

**Appendix S**  
**UST Summary Sheets**

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1 **Underground Storage Tank (UST) Identification:** RV-4, RV-86, and RV-87

2  
3 **Functional Area:** Administration Area

4  
5 **Building Location:** 1026, Telephone Exchange. Documentation from UST inventories indicate RV-  
6 86 exists 100 ft north of Building 1026; RV-87 and RV-4 are located to the northeast of the building.

7  
8 **Date of Installation:** 1941

9  
10 **Date Last Used:** Unknown

11  
12 **Date of Removal:** Unknown

13  
14 **Size:** RV-4 is 100 gallons; RV-86 and RV-87 sizes are unknown

15  
16 **UST Construction Material:** Unknown

17  
18 **Substance Stored:** Gasoline for RV-4; unknown for RV-86 and RV-87

19  
20 **Support Function:** Purposes of USTs RV-4, RV-86, and RV-87 are unknown. It is believed they  
21 were used for a backup generator or heating/cooling purposes at the Telephone Exchange.

22  
23 **Architectural Drawing:** Map 1018.201 is the schematic for Building 1026 and is provided in  
24 Appendix I. No USTs are shown on this drawing.

25  
26 **Photographs:** No historical photographs were found during this records review. Photographs of  
27 potential vent pipes associated with these USTs are provided in the *Investigation and Evaluation of*  
28 *Underground Storage Tanks* (USACE 1989). This report is provided in Appendix G. No evidence of  
29 these pipes was observed during the 2010 property visit.

30  
31 **Evidence of Spills:** No records or evidence of spills exist.

32  
33 **Removal Documentation:** No documented UST removal was found. Nozzle New's 1991 removal  
34 effort attempted to locate USTs RV-86 and RV-87 by searching a 20 ft by 20 ft by 4 ft grid in the  
35 suspected vicinity of the USTs but did not locate any structures. Available records indicate that the  
36 depths to the top of the USTs are 3 ft (RV-86) and 8 ft (RV-87). These excavated areas were not  
37 identified as part of the report. No records were located for RV-4 other than an inventory listing that  
38 indicates the UST was removed.

39  
40 **Closure Sampling:** Not Applicable

41  
42 **Regulatory Status:** RV-4 is exempt as it is less than 110 gallons. The regulatory status of RV-86 and  
43 RV-87 is unknown.

44  
45 **Further Action Recommended for Environmental Assessment and Closure:** Further action  
46 recommended due to lack of documentation on removal and general lack of data.

1 **UST Identification:** RV-23; Bureau of Underground Storage Tank Regulations (BUSTR) ID:  
2 679298-00

3  
4 **Functional Area:** Administration Area

5  
6 **Building Location:** 1045, Pump House

7  
8 **Date of Installation:** March 1942, with potential installation in 1975 based on site documentation.

9  
10 **Date of Removal:** February 1990

11  
12 **Size:** 15,000 gallons

13  
14 **Substance Stored:** No. 2 Diesel Fuel

15  
16 **Support Function:** Unloading pump house for George Road Gas Station until 1968. Fueling station  
17 was used for on-site equipment requiring diesel fuel from 1968 to 1990.

18  
19 **Architectural Drawing:** Drawing 1007.401 does not show a UST at the Pump House on this 1941  
20 schematic; however, it does show an underground piping line that leads to the George Road Service  
21 Station USTs. This piping line was abandoned in place in 1975 according to the schematic. Revisions  
22 from 1975 are illustrated on 1007.402 (RV-1 and RV-2). As no exact schematic could be located for  
23 the UST solely at Building 1045, combined 1055/1045 schematics and 1037/1045 schematics are  
24 provided in Appendix I. A sketch of the UST and piping layout is provided as Figure S-1.

25  
26 **Photographs:** Historical photographs of the 1045 Pump House are provided in Appendix H.

27  
28 **Evidence of Spills:** In 1989, the pump suction line cracked or corroded at a weld and approximately  
29 5 gallons of diesel fuel was released. Notification was provided to BUSTR that a release had  
30 occurred. During repair of the suction line, R&R International completed a soil boring in the area to  
31 determine the extent of excavation required to remove the contamination. Contaminated soil was  
32 removed in 1989 during installation of the replacement suction line. RV-23 failed the annual tank  
33 tightness test in January 1990. At this point, the UST was taken out of service for prompt removal.  
34 No other evidence of leakage exists. Documentation for these events is provided in Appendix G.

35  
36 **Removal Documentation and Closure Sampling:** The UST and associated piping were removed in  
37 1990. All final closure activities are documented in the *Final Report for the Removal of Four*  
38 *Underground Storage Tanks* (R&R International 1990). The excavated UST pit did not show any  
39 visual or olfactory signs of contamination. No holes or visual signs of leaks were observed on the  
40 UST exterior upon removal. Approximately 8-10 yards of soil were removed from the fill pipe area.  
41 Soil samples were collected as part of the closure process. Exact locations of sample collection are  
42 illustrated in the *Final Report for the Removal of Four Underground Storage Tanks* (R&R  
43 International 1990). A summary of sample results are presented below.

44

Sample ID	BTEX	TPH	Lead
4A	< 2 ppb	37 ppm	37.0 ppm
4B	< 2 ppb	67 ppm	23.4 ppm
4C	< 2 ppb	394 ppm	28.1 ppm

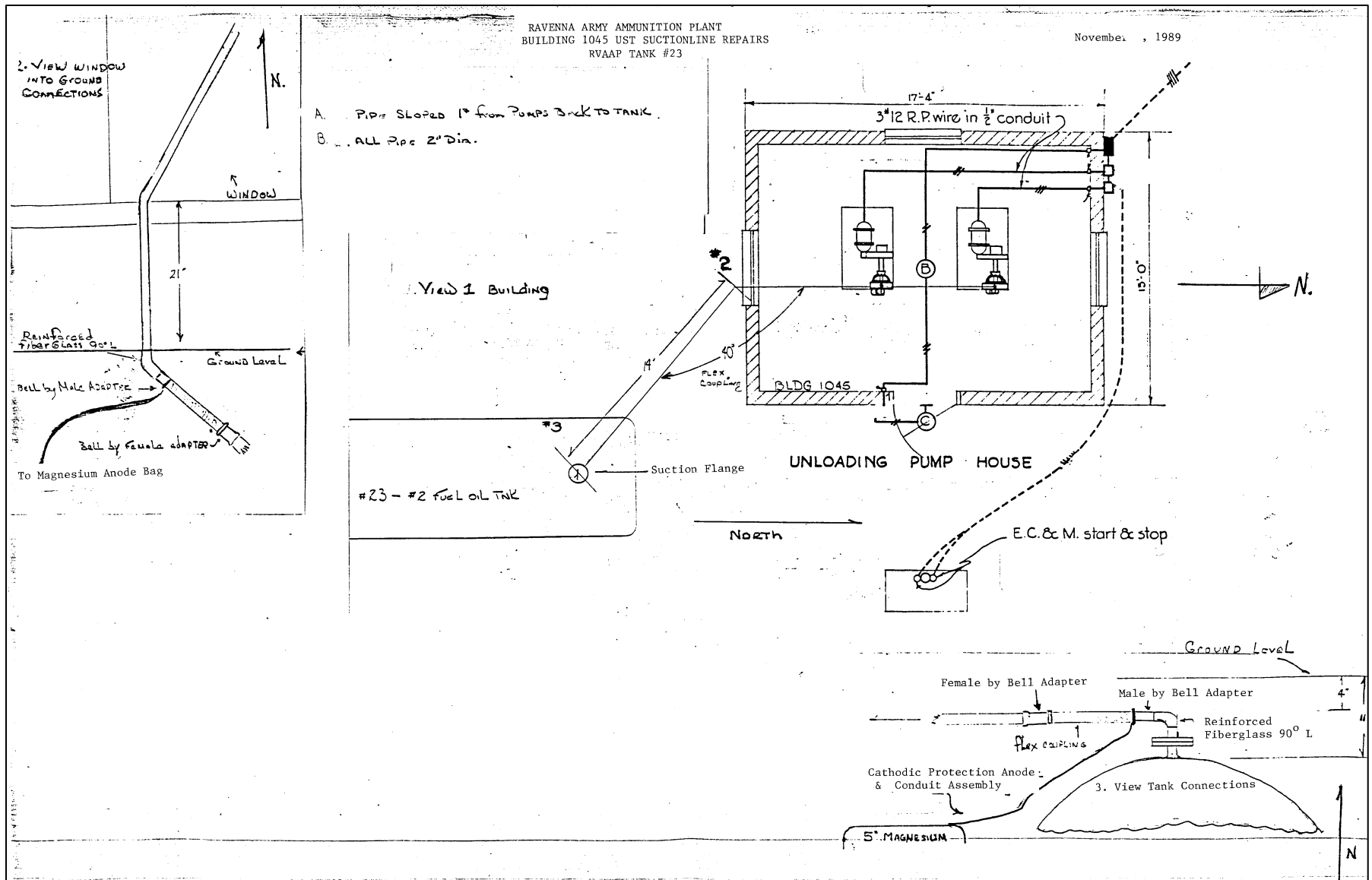
45 BTEX = benzene, toluene, ethylbenzene, and xylenes

46 ppb = parts per billion

47 ppm = parts per million

48 TPH = Total Petroleum Hydrocarbon

- 1 **Regulatory Status:** No Further Action (NFA) letter from BUSTR, dated April 9, 1992, is provided as
- 2 Figure S-2.
- 3
- 4 **Further Action Recommended for Environmental Assessment and Closure:** None



1  
2

Figure S-1. Sketch of UST System (RV-23) at Building 1045



**Ohio Department of Commerce**

*W. W. W. / Sue M. / Charada  
File*

<input type="checkbox"/> Information
<input type="checkbox"/> Compliance & applicable
<input type="checkbox"/> Reply NL

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



Figure S-2. No Further Action Documentation for RV-23

1 **UST Identification:** RV-1, RV-2, RV-80 (BUSTR ID 679298-12), and CC-RVAAP-72-07

2  
3 **Functional Area:** Administration Area

4  
5 **Building Location:** 1055

6  
7 **Date of Installation:** RV-1 and RV-2 were installed in 1968; each 12,000 gallon RV-80 and  
8 CC-RVAAP-72-07 were installed in 1941.

