be received by February 26, 1990. These results will be immediately forwarded to your attention upon receipt.

Excavated soils were sampled to characterize them for disposal. These samples will be analyzed for TPH, E.P. Toxicity, percent solids and flash point using methods set forth in SW-846.

Groundwater is currently the exclusive source of water supply for RVAAP. The location of active groundwater production wells is shown in Attachment #1. None of these wells is located with 1,000 ft. of the leaking tanks. A description of soil characteristics and a map showing subsurface soil distribution on site is shown in Attachment #2. Local climatogical conditions are shown in Attachment #3. Surrounding land use is residential; the closest residence to a leaking tank location on the installation is approximately 4,000 ft.

This installation's point of contact for this subject is Susan McCauslin, Environmental Specialist, (216)297-3220.

Sincerely,

Ravenna Arsenal, Inc.

H.R. Cooper

H.R. Cooper
Plant Engineer

HRC:SM:ade:90002

cf: Commander
AMCCOM
AMSMC-ISE
Rock Island, IL 61299-6000

cc: N. Wulff
File

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb, VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-8-13

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	BTEX*
Tank #1 (North) (RV 33)	B9015-8	<2 ppb
Tank #1 (Center)	B9015-9	<2 ppb
Tank #1 (South)	B9015-10	<2 ppb
Tank #4 (North) (RV 23)	B9015-11	<2 ppb
Tank #4 (Center)	B9015-12	<2 ppb
Tank #4 (South)	B9015-13	<2 ppb

* Benzene, Toluene, Ethylbenzene, Xylene

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-2-7

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	BTEX*
Tank #2 (RU 11) (East)	B9015-2	<2 ppb
Tank #2 (Center)	B9015-3	<2 ppb
Tank #2 (West)	B9015-4	<2 ppb
Tank #3 (RU 22) (North)	B9015-5	<2 ppb
Tank #3 (Center)	B9015-6	<2 ppb
Tank #3 (South)	B9015-7	<2 ppb

* Benzene, Toluene, Ethylbenzene, Xylene.

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received fo analysis and/or information furnished by client. Samples received will b disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-2-7

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	TPH
Tank #2 (East) (RU11)	B9015-2	22 ppm
Tank #2 (Center)	B9015-3	18 ppm
Tank #2 (West)	B9015-4	17 ppm
Tank #3 (North) (RU 22)	B9015-5	23 ppm
Tank #3 (Center)	B9015-6	18 ppm
Tank #3 (South)	B9015-7	44 ppm

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-8-13

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

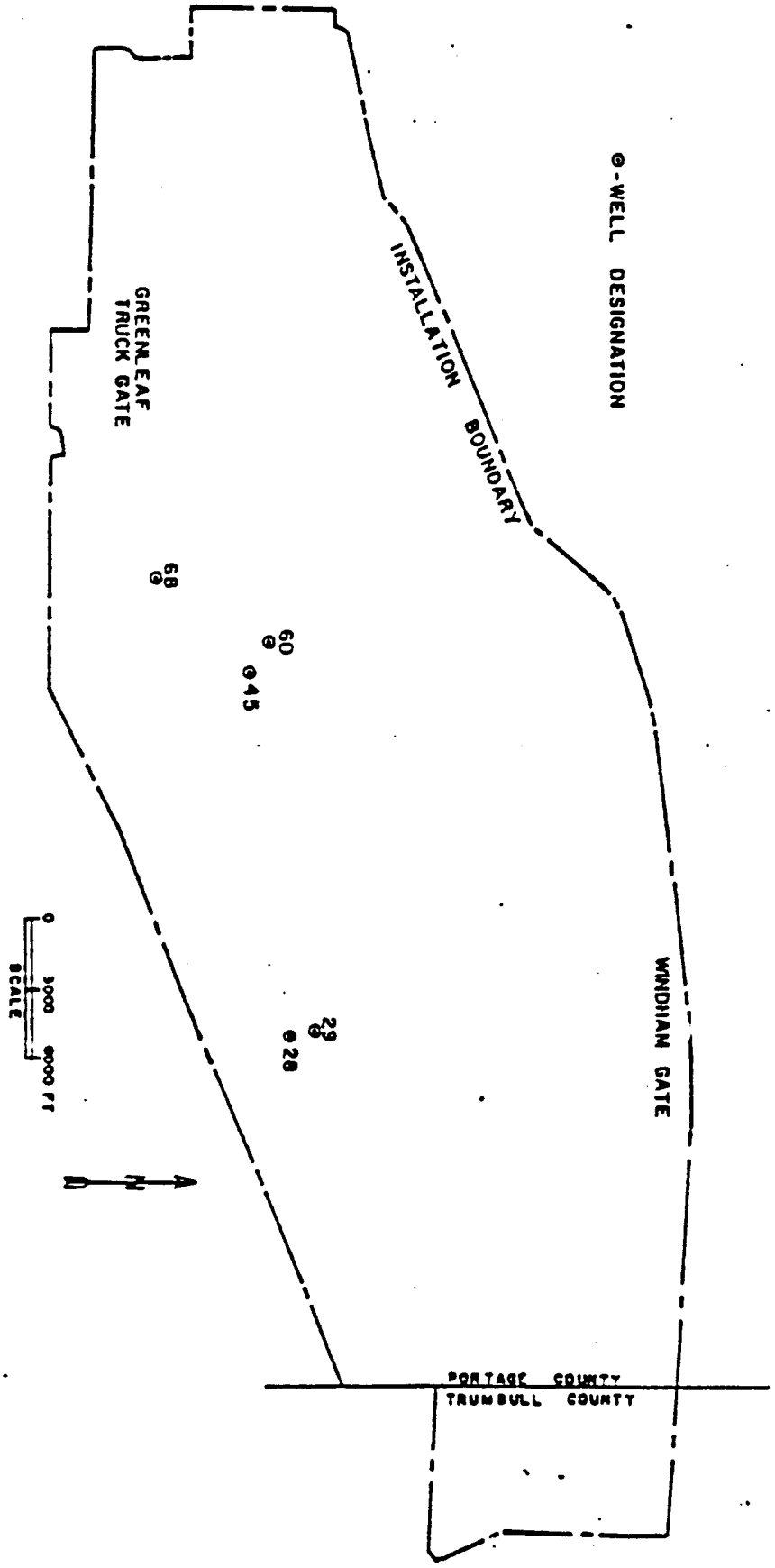
Customer I.D.	HOLK-Lab #	TPH
Tank #1 (North) (RV 33)	B9015-8	149 ppm
Tank #1 (Center)	B9015-9	305 ppm
Tank #1 (South)	B9015-10	158 ppm
Tank #4 (North) (RV 23)	B9015-11	37 ppm
Tank #4 (Center)	B9015-12	67 ppm
Tank #4 (South)	B9015-13	394 ppm

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

ATTACHMENT #1



MAP OF RAAP, SHOWING LOCATION OF PRODUCTION WELLS

● - WELL DESIGNATION

Soil Characteristics.*

(1) Distribution. RAAP contains three distinct soil associations; their distribution is depicted on Figure 1. Most of the installation is mantled by somewhat poorly drained and slowly permeable silt loams which have developed over silty clay loam or clay loam glacial till. The till soils in the western quarter of RAAP contain a restrictive, cemented subsoil layer (fragipan). The northeastern fringe of RAAP contains poorly drained but moderately permeable silt loams formed in silty, stream-deposited, alluvium on flood plains.

(2) Description.

(a) Mahoning-Ellsworth Soil Association. The topsoil consists of 8 inches of friable, dark grayish-brown silt loam; the subsoil consists of 52 inches of firm brown silty clay loam. The top 3 to 4 feet possess a pH ranging from 4.5 to 7.3; however, below that the soil is alkaline (7.4-8.4). These soils display slow to very slow permeability.

(b) Wadsworth-Rittman Soil Association. The topsoil consists of 8 inches of friable, dark grayish-brown silt loam; the subsoil consists of 19 inches of yellowish-brown silty clay loam over 21 to 33 inches of brown, very firm and brittle cemented, clay loam or silty clay loam (fragipan). These soils have a pH ranging from 4.5 to 7.8 and display slow permeability.

(c) Sebring-Holly Soil Association. The topsoil consists of 10 inches of friable gray silt loam; the subsoil contains 50 inches of gray silt loam to silty clay loam. The soil pH ranges from 5.1 to 7.3, and the soil permeability is moderately slow to moderately rapid.

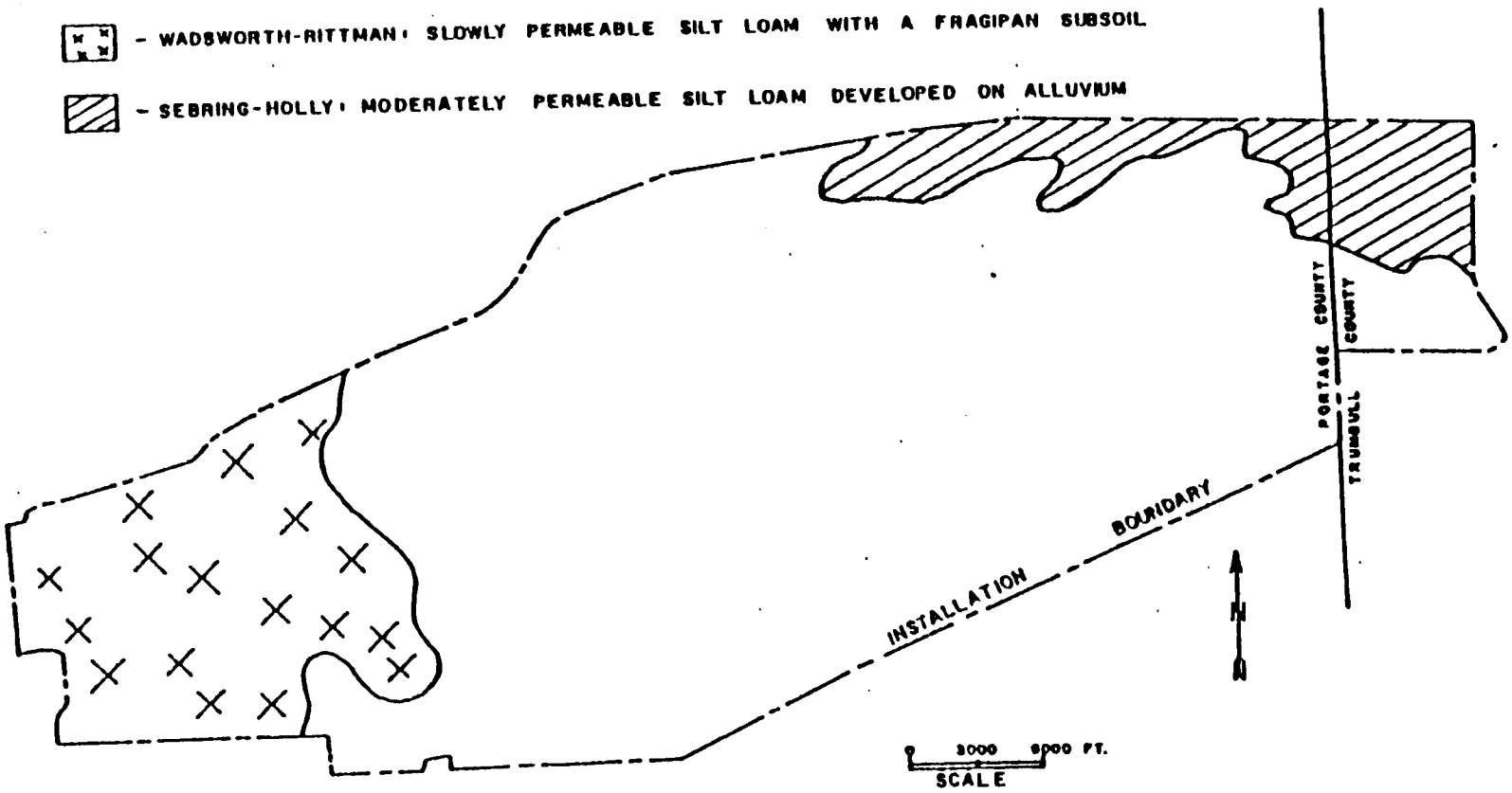
---

* Source of information is "An Inventory of Ohio Soils, Portage County," Ohio Department of Natural Resources, Progress Report No. 38 (1973)

ATTACHMENT #2

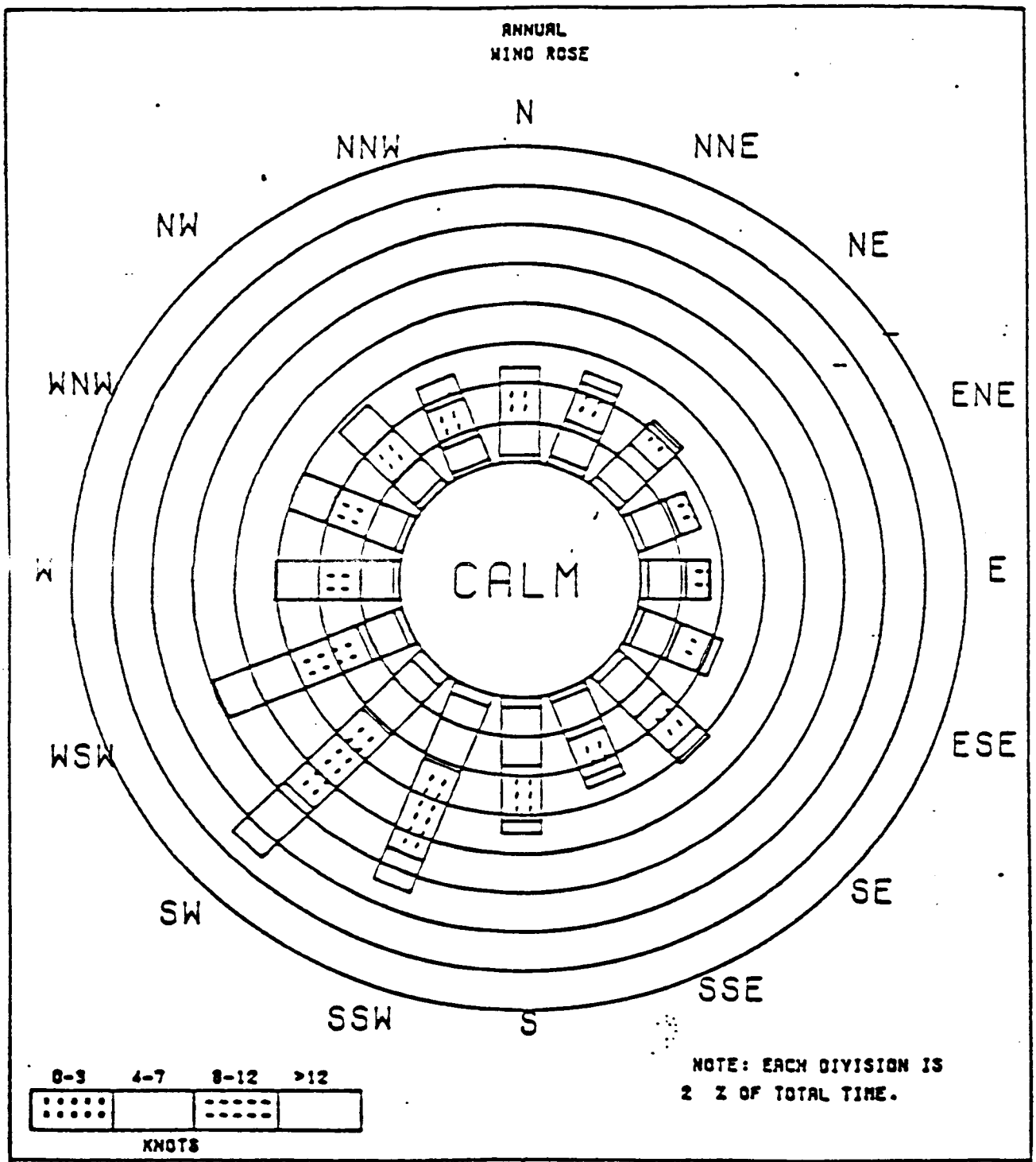
EXPLANATION OF SOIL ASSOCIATION:

- MAHONING-ELLSWORTH: SLOWLY PERMEABLE SILT LOAM DEVELOPED ON GLACIAL TILL
- WADSWORTH-RITTMAN: SLOWLY PERMEABLE SILT LOAM WITH A FRAGIPAN SUBSOIL
- SEBRING-HOLLY: MODERATELY PERMEABLE SILT LOAM DEVELOPED ON ALLUVIUM



MAP OF RAAP, SHOWING SOIL GROUP DISTRIBUTION

The plant site has a continental climate with temperature extremes of -21°F in January and 100°F in July. The annual mean precipitation is 36 inches. The annual mean snowfall is 48 inches. The prevailing winds are south and southwest and average 10 miles/hour.



U.S.ARMY ENVIRONMENTAL HYGIENE AGENCY HEALTH SERVICES COMMAND	FIGURE: RAVENNA ARP. OHIO. PERIOD OF RECORD JANUARY 1955 - DECEMBER 1964. SOURCE OF DATA USAFETAC FOR YOUNGSTOWN. OHIO.

IMPORTANT FAX INFORMATION

R&R INTERNATIONAL INC.

1234 S. Cleveland-Massillon Rd.
Akron, Ohio 44321
(216) 666-2200
FAX: (216) 666-7874

Please deliver immediately to: Mr. Bill Jenkins

Company: Ravenna Arsenal, Inc.

Fax #: 1-297-3216

Reference: UST Removal

Response Requested:	Y____	N____
Hardcopy to follow by mail:	Y____	N____

No. of pages (including cover sheet): ___ Date: _____

Please contact Maya if all pages not received.

B. J. JENKINS
FEB 22 1990

Comments:

cc: Susan McCauslin
Wayne Carbide
cc: BJJ 2/22/90

For Internal Use Only:

Signed By:

Sam Reed

Rev 3/9/89

Form 585

R&R
INTERNATIONAL, INC.

B. J. JENKINS
FEB 2 1990
cc: Wayne Carbido
Susan McCauslin

HAZARDOUS WASTE LANDFILLS

Michigan Disposal, Inc. (MDI) - Detroit Michigan NOT Acceptable

Envirosafe (Founemcy Fundessey) - Toledo, Ohio Acceptable

Waste Management, Inc. (Model Cities) - Niagara Falls, New York Acceptable

CECOS - Niagara Falls, New York Acceptable

DISPOSAL LANDFILLS

Peerless Oil Service - North Olmsted, Ohio

Environmental Transportation Services (ETS) - 1-800-234-3872
- Mark Cawthorne

7-7 Inc. 262-3877 - Richard Brown

Chem. Freight (Erieway) - Tom Holschum

CONTAMINATED LANDFILLS

Norton Landfill - 82-77 Broadview Hts.

Inland Landfill - Richmond Road - Glen Willow

Need to inspect

NON-HAZARDOUS LANDFILLS

North Coast Disposal Co. - 8650 Brookpark

Harvard Landfill - Cleveland

UNDERGROUND STORAGE INSTALLER CERTIFICATES

CN 90-159

CN 90-160

IMPORTANT FAX INFORMATION

R&R INTERNATIONAL, INC.

1234 S. Cleveland-Massillon Rd.
Akron, Ohio 44321
(216) 666-2200
FAX: (216) 666-7874

Please deliver immediately to: MR. BILL JENKINS

Company: RAVENNA ARSENAL, INC.

B. J. JENKINS
FEB 21 1990

Fax #: 1-297-3216

cc: Susan McCaughlin
Wayne Carbuto

Reference: UST REMOVAL

Response Requested:	Y ___	N ✓
Hardcopy to follow by mail:	Y ✓	N ___

No. of pages (including cover sheet): 7 Date: 21 FEB 1990

Please contact _____ if all pages not received.

Comments: MR. JENKINS — THE ATTACHED SHEETS INCLUDE:

2 SHEETS OF TEST RESULTS FOR "CONTAMINATED" SOIL (SHEET 2+3)

2 SHEETS OF TPH RESULTS FOR ALL 4 TANKS (SHEETS 4+5)

2 PAGE LETTER REGARDING TESTING OF SLUDGES.

* BTEX RESULTS SHOULD FOLLOW LATER TODAY

For Internal Use Only: _____

Signed By:

SAM REED

Rev 3/9/89

Form 585

RAVENNA ARSENAL, INC.

INTEROFFICE MEMO

TO: MR. BILL JENKINS, PURCHASING

FROM: T. M. CHANDA, ENVIRONMENTAL ENGINEER

DATE: FEBRUARY 19, 1990

SUBJECT: INSPECTION OF THE NORTON/ROYALTON ROAD LANDFILL FOR THE DISPOSAL OF ANALYTICALLY DETERMINED RVAAP NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL

==========

PURPOSE: To determine the environmental acceptableness of subject landfill by personal observation of all phases of the activity which includes site inspection, interview with the landfill operator, and interview of appropriate Ohio EPA site inspector. This action was enacted to insure proper disposal of petroleum product contaminated soil (analytically determined as non-hazardous) generated by the removal of 4 (ea) RVAAP Underground Storage Tanks (USTs) that failed regulated tank tightness testing. Subject disposal action is to be performed by RVAAP subcontractor R & R International, Inc. The inspection/survey was administered under a format established by Olin Corporation's procedure No. CSP 54, Appendix C.

FINDINGS: In the completion of this survey and personal contact with landfill and regulatory personnel it's been determined that the Norton/Royalton Road Landfill is acceptable for disposal of non-hazardous RVAAP petroleum contaminated soil.

I - PERSONAL OBSERVATIONS & CONTACT

A. Installation Personnel Performing Inspection/Interview:

Thomas M. Chanda
RAI Environmental Engineer

B. Inspection Date: February 13, 1990 at 0930 hrs.

C. Persons Contacted/Interviewed:

1.) Mr. John Felice
Norton Landfill Manager

2.) Mr. William Black, Sanitarian
Ohio EPA, Northeast District Office
Regulatory Agency's Landfill Inspector
for the Norton Landfill

D. General:

The Norton Landfill is owned and operated by the Norton Construction Co., North Royalton, Ohio.

The existing landfill is a 140 acre site with a remaining working capacity of 6 months. An additional 20 acres of adjacent land located to the immediate East is in readiness to commence landfill operations following Ohio EPA approval of engineering plans for site expansion. The existing site rises approximately 125 ft. in elevation attributed from previous landfill activity; this same elevation is proposed for 20 acre expansion site. The site is 1/4 mile North of the main thoroughfare of Royalton Rd. and is, therefore, non-visible to the general public. To the immediate South and Southwest of the landfill is an industrial park complex which houses both office and small manufacturing facilities; this area is well kept. The North and West boundaries of the site abut to wooded areas with the East being somewhat open field till meeting Interstate I-77 approximately one-half mile away. Vehicular access to the landfill can only be reached from the South through a gated entrance. Prior to entering the landfill proper, all transport vehicles are checked in at receiving station which consists of a trailered office area which is manned by landfill personnel. The only fencing observed was on the site's Southern boundary.

The site operations are considered to be small to medium activity with a traffic flow of one incoming waste load every 10-15 minutes. It was noted by the site manager that 12 municipalities have been turned down from disposing at the site in order to slow the rate of filling up the remaining active portion of the landfill.

E. Environmental Considerations:

1. Drinking water wells are of no consequence to the site. All portable water provided to surrounding communities are accomplished via a district municipal treatment facility and distribution system.

2. The site collects its leachate/run-off waters which are channelled into the local sewer collection system. The local sewer authority requires periodic testing of the landfills discharge, but does not impose any pre-treatment standards. Analyses is performed by an independent lab which forwards the results to the sewer authority. No objections have been raised to the leachate's characteristics and their contribution to the sewage system. No NPDES permits are maintained. There were no nearby streams, creeks, or waterways that may be impacted by the landfill.

3. There are 30 methane gas collection wells upon the landfill site. The gas is burned off/flashed to atmosphere. No air permits have been required of the landfill using this process of methane gas evacuation.

4. The site exhibited good maintenance, adequate cover, good housekeeping practices, no odors, and no presence of vermin. The site's cover material is imported with an adequate amount stockpiled. Access roads to and from the working face of the site were sound and adequate to support heavy bearing loads. There was noticed some paper blowing at the work site from a load that had just been dropped, but due to the high wind that day and appearance of the rest of the site's surrounding areas blowing debris is effectively policed.

5. The site does not maintain or have present any retention lagoons or ponds.

6. A current 1990 Ohio EPA Solid Waste Landfill permit/license was reviewed with a permit identification No. 8. The landfill is permitted to receive non-hazardous solid waste generated from commercial, industrial, and municipal/domestic sources. The landfill is not designated or permitted to receive regulated asbestos containing materials.

7. To the best recollection of the landfill manager, Olin Corporation wastes have never been received at the site.

8. Post closure care of the filled portions of the site were well maintained with adequate cover and no evidence of ponding.

9. Being owned by a construction type company the landfill site has an adequate amount of earth moving equipment available immediately adjacent to the site. Earth moving equipment included several 10-20 ton dump trucks, crawler cranes with dragline, earth scrapers, bulldozers, and compactors (Bull-Mags). The working face area had in operation one compactor and a bulldozer in standby.

10. The landfill operation maintains 6 groundwater monitoring wells; 2 upgradient and 4 down gradient. Analytical results are reported to be acceptable to primary drinking water standards. Other analytical parameters that are monitored for, are uncertain of acceptability due to Ohio EPA not having standards for those recognized non-drinking water quality constituents. Ohio EPA has never raised any objections to any of the landfill's monitoring well data.

F. Regulatory Agency Interview:

Mr. William Black from Ohio EPA's Northeast District, who's the inspector for the Norton Landfill's operation, was interviewed on February 13, 1990. Mr. Black commented upon the landfill as follows:

- The Norton Landfill is "substantially compliant"

- No noted violations, discrepancies, or restrictions have been administered against the landfill in the last six months.

- He was pleased with the management practices that were demonstrated at the landfill and the efforts to maintain a clean operation.

- There were no objections to the use of the landfill by RVAAP for the disposal of non-hazardous characterized petroleum contaminated soil. Other businesses/industries have used the Norton Landfill for similar waste disposal.

G. Other considerations prior to physical disposal of RVAAP petroleum contaminated soil by R & R International, Inc.

1. Analytical soil data shall include determination for total petroleum hydrocarbons (TPH), benzene, ethylene, toluene and xylene (BETX), percent solids content, ignitability, EP toxicity (metals), and polychlorinated biphenyls (PCBs).

2. All analytical data will be forwarded over to Mr. Black of Ohio EPA and Mr. Felice, Norton Landfill, prior to first receipt of waste. Approvals will be confirmed by both parties prior to RVAAP soil removal off-site.

3. R & R International, Inc. will be expected to pay in full for all fees waged by the landfill one day following the last load received for disposal at the Norton Landfill; this comment emphasized by Mr. Felice.

cc: RVAAP COR
N. Wulff
H. Cooper
S. McCauslin
File

cc: N. Wulff
T. Chanda/S. McCauslin
W. Carkido
B. Jenkins
File

RAVENNA ARSENAL INC.
8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297
Telephone (216) 358-7111
Autovon 346-3210

February 16, 1990

Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44226-9297

SUBJECT: UNDERGROUND STORAGE TANK (USTS) UPDATE

Dear Sir:

The Ravenna Army Ammunition Plant is currently in the process of removing 16 USTs. The 16 USTs being removed are broken into two (2) separate jobs:

1) 12 USTs declared abandoned are currently being removed by Cardamone Construction.

2) 4 USTs which failed their tank tightness tests are currently being removed by R & R International, Inc.

A breakdown of work completed in each job is as follows:

I. Cardamone has pulled all 12 USTs and their related appendages. Each excavation has been cleaned of all contamination and sampled, based on PID screenings during excavation. The apparent contaminated soil has been stockpiled while awaiting sample results per all EPA regulations.

The subcontractor is currently cleaning each tank of any leftover sludges and residues. Upon completion of cleaning, a sludge sample shall be taken for disposal purposes and the cleaned tank may be properly disposed of. Cleaning shall be completed by Tuesday, February 20, 1990.

Based on sample results, the subcontractor will either do further excavation then backfill or backfill each hole. The subcontractor will also be able to dispose of any contaminated materials at this time. The sample results are expected back no later than Friday, Feb. 23, 1990 and completion of project is expected by Friday, March 2, 1990.

II. R & R has cleaned, removed and disposed of all 4 USTs. R & R has taken all samples required, and based on PID screenings at the time of excavation, R & R decided to line each excavation with plastic and backfill each hole.

R & R is currently awaiting sample results to arrange for disposal of all contaminated materials. If test results warrant further excavation, they will do so. If test results come back clean, their job will be considered complete. Sample results are due back by Friday 2/23/90. Based on sample results, projected completion date shall be 2/23/90 or 3/2/90.

In summary, the actual work needed to complete both jobs is minor and the only element dictating an actual completion date is the time element in receiving results. In both cases, all work should be completed by 2 March 90 pending no unforeseen delays in receiving all sample results.

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper
Plant Engineer

WAC/wt/wc90003

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb, VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-8-13

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	BTEX*
Tank #1 (North) (RV 33)	B9015-8	<2 ppb
Tank #1 (Center)	B9015-9	<2 ppb
Tank #1 (South)	B9015-10	<2 ppb
Tank #4 (North) (RV 23)	B9015-11	<2 ppb
Tank #4 (Center)	B9015-12	<2 ppb
Tank #4 (South)	B9015-13	<2 ppb

* Benzene, Toluene, Ethylbenzene, Xylene.

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-2-7

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	BTEX*
Tank #2 (RU 11) (East)	B9015-2	<2 ppb
Tank #2 (Center)	B9015-3	<2 ppb
Tank #2 (West)	B9015-4	<2 ppb
Tank #3 (RU 22) (North)	B9015-5	<2 ppb
Tank #3 (Center)	B9015-6	<2 ppb
Tank #3 (South)	B9015-7	<2 ppb

* Benzene, Toluene, Ethylbenzene, Xylene

Thomas H. Richert
Director of Analytical Services

THR/tlg

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HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-2-7

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	TPH
Tank #2 (East) (RU11)	B9015-2	22 ppm
Tank #2 (Center)	B9015-3	18 ppm
Tank #2 (West)	B9015-4	17 ppm
Tank #3 (North) (RU 22)	B9015-5	23 ppm
Tank #3 (Center)	B9015-6	18 ppm
Tank #3 (South)	B9015-7	44 ppm

Thomas H. Richert
Director of Analytical Services

THR/tlg

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HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-8-13

Description: soil samples

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Customer I.D.	HOLK-Lab #	TPH
Tank #1 (North) (RV 33)	B9015-8	149 ppm
Tank #1 (Center)	B9015-9	305 ppm
Tank #1 (South)	B9015-10	158 ppm
Tank #4 (North) (RV 23)	B9015-11	37 ppm
Tank #4 (Center)	B9015-12	67 ppm
Tank #4 (South)	B9015-13	394 ppm

Thomas H. Richert
Director of Analytical Services

THR/tlg

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HOLK ENVIRONMENTAL SERVICES, INC.

4

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-1

Description: Composite of Tanks #1 - #4

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Flash Point (PMCC)	>140 F
Paint Filter Test	No Free Liquid Present
TPH	71 ppm

EP TOXIC EXTRACTION PROCEDURE (SW-846; Method 1310)

	Results (mg/l)	EP Tox Standard (mg/l)
Arsenic	<0.01	5.0
Barium	0.09	100.0
Cadmium	<0.01	1.0
Chromium	<0.01	5.0
Lead	<0.01	5.0
Mercury	<0.01	0.2
Selenium	<0.01	1.0
Silver	<0.01	5.0

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

END

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb, VM/JO

Date Reported: 2-20-90

HOLK-Lab #: B9015-1

Description: Composite of Tanks #1 - #4

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Benzene	<2 ppb
Toluene	<2 ppb
Ethylbenzene	<2 ppb
Xylene	<2 ppb

Thomas H. Richert
Director of Analytical Services

THR/tlg

The foregoing is limited to findings based upon material received for analysis and/or information furnished by client. Samples received will be disposed of after 30 days.

HOLK ENVIRONMENTAL SERVICES, INC.

7777 Wall Street
Valley View, Ohio 44125
(216) 524-0888
FAX (216) 524-2090

Date Received: 2-15-90

Customer I.D.: Ravenna Arsenal

P.O.#: vb. VM/JO

Nozzle New, Inc.
34412 Pettibone Road
Solon, Ohio 44139
Attn: Mr. Vince Marek

Date Reported: 2-20-90
HOLK-Lab #: B9015-1
Description: Composite of Tanks #1 - #4

Flash Point (PMCC)	>140 F
Paint Filter Test	No Free Liquid Present
TPH	71 ppm

EP TOXIC EXTRACTION PROCEDURE (SW-846; Method 1310)

	Results (mg/l)	EP Tox Standard (mg/l)
Arsenic	<0.01	5.0
Barium	0.09	100.0
Cadmium	<0.01	1.0
Chromium	<0.01	5.0
Lead	<0.01	5.0
Mercury	<0.01	0.2
Selenium	<0.01	1.0
Silver	<0.01	5.0

Thomas H. Richert
Director of Analytical Services

THR/tlg

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Ohio Department of Commerce

Richard F. Celeste, Governor

Division of State Fire Marshal • Bureau of Underground Storage Tank Regulations
7510 E. Main St., P.O. Box 525 • Reynoldsburg, OH 43068-3395 • (614) 752-8200

Linda K. Page, Director

February 13, 1990

Ravenna Army Ammunition Depot
Attn: Sue McCauslin
8451 S.R. 5
Ravenna, OH 44266

Dear Ms. McCauslin:

Enclosed is a copy of the current guidance document and a copy of the OAC 1301. If you have any questions regarding this matter, please call me at (614) 752-7938.

Sincerely,

Michelle Tarka
Site Coordinator
Bureau of Underground
Storage Tank Regulations

MT:ag

Enclosures

cc: File #679298-00

OHIO DEPARTMENT OF COMMERCE
DIVISION OF STATE FIRE MARSHAL

REGULATIONS PERTAINING TO PETROLEUM UNDERGROUND STORAGE TANK SUSPECTED RELEASE INVESTIGATIONS AND CORRECTIVE ACTIONS

OAC 1301:7-7-28 (A), (E), (I), (J), AND (K)
OAC 1301:7-7-36
Ohio Revised Code 3737.882 and 3737.99(I)

1301:7-7-28. Article 28: FLAMMABLE AND COMBUSTIBLE LIQUIDS

Note: This reproduction of the Ohio Administrative Code does not contain the full text of Article 28 of the Ohio Fire Code, OAC 1301:7-7-28. The text of this printing contains only those paragraphs of Article 28 that pertain directly to petroleum underground storage tank suspected and confirmed releases and the typical tank repair or replacement activities conducted during release investigations and corrective actions. Other sections of the Ohio Fire Code may apply.

(A) Section F-2800.0. General.

(1) FM-2800.1. Scope: This rule shall apply to the transportation, storage, handling and processing of flammable and combustible liquids and to any underground storage tank system as defined in paragraph (B) of rule 1301:7-7-02 of the Administrative Code (F-201.0). The provisions of NFiPA 30, NFiPA 30A, NFiPA 329, PEI RP 100-87, API 1604, API 1631 and ASTM G57-78 listed in rule 1301:7-7-34 of the Administrative Code shall apply where the provisions of this rule do not specifically cover conditions and operations.

(2) FM-2800.2. Permit required: A permit shall be obtained from the fire official for each of the following:

(a) To install, remove, repair or alter in any way a stationary tank for the storage of flammable or combustible liquids, or to modify or replace any line.

(b) To install, repair or alter in any way, an underground storage tank, to modify or replace any piping connected thereto, to take such tank system temporarily or permanently out of service, or to place an out-of-service tank system back into service. When such a permit is not required by the local fire official the permit shall be obtained from the fire marshal.

(c) For the storage, handling or use of class I liquids in excess of five gallons in a dwelling or other place of human habitation, or in excess of ten gallons in any other building or other occupancy, or in excess of sixty gallons outside of any building except that no permit shall be required for the following:

(i) For the storage or use of flammable liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant or mobile heating plant; or

(ii) For the storage or use of paints, oils, varnishes or similar mixtures when such liquids are stored for painting or maintenance, or similar purposes upon the premises, and which are not stored for a period exceeding thirty days.

(d) Storage, handling or use of class II combustible liquids or class III combustible liquids in excess of twenty-five gallons in a building, or in excess of sixty gallons outside of a building, except for fuel oil used in connection with oil burning equipment in single-family residential buildings.

(e) For the manufacture, processing, blending or refining of flammable or combustible liquids.

(f) For the storage of flammable or combustible liquids in stationary tanks.

(g) For placing any flammable or combustible liquid stationary tank temporarily or permanently out of service and to place said tank back into service (see paragraph (E)-(9) below [FM-2804.9]).

(h) Permits shall be obtained from the fire marshal for above-ground flammable and combustible liquid tank installations in bulk plants. This paragraph applies only

where a permit is not obtained from another officer mentioned in section 3737.14 of the Revised Code.

(3) FM-2800.3. Permit application: The application for a permit shall be submitted in such form as the fire official may prescribe and shall be accompanied by drawings and such additional information as may be required by the fire official. Permit and inspection fees which are required by ordinance shall accompany all applications. When a permit required by paragraph (A)(2)(b) of this rule is obtained from the fire marshal, an inspection fee in the amount of fifty dollars shall be paid to the fire marshal for each underground storage tank permit.

(4) F-2800.3.1. Stationary tank information: The application to install, remove, repair or alter any stationary tank for the storage of flammable or combustible liquids shall contain a general description of the proposed work and shall include two copies of a drawing indicating location, use, capacity and piping arrangement of all existing and proposed tanks located, or which are to be located, upon the premises and all adjacent buildings and property lines. Information which confirms that the tank meets the design requirements in paragraph (B)(2) below (F-2801.2) shall be attached to or made a part of the application.

(E) Section 2804.0. Underground storage tanks.

(1) FM-2804.1. Underground storage tank program compliance. All underground storage tank systems containing flammable or combustible liquids shall comply with the requirements of rule 1301:7-7-35 of the Administrative Code.

(2) FM-2804.2. Location: Underground storage tanks containing flammable or combustible liquids shall be located at least five feet from any wall, foundation or property line. The top of flammable liquid tanks shall be below the lowest floor level of any building within twenty feet of said tanks. Tanks shall not be located in or under any building unless said building and tank installation is constructed in accordance with the building code and NFiPA 30 listed in rule 1301:7-7-34 of the Administrative Code. A distance of at least one foot shall be maintained between underground tanks in multiple tank installations.

(3) FM-2804.3. Special conditions: The fire official may require greater separations or he may limit the storage capacity when the installation is subject to a severe exposure hazard or topographical conditions when necessary for the safety of the general public.

(4) FM-2804.4. Tank protection installation: Underground storage tanks containing flammable or combustible liquids shall comply with the following installation requirements:

(a) Steel tanks. Cathodically protected steel or approved noncorrosive coated steel underground storage tanks shall be set on a firm foundation and surrounded with at least six inches of noncorrosive inert material such as clean sand or gravel well tamped in place. Tanks, and the six inches of protective material, shall be covered with a minimum of two feet of earth or shall be covered with eighteen inches of earth, on top of which shall be placed a slab of reinforced concrete not less than four inches thick. When underground tanks are, or are likely to be, subjected to vehicular traffic, they shall be protected against damage by at least eighteen inches of earth, over the six inches of protective material, plus six inches of reinforced concrete or eight inches of asphaltic concrete. The reinforced concrete or asphaltic concrete protective cover shall extend at least one foot horizontally beyond the outline of the tank. When new tanks are located in an area that may be subjected to flooding or corrosion, applicable precautions shall be used in accordance with NFiPA 30 listed in rule 1301:7-7-34 of the Administrative Code.

(b) Fiberglass-reinforced plastic (FRP) tanks shall be installed in accordance with the manufacturer's specifications.

(5) FM-2804.5. Tank construction: Underground storage tanks containing flammable or combustible liquids shall meet the following requirements:

(a) Tanks shall be designed and built to prevent releases due to corrosion or structural failure for the operational life of the tank, using noncorrosive material or cathodi-

cally protected steel.

(b) The material used in constructing or lining the tank shall be compatible with the substance to be stored.

(c) Steel tank systems shall be cathodically protected by an impressed current cathodic protection system, sacrificial anodes, or some other type of equivalent protection. If a cathodic protection system is used, it shall be maintained in accordance with paragraph (e)(5)(d) below. Selection of the type of protection to be employed shall be based upon the corrosion history of the area and the judgment of a qualified engineer. If a soil test conducted in accordance with ASTM standard G57-78, or another standard approved by the fire marshal, indicates that soil resistivity in an installation location is twelve thousand ohms per centimeter or more (unless a more stringent standard is prescribed by the fire marshal by rule), a storage tank without corrosion protection may be installed in that location during the period until new standards are promulgated by the administrator of the United States environmental protection agency.

(d) If a cathodic protection system is installed, an ongoing preventative maintenance program shall be used. Where sacrificial anodes have been installed, their proper operation shall be confirmed by the installer within six to twelve months of installation and one year thereafter. If these tests confirm proper operation, subsequent inspection intervals can be extended to five years. However, if underground work is performed at a protected site, cathodic protection should be remonitored six to twelve weeks after work is completed and one year thereafter before again extending the inspection interval. If an impressed current cathodic protection system is installed, the operator shall verify, at least once a month, that it is operating, and a qualified person shall conduct an on-site test and inspection, at least once a year, to measure the structure to soil and structure-to-structure potentials and the rectifier voltage and current output.

(6) F-2804.6. Vent piping: Vent pipes from underground tanks containing flammable liquids shall be so located that the discharge point is outside of buildings, higher than the fill pipe opening and not less than twelve feet above the adjacent ground level. Vent pipes shall discharge only upward in order to disperse vapors. Each tank shall be vented through piping adequate in size as specified in the standards listed in rule 1301:7-7-34 of the Administrative Code, to prevent flow-back of vapor or liquid at the fill opening while the tank is being filled. Threaded joints and connections shall be liquid-tight with a suitable lubricant or piping compound.