9  
10 **Date Last Used:** RV-80 was last used and abandoned by filling with sand in 1968; CC-RVAAP-72-  
11 07 was removed in 1968 so RV-1 and RV-2 could be installed in its UST pit. RV-1 and RV-2 were  
12 taken out of service close to their removal in 1991. Piping formerly ran beneath South Service Road  
13 from CC-RVAAP-72-07 to Building 1045 (Pump House); that line was abandoned in place in 1968.

14  
15 **Date of Removal:** 1991 for RV-1, RV-2, and RV-80; 1968 for CC-RVAAP-72-07

16  
17 **Size:** 12,000 gallons each

18  
19 **UST Construction Material:** Steel

20  
21 **Substance Stored:** Gasoline

22 **Support Function:** Gasoline Fueling Station for Installation Vehicles

23  
24 **Architectural Drawing:** Schematics 1007.301, 1007.401, and 1007.402 showing UST locations and  
25 associated piping are provided in Appendix I. Site figure for the four USTs is provided as Figure S-3.

26  
27 **Photograph:** A historical photograph showing the Service Station post UST and piping removal is  
28 provided in Appendix H.

29  
30 **Evidence of Spills:** Upon removing RV-80, product was noticed in the UST pit adjacent to RV-2.  
31 The USTs were immediately emptied and promptly removed.

32  
33 **Removal Documentation and Closure Sampling:** Two closure reports by Nozzle New, each dated  
34 December 1991, provide details of the UST removal and soil sampling for RV-1, RV-2, and RV-80.  
35 Analytical data is tabulated in the closure reports.

36  
37 **Regulatory Status:** NFA letter from BUSTR, dated April 9, 1992, is provided as Figure S-4.

38  
39 **Further Action Recommended for Environmental Assessment and Closure:** None



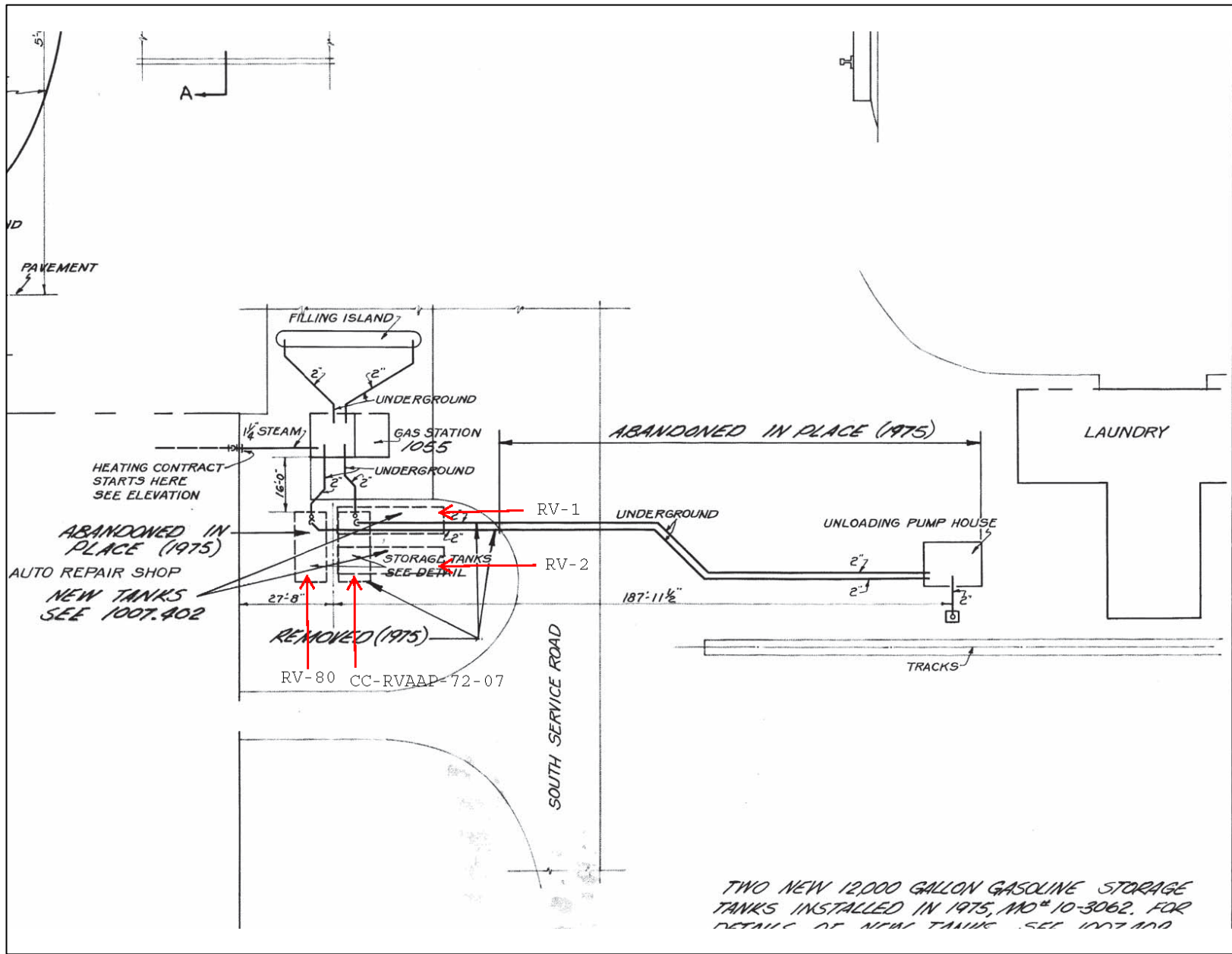


Figure S-3. Schematic of UST System at Building 1055

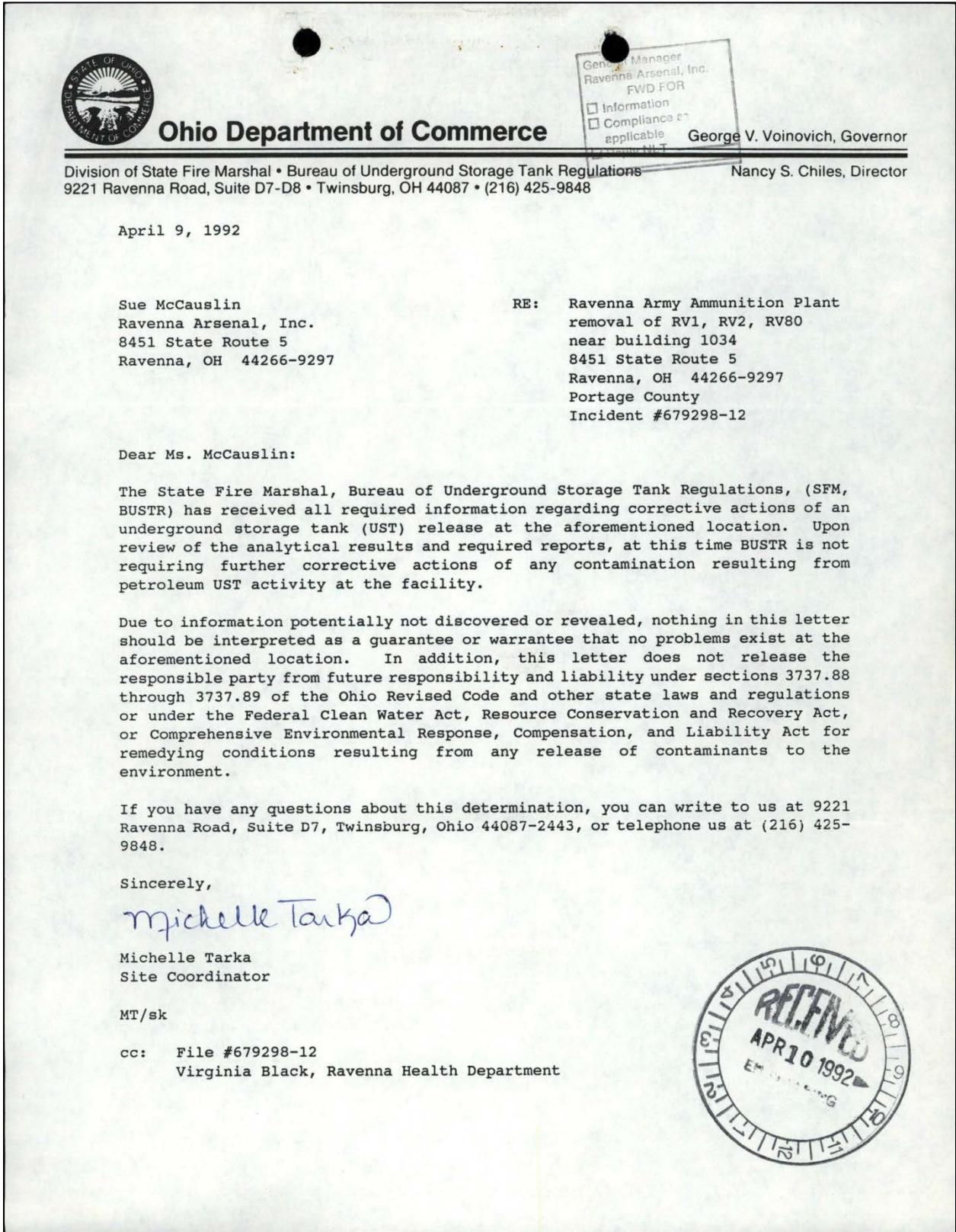


Figure S-4. No Further Action Documentation for RV-1, RV-2, and RV-80

1 **UST Identification:** RV-81, RV-82, and RV-83

2  
3 **Functional Area:** Administration Area

4  
5 **Building Location:** Building 1047

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** 1955; abandoned in place

10  
11 **Date of Removal:** 1991

12  
13 **Size:** RV-81 and RV-83 are 1,000 gallons; RV-82 is 1,500 gallons

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** Leaded Gasoline

18  
19 **Support Function:** Fueling station

20  
21 **Architectural Drawing:** Schematic 1008.201 is provided in Appendix I. No USTs were present on  
22 this schematic. A site sketch from the 1991 Closure Report illustrating the UST location is provided  
23 as Figure S-5.

24  
25 **Photograph:** Historical photograph provided in Appendix H. The pump island is visible in this  
26 photograph.

27  
28 **Evidence of Spills:** None

29  
30 **Removal Documentation and Closure Sampling:** Closure Report by Nozzle New, dated December  
31 1991, provides all details of UST removal and soil sampling. The top of the USTs were located 3 ft  
32 below ground surface (bgs) beneath a concrete pad. Samples were collected from UST pit for total  
33 petroleum hydrocarbon (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); Total lead (Pb);  
34 and Total Chromium (Cr). The UST pit was visibly clean and all photoionization detector (PID)  
35 measurements were <10 parts per million (ppm). Sample results are below BUSTR action levels.  
36 Sampling results and illustration of sample locations are included in the *UST Closure Report for the*  
37 *Ravenna Arsenal* (Nozzle New 1991) which is provided in Appendix G.

38

Sample ID	BTEX (ppb)	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
UST #81 Sample 1	ND	< 10	5.40	6.67
UST #81 Sample 2	ND	10	4.92	6.83
UST #82 Sample 1	ND	25	4.37	6.57
UST #82 Sample 2	ND	12	4.56	6.95
UST #83 Sample 1	ND	10	4.77	7.04
UST #83 Sample 2	ND	15	5.33	7.25
Product Line Island	ND	15	6.33	11.00

39 BTEX = benzene, toluene, ethylbenzene, and xylenes  
40 ND = Not Detected  
41 ppb = parts per billion  
42 ppm = parts per million  
43 TPH = Total Petroleum Hydrocarbon  
44 UST = Underground Storage Tank

1 **Regulatory Status:** USTs were abandoned in place prior to the effect of BUSTR regulations. Even  
2 though these USTs were physically removed after the effect of regulations, as no contamination was  
3 observed, these USTs do not fall under the look back provision and are not regulated.

4

5 **Further Action Recommended for Environmental Assessment and Closure:** None

6

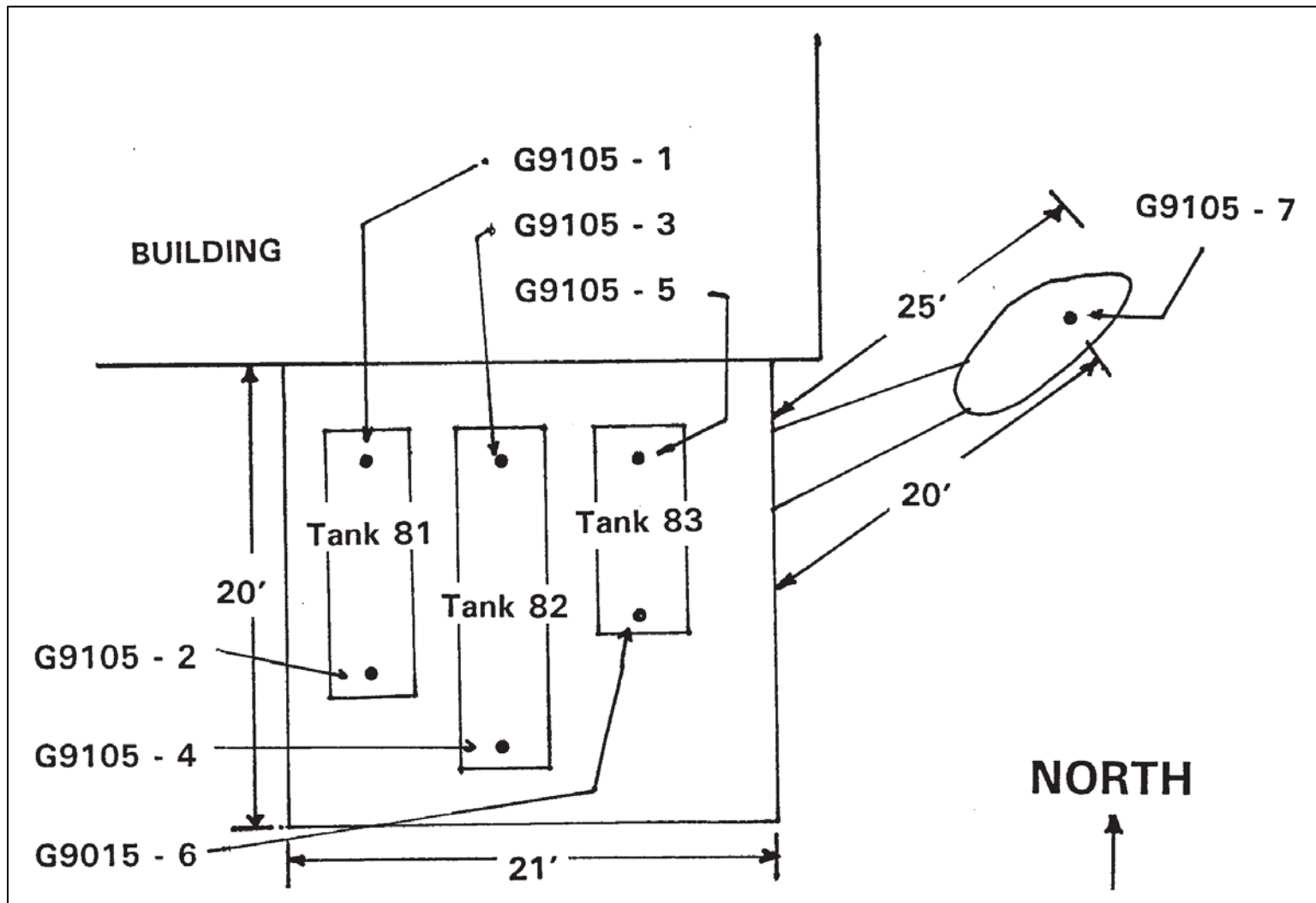


Figure S-5. Site Sketch of UST System at Building 1047

1  
2

1 **UST Identification:** RV-3 (BUSTR ID: 679298-15)

2

3 **Functional Area:** Administration Area

4

5 **Building Location:** Building 950A Gatehouse

6

7 **Date of Installation:** 1941

8

9 **Date of Removal:** July 1996

10

11 **Size:** 285 gallons

12

13 **UST Construction Material:** Steel

14

15 **Substance Stored:** No. 2 Diesel Fuel/gasoline

16

17 **Support Function:** Fuel source for backup generator to operate main gate and security post

18

19 **Architectural Drawing:** No schematics were located for Building 950A. A sketch from the closure  
20 report illustrating building and UST location is provided as Figure S-6 and in Appendix I.

21

22 **Photographs:** Historical photographs showing UST area and removal are provided in Appendix H.

23

24 **Evidence of Spills:** None. NFA letter from BUSTR, dated October 11, 1996, is provided as Figure  
25 S-7.

26

27 **Removal Documentation and Closure Sampling:** Closure report by TolTest, dated August 1996,  
28 provides all details of UST removal and soil sampling. Analytical data from soil sampling is in the  
29 closure report provided in Appendix G.

30

Sample ID	BTEX (ppm)	TPH (ppm)
B1	ND (<0.005)	ND (< 10)
SP1	ND (<0.005)	16.6
SP2	ND (<0.005)	14.2

31

BTEX = benzene, toluene, ethylbenzene, and xylenes

32

ND = Not Detected

33

ppm = parts per million

34

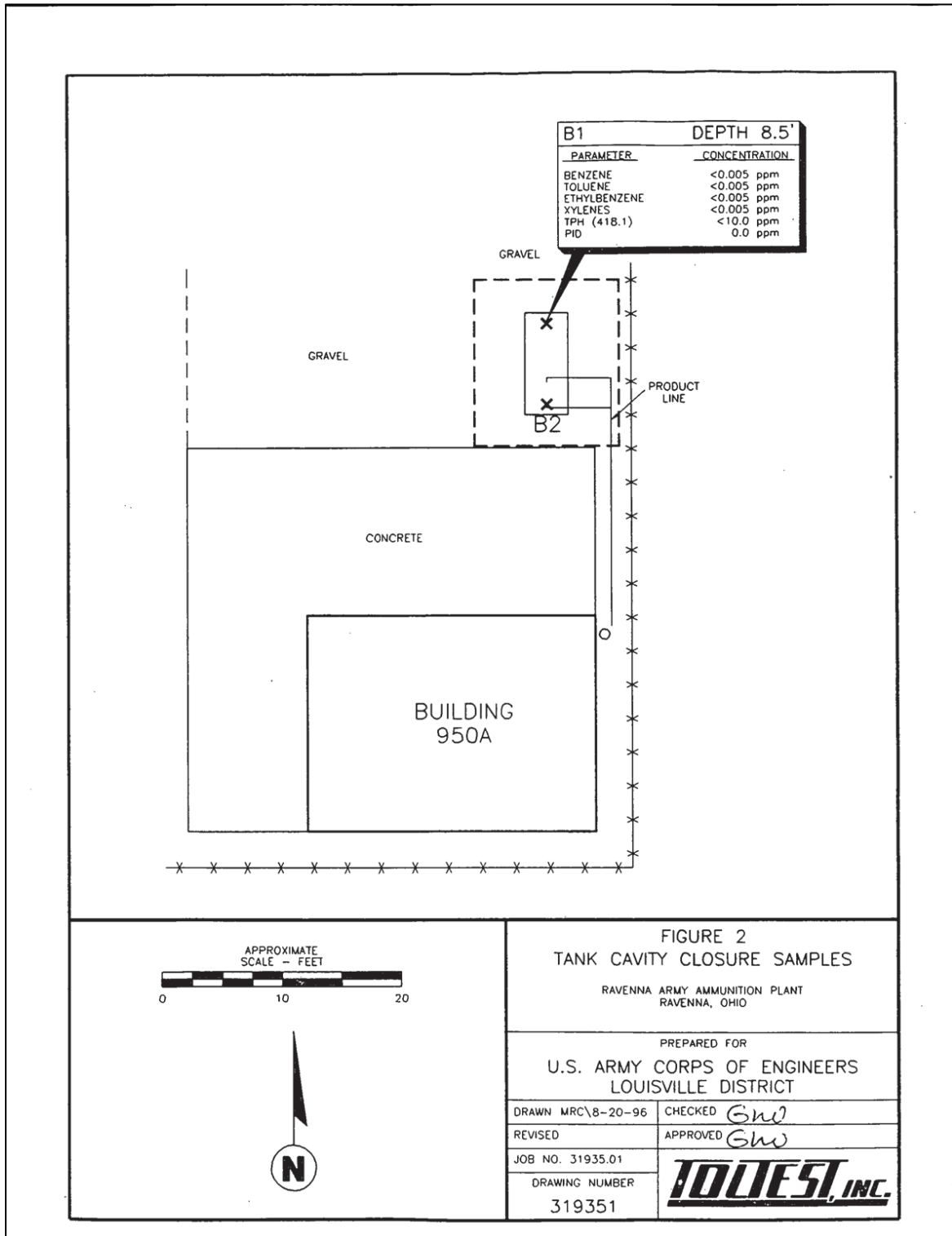
TPH = Total Petroleum Hydrocarbon

35

36 **Regulatory Status:** NFA letter from BUSTR, dated October 11, 1996, is provided as Figure S-7.