(7) F-2804.7. Fill piping: Fill piping passing through concrete shall be located in sleeves, mastic or the equivalent to protect against settlement, frost action and vibration. Welded or screwed joints or approved connectors shall be used. Threaded joints and connections shall be made liquid-tight and shall be made tight with a suitable lubricant or piping compound. Fill pipes shall terminate within six inches of the bottom of the tank.

(8) FM-2804.8. Testing: All underground storage tanks containing flammable or combustible liquids shall be subjected to the following tests.

(a) All tanks shall be strength tested before they are placed in service in accordance with the applicable provisions of the code or standard under which they were built. The "American Society of Mechanical Engineers" (ASME) code stamp, "American Petroleum Institute" (API) monogram, the label of the "Under writer's Laboratories, Inc." (UL), or the "Underwriter's Laboratories of Canada" (ULC) or an approved equivalent identification label on a tank shall be evidence of compliance with the strength test.

(b) Before tanks are placed into the hole they shall be tested with not less than three psi or more than five psi air pressure. All leaks or deformations shall be corrected in a manner approved by the fire official before the tanks are placed into the hole. Mechanical caulking is not permitted for correcting leaks in welded tanks.

(c) After the tank is set in the excavation and all lines are connected another air test

shall be conducted. This test must be conducted before the lines and the tank are covered over and before the tank is filled with product.

(d) When the vertical length of the fill and vent pipes is such that when filled with liquid the static head imposed upon the bottom of the tank exceeds ten psig, the tank and related piping shall be tested hydrostatically to a pressure equal to the static head thus imposed. In special cases where the height of the vent above the top of the tank is excessive, the hydrostatic test pressure shall be specified by the fire official.

(e) Periodic tests of underground tank storage systems may be required by the fire official to determine that leakage has not occurred. Testing shall be done in accordance with NFiPA 329 listed in rule 1301:7-7-34 of the Administrative Code.

(9) FM-2804.9. Abandonment of tanks: A permit shall be obtained from the fire official to remove, abandon, place temporarily out of service or otherwise dispose of any underground storage tank containing flammable or combustible liquids. When such a permit is not required from the local fire official the permit shall be obtained from the fire marshal.

(a) Tanks "temporarily out of service" shall have the fill line, gauge opening and pump connection secured against tampering. Vent lines shall remain open and be maintained in accordance with the requirements of this rule for vent lines.

(b) Any tank not used for a period of ninety days shall be properly safeguarded or removed in a manner approved by the fire official.

(c) Any tank which has been abandoned for a period of one year shall be removed from the property in a manner approved by the fire official and the site restored in an approved manner. When the fire official determines that the removal of the tank is not necessary, he may permit the tank to be abandoned in place in accordance with API 1604 listed in rule 1301:7-7-34 of the Administrative Code, and including the following methods:

(i) Remove all flammable or combustible liquid from the tank and all connecting lines.

(ii) Disconnect the suction, inlet, gauge, and vent lines.

(iii) Fill the tank completely with an inert solid material. Cap remaining underground piping.

(iv) Keep a record of tank size, location, date of abandonment, and method used for placing the abandoned tank in a safe condition.

(d) Tanks which are to be reinstalled for flammable or combustible liquid service shall comply with all the provisions of this rule.

(e) Tanks which are to be returned to service shall be tested in accordance with NFiPA 329 listed in rule 1301:7-7-34 of the Administrative Code.

(I) Section FM-2808.0. Tank lining. Procedure for the interior coating and repair of leaking and/or deteriorated underground storage tanks containing flammable or combustible liquids (both steel and nonmetallic).

(1) FM-2808.1. The local fire official shall determine whether or not the repair of leaking and/or deteriorating underground storage tanks containing flammable or combustible liquids shall be permitted within its jurisdiction. If such repair is permitted by the local fire official, it shall be accomplished in the manner prescribed in paragraphs (I)(2) and (I)(5) below.

(2) FM-2808.2. Manufacturers desiring to have their product used in Ohio shall register the specifications for the internal coating system for the repair of underground storage tanks containing flammable or combustible liquids with the fire marshal. The specifications shall

clearly describe the composition of the product, strength, limitations on use, preparation procedures, application procedures, quality control techniques, curing times and temperatures, field thickness testing procedures, field hardness testing procedures, and a method for determining whether an existing tank is repairable. This information, along with the results of the standards tests, shall be signed and sealed by a registered professional engineer.

(3) FM-2808.3. Each manufacturer who has registered an internal coating system must submit to the fire marshal a list of qualified applicators. It is the responsibility of the manufacturer to keep this list current. The list shall indicate that the applicator is qualified to seal metal tanks, nonmetallic tanks or both. The internal coating procedure shall be in accordance with API 1631 listed in rule 1301:7-7-34 of the Administrative Code.

(4) FM-2808.4. The applicator shall inform the following officials of the location of each project in the following manner:

(a) The local fire authority shall have in its possession a written notice stating the location of the project and the applicator's anticipated timetable for each stage of the project, prior to the commencement of the project. A copy of such written notice shall be mailed to the fire marshal simultaneously with its delivery to the local fire authority.

(b) Any applicator failing to make proper notification of the project location will be removed, for a period of six months, from the qualified applicator list on file with the fire marshal. Reinstatement can be accomplished only by the manufacturer resubmitting the applicator's name after the six-month period has elapsed.

(c) A current "Certificate of Insurance" covering the liability of the applicator shall be filed with the fire marshal.

(d) A sample of the "Application for Tank Repairs" may be obtained from the fire marshal.

(5) FM-2808.5. A "Certificate of Performance" shall be utilized as follows:

(a) A "Certificate of Performance" on each field application shall be submitted to the local fire authority. The certificate (to be designed by the fire marshal and printed and supplied by the contractor) shall be signed by the qualified applicator and will confirm that the tank preparation and product application complies with the sealant manufacturer's specifications which are registered with the fire marshal.

(b) A sample of the "Certificate of Performance" may be obtained from the fire marshal.

(J) Section FM-2809.0. Leak detection. Inventory records for underground storage tanks containing flammable and combustible liquids shall be maintained by the owner or operator of such tank. The procedures for inventory control are as follows:

(1) FM-2809.1. Daily inventory records shall be kept for each tank at each location by the operator. Such records shall be available at the location for inspection at any time by a proper authority and shall cover at least ninety days prior to the date of inspection.

(2) FM-2809.2. The inventory referred to in paragraph (J)(1) above shall be based on the actual measurement of tank liquid levels daily. The written record of such testing shall include a computation of daily gain or loss. The operator of the location shall be responsible for taking action to correct any abnormal loss or gain not explainable by temperature variations or other causes. Such abnormal loss or gain shall be reported promptly by the operator to the local fire official and fire marshal pursuant to paragraph (K) of this rule (FM-2810.0).

(3) FM-2809.3. The mere recording of pump meter readings combined with shipment records shall not constitute adequate inventory records for the purpose of this rule.

(4) FM-2809.4. Exemptions. The requirements for daily inventory records shall not apply in the following situations:

(a) Daily inventories are not required to be maintained when an installation is not in operation, except that during such an operation when an inventory must be taken at least once every seven days.

(b) Daily inventories need not be maintained for storage tanks connected to oil burning equipment.

(c) Daily inventories need not be maintained for storage tanks connected to manufacturing equipment.

(5) FM-2809.5. The following actions shall be taken by the operator daily:

(a) The operator shall record all meter totalizer readings, immediately gauge and record all tank measurements and balance inventory and product transferred.

(b) The operator shall record and make adjustments for all transfers of product occurring during gauging period.

(c) The operator shall retain all of the aforementioned records.

(d) The operator shall check all tanks for water. Experience will indicate whether daily checks are required or if they can be made less frequently. In any circumstances, the check must be made once a week. Tanks should be checked for water after a thaw and after a delivery.

(K) Section FM-2810.0. Underground storage tank release reporting and confirmation.

(1) FM-2810.1. Suspected releases requiring reporting. All owners and operators of underground storage tank containing flammable or combustible liquids shall report within twenty-four hours to the fire official and the fire marshal any of the following conditions:

(a) Test, sampling, or monitoring results from a release detection method specified under paragraph (J) of this rule (FM-2809.0), Or any other release detection method used, that indicates a release may have occurred;

(b) Unusual operating conditions such as erratic behavior of product dispensing equipment, the sudden loss of product from a tank system, an unexplained presence of water in the tank or the physical presence of water in the tank, or the physical presence of the regulated substance or an unusual level of vapors on the site that are of an unknown origin;

(c) Impacts in the surrounding area, such as evidence of regulated substances or resulting vapors in soils, basements, sewer and utility lines, and nearby surface water;

(d) An indication from a gas chromatography or equivalent method that there is a concentration of at least one hundred parts per million of total hydrocarbons in a soil sample; and

(e) Any spill or overfill of petroleum that exceeds twenty-five gallons or causes a sheen on any surface water. Any spill or overfill of petroleum of twenty-five gallons or less must be contained and cleaned up immediately, and if such cleanup cannot be accomplished within twenty-four hours, the fire official and the fire marshal shall be notified within twenty-four hours of the spill or overfill.

(2) FM-2810.2. Release investigation and confirmation. Unless corrective action is initiated by the owner or operator under rule 1301:7-7-36 of the Administrative Code for releases of petroleum, or as otherwise directed by the fire marshal, all suspected releases requiring reporting under this paragraph must be immediately investigated by the owner or operator using one of the following applicable procedures of this paragraph. Confirmation of a petroleum release by one of these methods will require the owner and operator to comply with the requirements for corrective action under rule 1301:7-7-36 of the Administrative Code.

(a) In the case of an underground storage system having secondary containment, an investigation of a possible release into the interstitial area between the underground storage tank and the secondary barrier using procedures that will determine if the interstitial monitoring is working properly;

(b) In the case of a failed tank or piping tightness test, an investigation in the following manner:

(i) A check of inventory records to detect a discrepancy that indicates a release may have occurred in accordance with the requirements of paragraph (J) of this rule.

(ii) Isolation from the tank and retesting of the piping within seven days of the initial reporting to the fire marshal to determine if a release may have occurred in accordance with the requirements in paragraph (J) of this rule;

(iii) Isolation from the piping and retesting of the tank within seven days of the initial reporting to the implementing agency to determine if a release may have occurred in accordance with the requirements in paragraph (J) of this rule (after the top of the tank has been excavated and all loose fitting vent pipes or other equipment has been checked, replaced or tightened); and

(iv) Analysis of soil core samples for hydrocarbon and/or chemical contamination in the unsaturated zone under the underground storage tank system, or, when the ground water is no more than twenty feet from the ground surface, analysis of ground-water samples for hydrocarbon and/or chemical contamination.

(c) In the case of a discrepancy during inventory reconciliation in accordance with paragraph (J) of this rule, or any other suspected release, an investigation conducted in the following manner:

(i) A tightness test of the tanks and piping that is conducted within seven days of the initial reporting to the fire marshal to determine if a release may have occurred; and

(ii) Analysis of soil core samples for hydrocarbon and/or chemical contamination in the unsaturated zone under the underground storage tank system, or, when the ground water is no more than twenty feet from the ground surface, analysis of ground-water samples for hydrocarbon and/or chemical contamination.

(d) A site-specific investigation, under the direction of the fire marshal, of the suspected release incident to determine if a release has occurred and reached soils outside of the excavation zone or ground water;

(e) Any other investigation procedure that is no less stringent than any of the procedures in paragraphs (a) to (c) of this rule and is approved for that underground storage tank system by the fire marshal.

Effective: 5/9/88

Original Signed
Certification

April 29, 1988
Date

Promulgated Under: 119.03 + 3737.86
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1301:7-7-36. CORRECTIVE ACTIONS AND COST RECOVERY STANDARDS FOR PETROLEUM UNDERGROUND STORAGE TANK RELEASES.

(A) General

(1) Purpose. For the purpose of prescribing rules pursuant to section 3737.88 of the Revised Code, the fire marshal hereby adopts this rule to establish standards for corrective actions for releases of petroleum from underground storage tanks and standards for the recovery of costs for undertaking corrective or enforcement actions with respect to such releases. This rule is adopted by the fire marshal in accordance with Chapter 119. of the Revised Code and shall not be considered a part of the "Ohio Fire Code."

(2) Scope. This rule shall apply to any suspected or confirmed release of petroleum from an underground storage tank as defined in paragraph (B) of rule 1301:7-7-35 of the Administrative Code.

(3) Requirement. All owners and operators of UST systems, in response to a suspected or confirmed release of petroleum from a UST system, shall comply with the requirements of this rule. These provisions apply to all UST systems containing petroleum as defined in paragraph (B) of rule 1301:7-7-35 of the Administrative Code.

(4) Fire marshal corrective actions. All corrective actions undertaken by the fire marshal or assistant fire marshal pursuant to division (A)(3) of section 3737.88 of the Revised Code shall be consistent with the requirements of this rule.

(B) Definitions. When used in this rule, the terms shall have the same meaning as those defined in paragraph (B) of rule 1301:7-7-35 of the Administrative Code.

(C) Initial abatement requirements, procedures, and evaluation.

(1) Suspected release confirmation. All suspected releases requiring reporting under paragraph (K) of rule 1301:7-7-28 of the Administrative Code shall be investigated and confirmed or disproved by the owner or operator in a manner consistent with paragraph (K) of rule 1301:7-7-28 of the Administrative Code to establish whether the corrective action requirements of this rule shall be followed.

(2) Upon confirmation of an actual release in accordance with paragraph (K) of rule 1301:7-7-28 of the Administrative Code, or discovery of a release in any other manner, the owners and operators shall:

(a) Report the release to the fire official and fire marshal within twenty-four hours pursuant to paragraph (K) of rule 1301:7-7-28 of the Administrative Code;

(b) Stop any further release from the UST system;

(c) Mitigate all fire, explosion, and safety hazards;

(d) Remove and properly dispose of all visibly contaminated soil and any associated groundwater from the excavation zone;

(e) Conduct an investigation to determine the possible presence of free product and initiate removal of any free product found as soon as practicable;

(f) Report all initial corrective action taken pursuant to this paragraph, including a verification of tank repair or closure if appropriate, to the fire official and the fire marshal within twenty days of the confirmation or discovery of the release.

(3) Site investigation. The owner and operator shall perform a site investigation for contaminated soil, groundwater, or free product and shall assemble from such an investigation, or from other sources (e.g., USGS maps, SCS soil maps, ODNR, OEPA, and other agencies), any information deemed necessary by the fire marshal. The site investigation and information shall include, but is not limited to, the following:

(a) Data on the nature and estimated quantity of the released substance;

(b) Data from surface and subsurface soil sampling and analyses;

(c) Data from groundwater and/or surface-water sampling and analyses; and

(d) Data from available sources and/or site investigations concerning background levels prior to the release, water quality and use, well locations, subsurface soil conditions, climatological conditions, land use, and surrounding populations.

(4) Reporting. The results of this site investigation and all required information shall be reported to the fire marshal within twenty days of the confirmation or discovery of the release unless otherwise directed by the fire marshal. The fire marshal may request the collection and submission of additional information and/or a corrective action plan for additional soil, surface-water, and groundwater cleanup.

(D) Free product removal. At sites where an owner or operator's investigations under paragraph (C)(2) of this rule indicate the presence of a free product, the owner or operator shall remove free-floating product to the maximum extent practicable while continuing, as necessary, any action initiated under paragraph (C) of this rule, and while preparing for subsequent actions required under paragraph (E) or (F) of this rule. In meeting the requirements of this paragraph, the owner or operator shall:

(1) Conduct free product recovery in such a manner that such actions do not spread contamination into previously uncontaminated areas through untreated discharge or improper disposal techniques.

(2) Conduct free product recovery in such a manner that such actions do not produce vapors in the atmosphere at levels such that they pose a health and safety threat to previously uncontaminated areas.

(3) Handle any flammable products in a safe and competent manner to prevent fires or explosions.

(4) Unless directed to do otherwise by the fire marshal, prepare and submit, within thirty days of the confirmation or discovery of the release, a free product removal report to the fire marshal. The report shall provide, but is not limited to, the following information:

(a) The name of the person(s) responsible for implementing the plan;

(b) The estimated quantity and type of product on site and the product thickness in wells, boreholes, and excavations;

(c) Details of the product recovery system;

(d) Whether any discharge will take place on or off site during the recovery operation;

(e) The type of treatment and expected effluent quality from any discharge; and

(f) The disposition of the recovered product.

(E) Site assessment. Whenever an investigation under paragraph (C)(3) of this rule indicates that there may be remnant soil contamination from the release, or that the released product or product from contaminated soil may have reached groundwater, or as otherwise directed by the fire marshal, the owners and operators shall:

(1) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release, to determine the full extent and location of the soils contaminated by the release.

(2) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release to determine the presence of dissolved contamination due to the release in the ground water.

(3) When directed by the fire marshal, conduct an exposure assessment to determine the extent of exposure of, or potential for exposure of, individuals to petroleum from the release. Such assessment shall be based on such factors as the nature and extent of contamination and the existence of or potential for pathways of human exposure, the size of the community within the likely pathways of exposure, and the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified contaminants and any available recommended exposure or tolerance limits for such contaminants.

(4) The information collected by the owners and operators during the course of the investigations under this paragraph shall be submitted in accordance with a schedule established by the fire marshal.

(5) The fire marshal may request the submission of a corrective action plan for additional soil and/or ground-water cleanup.

(F) Soil and ground-water cleanup.

(1) Owners and operators required by the fire marshal under this rule to develop and submit a corrective action plan for responding to any contaminated soils, surface waters, or ground waters shall submit such a plan according to a schedule established by the fire marshal.

(2) The fire marshal shall approve the corrective action plan only if it assures that implementation of the plan will provide adequate protection of human health, safety, and the environment. In making this determination, the fire marshal shall consider:

(a) The physical and chemical characteristics of the petroleum substance, including its toxicity, persistence, and potential for migration;

(b) The hydrogeologic characteristics of the facility and the surrounding land;

(c) The proximity, quality, and current and future uses of ground water and surface waters; and

(d) The results of an exposure assessment when such an assessment is required.

(3) Upon approval of the corrective action plan, the owners and operators shall implement the plan and monitor, evaluate, and report the results of implementation, as required by the fire marshal.

(G) Public participation.

(1) Corrective action plans. For each corrective action plan submitted to the fire marshal under paragraph (F) of this rule, and prior to the approval of such plan, the fire marshal shall provide an opportunity for public review and comment on the plan. The fire marshal shall provide notice to the public by means designed to reach those members of the public most directly affected by the release and the planned corrective action. Public notice shall provide adequate time for the review of the submitted plan by the affected public. Such notice may include, but is not limited to, public notice in local newspapers, including block advertisements, public service announcements, or letters to individual households.

(2) If there is sufficient public interest, or for any other reason, the fire marshal may hold a public meeting to consider comments on the corrective action plan. The fire marshal shall hold a public meeting in any case where implementation of an approved corrective action plan does not achieve the established cleanup levels and termination of that plan is under consideration by the fire marshal.

(3) In deciding whether to approve or modify the corrective action plan, the fire marshal shall consider and respond to the comments from the public.

(H) Owner or operator liable for costs. The owner or operator of an underground storage tank from which a release of petroleum has occurred is liable to the state for any costs incurred for any corrective or enforcement action undertaken by the fire marshal, assistant fire marshal, or attorney general, that

is conducted pursuant to section 3737.88 of the Revised Code. The liability under this paragraph shall be construed to be the standard of liability which obtains under section 311 of the Federal Clean Water Pollution Act.

(1) Cost recovery. In determining the equities for seeking the recovery of costs under this rule, the fire marshal may consider the amount of financial responsibility required to be maintained under subsections (C) and (D)(5) of section 9003 of the Resource Conservation and Recovery Act, as amended, and the factors considered in establishing such amount under subsection (D)(5) of such act.

(2) Effect on liability.

(a) No transfer of liability. No indemnification, hold harmless, or similar agreement or conveyance shall be effective to transfer from the owner or operator of any underground storage tank or from any person who may be liable for a release or threat of release under this paragraph, to any other person the liability imposed under this paragraph.

(b) No bar to cause of action. Nothing in this paragraph, including the provisions of paragraph (H)(2)(a) of this rule, shall bar a cause of action that an owner or operator or any person subject to liability under this rule, or a guarantor, has or would have, by reason of subrogation or otherwise against any person.

Effective: 5/9/88

ORIGINAL SIGNED
certification

APRIL 29, 1988
date

promulgated under:	119.03 + 3737.86
Authorized by:	3737.88
Amplifies:	3737.88
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Sec. 3737.882. (A) If, after an examination or inspection, the fire marshal or an assistant fire marshal finds that a release of petroleum is suspected, he shall take such action as he considers necessary to ensure that a suspected release is confirmed or disproved and, if the occurrence of a release is confirmed, to correct the release. These actions may include one or more of the following:

(1) Issuance of a citation and order requiring the responsible person to undertake, in a manner consistent with the requirements of section 9003 of the "Resource Conservation and Recovery Act of 1976," 98 Stat. 3279, 42 U.S.C.A. 699lb, as amended, applicable regulations adopted thereunder, and rules adopted under division (B) of this section, such actions as are necessary to protect human health and the environment, including, without limitation, the investigation of a suspected release.

(2) Requesting the attorney general to bring a civil action for appropriate relief, including a temporary restraining order or preliminary or permanent injunction, in the court of common pleas of the county in which a suspected release is located or in which the release occurred, to obtain the corrective action necessary to protect human health and the environment. In granting any such relief, the court shall ensure that the terms of the temporary restraining order or injunction are sufficient to provide comprehensive corrective action to protect human health and the environment.

(3) Entry onto premises and undertaking corrective action with respect to a release of petroleum if, in his judgment, such action is necessary to protect human health and the environment. Any corrective action undertaken by the fire marshal or assistant fire marshal under division (A)(3) of this section shall be consistent with the requirements of sections 9003 and 9005 of the "Resource Conservation and Recovery Act of 1976," 98 Stat. 3279, 42 U.S.C.A. 699lb, and 98 Stat. 3284, 42 U.S.C.A. 699le, respectively, as amended, applicable regulations adopted thereunder, and rules adopted under division (B) of this section.

(B) The fire marshal shall adopt, and may amend and rescind, such rules as he considers necessary to establish standards for corrective actions for suspected and confirmed releases of petroleum and standards for the recovery of costs incurred for undertaking corrective or enforcement actions with respect to such releases. The rules also shall include requirements for financial responsibility for the cost of corrective actions for and compensation of bodily injury and property damage incurred by third parties that are caused by releases of petroleum. Rules regarding financial responsibility shall, without limitation, require responsible persons to provide evidence that the parties guaranteeing payment of the deductible amount established under division (E) or (F) of section 3737.91 of the Revised Code are, at a minimum, secondarily liable for all corrective action and third-party liability costs incurred within the scope of the deductible amount. The rules shall be consistent with sections 9003 and 9005 of the "Resource Conservation and Recovery Act of 1976," 98 Stat. 3279, 42 U.S.C.A. 699lb, and 98 Stat. 3284, 42 U.S.C.A. 699le, respectively, as amended, and applicable regulations adopted thereunder.

(C)(1) No person shall violate or fail to comply with a rule adopted under division (A) of section 3737.88 of the Revised Code or division (B) of this section, and no person shall violate or fail to comply with the terms of any order issued under division (A) of section 3737.88 of the Revised Code or division (A)(1) of this section.

(2) Whoever violates division (C)(1) of this section or division (F) of section 3737.881 of the Revised Code shall pay a civil penalty of not more than ten thousand dollars for each day that the violation continues. The fire marshal may, by order, assess a civil penalty under this division, or he may request the attorney general to bring a civil action for imposition of the civil penalty in the court of common pleas of the county in which the violation occurred. If the fire marshal determines that a responsible person is in violation of division (C)(1) of this section or division (F) of section 3737.881 of the Revised Code, the fire marshal may request the attorney general to bring a civil action for appropriate relief, including a temporary restraining order or preliminary or permanent injunction, in the court of common pleas of the county in which the underground storage tank or, in the case of a violation of division (F)(3) of section 3737.881 of the Revised Code, the training program that is the subject of the violation is located. The court shall issue a temporary restraining order or an injunction upon a demonstration that a violation of division (C)(1) of this section or division (F) of section 3737.881 of the Revised Code has occurred or is occurring.

Any action brought by the attorney general under this division is a civil action, governed by the rules of civil procedure and other rules of practice and procedure applicable to civil actions.

(D) Orders issued under division (A) of section 3737.88 of the Revised Code and divisions (A)(1) and (C) of this section, and appeals thereof, are subject to and governed by Chapter 3745. of the Revised Code. Such orders shall be issued without the necessity for issuance of a proposed action under that chapter. For purpose of appeals of any such orders, the term "director" as used in Chapter 3745. of the Revised Code includes the fire marshal and an assistant fire marshal.

Sec. 3737.99

(I) Whoever knowingly violates division (C) of section 3737.882 of the Revised Code is guilty of an unclassified felony and shall be fined not more than twenty-five thousand dollars or imprisoned for not more than fourteen months, or both. Whoever recklessly violates division (C) of section 3737.882 of the Revised Code is guilty of a misdemeanor of the first degree.

OHIO DEPARTMENT OF COMMERCE
DIVISION OF STATE FIRE MARSHAL
BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS

CORRECTIVE ACTION GUIDANCE FOR PETROLEUM RELEASES

January 15, 1988

Section 3737.88 of the Ohio Revised Code requires that when the State Fire Marshal finds that a release of petroleum from an underground storage tank has occurred, he shall take actions necessary to protect human health and the environment.

This list of corrective action steps for petroleum releases from UST systems have been prepared to assist UST owners and operators in conducting the corrective action activities required by the State Fire Marshal when a release is discovered. Nothing in this guidance is intended to supercede any action taken by the Fire Marshal or any other local, state, or federal agency or regulation, nor does this list relieve the UST system owner or operator from compliance with any applicable local, state or federal regulations.

General Requirements

These requirements apply to any suspected or confirmed release of petroleum from an underground storage tank. All owners and operators of UST systems, in response to a suspected or confirmed release of petroleum from an UST system, shall comply with these requirements.

Unless otherwise indicated, all reports required by the State Fire Marshal must be submitted in writing to:

Ohio Division of State Fire Marshal
Bureau of Underground Storage Tank Regulation
7510 East Main Street
P.O. Box 525
Reynoldsburg, Ohio 43068-3395

Suspected Release Confirmation

(A) All suspected releases of petroleum from UST systems must be reported to the local fire department and the State Fire Marshal within 24 hours of their discovery. The report to the State Fire Marshal may be made by calling 614-752-7938 or 1-800-686-2878.

Any suspected release that affects surface or drinking water supplies must be reported to the Ohio Environmental Protection Agency at 1-800-282-9378.

Any suspected release that threaten's Ohio's wildlife must be reported to the Ohio Department of Natural Resources at 614-265-4300.

(B) Suspected releases must be immediately investigated and either confirmed or disproved by a method acceptable to the local fire department and the State Fire Marshal.

(C) If a suspected release is confirmed, the owners and operators of the UST system must undertake all required corrective actions.

Initial Corrective Actions

The following steps must be taken at all confirmed petroleum releases sites:

(A) Upon confirmation of an actual release, or discovery of a release in any other manner, the owners and operators of the UST system must:

(1) Report the confirmed releases to the local fire department and the State Fire Marshal within twenty-four hours.

(2) Stop any further release from the UST system;

(3) Mitigate all fire, explosion, and safety hazards;

(4) Remove and properly dispose of all visibly contaminated soil and any associated groundwater from the excavation zone. The disposal of contaminated soil or water must comply with all applicable local, state and federal regulations;

(5) Conduct an investigation to determine the possible presence of free product and initiate removal of any free product found as soon as practicable;

(6) Report all initial corrective action taken, including a verification of tank repair or closure if appropriate, to the local fire department and the State Fire Marshal within twenty days of the confirmation or discovery of the release.

(7) All UST system repairs, removals, abandonment, installation, and replacement must comply with the requirements of the Ohio Fire Code and all other local and state regulations. The Ohio Fire Code requires a permit from the fire official for all such actions.

(B) Site investigation. The owner and operator must perform a site investigation for contaminated soil, groundwater, or free product and assemble from the investigation, or from other sources (e.g., USGS maps, SCS soil maps, Ohio Department of Natural Resources Division of Water, Ohio Environmental Protection Agency, and other agencies), any information deemed necessary by the State Fire Marshal. The site investigation and information must include, but is not limited to, the following:

(1) Data on the nature and estimated quantity of the released substance;

(2) Data from surface and subsurface soil sampling and analyses;

(3) Data from groundwater and/or surface water sampling and analyses; and

(4) Data from available sources and/or site investigations concerning background levels prior to the release, water quality and use, well locations, subsurface soil conditions, climatological conditions, land use, and surrounding populations.

(C) Reporting. The results of this site investigation and all required information must be reported to the State Fire Marshal within twenty days of the confirmation or discovery of the release unless otherwise directed by the Fire marshal. The State Fire Marshal may request the collection and submission of additional information and/or a corrective action plan for additional soil, surface water, and groundwater cleanup.

Free Product Removal

The following steps must be taken at **all release sites where free product has been found:**

(A) At sites where an owner or operator's investigations indicate the presence of a free product, the owner or operator must remove free floating product to the maximum extent practicable while continuing, as necessary, all other corrective action steps initiated, and while preparing for subsequent long term corrective actions. In meeting this requirement, the owner or operator shall:

(1) Conduct free product recovery in such a manner that such actions do not:

(a) spread contamination into previously uncontaminated areas through untreated discharge or improper disposal techniques, or

(b) produce vapors in the atmosphere at levels such that they pose a health and safety threat to previously uncontaminated areas.

(2) Handle any flammable products in a safe and competent manner to prevent fires or explosions.

(B) Unless directed to do otherwise by the State Fire Marshal, prepare and submit, within thirty days of the confirmation or discovery of the release, a free product removal report to the State Fire Marshal. The report shall provide, but is not limited to, the following information:

(1) The name of the person(s) responsible for implementing the plan;

(2) The estimated quantity and type of product on site and the product thickness in wells, boreholes, and excavations;

(3) Details of the product recovery system;

(4) Whether any discharge will take place on or off site during the recovery operation;

(5) The type of treatment and expected effluent quality from any discharge; and

(6) The disposition of the recovered product.

Site Assessment

The following steps must be taken at all **release sites where remaining soil or groundwater contamination has been found:**

(A) Whenever an investigation indicates that there may be remaining soil contamination from the release, or that the released product or product from contaminated soil may have reached groundwater, or as otherwise directed by the State Fire Marshal, the owners and operators must:

(1) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release, to determine the full extent and location of the soils contaminated by the release; and

(2) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release to determine the presence of dissolved contamination due to the release in the groundwater.

(B) When directed by the State Fire Marshal, conduct an exposure assessment to determine the extent of exposure of, or potential exposure for exposure of, individuals to petroleum from the release. Such assessment shall be based on such factors as the nature and extent of contamination and the existence of or potential for pathways of human exposure, the size of the community within the likely pathways of exposure, and the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified contaminants and any available recommended exposure or tolerance limits for such contaminants.

(C) The information collected by the owners and operators during the course of this site assessment shall be submitted in accordance with a schedule established by the State Fire Marshal.

(D) The State Fire Marshal may request the submission of a corrective action plan for additional soil and/or groundwater cleanup.

Long Term Corrective Action

The following steps must be taken when **long term soil and/or groundwater cleanup** is required by the State Fire Marshal:

(A) Owners and operators must develop and submit a corrective action plan for responding to any contaminated soils, surface waters, or groundwaters shall submit such a plan according to a schedule established by the State Fire Marshal.

(B) The State Fire Marshal shall approve the corrective action plan only if it assures that implementation of the plan will provide adequate protection of human health, safety, and the environment. In making this determination, the State Fire Marshal shall consider:

(1) The physical and chemical characteristics of the petroleum substance, including its toxicity, persistence, and potential for migration;

(2) The hydrogeologic characteristics of the facility and the surrounding land;

(3) The proximity, quality, and current and future uses of groundwater and surface waters; and

(4) The results of an exposure assessment when such an assessment is required.

(C) Upon approval of the corrective action plan, the owners and operators shall implement the plan and monitor, evaluate, and report the results of implementation, as required by the State Fire Marshal.

(D) Public participation.

(1) Prior to the approval of each long term corrective action plan submitted, the State Fire Marshal will provide an opportunity for public review and comment on the plan.

(2) If there is sufficient public interest, or for any other reason, the State Fire Marshal may hold a public meeting to consider comments on the corrective action plan. A public meeting will be conducted in any case where implementation of an approved corrective action plan does not achieve the established cleanup levels and termination of that plan is under consideration.

(3) In deciding whether to approve or modify the corrective action plan, the fire marshal will consider and respond to the comments from the public.

Cost Recovery

The owner or operator of an underground storage tank from which a release of petroleum has occurred is liable to the state for any costs incurred for any corrective or enforcement action undertaken by the State that is conducted pursuant to section 3737.88 of the Ohio Revised Code.

cc: N. Wulff
W. Carkido
T. Chanda
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

February 8, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Commander
U. S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-PCG-B (Shirlene Wise)
Rock Island, IL 61299-6000

Subject: Specification For Removal of Four (4) Ea. Underground Storage Tanks (USTs)
(Ref. Phone Conversation on 1 Feb. 1990 @ 1400 Hrs. SAB)

Dear Sir:

Attached are the specifications for removal of the four (4) USTs which failed their required tank tightness tests. The four tanks are as follows:

1. Tank 33 DEAC
2. Tank 23 Bldg. 1045
3. Tank 22 Rail Yard
4. Tank 11 Rail Yard

The specifications were written by a consulting engineering firm registered in the State of Ohio. The specifications were originally drawn up for the removal of 12 registered USTs declared abandoned at the Ravenna Army Ammunition Plant, but may be used for the removal of any UST at the RVAAP.

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper
Plant Engineer

HRC/WAC/wt/wc90002

Attachment

2/8/90 @ 17:15 Hrs.

Sue,

I spoke To a Sam Reed Fm/ R&R last night. ChemTron their sludge disposer, requires a sludge characteristic profile be performed; which includes PCB analysis. He said we could sign a waiver To dispense Fm/ PCB Analysis if we would provide statement that there wasn't any PCBs in the Sludge. I said No, we would not sign such a waiver being that we really don't know what's been dumped into those tanks other than Fuel oil. The problem is that neither of us know if the tank removal specs. (he's got a copy) specifically call for PCB analyses or; if the specs. state the responsibility of the contractor To perform all required analysos upon the sludge To assure proper disposal. In any case, if the specs. in some manner don't put the responsibility of costs upon the contractor To test For PCBs then this will be interpreted as an additional cost. IF it's determined To be an additional cost, he's been advised To contact Jenkins before PCB Analysis is performed. I think!!! there is a general statement To the effect that the contractor is responsible For all required analyses upon the sludge. I've put the tank removal plan on your desk. LET Jenkins & Wayne know of this discussion in case Reed feels this is an additional cost.

Also, Reed said, since ChemTron wants To perform an analytical profile on the sludge, the 5 drums can't be taken off site for disposal. Reed assured me the drums were weather & spill protected — You or Wayne might want To Check this out

Have a Nice Day

Chenda Fm/ RABEWA ☺

Message 11

Date: FRI, 02 FEB 90 09:18:41 CST
From: Robert J. Kasper <ORVAAP@RIA-EMH1.ARMY.MIL>
To: op01@ria-emh1.army.mil, oppxpg@ria-emh1.army.mil, oincdr@ria-emh1.army.mil

SMCRV-CR (200) 2 February 1990

MEMORANDUM FOR Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-PL/Mr. Woodhouse, Rock Island, IL 61299-6000

SUBJECT: Update on Underground Storage Tanks Testing/Removal, RVAAP

1. Status of original project for removal of 12 abandoned USTs.

a. Ground cover removed and all tanks exposed.

b. Hazardous hauler to drain and remove any remaining material, 2 Feb 90.

c. State Fire Marshal to inspect 5 Feb 90.

d. If State Fire Marshal approves, cleaning of the tanks to begin.

e. State Fire Marshal to inspect after cleaning. Upon Fire Marshal's approval, removal will begin with a projected completion date of 30 Mar 90 for all tanks.

2. An additional 8 tanks that were in service were tested. 3 tanks were found to be leaking and were drained and required removal. A 4th tank requires removal with the 3 leaking tanks because it is adjacent to one of the leaking tanks and will have to be removed with the leaking tank. The 4th tank was considered in the cost estimate for removal. It was also drained. Status of removal of the 4 tanks is as follows.

a. $94,000 has been funded for removal of 4 tanks.

b. Subcontract to be let 2 Feb 90.

c. Same procedures with State Fire Marshal inspection/approval apply as for 12 tanks in paragraph 1 above.

d. Estimated completion for removal of additional 4 tanks is also 30 Mar 90.

3. Request for 20 day leniency extension from the Division of State Fire Marshal, Ohio Department of Commerce to complete removal was verbally approved 1 Feb 90.

4. POC is Mr. John Cicero, AUTOVON 346-3127.

FOR THE COMMANDER:

ROBERT J. KASPER
Commander's Representative

CF:
Cdr, INAAP

TELEPHONE CONVERSATION RECORD

DATE: February 1, 1990

PERSON CALLING: Michelle Tarka
Site Coordinator
Div. State Fire Marshal

PHONE:

PERSON CALLED: H. R. Cooper
Plant Engineer

PHONE: 297-3240

SUBJECT: Request For Extension of Time to Complete Investigation of Leaking UST
Ref. Ltr. Dated 30 Jan. 1990

Ms. Tarka called to say that there are no problems with our request for a 20 day extension.

H. R. Cooper

cc: COR RVAAP Office
N. Wulff
T. Chanda
W. Carkido
File

hcust.pr

UNCLAS

01 01 011520Z FEB 90 RR UUUU 0311400

CDR AMCCOM ROCK ISL IL//AMSMC-PCG-B (R)//

CDR RVAAP RAVENNA OH//SMCRV-CA//

FEB 01 1990
N. WULFF

UNCLAS (715K)

SGD EMIL E. MASLANKA, CONTRACTING OFFICER

SUBJ UNILATERAL OBLIGATION OF FUNDS

1. THE FOL IS UNIL OBLIG FOR PERFORMANCE UNDER CONTRACT DAAA09-88-Z-0001:

CLIN: 0046AE PRON: M10PF628M1G2/01

ACRN: UNK AMS-CD: 4211052910**4210052910

ACCTG CLASS: 21-02034-0658251P4210-2572-S11173

AMT OBLIG: $94,000.00 CUM CLIN AMT: $94,000.00

DESC: FY 90 ENVIRONMENTAL RESTORATION PROJECT 5902910-04, UNDERGROUND STORAGE TANK REMOVAL IAW RAI LETTERS OF 16, 19, AND 26 JAN 90.

2. THIS ACTION WILL BE FORMALIZED ON P00092.

3. REQUEST CONTRACTOR'S ACK OF RECEIPT OF THIS MSG.

4. POC IS SHIRLENE WISE, AMSMC-PCG-B (R), AUTOVON 793-3359.

2-1-90

TO	OFFICE	ACTION
C		
C		
	P&CA	
	SAF	
	CPM	
	RETURN	

AMSMC-PCG (R)
AMSMC-PCG-B (R)
AMSMC-PDP-B (R)
AMSMC-CPF-LG (R)
AMSMC-BPA-P (R)

RECEIVED FEB 01 1990

MS. WISE/CONTR SPEC/
AMSMC-PCG-B (R)/23359

EMIL E. MASLANKA, CONTR OFF, AMSMC-PCG-B (R), 26628

UNCLAS

cc: N. Wulff
T. Chanda
W. Carkido
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 30, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Ohio Department of Commerce
Division of State Fire Marshal
Bureau of Underground Storage Tank Regulations
ATTN: Michelle Tarka, Site Coordinator
7510 East Main Street
P.O. Box 525
Reynoldsburg, Ohio 43068-3395

Subject: Request For Extension Of Time To Complete Investigation Of Leaking UST

Dear Ms. Tarka:

Your office has been notified about three tanks which failed their tank tightness tests.

The tanks were drained as soon as the test results were known. The earth surrounding the tanks are generally low permeability clay.

These tanks were included in a project to test eight tanks at the Ravenna Army Ammunition Plant. After each of the first tanks failed, the plant requested funding from the Army Command Headquarters to remove the tanks to comply with the requirements of OAC Rule 1301:7-7-36.

The command waited for the results of the last leak test so that it could be included in the same project if it failed. It failed its test on January 26, 1990.

We hereby request a 20 day extension to the allowed time of 20 days to remove a tank. The extension is requested for each tank. This will allow for the time delay in funding the removal of the first tanks while waiting on the results of the third test. It will also allow for approximately one week to process a contract modification and for the fact that the contractor has three tanks to remove almost simultaneously. We expect to have the tanks removed and the required samples taken by the requested extended deadlines.

A summary of the proposed dates are as follows:

	Date Reported	20 Days	20 Day Extension
Tank No. 33	January 15	Feb. 4	February 24
Tank No. 23	January 19	Feb. 8	February 28
Tank No. 11	January 26	Feb. 15	March 7

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper
Plant Engineer

HRC/wt/hc90008

cf: AMCCOM
AMSMC-PCG-B (Shirlene Wise)

AMCCOM
AMSMC-ISE-M (Ms. Ronnie DePorter)

cc: N. Wulff
R. Holford
J. Melnik
T. Chanda
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 29, 1990

THRU Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266-9297

TO Commander
U.S. Army Armament, Munitions and Chemical Command
Attn: AMSMC-ISE-M (Mr. Dennis Versluys)
Rock Island, IL 61299-6000

Subject: Reporting of a #2 Fuel Oil Leak from RVAAP's Underground Storage Tank (UST), #RV22-Rail Yard Building 47-40; Following 26 January 1990 Failure to Pass State Required Tank Tightness Test

Dear Sir:

Attached is completed DARCOM Form 2647-R in response to subject leak incident.

This installation's point of contact will be Thomas M. Chanda, Environmental Engineer, Autovon 346-3221.