37

38 **Further Action Recommended for Environmental Assessment and Closure:** None



1  
2

Figure S-6. Site Map of UST System RV-3 at Building 950A



**Ohio Department of Commerce**

Division of State Fire Marshal  
Bureau of Underground Storage Tank Regulations  
8895 East Main Street P.O. Box 687  
Reynoldsburg, OH 43068  
(614) 752-7938 FAX (614) 752-7942

**George V. Voinovich**  
Governor  
**Donna Owens**  
Director

UST FILE

UST

October 11, 1996

RAVENNA ARMY AMMUNITION PLANT  
8451 STATE ROUTE 5  
BUILDING 590A  
RAVENNA OH 44266

<input type="checkbox"/> Dir.
<input type="checkbox"/> Comm.
<input type="checkbox"/> Appr.
<input type="checkbox"/> Reply

SITE: RAVENNA ARMY  
AMMUNITION PLANT  
ST RT 5 BLDG 590A  
RAVENNA OH  
PORTAGE COUNTY  
INCIDENT #679298-15

TO	10/15/96
<input checked="" type="checkbox"/>	CR-COR
<input type="checkbox"/>	PROP ADM
<input type="checkbox"/>	LAND MGR
<input checked="" type="checkbox"/>	CONTRACTOR
<input type="checkbox"/>	RETURNS FOR

RE: NO FURTHER ACTION STATUS REGARDING CLOSURE REQUIREMENTS

Dear Sir or Madam:

The Bureau of Underground Storage Tank Regulations (BUSTR) has reviewed all information submitted for this incident number. Based on this information, BUSTR requires no further action involving closure under Ohio Administrative Code rule 1301:7-9-12.

If you feel that you are entitled to reimbursement you should contact the Petroleum Underground Storage Tank Release Compensation Board (PUSTRCB) at P.O. Box 163188, Columbus, Ohio 43216, (614) 752-8963 or (800) 224-4659. PUSTRCB administers Ohio's assurance fund and is a separate entity apart from BUSTR.

Thank you for your cooperation. If you have any questions, please contact our office at (614) 752-7938.

Sincerely,

Kevin W. Hodnett  
Corrective Action Supervisor

KWH:DT:cah

xc: Site File  
Chief Larry A. Shafer, Ravenna Fire Department  
DuWayne Porter, Portage County Health District

OCT 15 1996

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1  
2

Figure S-7. No Further Action Documentation for RV-3



1 **UST Identification:** RV-5  
2  
3 **Functional Area:** Administration Area  
4  
5 **Building Location:** Building 1048A  
6  
7 **Date of Installation:** Unknown  
8  
9 **Date of Removal:** Unknown  
10  
11 **Size:** 100 gallons  
12  
13 **UST Construction Material:** Unknown  
14  
15 **Substance Stored:** Gasoline  
16  
17 **Support Function:** Unknown  
18  
19 **Architectural Drawing:** Several schematics of Building 1048A are included in Appendix I. No  
20 drawings indicated the location of the UST.  
21  
22 **Photographs:** Photographs of the Fire station were obtained and are included in Appendix H under  
23 CC-RVAAP-69; however, no evidence of the UST is present in the photographs.  
24  
25 **Evidence of Spills:** No information  
26  
27 **Removal Documentation:** No information other than a UST inventory spreadsheet indication of  
28 “removed and scrapped.”  
29  
30 **Closure Sampling:** No information  
31  
32 **Regulatory Status:** RV-5 is less than 110 gallons and is exempt from BUSTR regulations.  
33  
34 **Further Action Recommended for Environmental Assessment and Closure:** Further action  
35 recommended due to lack of removal documentation.  
36

1 **UST Identification:** RV-12 (BUSTR ID: 679298-14), RV-66, and RV-67

2  
3 **Functional Area:** Administration Area

4  
5 **Building Location:** Powerhouse #6

6  
7 **Date of Installations:** June 1974

8  
9 **Date of Removals:** 1993

10  
11 **Size:** RV-12 is 1,000 gallons; RV-66 and RV-67 are 20,000 gallons each

12  
13 **UST Construction Material:** Steel

14  
15 **Substance Stored:** No. 2 Diesel Fuel for RV-12; No. 6 Oil for RV-66 and RV-67

16  
17 **Support Function:** RV-12 was used as a fuel source for backup generator; RV-66 and RV-67  
18 provided fuel oil to heat Powerhouse No. 6 boilers.

19  
20 **Architectural Drawing:** Schematics 26.02.23, 1002.407, 1002.415, and 1002.416 illustrate the  
21 layout of the powerhouse and associated USTs and are provided in Appendix I. A site map is  
22 provided as Figure S-8.

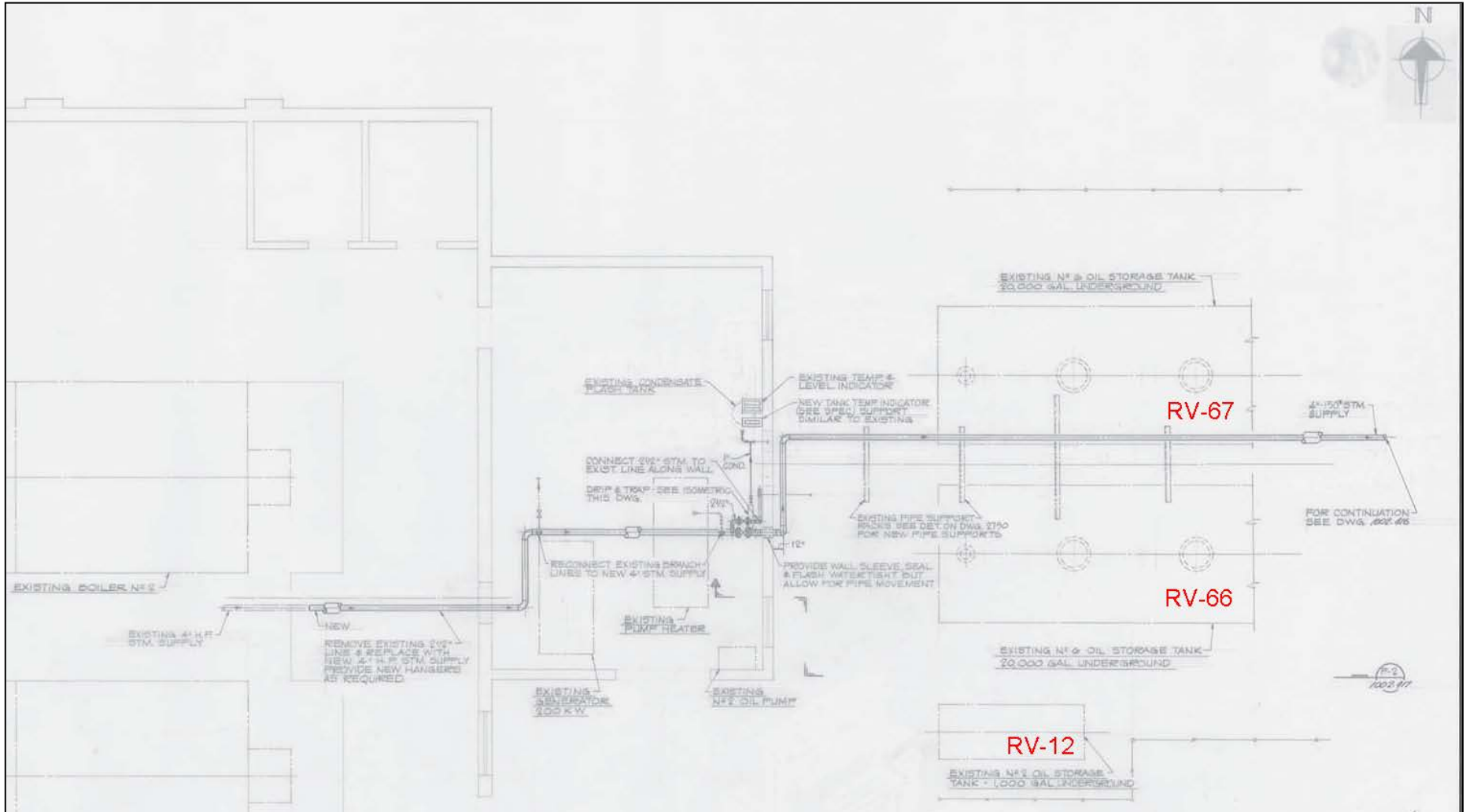
23  
24 **Photographs:** Historical photographs are provided in Appendix H; evidence of USTs is not apparent  
25 in these photographs.

26  
27 **Evidence of Spills:** Documentation indicated a 1979 boiler house spill of unknown quantity when a  
28 faulty valve caused a release which migrated through boiler house sewers that took contamination to  
29 containment pond. A light oil sheen was observed on the surface of the pond. Spill was cleaned using  
30 straw bales and absorbent floats.

31  
32 **Removal Documentation and Closure Sampling:** Removal documentation is provided within two  
33 Autumn Technical Services 1993 closure reports. Contamination was observed in the UST pit for  
34 RV-12 initially upon UST removal. The UST pit was excavated further with approval from BUSTR  
35 to remove soil contamination. Soil samples were collected at the final excavated limit. No visible  
36 signs of contamination existed in the UST pit for RV-66 and RV-67. Closure reports, analytical data,  
37 and correspondence with BUSTR for excavation are provided in Appendix G.

38  
39 **Regulatory Status:** NFA was issued for RV-12 and is provided as Figure S-9. RV-66 and RV-67 are  
40 not regulated as they are excluded from BUSTR as USTs were used for heating oil.