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper
Plant Engineer

HRC:TMC:ade:TMC90002
Attachment

cf: INAAP
Attn: Col. Miller

1 February 1983

DARCOM Suppl 1 to AR 200-1

TELEPHONIC NOTIFICATION OF POLLUTION INCIDENT

(ALL TIMES ARE LOCAL TIMES)

DATE/TIME REPORT RECEIVED: 26 January 1990

1. INSTALLATION: Ravenna Army Ammunition Plant

2. INSTALLATION COMMANDER: Mr. Robert J. Kasper, Commander's Rep.

3. PERSON REPORTING INCIDENT (Include Phone No. and Ext): T.M. Chanda AV 346-3221

4. PERSON RECEIVING REPORT (Include Office and Ext): Mr. Dennis Versluys AMSMC-ISE-M AV743-1870

5. INCIDENT DISCOVERY DATE AND TIME: 26 January 1990 At 1430 Hrs.

NATURE OF INCIDENT

6. TYPE AND AMOUNT OF MAT AND SOURCE: No. 2 Fuel Oil at 0.353 Gals./Hr (0.05 gals/Hr max allowable)

7. SEVERITY: ☐ MINOR ☐ REPORTABLE ☐ MEDIUM ☒ NON REPORTABLE ☐ MAJOR

8. PERSONNEL INJURIES/PROPERTY LOSS: None

9. CAUSE: Tank tightness test failure Administered under regulatory standards

10. EQUIP/FAC INVOLVED (Location and Specific area): Railroad yard at Bldg. 47-40 - 15000 gal. underground storage tank RV #22 - R.R. locomotive fueling station.

11. DURATION/MAGNITUDE OF POLLUTION PRODUCED/RELEASED

a. SOURCE OF RELEASE BEEN STOPPED. ☒ YES ☐ NO

b. RELEASED MATERIAL BEEN RETAINED. ☐ YES ☒ NO

c. REACH INTO NAVIGABLE WATERS. ☐ YES ☒ NO

d. NAME OF RECEIVING STREAM OR WATERS. N/A

e. PASS THE INSTALLATION BOUNDARY. ☐ YES ☒ NO

f. NPDES PERMIT POINTS INVOLVED. ☐ YES ☒ NO SPECIFY.

g. SAMPLE BEING TAKEN FOR LEGAL RECORD. ☒ YES ☐ NO

12. DAMAGE/IMPACT ON SURROUNDINGS (Ground water, wildlife, etc.)

Contamination of subsurface soils within immediate area of Underground Storage Tank; vertical & horizontal migrational path unknown till remedial action undertaken.

13. REMEDIAL ACTION TAKEN

Product removed from tank immediately following tank tightness test failure; submitted funding request to AMCCOM PCO to implement remedial action.

14. REMEDIAL ACTION PLANNED

Tank & comtaminated soil removal; soil sampling & analysis to determine extent of migrational path with subsequent abatement response.

15. DATE OF REMEDIAL ACTION COMPLETION (est or actual): By State 16 FEB 1990 STDS.

16. NOTIFICATIONS

a. REGIONAL EPA. ☐ YES ☒ NO WHEN?

b. STATE ☒ YES ☐ NO ☐ WHEN? 26 January 1990

c. COAST GUARD OR NATIONAL RESPONSE CENTER (800-424-8802) ☐ YES ☒ NO WHEN?

d. NEXT HIGHER HQ ☐ ☐ ☐ YES ☐ NO WHEN?

17. REACTION BY NEWS MEDIA/PUBLIC

None

18. DOLLAR VALUE OF MATERIAL SPILLED: Unknown due to discovery of leak only after administering leak.

19. TOTAL COST CLEANUP ACTIVITIES (Est or Actual): $59,000. (est.)

DISTRIBUTION: ☒ AMCCOM, AMSMC-ISE ☒ RVAAP Co. ☐ ☒ RVAAP COR ☒ RAI ☐

DARCOM Form 2647-R
1 Oct 82

Figure 8-1

TELEPHONE CONVERSATION RECORD

DATE: January 26, 1990

FROM: SUSAN MCCAUSLIN, ENVIRONMENTAL SPECIALIST **PHONE** 216-297-3220

TO: TODD PARFITT, STATE FIRE MARSHALL'S OFFICE **PHONE** 1-800-686-2878

SUBJECT: TANK TEST FAILURE, TANK #22 RAIL YARD

I called B.U.S.T. and spoke with Todd parfitt to report the tank leak test failure of Tank #22. Todd recorded all needed information and requested we mail him a map of the facility indicating the location of the leaking tanks.

Susan McCauslin

SM:ade:012690.PR

cc: N. Wulff
B. Jenkins
D. Kanavy
T. Chanda
W. Carkido
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 26, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Commander
U. S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-PCG-B (Shirlene Wise)
Rock Island, IL 61299-6000

Subject: Corrective Action - Leaking Underground Storage Tank
Ref. RAI Letter January 16, 1990, Same Subject
RAI Letter January 19, 1990, Same Subject

Dear Sir:

The referenced letter advised you of the failure of a tank tightness test on two tanks during the testing of eight underground Storage Tanks at Ravenna AAP.

On the afternoon of January 26, 1990 a third tank (the Railroad Yard #2 Fuel Oil Dispensing Station), failed the tightness test. The leakage rate was approximately 0.30 gallons per hour vs. criteria of 0.05 gallons per hour. Per Ohio guidelines for tanks failing a tightness test the #2 Fuel Oil contents in the tank was removed to another tank thus eliminating the possibility of further loss.

As with prior two tanks discussed in the reference letter, we recommend removal of the tank rather than attempting to repair. This tank is steel construction and 49 years old. If the tank is rusted extensively, as we assume it is due to its age, it would not be able to be repaired. The removal of the 15,000 gallon tank in accordance with Ohio EPA requirements is estimated to cost $59,000 depending upon the extent of ground contamination and assuming no ground water contamination. We believe these are reasonable assumptions because the sub surface soil is mostly clay. The reason for the higher cost is that a second tank of the same age is in the same excavation. Any attempt to remove the failed tank will affect the structural integrity of the other tank. In addition, these tanks have concrete vaults over part of them which will increase the subcontractors work. The work must be subcontracted because RAI is not certified by the State for tank removal.

Request that additional funds in the amount of $59,000 be provided in the same way as the $35,000 requested in the referenced letters for the Deactivation Furnace and Building 1045 Tanks. The total requirement is now $94,000.

As explained in the referenced letter, the tank must be removed within 20 days from January 26, 1990 or by February 15, 1990. We will request an extension of 20 days (the maximum allowed) to March 7, 1990. To complete the physical work prior to March 7, 1990, we must be authorized to proceed by February 13, 1990. Failure to complete the removal of this tank by March 7, 1990 will result in the plant being in non-compliance with Ohio regulations.

As a reminder, the funding requested in the prior letters must be received by February 8, 1990 to avoid a non-compliance violation for those tanks.

Of the original eight tanks all have now been tested.

A 1383 Exhibit-1 and a DD Form 319-R are attached for the project. Also a DD Form 319-R for the first two tanks is attached.

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper
Plant Engineer

HRC/wt/hc90003

cf: AMCCOM
AMSMC-ISE (Ms. Ronnie DePorter)

AMCCOM
AMSMC-BPA-P

Attachment

Exhibit 1

1383 REPORT EXHIBIT 1

AMCCOM SUPPLEMENTAL INFORMATION SHEET

Installation Name: Ravenna Army Ammunition plant
Project Name: Underground Storage Tank Removal - 2 Leaking Tanks (Second group)

1. FUNDED: NO
2. PRON:
3. AMS CODE/PROGRAM ELEMENT (PE):
4. EXECUTING AGENCY: RVAAP OPERATING CONTRACTING
5. PRIORITY: HIGH
6. 319R #:
7. HAZMIN: YES
8. SOURCE STATUS: ACTIVE
9. TECH/ADMIN APPROVAL: YES
10. PERCENT CMPL: -0-
11. a. SUPPORTS PRODUCTION: NO

    b. IF YES, SPECIFY:
12. TYPE EFFORT: CLOSURE
13. CORRECT NOV: NO
14. ON COMPLIANCE SCHEDULE/AGREEMENT: YES
15. NEPA DOCUMENTATION:

    A. Prepared; Record of Environmental Consideration

    B. Approved: YES, Installation Level Only
16. IMPACT IF NOT FUNDED: Ravenna Army ammunition Plant will not be in compliance with Ohio Administration Code Rule 1301-7-7-36(C)(2) which applies to UST's which fail a tightness test.

1383 REPORT EXHIBIT 1

SUPPLEMENTAL INFORMATION SHEET

DATE PREPARED: 1/25/90
GSA INVENTORY CONTROL NO: 20736

1. PROJECT NARRATIVE DESCRIPTION:

This project is to remove two leaking underground storage tanks 15,000 gallon capacities). The project includes abandonment of the tanks by removal according to an approved closure plan, removal and disposal of all visibly contaminated soils, testing of remaining soil, and completion of a closure report.

FUNDING TYPE: PAA INSTALLATION STATUS: Inactive
REQUIRED FOR MOBILIZATION: No; however, the removal of these tanks must be fully coordinated with revisions to the mobilization plan.

2. SPECIFIC TYPE OF POLLUTION/CONTAMINATION:

The tanks failed routine tank tightness tests on January 26, 1990. The subject tanks contained No. 2 fuel oils.

3. AMOUNT OF POLLUTION/CONTAMINATION:

The two (2) tanks to be removed have a combined capacity of 30,000 gals. Inventory checks have not indicated extensive product loss. Extent of contamination will be assessed during removal process.

4. POLLUTION SOURCE AND DISCHARGE, EMISSION OR DEPOSIT POINT:

Discharge is to the soil around the tanks.

5. EXISTING TREATMENT & OTHER CONTROL MEASURES: None

6. EFFECTIVENESS OF EXISTING TREATMENT CONTROL: Not applicable

7. REMEDIAL MEASURES PROPOSED & ESTIMATED EFFECT IN CORRECTING PROBLEMS: None

Tanks have been emptied of most fluid. The tanks remain in violation until removed or repaired and contamination is cleaned up.

8. APPLICABLE STANDARD: OAC 1301:7-7-36 (C)(2)

*9. OTHER RELEVANT INFORMATION:

The tanks must be removed within 40 days of discovery and contamination of the leak. (20 days per regulation plus the maximum extension allowed of 20 days). One tank was determined leaking January 26, 1990. Time to complete removal of both tanks is two weeks. Both tanks must be removed since they are in the same excavation and are 49 years old. One can't be removed without disturbing the other. Funding is needed by February 10, 1990.

United States Environmental Protection Agency
Washington, DC 20460

EPA Federal Agency Pollution Abatement Plan — Project Report

I. Facility Information

1. State Alpha	2. Agency/ Bureau	3. GSA Installation	4. EPA Region	5. Country	6. New Installation
OH	2138	20736	05	USA	[ ] Yes [X] No

7. Name of the Installation: RAVENNA ARMY AMMUNITION PLANT

8. Street Address: 8451 STATE ROUTE 5

9. City Name	10. ZIP Code, if known	11. Ownership Type
RAVENNA OHIO	- 44266 - 9297	C

II. Basic Project Information

1. Agency Project Number	2. Various Locations	3. Media	4. Pollutant Category	5. Funding Account	6. Year Funding Required
	[ ] Yes [X] No	S W	LUST	04	90

7. Project Name (Brief description): UNDERGROUND STORAGE TANK REMOVAL (2 TANKS) 2ND

8. Project Contact Name	9. Contact Telephone	10. Total Cost Estimate (in $1,000's)
TOM CHANDA	216-297-3221	

11. Project Assessment

- [X] High (H) — Project critical to Agency programs and/ or cleanup of local environments
- [ ] Med (M) — Project important to Agency programs and/ or cleanup of local environments
- [ ] Low (L) — Project desirable to Agency programs and/ or cleanup of local environments

12. Compliance Status

- [X] ESOP Does not meet established standard and compliance deadline has passed
- [ ] ESOF Does not meet established standard and compliance deadline is in the future
- [ ] PSOF Does not meet pending standard and compliance deadline is in the future
- [ ] ESRO Meets established standard but need replacement due to obsolescence
- [ ] ESRE Meets established standard but need replacement due to need for expansion
- [ ] ESOL Meets established standards but need demonstrate leadership
- [ ] OTHR Other

13. Project Cost

Fiscal Year	Budgeted ($1,000)	Funded ($1,000)
90	590	[redacted]

14. Project Milestones/ Progress (All dates are month/ y

Design/ Plan Completion	Construction/ Work Start	Construction/ Work Complet
0190	0190	0290

First Compliance Required	Progress Code	Fiscal Ye Complet
0290	[redacted]	

For DOE Use Only

Program ID	Field Office
	[redacted]

15. Project Narrative (including description of legal requirement and pollutants to be controlled)

SEE ATTACHED 1383 EXHIBIT 1

RAVENNA ARMY AMMUNITION PLANT

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Ravenna Arsenal, Inc. January 26, 1990

I. PROJECT TITLE/PROPOSED PROJECT

Underground Storage Tank Removal - 2 Leaking Tanks (Second Group)

II. PROJECT DESCRIPTION

RVAAP has 2 USTs which have failed tank tightness tests. In compliance with State and Federal EPA regulations said USTs and their appurtenances must be removed or repaired immediately. Due to the age of the tanks this project proposes removal.

III. ANTICIPATED DATE AND/OR DURATION OF PROPOSED ACTION

Expected to be performed in February 1990.

IV. REASON FOR USING RECORD OF ENVIRONMENTAL CONSIDERATION

The proposed action is categorically excluded under the provisions of Categorical Exclusion A-7, AR200-2, Appendix A (and no extraordinary circumstances exist as defined in paragraph 4-3) because subject action is in compliance with State and Federal EPA regulations pertaining to the removal of leaking USTs.

T. M. CHANDA — DATE 1-26-90
Environmental Engineer/Proponent

H. R. COOPER — DATE 1-26-90
Plant Engineer

ROBERT J. KASPER — DATE 26 Jan 90
Commander's Representative Installation
Environmental Engineer

hc90rec.rpt

CURRENT OR BACKLOG OF DEFICIENCY IDENTIFICATION AND INDUSTRIAL PREPAREDNESS MEASURE (IPM)
(AMCCOM Suppl 1 to AR 700-90)

1. INSTALLATION NAME/PIN: Ravenna Army Ammunition Plant / PIN 995282

2. DATE OF SUBMISSION: ORIGINAL: Jan. 26, 1990; REVISED:

REQUIREMENT CONTROL SYMBOL FEEDER FOR RCS CSCAB-205

3. ACTION OFFICE:

4. LINE/AREA	5. LINE/AREA STATUS CODE	6. IPM NUMBER	7. REASON CODE	8. PROG FUNDING CODE	12. TIME TO COMP DESIGN	13. TIME TO COMP PHY WORK	14. STATE OF READ	
							WITHOUT IPM	WITH IPM
General	A		C1	PAA(ENVIR)	0	2 WKS	N/A	N/A
	9. IMPACT CODE: E	10. IMPLEMENTATION CODE: G	11. TIME IPM REQ AFTER M-DAY					

	15. ITEM/COMPONENT MANUFACTURED	16. ISN	17. PROD CAP (MAX) WITHOUT IPM	17. PROD CAP (MAX) WITH IPM	18. PROD LEVEL OFF TIME WITHOUT IPM	18. PROD LEVEL OFF TIME WITH IPM	19. RELATED IPMS
a.							
b.	N/A	N/A	N/A	N/A	N/A	N/A	
c.							
d.							
e.							
f.							
g.							
h.							
i.							
j.							
k.							
l.							
m.							
n.							
o.							
p.							

20. OPERATIONAL IMPACT
- [X] MISSION SUPPORT
- [ ] GENERAL SUPPORT
- [ ] PROD SUPPORT
- [ ] ADMIN SUPPORT

21. LOCAL CONTROL NUMBER:

22. PROGRAM CONTROL NUMBER:

25. COST DATA ($000)

a. REAL PROPERTY		b. EQUIPMENT	
(1)	LABOR COST	(1)	LABOR COST
(2)	MATERIAL COST	(2)	MATERIAL COST
(3)	SUBCONTRACT 35.0	(3)	SUBCONTRACT
(4)	G&A COST 0	(4)	G&A COST
(5)	FEE 0	(5)	FEE
(6)	TOTAL EST COST 35.0	(6)	TOTAL EST COST

26. DD FORM 1391 PROCESSOR NUMBER:

27. AMCCOM PROJECT IDENTIFICATION NUMBER:

23. DEFICIENCY PROJECT TITLE

P.O.C. R.J. Kasper COR AV 346-3124
W.A. Carkido AV346-3237

DESCRIPTION: (Bldg no, equipment, sq ft, length, quantity, etc.)

- [X] a. REAL PROPERTY FAC CAT CODE NUMBER 12450
- [ ] b. EQUIPMENT

Remvoe two (2) underground storage tanks which failed their required tank tightness tests.
1. Tank #33 DEAC Furnance - 2000 Gal. # 2 Fuel Oil
2. Tank #23 Bldg. 1045 - 15000 Gal. #2 Fuel Oil
The tanks must be removed within 40 days of discovery of leak(20 days/regulations plus 20 days maximum extention granted). The tanks were determined leaking on 1/15/90 and 1/18/90. Time to complete removal of both tanks is 2 weeks. Funding is needed by February 8, 1990.

24. JUSTIFICATION (Includes impact on mobilization planning, effort, economics, etc.)

Ravenna Army Ammunition Plant will not be in compliance with Ohio Administration Code Rule 1301:7-7-36(c)(2) which applies to USTs which fail a tightness test.

28. VERIFIED [ ] YES [ ] NO CODE _____
OFFICE _____ DATE _____
SIGNATURE

29. VALIDATED [ ] YES [ ] NO CODE _____
OFFICE _____ DATE _____
SIGNATURE

CURRENT OR BACKLOG OF DEFICIENCY IDENTIFICATION AND INDUSTRIAL PREPAREDNESS MEASURE (IPM)

(AMCCOM Suppl 1 to AR 700-90)

1. INSTALLATION NAME/PIN: Ravenna Army Ammunition Plant /Pin 995282

2. DATE OF SUBMISSION: ORIGINAL: Jan. 26, 1990; REVISED:

REQUIREMENT CONTROL SYMBOL FEEDER FOR RCS CSCAB-205

3. ACTION OFFICE:

4. LINE/AREA	5. LINE/AREA STATUS CODE	6. IPM NUMBER	7. REASON CODE	8. PROG FUNDING CODE	12. TIME TO COMP DESIGN	13. TIME TO COMP PHY WORK	14. STATE OF READ	
							WITHOUT IPM	WITH IPM
General	A		C1	T	0	2 WKS	N/A	N/A
	9. IMPACT CODE	10. IMPLEMENTATION CODE	11. TIME IPM REQ AFTER M-DAY	PAA (ENVIR)				
	E	G						

	15. ITEM/COMPONENT MANUFACTURED	16. ISN	17. PROD CAP (MAX) WITHOUT IPM	17. PROD CAP (MAX) WITH IPM	18. PROD LEVEL OFF TIME WITHOUT IPM	18. PROD LEVEL OFF TIME WITH IPM	19. RELATED IPMS
a.							
b.	N/A	N/A	N/A	N/A	N/A	N/A	
c.							
d.							
e.							
f.							
h.							
i.							
j.							
k.							
l.							
m.							
n.							
o.							
p.							

20. OPERATIONAL IMPACT

- [X] MISSION SUPPORT
- [ ] GENERAL SUPPORT
- [ ] PROD SUPPORT
- [ ] ADMIN SUPPORT

21. LOCAL CONTROL NUMBER

22. PROGRAM CONTROL NUMBER

25. COST DATA ($000)

a. REAL PROPERTY	b. EQUIPMENT
(1) LABOR COST	(1) LABOR COST
(2) MATERIAL COST	(2) MATERIAL COST
(3) SUBCONTRACT 54.0	(3) SUBCONTRACT
(4) G&A COST 0	(4) G&A COST
(5) FEE 0	(5) FEE
(6) TOTAL EST COST 54.0	(6) TOTAL EST COST

26. DD FORM 1391 PROCESSOR NUMBER

27. AMCCOM PROJECT IDENTIFICATION NUMBER

23. DEFICIENCY PROJECT TITLE

P.O.C. R.J. KASPER
AV346-3124

W.A. Carkido
AV346-3237

DESCRIPTION: (Bldg no, equipment, sq ft, length, quantity, etc.)

- [X] a. REAL PROPERTY FAC CAT CODE NUMBER 12450
- [ ] b. EQUIPMENT

To remove one (1) underground storage tank (UST) which failed it required tightness test and one (1) UST adjacent to said UST (within 3 ft.) of the same size, age, and construction.

1. Tank #22 Rail YD - 15000 Gal. - #2 Fuel Oil
2. Tank #11 Rail YD - 15000 Gal. - #2 Fuel Oil

The tanks must be removed within 40 days of discovery of leak (20 days/regulations plus 20 days maximum extension granted) The tank was determined leaking on January 26, 1990. Time to complete removal of both tanks is 2 weeks. Funding is needed by February 10, 1990.

24. JUSTIFICATION (Includes impact on mobilization planning, effort, economics, etc.)

Ravenna Army Ammunition Plant will not be in compliance with Ohio Administration Code 1301:7-7-36 (C) (2) which applies to USTs which fail a tightness test.