41  
42 **Further Action Recommended for Environmental Assessment and Closure:** None



1  
2  
3

Figure S-8. Schematic of UST System at Powerhouse #6



**Ohio Department of Commerce**

Division of State Fire Marshal  
Bureau of Underground Storage Tank Regulations  
8895 E. Main St. • P.O. Box 687  
Reynoldsburg, OH 43068-9009  
(614) 752-7938 FAX (614) 752-7942  
[www.com.state.oh.us](http://www.com.state.oh.us)

Bob Taft  
Governor

Gary C. Suhadolnik  
Director

January 08, 2003

MARK PETERSON  
DEPT OF THE ARMY  
8451 STATE ROUTE 5  
RAVENNA, OH 44266

SITE: RAVENNA ARMY AMMUNITION PLANT  
1993 REMOVAL OF 1-K DIESEL UST  
8451 ST RT 5  
RAVENNA OH  
PORTAGE COUNTY  
RELEASE #67000501-N00009

RE: NO FURTHER ACTION STATUS REGARDING CLOSURE REQUIREMENTS

Dear Mr. Peterson:

The Bureau of Underground Storage Tank Regulations (BUSTR) has reviewed all information submitted for the referenced release. Based on this information, BUSTR requires no further action under Ohio Administrative Code 1301.7-9-12, effective September 1992.

Thank you for your cooperation. If you have any questions, please contact our office at (614) 752-7938.

Sincerely,

Kelly J. Gill  
Corrective Action Supervisor

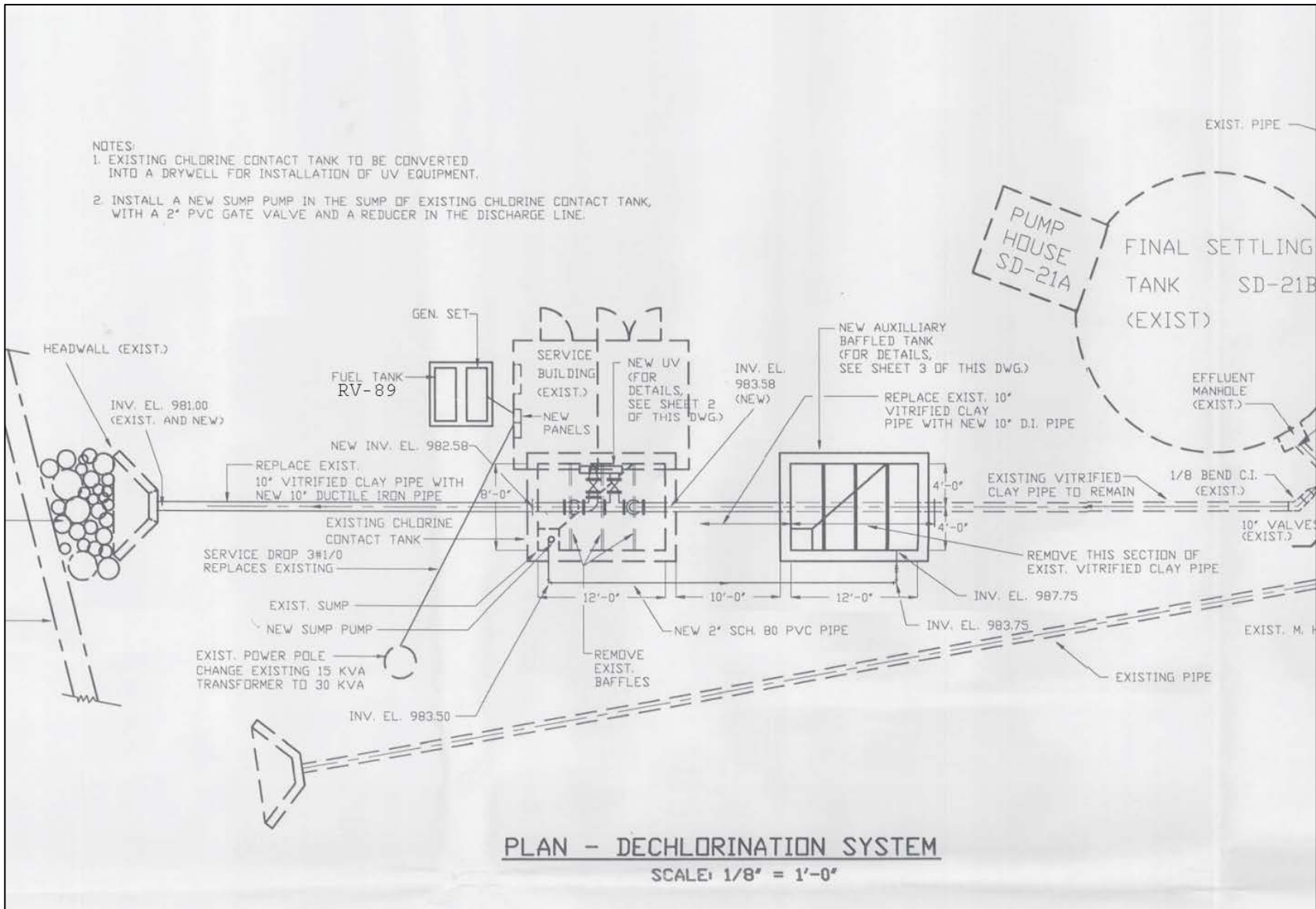
cc Site File

1

2

**Figure S-9. No Further Action Documentation for RV-12**

1 **UST Identification:** RV-89  
2  
3 **Functional Area:** George Road Sewage Treatment Plant  
4  
5 **Building Location:** 100 yd south of South Service Road  
6  
7 **Date of Installation:** Unknown  
8  
9 **Date Last Used:** Unknown (pre-1992)  
10  
11 **Date of Removal:** Unknown  
12  
13 **Size:** Unknown  
14  
15 **Substance Stored:** No. 2 Diesel Fuel  
16  
17 **Support Function:** Support dechlorination system at the sewage treatment plant.  
18  
19 **Architectural Drawing:** Drawing A-3794 of the George Road Sewage Treatment Plant illustrates the  
20 UST location and is provided in Appendix I. Figure S-10 is provided to document the UST location.  
21  
22 **Photographs:** A historical photograph of the George Road Sewage Treatment Plant is provided in  
23 Appendix H as part of CC-RVAAP-75. This photograph does not show the UST. A fill pipe was  
24 observed during the *Investigation and Evaluation of USTs* (USACE 1989). This report and  
25 photograph are provided in Appendix G. The fill pipe was not observed during the 2010 property  
26 visit.  
27  
28 **Evidence of Spills:** None  
29  
30 **Removal Documentation:** No removal documentation was found. Nozzle New's 1991 removal  
31 effort attempted to locate UST RV-89 by searching a 20 ft by 20 ft by 4 ft grid in the suspected  
32 vicinity of the UST. The location of the search grid was not identified in the closure report. Two  
33 unidentified fill pipes existed along George Road Sewer Treatment Plant Road. Interviews indicated  
34 UST piping remains in place to document former UST location. Fill pipes for USTs were found along  
35 the side of the road as documented in historical reports. No UST components were found during the  
36 2010 property visit.  
37  
38 **Closure Sampling:** Unknown  
39  
40 **Regulatory Status:** Unknown  
41  
42 **Further Action Recommended for Environmental Assessment and Closure:** Further action  
43 recommended due to lack of documentation on removal.



1  
2

Figure S-10. Schematic of RV-89 at the George Road Sewage Treatment Plant

1 **UST Identification:** RV-52 (BUSTR ID: 679298-10)

2  
3 **Functional Area:** Atlas Scrap Yard

4  
5 **Building Location:** Building T-18 Atlas Powder Offices. Building was demolished in the 1960s, but  
6 UST existed and was used for storage purposes until 1987.

7  
8 **Date of Installation:** 1941

9  
10 **Date Last Used:** 1987

11  
12 **Date of Removal:** February 1990

13  
14 **Size:** 1,000 gallons

15  
16 **Substance Stored:** Diesel

17  
18 **Support Function:** Original function was storage of fuel oil for Building T-18 boiler.

19  
20 **Architectural Drawing:** Drawing 1500.32 was included in the closure report to indicate location of  
21 RV-52. Site Map 1006.1 from 1955 provides the location of Building T-18A Boiler House, the  
22 location of the UST. The Construction Camp Utilities Map 1075.1 also provides detailed location of  
23 site features. All site maps are included in Appendix I. A site map showing all known UST and above  
24 ground storage tank (AST) locations at Atlas Scrap Yard is provided as Figure S-11.

25  
26 **Photographs:** Historical photographs are provided in Appendix H. The UST at T-18 was not visible  
27 in available photographs.

28  
29 **Evidence of Spills:** None

30  
31 **Removal Documentation and Closure Sampling:** Closure activities are documented in the *Review*  
32 *of Underground Storage Tank Closure* (Cardamone Construction 1990). The UST was removed of  
33 contents and cleaned prior to excavation and removal. The UST was excavated, removed, and  
34 disposed off-site. Soil removed from the excavation was screened using a PID. All closure activities  
35 are documented in the *Review of Underground Storage Tank Closure* (Cardamone Construction  
36 1990). A summary of the sampling results are presented below.

37

Sample ID	BTEX (ppb)	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
East Bottom	ND	16	ND	13
West Wall	ND	ND	NA	NA

38 BTEX = benzene, toluene, ethylbenzene, and xylenes

39 TPH = Total Petroleum Hydrocarbon

40 NA = Not Applicable

41 ND = Not Detected

42 ppb = parts per billion

43 ppm = parts per million

44  
45 **Regulatory Status:** BUSTR provided notification that this UST was not regulated under BUSTR, but  
46 all information should be forwarded to the Ohio Environmental Protection Agency (Ohio EPA).  
47 Information was forwarded with no documented response from Ohio EPA found during historical  
48 records review. Documentation of this correspondence is provided in Appendix G.

1 **Further Action Recommended for Environmental Assessment and Closure:** None. Soil at Atlas  
2 Scrap Yard to be addressed under a separate Comprehensive Environmental Response,  
3 Compensation, and Liability Act (CERCLA) decision.  
4



1 **UST Identification:** CC-RVAAP-72-02, CC-RVAAP-72-03, CC-RVAAP-72-04, and CC-RVAAP-  
2 72-05

3  
4 **Functional Area:** Atlas Scrap Yard

5  
6 **Building Location:** Northern Service Station

7  
8 **Date of Installation:** Unknown; most likely 1941

9  
10 **Date of Removal:** Unknown

11  
12 **Size and Substance Stored:** CC-RVAAP-72-02 and CC-RVAAP-72-03 were 1,000 gallon, leaded  
13 gasoline USTs; CC-RVAAP-72-04 was a 1,000 gallon fuel oil UST; and CC-RVAAP-72-05 was a  
14 2,000 gallon kerosene UST.

15  
16 **Support Function:** Fueling Station for Construction Camp

17  
18 **Architectural Drawing:** The Construction Camp Utilities Map 1075.1 provides detailed location of  
19 site features. One historical drawing of the northern service station from an unknown source was  
20 provided in the geophysical search report published by MKM Engineers (MKM) in 2007. All site  
21 maps are included in Appendix I. A site map showing all known UST and AST locations is provided  
22 as Figure S-11.

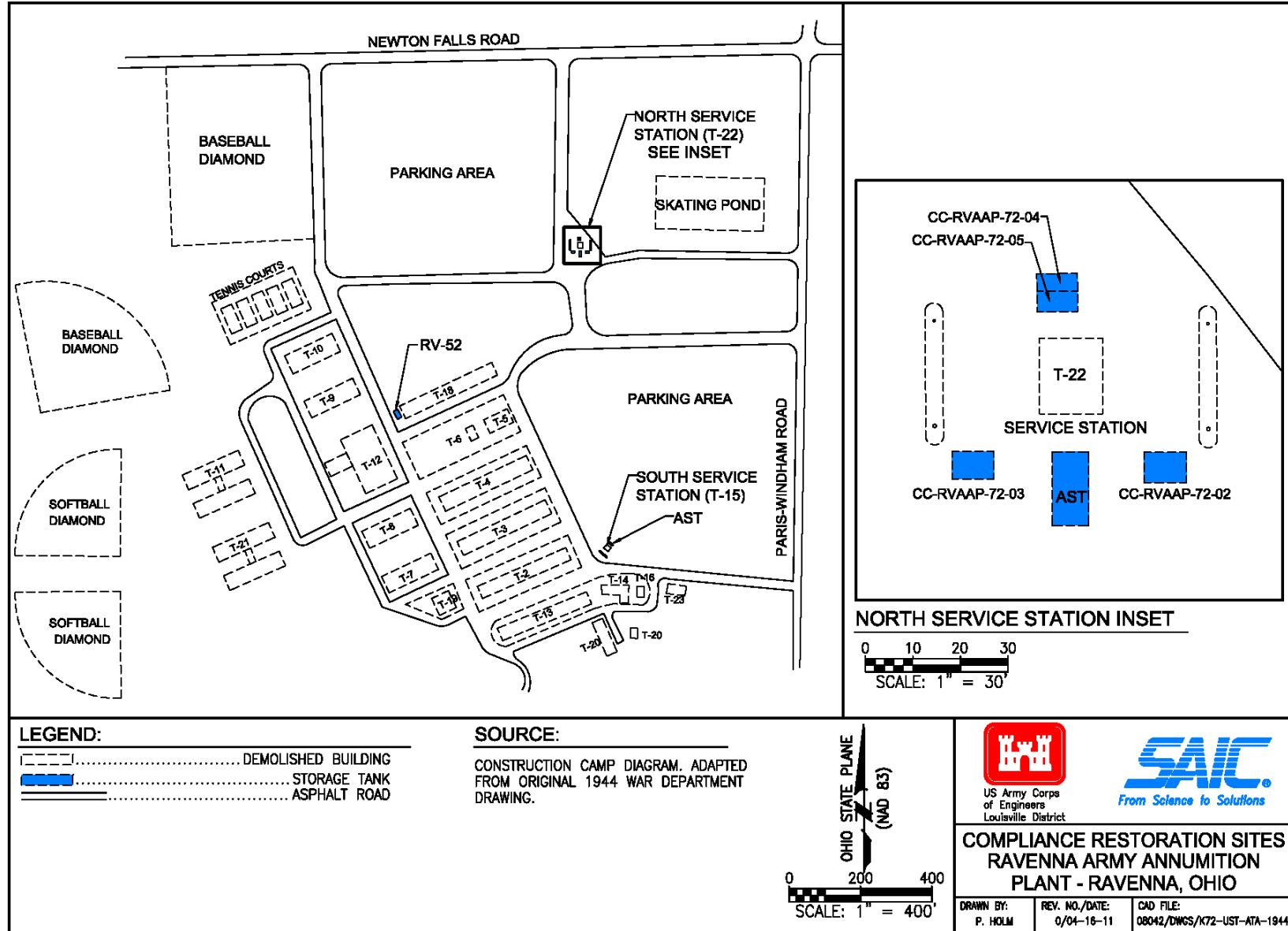
23  
24 **Photographs:** Historical photographs are provided in Appendix H. As seen in the aerial photograph,  
25 T-18 is the most prominent building remaining within Atlas Scrap Yard, adjacent to the water tower.  
26 The 1940s site photograph shows site buildings, the north service station, and the south service  
27 station with associated AST.

28  
29 **Evidence of Spills:** Stained soil with degraded petroleum odor observed during Performance-Based  
30 Acquisition 2008 (PBA08) investigation in the vicinity of the northern service station.

31  
32 **Removal Documentation and Closure Sampling:** None. A geophysical survey was completed by  
33 MKM in 2004 in an attempt to confirm the presence or absence of USTs at the two service stations  
34 within Atlas Scrap Yard. The findings of this report were inconclusive. This report is provided in  
35 Appendix G.

36  
37 **Regulatory Status:** Regulated only if USTs have not been removed.

38  
39 **Further Action Recommended for Environmental Assessment and Closure:** Further action  
40 recommended due to inconclusive results of geophysical survey conducted by MKM and lack of  
41 documented removal and soil sampling. Soil at Atlas Scrap Yard to be addressed under a separate  
42 CERCLA decision.



1 Figure S-11. Site Map of Atlas Scrap Yard and Associated USTs at T-18, the South Service Station, and the North Service Station

1 **UST Identification:** RV-37 (BUSTR ID 679298-07)

2  
3 **Functional Area:** Depot Administration Area

4  
5 **Building Location:** A-1

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** 1968

10  
11 **Date of Removal:** February 1990

12  
13 **Size:** 5,000 gallons

14  
15 **UST Construction:** Steel

16  
17 **Substance Stored:** Heating oil; last material stored was a potassium chromate inhibitor mixed with  
18 water to prevent corrosion during non-use

19  
20 **Support Function:** Depot Boiler House; heating oil supply for building heating boiler

21  
22 **Architectural Drawing:** Boiler House Schematic 6988-503 is provided in Appendix I. A portion of  
23 this schematic illustrating the UST location is provided as Figure S-12. Sketch illustrating closure  
24 sampling included in the 1990 closure report is provided in Appendix G.

25  
26 **Photographs:** Photographs of the UST removal are included as an appendix to the 1990 closure  
27 report provided in Appendix G. One photograph at this building is included in Appendix H and one  
28 recent photograph from the 2010 property visit is provided in Appendix M. UST features are not  
29 visible in either photograph.

30  
31 **Evidence of Spills:** None

32  
33 **Removal Documentation and Closure Sampling:** Closure activities are documented in the *Review*  
34 *of Underground Storage Tank Closure* (Cardamone Construction 1990). The UST was removed of  
35 contents and cleaned prior to excavation and removal. The UST was excavated, removed, and  
36 disposed off-site. Depth to top of UST was 2.75 ft bgs. Soil removed from the excavation was  
37 screened using a PID. A summary of the soil sampling results are presented below.

38

Sample ID	BTEX	TPH	Lead	Chromium
Bottom West	ND	16 ppm	ND	ND
Bottom East	ND	ND	ND	ND
Product Line	ND	ND	ND	ND