28. VERIFIED [ ] YES [ ] NO CODE _____

OFFICE _____ DATE _____

SIGNATURE

29. VALIDATED [ ] YES [ ] NO CODE _____

OFFICE _____ DATE _____

SIGNATURE

cc: N. Wulff
T. Chanda
W. Carkido
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 26, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

26 Jan 90

TO: Commander
U. S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-ISE-M (Ms. Ronnie DePorter)
Rock Island, IL 61299-6000

Subject: Corrective Action - Leaking Underground Storage Tank
Ref. RAI Letter January 16, 1990 - Same Subject
RAI Letter January 19, 1990 - Same Subject

Dear Sir:

Per your request, a 1383 Exhibit 1 and supporting documentation have been prepared for the removal of the two leaking tanks discussed in the referenced letters.

It is attached for further action.

Sincerely,

RAVENNA ARSENAL, INC.

H.R. Cooper

H. R. Cooper
Plant Engineer

HRC/wt/hc90005

Attachment

cf: AMCCOM
AMSMC-PCG-B

United States Environmental Protection Agency
Washington, DC 20460

EPA Federal Agency Pollution Abatement Plan — Project Report

I. Facility Information

1 State Alpha	2. Agency/Bureau	3. GSA Installation	4 EPA Region	5 Country	6. New Installation
O H	2 1 3 8	2 0 7 3 6	0 5	U S A	☐ Yes ☒ No

7 Name of the Installation: RAVENNA ARMY AMMUNITION PLANT

8 Street Address: 8451 STATE ROUTE 5

9 City Name	10 ZIP Code, if known	11 Ownership Type
RAVENNA OHIO	44266-9297	C

II. Basic Project Information

1 Agency Project Number	2. Various Locations	3. Media	4 Pollutant Category	5. Funding Account	6 Year Funding Required
	☐ Yes ☒ No	S W	L U S T	0 4	9 0

7 Project Name (Brief description): UNDERGROUND STORAGE TANK REMOVAL (2 TANKS)

8 Project Contact Name	9. Contact Telephone	10. Total Cost Estimate (in $1,000's)
TOM CHANDA	216-297-3221	[redacted]

11 Project Assessment

- ☒ High (H) — Project critical to Agency program and/or cleanup of local environment
- ☐ Med (M) — Project important to Agency program and/or cleanup of local environment
- ☐ Low (L) — Project desirable to Agency program and/or cleanup of local environment

12 Compliance Status

- ☒ ESDP Does not meet established standard and compliance deadline has passed
- ☐ ESDF Does not meet established standard and compliance deadline is in the future
- ☐ PSDF Does not meet pending standard and compliance deadline is in the future
- ☐ ESRO Meets established standard but needs replacement due to obsolescence
- ☐ ESRE Meets established standard but needs replacement due to need for expansion
- ☐ ESDL Meets established standards but needs to demonstrate leadership
- ☐ OTHR Other

13 Project Cost

Fiscal Year	Budgeted ($1,000)	Funded ($1,000)
90	35.0	

14 Project Milestones/Progress (All dates are month/year)

Design/Plan Completion	Construction/Work Start	Construction/Work Completion
0190	0190	0290

First Compliance Required	Progress Code	Fiscal Year Completed
0290	[redacted]	

For DOE Use Only

Program ID	Field Office

Project Narrative (including description of legal requirement and pollutants to be controlled)

SEE ATTACHED 1383 EXHIBIT 1

EPA Form 3500-7 (Rev. 8-85) Previous edition is obsolete.

1383 REPORT EXHIBIT 1

SUPPLEMENTAL INFORMATION SHEET

DATE PREPARED: 1/25/90
GSA INVENTORY CONTROL NO: 20736

1. PROJECT NARRATIVE DESCRIPTION:

This project is to remove two leaking underground storage tanks (2,000 and 15,000 gallon capacities). The project includes abandonment of the tanks by removal according to an approved closure plan, removal and disposal of all visibly contaminated soils, testing of remaining soil, and completion of a closure report.

FUNDING TYPE: PAA INSTALLATION STATUS: Inactive
REQUIRED FOR MOBILIZATION: No; however, the removal of these tanks must be fully coordinated with revisions to the mobilization plan.

2. SPECIFIC TYPE OF POLLUTION/CONTAMINATION:

The tanks failed routine tank tightness tests on January 15 and 18, 1990. The subject tanks contained No. 2 fuel oils.

3. AMOUNT OF POLLUTION/CONTAMINATION:

The two (2) tanks to be removed have a combined capacity of 17,000 gals. Inventory checks have not indicated extensive product loss. Extent of contamination will be assessed during removal process.

4. POLLUTION SOURCE AND DISCHARGE, EMISSION OR DEPOSIT POINT:

Discharge is to the soil around the tanks.

5. EXISTING TREATMENT & OTHER CONTROL MEASURES: None

6. EFFECTIVENESS OF EXISTING TREATMENT CONTROL: Not applicable

7. REMEDIAL MEASURES PROPOSED & ESTIMATED EFFECT IN CORRECTING PROBLEMS: None

Tanks have been emptied of most fluid. The tanks remain in violation until removed or repaired and contamination is cleaned up.

8. APPLICABLE STANDARD: OAC 1301:7-7-36 (C)(2)

*9. OTHER RELEVANT INFORMATION:

The tanks must be removed within 40 days of discovery and contamination of the leak. (20 days per regulation plus the maximum extension allowed of 20 days). The tanks were determined leaking January 15 and 18, 1990. Time to complete removal of both tanks is two weeks. Funding is needed by February 8, 1990.

Exhibit 1

1383 REPORT EXHIBIT 1

AMCCOM SUPPLEMENTAL INFORMATION SHEET

Installation Name: Ravenna Army Ammunition plant
Project Name: Underground Storage Tank Removal - 2 Leaking Tanks

1. FUNDED: NO
2. PRON:
3. AMS CODE/PROGRAM ELEMENT (PE):
4. EXECUTING AGENCY: RVAAP OPERATING CONTRACTING
5. PRIORITY: HIGH
6. 319R #:
7. HAZMIN: YES
8. SOURCE STATUS: ACTIVE
9. TECH/ADMIN APPROVAL: YES
10. PERCENT CMPL: -0-
11. a. SUPPORTS PRODUCTION: NO

    b. IF YES, SPECIFY:
12. TYPE EFFORT: CLOSURE
13. CORRECT NOV: NO
14. ON COMPLIANCE SCHEDULE/AGREEMENT: YES
15. NEPA DOCUMENTATION:

    A. Prepared; Record of Environmental Consideration

    B. Approved: YES, Installation Level Only
16. IMPACT IF NOT FUNDED: Ravenna Army ammunition Plant will not be in compliance with Ohio Administration Code Rule 1301-7-7-36(C)(2) which applies to UST's which fail a tightness test.

RAVENNA ARMY AMMUNITION PLA

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

Ravenna Arsenal, Inc. January 25, 1990

I. PROJECT TITLE/PROPOSED PROJECT

Underground Storage Tank Removal - 2 Leaking Tanks

II. PROJECT DESCRIPTION

RVAAP has 2 USTs which have failed tank tightness tests. In compliance with State and Federal EPA regulations said USTs and their appurtenances must be removed or repaired immediately. Due to the age of the tanks this project proposes removal.

III. ANTICIPATED DATE AND/OR DURATION OF PROPOSED ACTION

Expected to be performed in February 1990.

IV. REASON FOR USING RECORD OF ENVIRONMENTAL CONSIDERATION

The proposed action is categorically excluded under the provisions of Categorical Exclusion (CX) A-5 and A-12, AR200-2, Appendix A (and no extraordinary circumstances exist as defined in paragraph 4-3) because subject action is in compliance with State and Federal EPA regulations pertaining to the removal of leaking USTs.

T. M. CHANDA
Environmental Engineer

1-26-90
DATE

H. R. COOPER

1-26-90
DATE

ROBERT J. KASPER
Commander's Representative Installation
Environmental Engineer

26 Jan 90
DATE

hc90rec.rpt

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE: 1-25-90

SUBJECT OF CONVERSATION: Need 1383's on failed underground STG. TANKS

INCOMING CALL

PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
S. Wise	AMSMC-PCG-B	793-3359
PERSON CALLED	**OFFICE**	**PHONE NUMBER AND EXTENSION**
J. Cicero	SMCRU-CA	346-3127

OUTGOING CALL

PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
PERSON CALLED	**ADDRESS**	**PHONE NUMBER AND EXTENSION**

SUMMARY OF CONVERSATION

Need RAI To submit 1383's on failed Underground STG. TANK – DATA FAX To Ronnie Deporter + Shirlene Wise!

[signature]

DA FORM 1 APR 66 751 REPLACES EDITION OF 1 FEB 58 WHICH WILL BE USED.

★GPO: 1968 O — 343-778, 84

CC: RVAAP COR (Cicero)
Wulff
Cooper
File

TELEPHONE OR VERBAL CONVERSATION RECORD

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE: 1/23/90

SUBJECT OF CONVERSATION: Extension Request For UST Remedial Action Following UST Tightness Failure

INCOMING CALL

PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION

PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION

OUTGOING CALL

PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
T.M. Chanda	RAI Environmental Engineering	216-297-3221

PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
Richard Sissler	State Fire Marshal's Office Site Coordinator Columbus, Oh	1-800-686-2878

SUMMARY OF CONVERSATION

Mr. Sissler was posed with subject request in view of RVAAP's remedial action efforts being coordinated into one funded project. RVAAP still has one more UST to test; previously RVAAP had 2(ea) UST fail tightness testing which requires a Feb. 5th & Feb 9th 1990 (respectively) final corrective action. RVAAP would require an extension to finish UST testing, make funding requests, remove failed USTs, remove contaminated soil and/or product removal, and soil analysis.

Sissler said that the State cannot formally grant extensions; but can demonstrate a 20 day leniency period following regulated deadlines. After which enforcement action takes over to any irresponsiveness.

Sissler suggested RVAAP write an explanatory letter indicating inability to meet the initial 20 da. deadline; he cannot see any objection in allowing an additional 20 days to accomplish remediation under a One Project Scenario.

T.M. Chanda

DA FORM 751, 1 APR 66 — REPLACES EDITION OF 1 FEB 58 WHICH WILL BE USED.

★GPO: 1968 O — 343-775

12166667874

IMPORTANT FAX INFORMATION

R&R INTERNATIONAL INC.

1234 S. Cleveland-Massillon Rd.
Akron, Ohio 44321
(216) 666-2200
FAX: (216) 666-7874

Please deliver immediately to: Mr. Bill Jenkins

Company: Ravenna Arsenal, Incorporated

Fax #: (216) 297-3216

Reference:

Response Requested:	Y____	N____
Hardcopy to follow by mail:	Y____	N____

No. of pages (including cover sheet): 3 Date: 1-23-90

Please contact Mary if all pages not received.

Comments:

B. J. JENKINS
JAN 23 1990
cc: H. Cope

For Internal Use Only:

FILED
JAN 23 1990

Signed By:

Rev 3/9/89

Form 585

R&R
INTERNATIONAL, INC.

1234 S. CLEVELAND-MASSILLON ROAD
P.O. BOX 4383
AKRON, OHIO 44321
(216) 666-2200

January 23, 1990

B. J. JENKINS
JAN 23 1990

Mr. Bill Jenkins
Ravenna Arsenal, Incorporated
8451 State Route 5
Ravenna, Ohio 44266-9297

Reference: Removal of Two (2) 15,000 Gallon Tanks and Concrete Vault

Dear Mr. Jenkins:

Enclosed please find the following:

1. Cost Basis

2. Cost of Services

We are looking forward to working with you on this project. Please call us when we can be of assistance.

Respectfully,

R & R INTERNATIONAL, INC.

G. M. Rana, P.E.
President

GMR:mfp
Enclosure

R&R
INTERNATIONAL, INC.

B. J. JENKINS
JAN 23 1990

COST BASIS

Number of tanks to be removed:	2
Size	15,000 gallons

NOTE:

1. Ravenna Arsenal will pump out the water in the concrete vault and all contents (Number 2 fuel oil) from the tanks.
2. "Complete Removal of Tanks" - means excavation, transportation, disposal of the tanks and associated piping.
3. Included in the prices are cost of backfilling the hole with on-site soil, cost of analytical testing and closure report.

COST OF SERVICES

Two (2) tanks, 15,000 gallons, complete removal	$ 18,400.00
Concrete Vault removed	1,400.00
Contaminated soil removal	68.00 per yard

Sam Reed R&R

Pd up front $ / Landfill

Copy of soil analyses
- TPH
- PCB
- BETX
- Flash Pt.
- EP Tox.

Before material on-site
I.D. of Job on the day

TELEPHONE CONVERSATION RECORD

DATE: JANUARY 19, 1990, 8:15 A.M.

FROM: SUSAN MCCAUSLIN, ENVIRONMENTAL SPECIALIST **PHONE** 216-297-3220

TO: TODD PARFITT, STATE FIRE MARSHALL'S OFFICE **PHONE** 1-800-686-2878

SUBJECT: TANK TEST FAILURE, TANK #23 BUILDING 1045

I called B.U.S.T. and spoke to Todd Parfitt to report the tank leak test failure of Tank #23. Todd took down all required information and informed me that the Fire Marshall's Office would be sending us a letter outlining our requirements with regard to corrective action.

Susan McCauslin

SM:ade

cc: N. Wulff
B. Jenkins
D. Kanavy
T. Chanda
W. Carkido
File

RAVENNA ARSENAL INC.

8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

Telephone (216) 358-7111

Autovon 346-3210

January 19, 1990

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: Commander
U. S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-PCG-B (Shirlene Wise)
Rock Island, IL 61299-6000

Subject: Corrective Action - Leaking Underground Storage Tank
Ref. RAI Letter January 16, 1990, Same Subject

Dear Sir:

The referenced letter advised you of the failure of a tank tightness test on Tank No. 33 during the testing of eight underground Storage Tanks at Ravenna AAP.

On the evening of January 18, 1990 a second tank at the #2 Fuel Oil Dispensing Station, Building 1045, failed the tightness test. The leakage rate was approximately 0.27 gallons per hour vs. criteria of 0.05 gallons per hour. Per Ohio guidelines for tanks failing a tightness test the 15,000 gallons of #2 Fuel Oil in the tank was removed to another tank thus eliminating the possibility of further loss.

As with the Deactivation Furnace tank discussed in the reference letter, we recommend removal of the tank rather than attempting to repair. This tank is steel construction and approximately 35 to 40 years old. The removal of the 15,000 gallon tank in accordance with Ohio EPA requirements is estimated to cost $25,000 depending upon the extent of ground contamination and assuming no ground water contamination. We believe these are reasonable assumptions because the sub surface soil is mostly clay.

Request that additional funds in the amount of $25,000 be provided in the same way as the $10,000 requested in the referenced letter for the Deactivation Furnace Tank.

As explained in the referenced letter, the tank must be removed within 20 days from January 18, 1990 or by February 7, 1990. To complete the physical work prior to February 7, 1990, we must be authorized to proceed by January 29, 1990. Failure to complete the removal of this tank by February 7, 1990 will result in the plant being in non-compliance with Ohio regulations.

As a reminder, the funding requested in the referenced letter must be received by January 26, 1990 to avoid a non-compliance violation for that tank.

Of the original eight tanks to be tested only one remains to be tested next week.

Sincerely,

RAVENNA ARSENAL, INC.

H. R. Cooper

H. R. Cooper
Plant Engineer

HRC/wt/hc90003

cf: AMCCOM
AMSMC-ISE (Ms. Ronnie DePorter)

OHIO DEPARTMENT OF COMMERCE
DIVISION OF STATE FIRE MARSHAL
BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS

CORRECTIVE ACTION GUIDANCE FOR PETROLEUM RELEASES

January 15, 1988

Section 3737.88 of the Ohio Revised Code requires that when the State Fire Marshal finds that a release of petroleum from an underground storage tank has occurred, he shall take actions necessary to protect human health and the environment.

This list of corrective action steps for petroleum releases from UST systems have been prepared to assist UST owners and operators in conducting the corrective action activities required by the State Fire Marshal when a release is discovered. Nothing in this guidance is intended to supercede any action taken by the Fire Marshal or any other local, state, or federal agency or regulation, nor does this list relieve the UST system owner or operator from compliance with any applicable local, state or federal regulations

General Requirements

These requirements apply to any suspected or confirmed release of petroleum from an underground storage tank. All owners and operators of UST systems, in response to a suspected or confirmed release of petroleum from an UST system, shall comply with these requirements.

Unless otherwise indicated, all reports required by the State Fire Marshal must be submitted in writing to:

Ohio Division of State Fire Marshal
Bureau of Underground Storage Tank Regulation
7510 East Main Street
P. O. Box 525
Reynoldsburg, OH 43068-3395

Suspected Release Confirmation

(A) All suspected releases of petroleum from UST systems must be reported to the local fire department and the State Fire Marshal within 24 hours of their discovery. The report to the State Fire Marshal may be made by calling 614-752-8200 or 1-800-282-1927.

Any suspected release that effects surface or drinking water supplies

must be reported to the Ohio Environmental Protection Agency at 1-800-282-9378.

Any suspected release that threatens Ohio's wildlife must be reported to the Ohio Department of Natural Resources 614-265-4300.

(B) Suspected releases must be immediately investigated and either confirmed or disproved by a method acceptable to the local fire department and the State Fire Marshal.

(C) If a suspected release is confirmed, the owners and operators of the UST system must undertake all required corrective actions.

Initial Corrective Actions

The following steps must be taken at **all confirmed petroleum releases sites:**

(A) Upon confirmation of an actual release, or discovery of a release in any other manner, the owners and operators of the UST system must:

(1) Report the confirmed releases to the local fire department and the State Fire Marshal within twenty-four hours.

(2) Stop any further release from the UST system;

(3) Mitigate all fire, explosion, and safety hazards;

(4) Remove and properly dispose of all visibly contaminated soil and any associated groundwater from the excavation zone. The disposal of contaminated soil or water must comply with all applicable local, state and federal regulations;

(5) Conduct an investigation to determine the possible presence of free product and initiate removal of any free product found as soon as practicable;

(6) Report all initial corrective action taken, including a verification of tank repair or closure if appropriate, to the local fire department and the State Fire Marshal within twenty days of the confirmation or discovery of the release.

(7) All UST system repairs, removals, abandonment, installation, and replacement must comply with the requirements of the Ohio Fire Code and all other local and state regulations. The Ohio Fire Code requires a permit from the fire official for all such actions.

(B) Site investigation. The owner and operator must perform a site investigation for contaminated soil, groundwater, or free product and assemble from the investigation, or from other sources (e.g., USGS maps, SCS soil maps, Ohio Department of Natural Resources Division of Water, Ohio Environmental Protection Agency, and other agencies), any information

deemed necessary by the State Fire Marshal. The site investigation and information must include, but is not limited to, the following:

(1) Data on the nature and estimated quantity of the released substance;

(2) Data from surface and subsurface soil sampling and analyses;

(3) Data from groundwater and/or surface water sampling and analyses; and

(4) Data from available sources and/or site investigations concerning background levels prior to the release, water quality and use, well locations, subsurface soil conditions, climatological conditions, land use, and surrounding populations.

(C) Reporting. The results of this site investigation and all required information must be reported to the State Fire Marshal within twenty days of the confirmation or discovery of the release unless otherwise directed by the fire marshal. The State Fire Marshal may request the collection and submission of additional information and/or a corrective action plan for additional soil, surface water, and groundwater cleanup.

Free Product Removal

The following steps must be taken at **all release sites where free product has been found:**

(A) At sites where an owner or operator's investigations indicate the presence of a free product, the owner or operator must remove free floating product to the maximum extent practicable while continuing, as necessary, all other corrective action steps initiated, and while preparing for subsequent long term corrective actions. In meeting this requirement, the owner or operator shall;

(1) Conduct free product recovery in such a manner that such actions do not:

(a) spread contamination into previously uncontaminated areas through untreated discharge or improper disposal techniques, or

(b) produce vapors in the atmosphere at levels such that they pose a health and safety threat to previously uncontaminated areas.

(2) Handle any flammable products in a safe and competent manner to prevent fires or explosions.

(B) Unless directed to do otherwise by the State Fire Marshal, prepare and submit, within thirty days of the confirmation or discovery of the release, a free product removal report to the State Fire Marshal. The report shall provide, but is not limited to, the following information:

(1) The name of the person(s) responsible for implementing the plan;

(2) The estimated quantity and type of product on site and the product thickness in wells, boreholes, and excavations;

(3) Details of the product recovery system;

(4) Whether any discharge will take place on or off site during the recovery operation;

(5) The type of treatment and expected effluent quality from any discharge; and

(6) The disposition of the recovered product.

Site Assessment

The following steps must be taken at all **release sites where remaining soil or ground water contamination has been found:**

(A) Whenever an investigation indicates that there may be remaining soil contamination from the release, or that the released product or product from contaminated soil may have reached groundwater, or as otherwise directed by the State Fire Marshal, the owners and operators must:

(1) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release, to determine the full extent and location of the soils contaminated by the release; and

(2) Conduct additional investigations of the release, the release site, and the surrounding area possibly affected by the release to determine the presence of dissolved contamination due to the release in the ground water.

(B) When directed by the State Fire Marshal, conduct an exposure assessment to determine the extent of exposure of, or potential exposure for exposure of, individuals to petroleum from the release. Such assessment shall be based on such factors as the nature and extent of contamination and the existence of or potential for pathways of human exposure, the size of the community within the likely pathways of exposure, and the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified contaminants and any available recommended exposure or tolerance limits for such contaminants.

(C) The information collected by the owners and operators during the course of this site assessment shall be submitted in accordance with a schedule established by the State Fire Marshal.

(D) The State Fire Marshal may request the submission of a corrective action plan for additional soil and/or ground water cleanup.

Long Term Corrective Action

The following steps must be taken when **long term soil and/or ground water cleanup** is required by the State Fire Marshal:

(A) Owners and operators must develop and submit a corrective action plan for responding to any contaminated soils, surface waters, or ground waters shall submit such a plan according to a schedule established by the State Fire Marshal.

(B) The State Fire Marshal shall approve the corrective action plan only if it assures that implementation of the plan will provide adequate protection of human health, safety, and the environment. In making this determination, the State Fire Marshal shall consider:

(1) The physical and chemical characteristics of the petroleum substance, including its toxicity, persistence, and potential for migration;

(2) The hydrogeologic characteristics of the facility and the surrounding land;

(3) The proximity, quality, and current and future uses of ground water and surface waters; and

(4) The results of an exposure assessment when such an assessment is required.

(C) Upon approval of the corrective action plan, the owners and operators shall implement the plan and monitor, evaluate, and report the results of implementation, as required by the State Fire Marshal.

(D) Public participation.

(1) Prior to the approval of each long term corrective action plan submitted, the State Fire Marshal will provide an opportunity for public review and comment on the plan.

(2) If there is sufficient public interest, or for any other reason, the State Fire Marshal may hold a public meeting to consider comments on the corrective action plan. A public meeting will be conducted in any case where implementation of an approved corrective action plan does not achieve the established cleanup levels and termination of that plan is under consideration.

(3) In deciding whether to approve or modify the corrective action plan, the fire marshal will consider and respond to the comments from the public.

Cost Recovery

The owner or operator of an underground storage tank from which a release of petroleum has occurred is liable to the state for any costs incurred for any corrective or enforcement action undertaken by the State that is conducted pursuant to section 3737.88 Of the Ohio Revised Code.

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER Property ☒ Tank(s) ☒

Name: RIVENNA ARSENAL | Address | Representative | Telephone

Name | Address | Representative | Telephone

2. OPERATOR

Name: SAME | Address | Telephone

3. REASON FOR TEST (Explain Fully)

NEW LAWS

4. WHO REQUESTED TEST AND WHEN

Name: WAYNE CARKido | Title | Company or Affiliation | Date

Address | Telephone

5. TANK INVOLVED Use additional lines for manifolded tanks

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
#11 R/R Yard	15,000		#2 Fuel oil	49 YRS	STEEL

Location	Cover	Fills	Vents	Siphones	Pumps
	EARTH	2" & 3"	2"	N/A	suction
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

6. INSTALLATION DATA

7. UNDERGROUND WATER

Depth to the Water table 125" | Is the water over the tank? ☐ Yes ☒ No

8. FILL-UP ARRANGEMENTS

Tanks to be filled _____ hr. _____ Date | Arranged by _____ Name | Telephone

Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead.

Terminal or other contact for notice or inquiry _____ Company | Name | Telephone

9. CONTRACTOR, MECHANICS, any other contractor involved

10. OTHER INFORMATION OR REMARKS

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.

11. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#11 R/R yard	NO	-.353 G.P.H.	1-26-90

12. SENSOR CERTIFICATION

3-89
Date

2408
Serial No. of Thermal Sensor

13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

Technicians

1. A.L. SEARS
Certification # 12210645

2. _____
Certification # _____

ALL OHIO PETRO TEST Inc.
Testing Contractor or Company. By: Signature

2507 4th ST. N.W. CANTON, OHIO 44708
Address

PN6827

1300		6	11.5	12	.225	.205	-.020	253	+1	+.023	-.043	-.215
1305		7	11.5	12	.985	.965	-.020	253	+0	+.000	-.020	-.235
1310		8	11.4	12	.965	.940	-.025	253	+0	+.000	-.025	-.260
1315		9	11.4	12	.940	.915	-.025	254	+1	+.023	-.048	-.308
1320		10	11.4	12	.915	.890	-.025	254	+0	+.000	-.025	-.333
1325		11	11.4	12	.890	.865	-.025	255	+1	+.023	-.048	-.381
1330		12	11.4	12	.865	.840	-.025	254	-1	-.023	-.002	-.383
1335		13	11.4	12	.840	.815	-.025	255	+1	+.023	-.048	-.431
1340		14	11.4	12	.815	.790	-.025	255	+0	+.000	-.025	-.456
1345		15	11.4	12	.790	.765	-.025	256	+1	+.023	-.048	-.504
1350		16	11.4	12	.765	.740	-.025	256	+0	+.000	-.025	-.529
1355		17	11.4	12	.740	.715	-.025	256	+0	+.000	-.025	-.554
1400		18	11.4	12	.715	.690	-.025	255	-1	-.023	-.002	-.556
1405		19	11.4	12	.690	.665	-.025	255	+0	+.000	-.025	-.581
1410		20	11.4	12	.665	.640	-.025	256	+1	+.023	-.048	-.629
1415		21	11.4	12	.640	.615	-.025	256	+0	+.000	-.025	-.645
1420		22	11.4	12	.615	.590	-.025	256	+0	+.000	-.025	-.679
1425		23	11.4	12	.590	.565	-.025	256	+0	+.000	-.025	-.704
1430		24	11.4	12	.565	.540	-.025	255	-1	-.023	-.002	-.706
	End Test										-.353	G.P.H.

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test -.353 gph

Signature of Tester: A.L. Sears

Date: 1-26-90

2. Statement:

☐ Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A. publication 329. This is not intended to indicate permission of a leak.

OR

☒ Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator _____

Date _____

27. Sensor Calibration 167301, 167311 — LOG OF TEST PROCEDURES			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGING EACH READING	39. ACCUMULATED CHANGE
28. DATE 1-26-90 TIME (24 hr)	Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Standpipe Level in Inches: Level to which Restored	32. Product in Graduate: Before Reading	32. Product in Graduate: After Reading	33. Product Replaced (-) / Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower - (c)	37. Computation (c) × (a) = Expansion + Contraction -	Temperature Adjustment: Volume Minus Expansion (+) or Contraction (-) #33(V) — #37(T)	At Low Level compute Change per Hour (NFPA criteria)
430	ARRIVE TEST LOCATION											
	MAKE MODIFICATION TO TANK TOP FOR EQUIP.											
	CHECK FOR GROUNDWATER TABLE											
	SETUP SCAFFOLDING											
	SETUP EQUIP											
	FILL EQUIP AND BLEED AIR FROM SYSTEM											
745	START CIRCULATION									.0231		
	DRAW SAMPLES											
915	START HIGH LEVEL TEST	1		42		.800		224				
930		2	38.5	42	.800	.570	-.230	222	+1	+.023	-.253	
945		3	37.8	42	.570	.270	-.300	223	+1	+.023	-.323	
1000		4	37.8	42	1.000	.700	-.300	226	+3	+.069	-.369	
1015	BLEED AIR FROM SYSTEM	5	37.0	42	.700	.355	-.345	228	+2	+.046	-.391	
1030	BL	6	37.9	42	.355	.070	-.285	228	+0	+.000	-.285	
1045		7	38.4	42	1.000	.755	-.245	229	+1	+.023	-.268	
1100		8	38.5	42	.755	.520	-.235	232	+3	+.069	-.294	
1115		9	38.5	42	.520	.285	-.235	234	+2	+.046	-.281	
1130		10	39.0	42	1.000	.800	-.200	237	+3	+.069	-.269	
1145		11	39.0	42	.800	.600	-.200	239	+2	+.046	-.246	
1200		12	39.0	42	.600	.400	-.200	241	+2	+.046	-.246	
1202	DROP TO LOW LEVEL TEST											
1215	PRELIM READING	13		12				245				
1230	" "	14		12				248				
1235	START LOW LEVEL TEST	1	11.9	12	.305	.300	-.005	249	+1	+.023	-.028	
1240		2	11.7	12	.300	.285	-.015	251	+2	+.046	-.061	-.089
1245		3	11.5	12	.285	.265	-.020	251	+0	+.000	-.020	-.109
1250		4	11.5	12	.265	.245	-.020	252	+1	+.023	-.043	-.152
1255		5	11.5	12	.245	.225	-.020	252	+0	+.000	-.020	-.172

14. Ravenna Arsenal — Name of Supplier, Owner or Dealer | S.R. 5 — Address No. and Street(s) | Keenan — City | Ohio — State | 1-26-[illegible] — Date of Test

15. TANK TO TEST

#11 R/R Yard — Identity by position

#2 fuel oil — Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY

Nominal Capacity 15,000 Gallons

By most accurate capacity chart available 15,546 Gallons

From
- ☐ Station Chart
- ☒ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☐ Charts supplied with
- ☐ Other ______

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up 0 to ⅛" in. 0 Gallons 126 in. Tank Diameter

		Gallons	Total Gallons ea. Reading
Inventory			15546
TopOff			20
TOTAL			15,566

Transfer total to line 25a

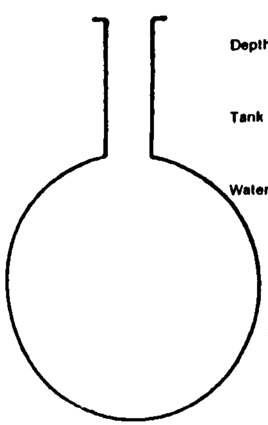
18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK ☒ Water in tank ☒ Line(s) being tested with LVLLT ☒ High water table in tank excavation

See manual sections applicable. Check below and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to doublewalled tanks.

Complete section below:

1. Is four pound rule required? Yes ☒ No ☐
2. Height to 12" mark from bottom of tank 270.7 in.
3. Pressure at bottom of tank 4.609 P.S.I.
4. Pressure at top of tank 4.485 P.S.I.



Depth of burial 121 in.

Tank dia. 126 in.

Water table 122 in.

NOTES:

23.7

x.030
41.392
+4
8.392
÷.031
270.7
−247

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to grade* .... 247 in.
Add 30" for "T" probe assy. .... 30 in.
Total tubing to assemble — approximate .... 277 in.

20. EXTENSION HOSE SETTING

Tank top to grade* .... 121 in.
Extend hose on suction tube 6" or more below tank top .... 0 in.

*If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation 8221 digits Between 46/47 °F

23. Digits per °F in range of expected change 312 digits

COEFFICIENT OF EXPANSION (Complete after circulation)

24a. Corrected A.P.I. Gravity

Observed A.P.I. Gravity .... ______
Hydrometer employed .... ______ H
Observed Sample Temperature .... ______ °F
Corrected A.P.I. Gravity @ 60°F, From Table A .... ______
Coefficient of Expansion for Involved Product From Table B .... ______

Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM ☐ ~~Stage I~~ N/A ☐ Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD

Type of Product .... #2 fuel oil
Hydrometer Employed .... 4 H
Temperature in Tank After Circulation .... 46.4 °F
Temperature of Sample .... 41.0 °F
Difference (+/-) .... −5 °F
Observed A.P.I. Gravity 34.9

Reciprocal 2159 Page # 38

15,566 (Total quantity in full tank (16 or 17)) ÷ 2159 (Reciprocal) = 7.2098193 (Volume change in this tank per °F) Transfer to Line 26a.

24c. FOR TESTING WITH WATER see Table C & D

Water Temperature after Circulation Table C .... ______ °F
Coefficient of Water Table D .... ______
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b.

25. (a) ______ Total quantity in full tank (16 or 17) × (b) ______ Coefficient of expansion for involved product = (c) ______ gallons Volume change in this tank per °F

26. (a) 7.2098193 Volume change per °F (25 or 24b) ÷ 312 Digits per °F in test Range (23) = .0231083 Volume change per digit. Compute to 4 decimal places. (0231) This is test factor (a)

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER Property ☒ Tank(s) ☒

RADFORD ARSENAL

Name | Address | Representative | Telephone

Name | Address | Representative | Telephone

2. OPERATOR

SAME

Name | Address | Telephone

3. REASON FOR TEST (Explain Fully)

NEW LAWS

4. WHO REQUESTED TEST AND WHEN

WAYNE CARKido ENG.

Name | Title | Company or Affiliation | Date

Address | Telephone

5. TANK INVOLVED Use additional lines for manifolded tanks

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
#23 B. 1045	15,000		#2 FUEL OIL	41 YRS	STEEL

6. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
SOUTHEAST CORNER OF BUILDING 1045	EARTH	4"	2"	N/A	SUCTION
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

7. UNDERGROUND WATER

Depth to the Water table 34"

Is the water over the tank? ☐ Yes ☒ No

8. FILL-UP ARRANGEMENTS

Tanks to be filled _____ hr. _____ Date Arranged by _____ Name Telephone

Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead.

Terminal or other contact for notice or inquiry _____ Company Name Telephone

9. CONTRACTOR, MECHANICS, any other contractor involved

10. OTHER INFORMATION OR REMARKS

SUCTION LINE disconnected FOR TEST with STATE FIRE MARSHALL

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.

11. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#23 B. 1045	NO	-.3005 G.P.H.	1-18-90

12. SENSOR CERTIFICATION

3-89
Date

2408
Serial No. of Thermal Sensor

13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

Technicians

1. AL. SEARS

Certification # 122110645

2. _____

Certification # _____

ALL OHIO PETRO TEST INC.
Testing Contractor or Company. By: Signature

2507 6TH ST. N.W. CANTON, OHIO 44708
Address

PN6827

1730		6	13.0	12	.270	.305	+.035	477	-1	-.022	+.057	
1735	START LOW LEVEL TEST	1		12				476				
1740		2	11.9	12	.315	.310	-.005	476	+0	+.000	-.005	
1745		3	11.7	12	.310	.300	-.010	477	+1	+.022	-.032	-.037
1750		4	11.7	12	.300	.290	-.010	477	+0	+.000	-.010	-.047
1755		5	11.5	12	.290	.270	-.020	478	+1	+.022	-.042	-.089
1800		6	11.5	12	.270	.250	-.020	478	+0	+.000	-.020	-.109
1805		7	11.5	12	.990	.970	-.020	478	+0	+.000	-.020	-.129
1810		8	11.5	12	.970	.950	-.020	479	+1	+.022	-.042	-.171
1815		9	11.5	12	.950	.930	-.020	480	+1	+.022	-.042	-.213
1820		10	11.5	12	.930	.910	-.020	480	+0	+.000	-.020	-.233
1825		11	11.5	12	.910	.890	-.020	480	+0	+.000	-.020	-.253
1830		12	11.5	12	.890	.870	-.022	480	+0	+.000	-.020	-.273
1835		13	11.5	12	.870	.850	-.020	481	+1	+.022	-.042	-.315
1840		14	11.5	12	.850	.830	-.020	482	+1	+.022	-.042	-.357
1845		15	11.5	12	.830	.810	-.020	482	+0	+.000	-.020	-.377
1850		16	11.5	12	.810	.790	-.020	482	+0	+.000	-.020	-.397
1855		17	11.5	12	.790	.770	-.020	481	-1	-.022	+.002	-.395
1900		18	11.5	12	.770	.750	-.020	481	+0	+.000	-.020	-.415
1905		19	11.5	12	.750	.730	-.020	482	+1	+.022	-.042	-.457
1910		20	11.5	12	.730	.710	-.020	483	+1	+.022	-.042	-.499
1915		21	11.5	12	.710	.690	-.020	483	+0	+.000	-.020	-.519
1920		22	11.5	12	.690	.670	-.020	484	+1	+.022	-.042	-.561
1925		23	11.5	12	.670	.650	-.020	484	+0	+.000	-.020	-.581
1930		24	11.5	12	.650	.630	-.020	484	+0	+.000	-.020	-.601

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test -.3005 gph

Signature of Tester: H. L. Seavo

Date: 1-18-90

2. Statement:

☐ Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A. publication 329. This is not intended to indicate permission of a leak.

OR

☒ Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator _____

Date _____

14. REUSNH ARSENAL — Name of Supplier, Owner or Dealer | 5R.5 — Address No and Street(s) | REUSNH — City | OHD — State | 1-18-90 — Date of Test

15. TANK TO TEST

#23 B.1045 — Identify by position

#2 fuel oil — Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY

Nominal Capacity 15,000 Gallons

By most accurate capacity chart available 15,546 Gallons

From
- [X] Station Chart
- [ ] Tank Manufacturer's Chart
- [ ] Company Engineering Data
- [ ] Charts supplied with
- [ ] Other

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up 2 1/4 to 1/8" in. | 62 Gallons | 126 Tank Diameter in.

	Gallons	Total Gallons ea. Reading
Inventory	126	15,546
Topoff		+ 20
WATER		- 62
TOTAL		15504

Transfer total to line 25a

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK

[X] Water in tank [ ] Line(s) being tested with LVLLT

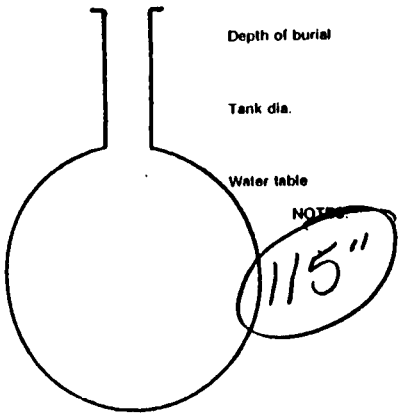
[X] High water table in tank excavation

See manual sections applicable. Check below and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to doublewalled tanks.

Complete section below:

1. Is four pound rule required? Yes [X] No [ ]
2. Height to 12" mark from bottom of tank 270.7 in.
3. Pressure at bottom of tank 4.609 P.S.I.
4. Pressure at top of tank 4.483 P.S.I.



122
x.036
4.392
+ 4.000
8.392
÷ .031
270.7
- 126
144.7

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to grade* 156 in.
Add 30" for "T" probe assy. 30 in.
Total tubing to assemble — approximate 186 in.

20. EXTENSION HOSE SETTING

Tank top to grade* 32 1/2 in.
Extend hose on suction tube 6" or more below tank top 10 in.
*If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation 74150 digits
49/45 °F Between

23. Digits per °F in range of expected change 320 digits

COEFFICIENT OF EXPANSION (Complete after circulation)

24a. Corrected A.P.I. Gravity

Observed A.P.I. Gravity
Hydrometer employed H
Observed Sample Temperature °F
Corrected A.P.I. Gravity @ 60°F. From Table A
Coefficient of Expansion for Involved Product From Table B
Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM [ ] ~~Stage I~~ [ ] Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD

Type of Product #2 fuel oil
Hydrometer Employed 4 H
Temperature in Tank After Circulation 44.0 °F
Temperature of Sample 43 °F
Difference (+/-) -1 °F
Observed A.P.I. Gravity 34.0
Reciprocal 2179 Page # 38

15,504 (Total quantity in full tank (16 or 17)) ÷ 2179 (Reciprocal) = 7.1151904 (Volume change in this tank per °F)

Transfer to Line 26a.

24c. FOR TESTING WITH WATER see Table C & D

Water Temperature after Circulation Table C °F
Coefficient of Water Table D
Added Surfactant? [ ] Yes [ ] No Transfer COE to Line 25b.

25. (a) _____ (Total quantity in full tank (16 or 17)) × (b) _____ (Coefficient of expansion for involved product) = (c) _____ (Volume change in this tank per °F) gallons (.0222)

26. (a) 7.1151904 (Volume change per °F (25 or 24b)) ÷ 320 (Digits per °F in test Range (23)) = .0222349 Volume change per digit Compute to 4 decimal places. This is test factor (a)

27. Sensor Calibration 16739 16732			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGING EACH READING	39. ACCUMULATED CHANGE
LOG OF TEST PROCEDURES												
28. DATE 1-18-90 TIME (24 hr.)	Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Standpipe Level in Inches: Level to which Restored	32. Product in Graduate: Before Reading	32. Product in Graduate: After Reading	33. Product Replaced (-) Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower - (c)	37. Computation (c) = (a) = Expansion + Contraction -	Temperature Adjustment: Volume Minus Expansion (+) or Contraction (-) #33(V) -- #37(T)	At Low Level computr Change per Hour (NFPA criteria)
815	ARRIVE TEST LOCATION STICK TANK FOR BURIAL DEPTH AND WATER											
	WAIT FOR TANK TO BE TOPPED OFF CHECK FOR GROUNDWATER											
1030	SETUP SCAFFOLDING											
	SETUP 2 SETS OF EQUIP											
	FILL EQUIP AND BLEED AIR FROM SYSTEM											
1130	START CIRCULATION									.0222		
1229	TAKE SAMPLE											
1230	START HIGH LEVEL TEST	1		4/2		.720		7450				
1245		2	39.2	4/2	.720	.620	-.100	4/50	+0	+.000	-.100	
1300		3	37.9	4/2	.620	.470	-.150	4/51	+1	+.022	-.172	
1315	BLEED AIR FROM SYSTEM	4	37.5	4/2	.470	.290	-.180	4/51	+0	+.000	-.180	
1330		5	37.5	4/2	1.000	.820	-.180	4/51	+0	+.000	-.180	
1345		6	37.7	4/2	.820	.660	-.160	4/52	+1	+.022	-.182	
1400		7	37.7	4/2	.660	.500	-.160	4/53	+1	+.022	-.182	
1415		8	38.0	4/2	.500	.350	-.150	4/55	+2	+.044	-.194	
1430		9	38.0	4/2	.350	.200	-.150	4/58	+3	+.067	-.217	
1445		10	38.0	4/2	.200	.050	-.150	4/60	+2	+.044	-.194	
500		11	38.0	4/2	.610	.460	-.150	4/63	+3	+.067	-.217	
1515		12	38.0	4/2	.460	.310	-.150	4/64	+1	+.022	-.172	
1517	DROP TO LOW LEVEL TEST AIR POCKET SHOWED IN DROP TO LOW LEVEL TEST											
	RE BLEED MANWAY LEFT CIRCULATING MOTORS RUNNING											
1600	RERUN 1 HOUR HIGH LEVEL READINGS											
1615		1		4/2		.725		7470				
1630		2	38.3	4/2	.725	.590	-.135	472	+2	+.044	-.179	
1645		3	38.3	4/2	.590	.455	-.135	476	+4	+.089	-.224	
1700		4	38.3	4/2	.455	.320	-.135	478	+2	+.044	-.179	
1702	DROP TO LOW LEVEL TEST											
1715		5	15.2	12	.600	.760	+.160	478	+0	+.000	+.160	

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER Property ☒ Tank(s) ☒

REGINA ARSENAL

Name | Address | Representative | Telephone

Name | Address | Representative | Telephone

2. OPERATOR

SAME

Name | Address | Telephone

3. REASON FOR TEST (Explain Fully)

NEW LINES

4. WHO REQUESTED TEST AND WHEN

WAYNE CARLSON ENG.