39 BTEX = benzene, toluene, ethylbenzene, and xylenes

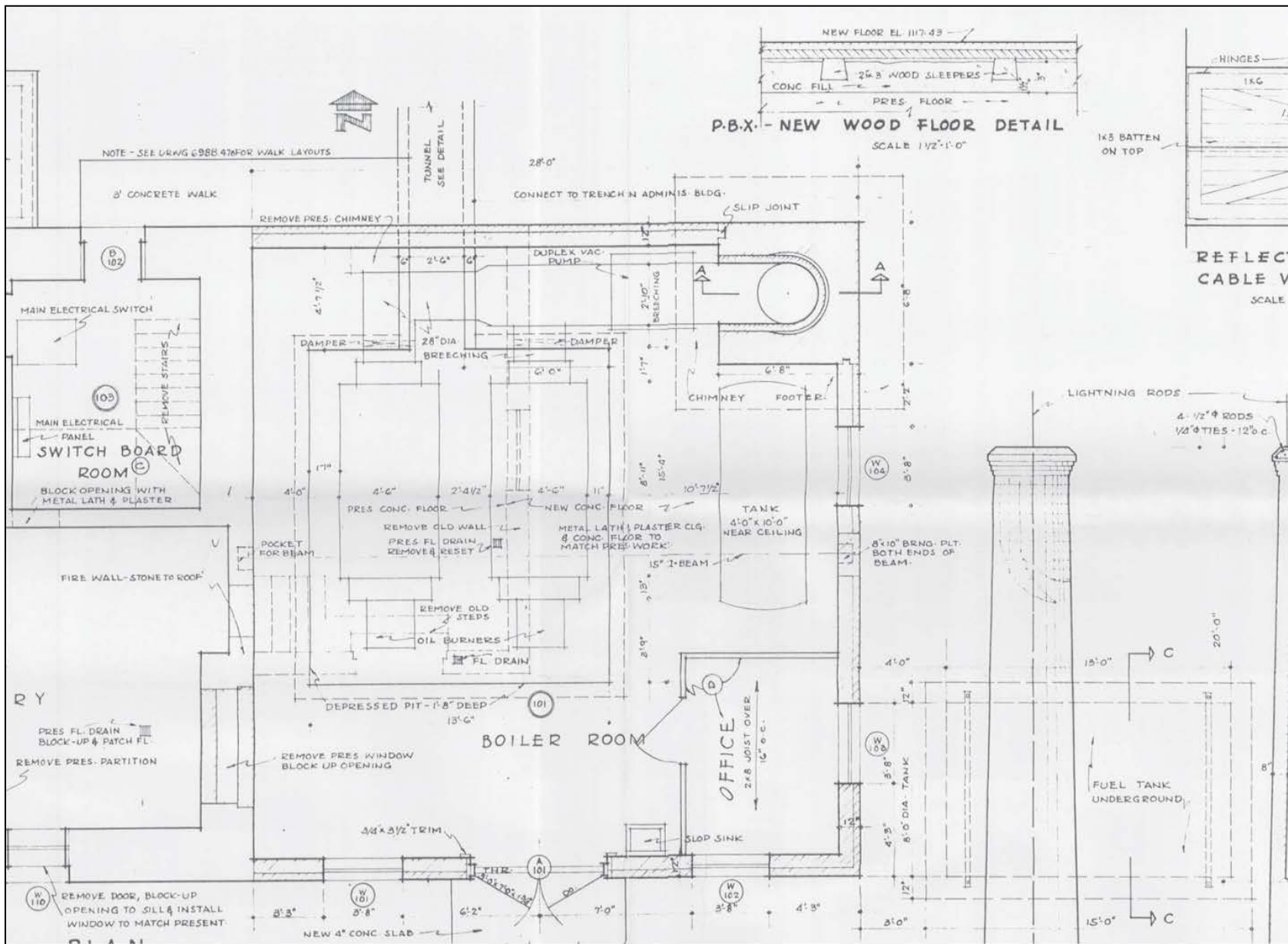
40 TPH = Total Petroleum Hydrocarbon

41 ND = Not Detected

42 ppm = parts per million

43  
44 **Regulatory Status:** BUSTR provided notification that this UST was not regulated under BUSTR, but  
45 all information should be forwarded to Ohio EPA. Information was forwarded with no documented  
46 response from the Ohio EPA found during historical records review. Documentation of  
47 correspondence is provided in Appendix G.

- 1 **Further Action Recommended for Environmental Assessment and Closure:** None. Soil samples
- 2 fall below BUSTR action levels.



1

Figure S-12. Schematic of UST System (RV-37) at Building A-1

1 **UST Identification:** RV-17 (North UST), RV-18 (Center UST), RV-19 (South UST)  
2 (BUSTR ID: 679298-05)

3  
4 **Functional Area:** Depot Administration Area

5  
6 **Building Location:** A-6

7  
8 **Date of Installation:** 1941

9  
10 **Last Used:** June 1971

11 **Date of Removal:** February 8, 1990

12  
13 **Size:** 3,900 gallons each

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** Gasoline; last material stored was a potassium chromate inhibitor mixed with  
18 water to prevent corrosion during non-use.

19  
20 **Support Function:** Portage Ordnance Depot Filling Station

21  
22 **Architectural Drawing:** Drawings 6988.522 and 6988.523 show UST schematics for A-6 and are  
23 included in Appendix I. A portion of the architectural drawing is provided as Figure S-13 to illustrate  
24 UST location.

25  
26 **Photographs:** Photographs of the UST removal are included as an appendix to the closure report  
27 (Appendix G). Additional photographs of the excavated UST pit are provided in Appendix H.

28  
29 **Evidence of Spills:** None

30  
31 **Removal Documentation and Closure Sampling:** Closure activities are documented in the *Review*  
32 *of Underground Storage Tank Closure* (Cardamone Construction 1990). All USTs were removed of  
33 contents and cleaned prior to excavation and removal. Depth to the top of UST was 3.6 ft. USTs  
34 were excavated, removed, and disposed off-site. Soil removed from the excavation was screened  
35 using a PID. A summary of the sampling results are presented below.

36

Sample ID	BTEX	TPH (ppm)	Total Lead	Total Chromium (ppm)
Bottom Side #17 (West)	ND	22	ND	5.4
Bottom Side #19 (West)	ND	ND	ND	6.8
Island	ND	16	NA	NA
Product Line	ND	ND	NA	NA

37 BTEX = benzene, toluene, ethylbenzene, and xylenes

38 TPH = Total Petroleum Hydrocarbon

39 NA = Not Applicable

40 ND = Not Detected

41 ppm = parts per million

42

- 1 **Regulatory Status:** Documented NFA from BUSTR, dated November 14, 1991. NFA is provided as
- 2 Figure S-14.
- 3
- 4 **Further Action Recommended for Environmental Assessment and Closure:** None

1 **UST Identification:** RV-97 (BUSTR ID 679298-06)

2  
3 **Functional Area:** Depot Administration Area

4  
5 **Building Location:** A-6

6  
7 **Date of Installation:** 1941

8  
9 **Date of Removal:** February 8, 1990

10  
11 **Size:** 550 gallons

12  
13 **Substance Stored:** Heating Oil

14  
15 **Support Function:** Heating Oil for Portage Ordnance Depot Filling Station Building

16  
17 **Architectural Drawing:** Drawings 6988.522 and 6988.523 show UST schematics for A-6. Drawings  
18 are included in Appendix I. A portion of the architectural drawing is provided as Figure S-13 to  
19 illustrate UST location.

20  
21 **Photographs:** Photographs of the UST removal are included as an appendix to the closure report  
22 (Appendix G).

23  
24 **Evidence of Spills:** None

25  
26 **Removal Documentation and Closure Sampling:** Closure activities are documented in the *Review*  
27 *of Underground Storage Tank Closure* (Cardamone Construction 1990). The UST was removed of  
28 contents and cleaned prior to excavation and removal. The UST was excavated, removed, and  
29 disposed off-site. Soil removed from the excavation was screened using a PID. This UST did not  
30 have an RVAAP-assigned UST ID in the 1990 closure report. UST size in the closure report  
31 identified it as a 500-gallon UST. The original site sketch map identifies it as a 550-gallon UST.

32

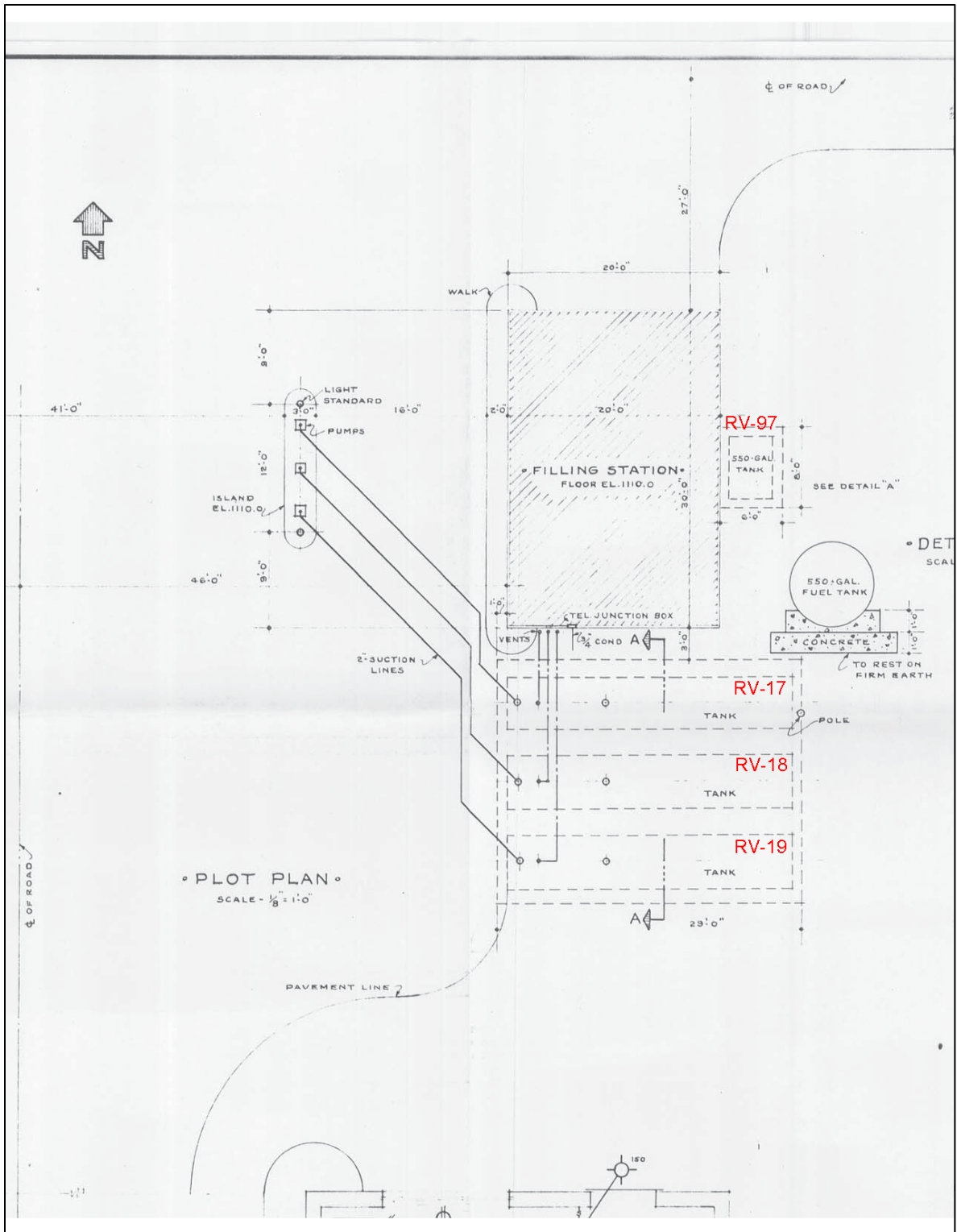
Sample ID	BTEX	TPH	Leachable Lead	Leachable Chromium
Bottom South	ND	ND	ND	ND
Bottom North	ND	ND	ND	ND

33 BTEX = benzene, toluene, ethylbenzene, and xylenes  
34 TPH = Total Petroleum Hydrocarbon  
35 ND = Not Detected

36  
37 **Regulatory Status:** UST not regulated by BUSTR. Samples do not exceed BUSTR action levels.