Name | Title | Company or Affiliation | Date

Address | Telephone

5. TANK INVOLVED Use additional lines for manifolded tanks

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
#33 DOAC FURNACE	2000		#2 FUEL OIL		STEEL

6. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
EAST SIDE OF BURN PAD	EARTH	3"	2"	N/A	SUCTION
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

7. UNDERGROUND WATER

Depth to the Water table 69"

Is the water over the tank? ☐ Yes ☒ No

8. FILL-UP ARRANGEMENTS

Tanks to be filled _____ hr. _____ Date Arranged by _____ Name Telephone

Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead.

Terminal or other contact for notice or inquiry _____ Company Name Telephone

9. CONTRACTOR, MECHANICS, any other contractor involved

10. OTHER INFORMATION OR REMARKS

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.

11. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#33 DOAC FURNACE	NO	.0825 G.P.H.	1-15-90

12. SENSOR CERTIFICATION

3-87
Date

24JK
Serial No. of Thermal Sensor

13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

Technicians

1. A.L. SEARS

Certification # 122110645

2. _____

Certification # _____

ALL OHIO PETROTEST INC.
Testing Contractor or Company. By: Signature

2307 4TH STREET CANTON, OHIO 44708
Address

PN6827

1415		12	12.5	12	.265	.285	±.020	686	+7	±.022	-.002	-.061
1450		13	12.5	12	.285	.305	±.020	696	+10	±.032	-.012	-.073
1455		14	12.5	12	.305	.325	±.020	704	+8	±.026	-.006	-.079
1500		15	12.5	12	.325	.345	±.020	711	+7	±.022	-.002	-.081
1505		16	12.5	12	.345	.365	±.020	721	+10	±.032	-.012	-.093
1510		17	12.5	12	.365	.385	±.020	731	+10	±.032	-.012	-.105
1515		18	12.5	12	.385	.405	±.020	739	+8	±.026	-.006	-.111
1520		19	12.5	12	.405	.425	±.020	749	+10	±.032	-.012	-.123
1525		20	12.5	12	.425	.445	±.020	757	+8	±.026	-.006	-.129
1530		21	12.5	12	.445	.465	±.020	765	+8	±.026	-.006	-.135
1535		22	12.5	12	.465	.485	±.020	774	+9	±.029	-.009	-.144
1540		23	12.5	12	.485	.505	±.020	783	+9	±.029	-.009	-.153
1645		24	12.5	12	.505	.525	±.020	793	+10	±.032	-.012	-.165
	DROP PRODUCT DISCONNECT COPPER PRODUCT LINE AND RETEST TANK ONLY										-.0825	G.P.H.

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test -.0825 gph

Signature of Tester: A.L. Sears

Date: 1-15-90

2. Statement:

☐ Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A. publication 329. This is not intended to indicate permission of a leak.

OR

☒ Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator _____

Date _____

14. KEVENNA ARSENAL | SR 5 | KEVENNA | OHIO | 1-15-90
Name of Supplier, Owner or Dealer | Address No. and Street(s) | City | State | Date of Test

15. TANK TO TEST
#33 DRAC FURNACE
Identity by position
#2 Fuel oil
Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY
Nominal Capacity 2000 Gallons
By most accurate capacity chart available 2005 Gallons

From
- ☐ Station Chart
- ☐ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☒ Charts supplied with PETROTITE Equip
- ☐ Other SLIDE CHART

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up 1/8 to 1/4" in. | 1 Gallons | 64 Tank Diameter in.

	Gallons	Total Gallons ea. Reading
Inventory	64"	2003
TOPOFF		+ 5
WATER		- 1
TOTAL		2009

Transfer total to line 25a

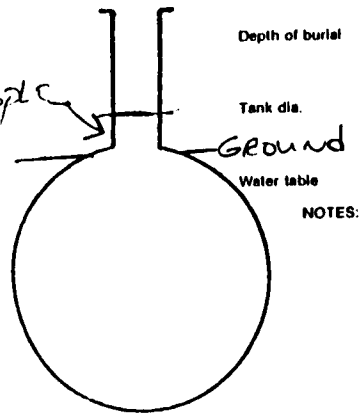
18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK ☒ Water in tank ☒ Line(s) being tested with LVLLT ☒ High water table in tank excavation

See manual sections applicable. Check below and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to doublewalled tanks.

Complete section below:

1. Is four pound rule required? Yes ☐ No ☒
2. Height to 12" mark from bottom of tank 100 in.
3. Pressure at bottom of tank 3,100 P.S.I.
4. Pressure at top of tank 1,116 P.S.I.



Depth of burial 6 in.
Tank dia. 64 in.
Water table 0 in.

NOTES:

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY
Bottom of tank to grade* 69 in.
Add 30" for "T" probe assy. 30 in.
Total tubing to assemble — approximate 99 in.

20. EXTENSION HOSE SETTING
Tank top to grade* 6 in.
Extend hose on suction tube 6" or more below tank top 20 in.
*If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation 4412 digits
34/35 °F Between
23. Digits per °F in range of expected change 288 digits

COEFFICIENT OF EXPANSION (Complete after circulation)
24a. Corrected A.P.I. Gravity
Observed A.P.I. Gravity
Hydrometer employed H
Observed Sample Temperature °F
Corrected A.P.I. Gravity @ 60°F, From Table A
Coefficient of Expansion for Involved Product From Table B
Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM ☐ Stage I ☐ Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD
Type of Product #2 Fuel oil
Hydrometer Employed 4 H
Temperature in Tank After Circulation 34.2 °F
Temperature of Sample 37 °F
Difference (+/-) +3 °F
Observed A.P.I. Gravity 34.4
Reciprocal 2178 Page # 38
2009 (Total quantity in full tank (16 or 17)) × .2178 (Reciprocal) = .9224058 (Volume change in this tank per °F)
Transfer to Line 26a.

24c. FOR TESTING WITH WATER see Table C & D
Water Temperature after Circulation Table C °F
Coefficient of Water Table D
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b.

25. (a) Total quantity in full tank (16 or 17) × (b) Coefficient of expansion for involved product = (c) Volume change in this tank per °F gallons
26. (a) .9224058 Volume change per °F (25 or 24b) × 288 Digits per °F in test Range (23) = .0032027 Volume change per digit Compute to 4 decimal places. .0032 This is test factor (a)

27. Sensor Calibration 16730, 16732 — LOG OF TEST PROCEDURES			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGING EACH READING	39. ACCUMULATED CHANGE
28. DATE 4-15-90 TIME (24 hr.)	Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Standpipe Level in Inches: Level to which Restored	32. Product in Graduate: Before Reading	32. Product in Graduate: After Reading	33. Product Replaced (-): Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower - (c)	37. Computation (c) × (a) = Expansion + Contraction -	Temperature Adjustment: Volume Minus Expansion (+) or Contraction (-) #33(V) − #37(T)	At Low Level compute Change per Hour (NFPA criteria)
740	ARRIVE TEST SITE WAIT FOR PERSON TO UNLOCK AREA TO TANK TO BE TESTED											
	WAIT FOR MAINT. TO COME TURN ON ELECT.											
	REMOVE 4" BUSHING FROM TANK CLEAN AND PROBE REINSTALLED											
										,0032		
1130	START CIRCULATION											
1200	START HIGH LEVEL TEST	1		42		,245		4412				
1215		2	43.1	42	,245	,295	+.050	4138	+26	+.083	-.033	
1230	TIGHTEN 4" BUSHING	3	43.1	42	,295	,340	+.045	464	+26	+.083	-.038	
1245		4	43.1	42	,340	,390	+.050	490	+26	+.083	-.033	
1300		5	43.1	42	,390	,440	+.050	516	+26	+.083	-.033	
1315		6	42.9	42	,440	,475	+.035	543	+27	+.086	-.051	
1317	DROP TO LOW LEVEL TEST											
1330		7	13.7	12	,475	,540	+.065	567	+24	+.077	-.012	
1345		8	13.2	12	,540	,580	+.040	590	+23	+.074	-.034	
1350		1	12.5	12	,580	,600	+.020	597	+7	+.022	-.002	
1355		2	12.5	12	,600	,620	+.020	604	+7	+.022	-.002	-.004
1400		3	12.5	12	,620	,640	+.020	613	+9	+.029	-.009	-.013
1405		4	12.5	12	,640	,660	+.020	620	+7	+.022	-.002	-.015
1410		5	12.5	12	,120	,140	+.020	628	+8	+.026	-.006	-.021
1415		6	12.5	12	,140	,160	+.020	637	+9	+.029	-.009	-.030
1420		7	12.5	12	,160	,180	+.020	647	+10	+.032	-.012	-.042
1425		8	12.5	12	,180	,200	+.020	656	+9	+.029	-.009	-.051
1430		9	12.5	12	,200	,220	+.020	663	+7	+.022	-.002	-.053
1435		10	12.5	12	,220	,245	+.025	672	+9	+.029	-.004	-.057
1440		11	12.5	12	,245	,265	+.020	679	+7	+.022	-.002	-.059

Data Chart for Tank System Tightness Test

PLEASE PRINT

1. OWNER Property ☒ Tank(s) ☒

Name	Address	Representative	Telephone
REGINNA ARSENAL			
Name	Address	Representative	Telephone

2. OPERATOR

Name	Address	Telephone
SAME		

3. REASON FOR TEST (Explain Fully)

RETEST AFTER DISCONNECTING COOPER LINE

4. WHO REQUESTED TEST AND WHEN

Name	Title	Company or Affiliation	Date
WAYNE CARLSON	Eng.	SAME	1-15-90

Address: _____ Telephone: _____

5. TANK INVOLVED (Use additional lines for manifolded tanks)

Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
#33 DEAC. FURNACE	2000		#2 FUEL OIL		STEEL

6. INSTALLATION DATA

Location	Cover	Fills	Vents	Siphones	Pumps
EAST SIDE OF BURN UNIT	EARTH	3"	2"	N/A	DISCONNECTED
North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Titefill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

7. UNDERGROUND WATER

Depth to the Water table 6T

Is the water over the tank? ☐ Yes ☒ No

8. FILL-UP ARRANGEMENTS

Tanks to be filled _____ hr. _____ Date Arranged by _____ Name _____ Telephone

Extra product to "top off" and run tank tester. How and who to provide? Consider NO Lead.

Terminal or other contact for notice or inquiry _____ Company _____ Name _____ Telephone

9. CONTRACTOR, MECHANICS, any other contractor involved

10. OTHER INFORMATION OR REMARKS

DISCONNECTED PRODUCT LINE TEST TANK ONLY

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test, etc.

11. TEST RESULTS

Tests were made on the above tank systems in accordance with test procedures prescribed for as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#33 DEAC FURNACE	NO	-.065 G.P.H.	1-15-90

12. SENSOR CERTIFICATION

3-89
Date

2428
Serial No. of Thermal Sensor

13. This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 328.

Technicians

1. AL SEARS
Certification # 122110645

2. _____
Certification # _____

ALL OHIO PETRO TEST INC.
Testing Contractor or Company. By: Signature

2507 4TH ST. N.W. CANTON, OHIO 44708
Address

PN6827

1940		14	12.2	12	.1270	.1280	±.010	0608	±5	±.016	±.006	±.067
1945		15	12.2	12	.1280	.1290	±.010	014	±6	±.019	±.019	±.076
1950		16	12.2	12	.1290	.1300	±.010	018	±4	±.013	±.003	±.079
1955		17	12.2	12	.1300	.1310	±.010	024	±6	±.019	±.009	±.088
2000		18	12.2	12	.1310	.1320	±.010	028	±4	±.013	±.003	±.091
2005		19	12.2	12	.1320	.1330	±.010	033	±5	±.016	±.006	±.097
2010		20	12.2	12	.1330	.1340	±.010	037	±4	±.013	±.003	±.100
2015		21	12.2	12	.1340	.1350	±.010	043	±6	±.019	±.009	±.109
2020		22	12.2	12	.1350	.1360	±.010	049	±6	±.019	±.009	±.118
2025		23	12.2	12	.1360	.1370	±.010	055	±6	±.019	±.019	±.127
2030		24	12.2	12	.1370	.1380	±.010	059	±4	±.013	±.003	±.130
	End Test										±.065	G.P.H.
	Tank only does NOT PASS Test											

P-T Tank Test Data Chart
Additional Info

1. Net Volume Change at Conclusion of Precision Test ±.065 gph

Signature of Tester: A.L. Sears

Date: 1-15-90

2. Statement:

[ ] Tank and product handling system has been tested tight according to the Precision Test Criteria as established by N.F.P.A publication 329. This is not intended to indicate permission of a leak.

OR

[X] Tank and product handling system has failed the tank tightness test according to the Precision Test Criteria as established by N.F.P.A. publication 329.

It is the responsibility of the owner and/or operator of this system to immediately advise state and local authorities of any implied hazard and the possibility of any reportable pollution to the environment as a result of the indicated failure of this system. Heath Consultants Incorporated does not assume any responsibility or liability for any loss of product to the environment.

Tank Owner/Operator _____

Date _____

14. REVENNA ARSENAL | SR5 | REVENNA | OHO | FEB-90
Name of Supplier, Owner or Dealer | Address No. and Street(s) | City | State | Date of Test

15. TANK TO TEST
#33 DAK. FURNACE
Identity by position
#2 FUEL OIL
Brand and Grade

15a. BRIEF DIAGRAM OF TANK FIELD

16. CAPACITY
Nominal Capacity 2000 Gallons
By most accurate capacity chart available 2005 Gallons
From
- ☐ Station Chart
- ☐ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☒ Charts supplied with PETROTITE EQUIP
- ☒ Other SLIDE CHART

TEST B TANK ONLY

17. FILL-UP FOR TEST
Stick Water Bottom before Fill-up 1/8' to ¼" in. | 1 Gallons | 64 Tank Diameter in.

	Gallons	Total Gallons as. Reading
Inventory	64	2005
To/off		+ 3
WATER		- 1
TOTAL		2007

Transfer total to line 25a

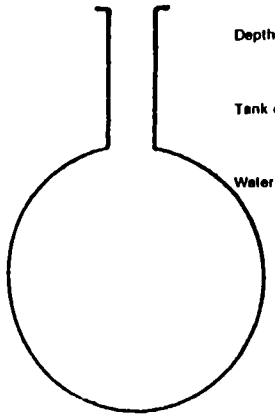
18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK
☒ Water in tank ☒ Line(s) being tested with LVLLT ☒ High water table in tank excavation

See manual sections applicable. Check below and record procedure in log (27).

Use maximum allowable test pressure for all tests.
Four pound rule does not apply to doublewalled tanks.

Complete section below:

1. Is four pound rule required? Yes ☐ No ☒
2. Height to 12" mark from bottom of tank 100 in.
3. Pressure at bottom of tank 3,100 P.S.I.
4. Pressure at top of tank 1,116 P.S.I.



NOTES:

The above calculations are to be used for dry soil conditions to establish a positive pressure advantage, or when using the four pound rule to compensate for the presence of subsurface water in the tank area.

Refer to N.F.P.A. 30, Sections 2-3.2.4 and 2-7.2 and the tank manufacturer regarding allowable system test pressures.

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY
Bottom of tank to grade* 69 in.
Add 30" for "T" probe assy 30 in.
Total tubing to assemble — approximate 99 in.

20. EXTENSION HOSE SETTING
Tank top to grade* 4 in.
Extend hose on suction tube 6" or more below tank top 20 in.
*If Fill pipe extends above grade, use top of fill.

22. Thermal-Sensor reading after circulation 4831 digits
35/36 °F Between
23. Digits per °F in range of expected change 292 digits

COEFFICIENT OF EXPANSION (Complete after circulation)
24a. Corrected A.P.I. Gravity
Observed A.P.I. Gravity
Hydrometer employed H
Observed Sample Temperature °F
Corrected A.P.I. Gravity @ 60°F, From Table A
Coefficient of Expansion for Involved Product From Table B
Transfer COE to Line 25b.

21. VAPOR RECOVERY SYSTEM ☐ Stage I ☒ Stage II

24b. COEFFICIENT OF EXPANSION RECIPROCAL METHOD
Type of Product #2 FUEL OIL
Hydrometer Employed 2 H
Temperature in Tank After Circulation 35.6 °F
Temperature of Sample 39 °F
Difference (+/-) +3 °F
Observed A.P.I. Gravity 34.5
Reciprocal 2176 Page # 38
2007 Total quantity in full tank (16 or 17) × 2176 Reciprocal = .9223345 Volume change in this tank per °F
Transfer to Line 26a.

24c. FOR TESTING WITH WATER see Table C & D
Water Temperature after Circulation Table C °F
Coefficient of Water Table D
Added Surfactant? ☐ Yes ☐ No Transfer COE to Line 25b.

25. (a) ____ Total quantity in full tank (16 or 17) × (b) ____ Coefficient of expansion for involved product = (c) ____ Volume change in this tank per °F gallons
26. (a) .9223345 Volume change per °F (25 or 24b) ÷ 292 Digits per °F in test Range (23) = .0031586 Volume change per digit Compute to 4 decimal places. (.0032) This is test factor (a)

27. Sensor Calibration 16730 16131			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGING EACH READING	39. ACCUMULATED CHANGE
LOG OF TEST PROCEDURES												
28. DATE 1-15-90 TIME (24 hr)	Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches		32. Product in Graduate		33. Product Replaced (-)	35. Thermal Sensor Reading	36. Change Higher + Lower - (c)	37. Computation (c) × (a) = Expansion + Contraction -	Temperature Adjustment Volume Minus Expansion (+) or Contraction (-) #33(V) — #37(I)	At Low Level compute Change per Hour (NFPA criteria)
			Beginning of Reading	Level to which Restored	Before Reading	After Reading	Product Recovered (+)					
	DISCONNECT COPPER PRODUCT LINE, PLUG OFF TO RETEST TANK ONLY											
	FILL EQUIP BLEED AIR FROM SYSTEM									.0032		
1630	RESTART CIRCULATION											
1645	START HIGH LEVEL TEST	1		42		.540		4831				
1700		2	42.7	42	.510	.570	+.030	857	+26	+.083	-.048	
1715		3	42.6	42	.570	.595	+.025	868	+11	+.035	-.010	
1730	CHANGE JET TUBE DIRECTION	4	42.6	42	.595	.620	+.025	884	+16	+.051	-.026	
1745		5	42.4	42	.620	.640	+.020	902	+18	+.058	-.038	
1800		6	42.4	42	.640	.660	+.020	917	+15	+.048	-.028	
1802	DRY TO LOW LEVEL TEST											
1815		7	13.6	12	.660	.730	+.070	929	+12	+.038	+.032	
1830		8	13.0	12	.095	.135	+.040	942	+13	+.042	-.002	
1835	START LOW LEVEL TEST	1	12.3	12	.135	.150	+.015	948	+6	+.019	-.004	
1840		2	12.2	12	.150	.160	+.010	951	+3	+.010	+.000	-.004
1845		3	12.2	12	.160	.170	+.010	955	+4	+.013	-.003	-.007
1850		4	12.2	12	.170	.180	+.010	960	+5	+.016	-.006	-.013
1855		5	12.2	12	.180	.190	+.010	965	+5	+.016	-.006	-.019
1900		6	12.2	12	.190	.200	+.010	970	+5	+.016	-.006	-.025
1905		7	12.2	12	.200	.210	+.010	974	+4	+.013	-.003	-.028
1910		8	12.2	12	.210	.220	+.010	981	+7	+.022	-.012	-.040
1915		9	12.2	12	.220	.230	+.010	986	+5	+.016	-.006	-.046
1920		10	12.2	12	.230	.240	+.010	989	+3	+.010	+.000	-.046
1925		11	12.2	12	.240	.250	+.010	993	+4	+.013	-.003	-.049
1930		12	12.2	12	.250	.260	+.010	998	+5	+.016	-.006	-.055
1935		13	12.2	12	.260	.270	+.010	003	+5	+.016	-.006	-.061