38  
39 **Further Action Recommended for Environmental Assessment and Closure:** None





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Figure S-13. Schematic of USTs, RV-17, RV-18, RV-19, and RV-97 at Building A-6



**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

November 14, 1991

Susan McCauslin  
Ravenna Arsenal, Inc.  
8451 State Route 5  
Ravenna, OH 44266

RE: Ravenna Arsenal, Inc.  
8451 State Route 5  
Ravenna, OH 44266  
Portage County  
679298-03 through 05

Dear Ms. McCauslin:

On October 22, 1991, the State Fire Marshal, Bureau of Underground Storage Tank Regulations (SFM, BUSTR) received information regarding the closure of the underground storage tank (UST) system(s) located at the aforementioned site. Upon review of the analytical results and associated information, BUSTR is not requiring further corrective actions at this time of any contamination resulting from petroleum UST systems activity at the site.

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

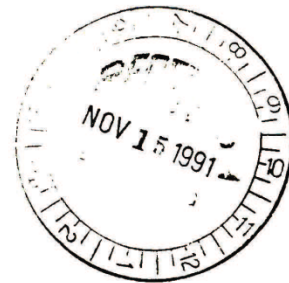
If you have questions about this determination, please contact me at (216) 425-9848. To assist our office in expediting a review of your correspondence, please reference the incident number (679298-03 through 05) and place it in the right hand corner of all your correspondence. Thank you for your cooperation.

Sincerely,

Thomas J. Kilbane  
Environmental Specialist

TJK/sk

cc: File #679298-03 through 05



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COR  
Sue*

*File*

*Wayne*

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Figure S-14. No Further Action Documentation for RV-17, RV-18, and RV-19 at Building A-6

1 **UST Identification:** RV-46  
2  
3 **Functional Area:** Depot Administration Area  
4  
5 **Building Location:** EE-102 Bolton Mansion  
6  
7 **Date of Installation:** Pre-1941  
8  
9 **Date of Removal:** 1968  
10  
11 **Size:** 1,500 gallons  
12  
13 **UST Construction Material:** Steel  
14  
15 **Substance Stored:** No. 2 Fuel Oil  
16  
17 **Support Function:** Suspected use was heating oil storage for the mansion.  
18  
19 **Architectural Drawing:** Available untitled schematic for the house is included in Appendix I and as  
20 Figure S-15 below. Based on the house schematic, it would be practical that the UST was located near  
21 the heater pit on the north side of the house between the property and the road.  
22  
23 **Photographs:** No historical photographs of the Bolton Mansion were located during the historical  
24 records review.  
25  
26 **Evidence of Spills:** None  
27  
28 **Removal Documentation:** Closure report presents that a 20 ft by 20 ft grid search was conducted in  
29 June 1991 by New Nozzle in attempts to find the UST. No UST was found after extensive excavation  
30 at the former mansion. The exact excavation area was not noted in the closure report or supporting  
31 documentation from Nozzle New. The UST may have been removed when the house was relocated  
32 off-site. Interviews indicated the UST was removed from the mansion. The exact UST location was  
33 not noted during the interviews.  
34  
35 **Closure Sampling:** Unknown  
36  
37 **Regulatory Status:** Not Regulated  
38  
39 **Further Action Recommended for Environmental Assessment and Closure:** Further action  
40 recommended due to lack of documentation on removal and lack of analytical soil data.



1 **UST Identification:** RV-15 (South UST), RV-16 (North UST) (BUSTR ID: 679298-04), and CC-  
2 RVAAP-72-01

3  
4 **Functional Area:** Depot Administration Area

5  
6 **Building Location:** U-3

7  
8 **Date of Installation:** 1941

9  
10 **Date Last Used:** 1971

11  
12 **Date of Removal:** February 1990

13  
14 **Size:** RV-15 and RV-16 are 12,000 gallons; size of CC-RVAAP-72-01 is unknown

15  
16 **Substance Stored:** Gasoline was the primary substance stored for RV-15 and RV-16. The last  
17 material stored was a potassium chromate inhibitor mixed with water to prevent corrosion during  
18 non-use. CC-RVAAP-72-01 was a kerosene UST.

19  
20 **Support Function:** Gasoline Motor Fuel Station

21  
22 **Architectural Drawing:** Portage Ordnance Depot Drawing No. 6988.606 showing U-3 layout is  
23 included in Appendix I. Architectural drawing 6698-RU A-10 indicates the installation of a kerosene  
24 UST at U-3. This is an unverified UST and may not exist since the drawing was never approved. A  
25 figure of all USTs at U-3 is provided as Figure S-16.

26  
27 **Photographs:** A historical photograph of Building U-3 is provided in Appendix H. The pump island  
28 is visible in this photograph.

29  
30 **Evidence of Spills:** None

31  
32 **Removal Documentation and Closure Sampling:** Closure activities for RV-15 and RV-16 are  
33 documented in the *Review of Underground Storage Tank Closure* (Cardamone Construction 1990).  
34 The USTs were removed of contents and cleaned prior to excavation and removal. The depth to the  
35 top of the USTs was 1.5 ft bgs. USTs were excavated, removed, and disposed off-site. Soil removed  
36 from the excavation was screened using a PID. A summary of the sampling results for RV-15 and  
37 RV-16 are presented below.

38

<b>Sample ID</b>	<b>BTEX (ppb)</b>	<b>TPH (ppm)</b>	<b>Total Lead (ppm)</b>	<b>Total Chromium (ppm)</b>
Bottom West	ND	ND	NA	NA
Bottom East	ND	ND	11	17
Supply Lines	37	ND	NA	NA

39 BTEX = benzene, toluene, ethylbenzene, and xylenes

40 TPH = Total Petroleum Hydrocarbon

41 NA = Not Applicable

42 ND = Not Detected

43 ppb = parts per billion

44 ppm = parts per million

45

1 Vent pipes were observed on the north face of U-3 during the 2010 property visit. These vent pipes  
2 may be remnant structures or may be associated with CC-RVAAP-72-01.

3

4 **Regulatory Status:** Documented NFA from BUSTR for RV-15 and RV-16, dated November 14,  
5 1991. NFA is provided as Figure S-17.

6

7 **Further Action Recommended for Environmental Assessment and Closure:** No action for RV-15  
8 and RV-16. Further action is recommended for previous unidentified UST CC-RVAAP-72-01.

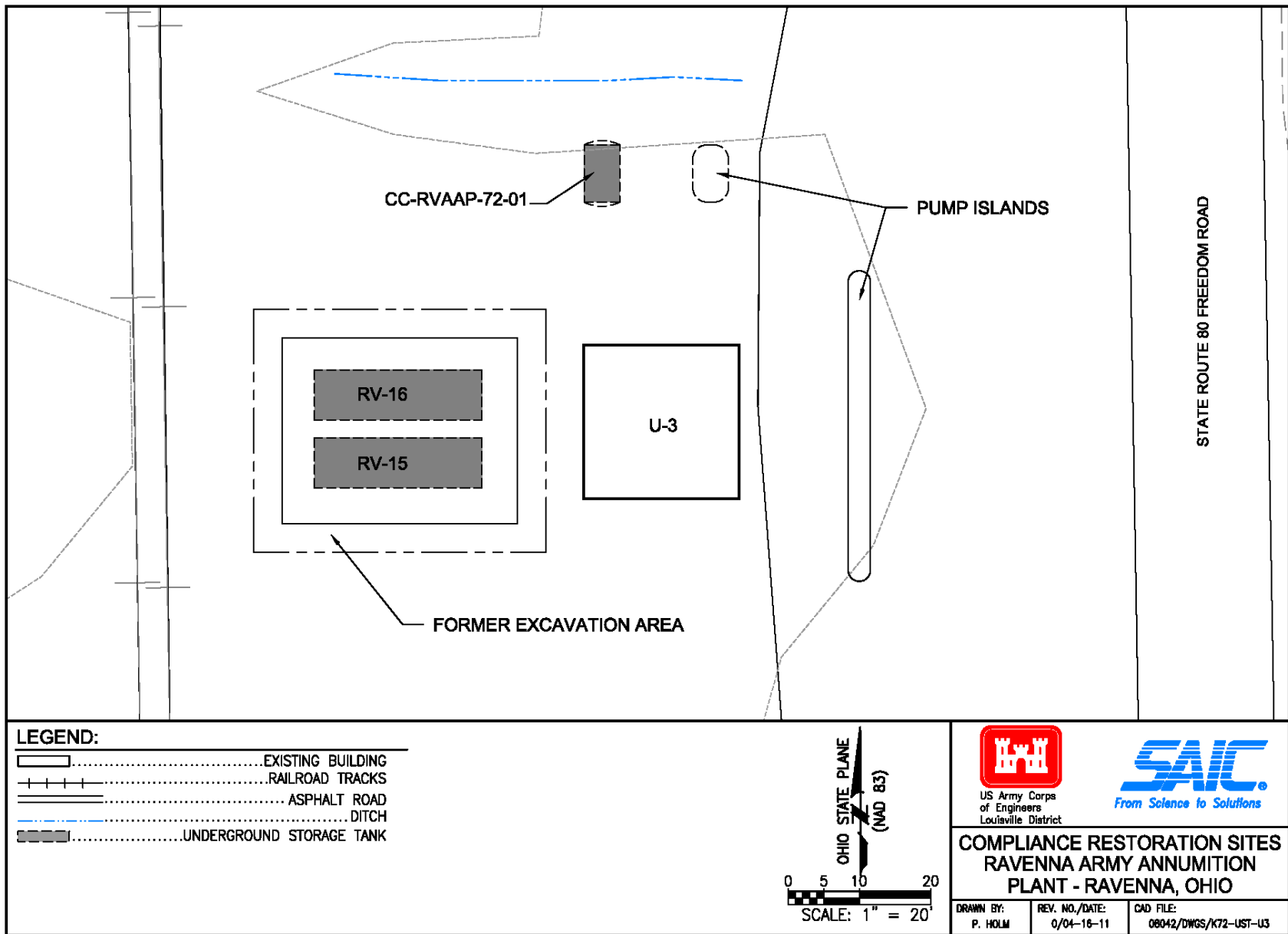


Figure S-16. Figure of USTs Located at Depot Area Building U-3



**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

November 14, 1991

Susan McCauslin  
Ravenna Arsenal, Inc.  
8451 State Route 5  
Ravenna, OH 44266

RE: Ravenna Arsenal, Inc.  
8451 State Route 5  
Ravenna, OH 44266  
Portage County  
679298-03 through 05

Dear Ms. McCauslin:

On October 22, 1991, the State Fire Marshal, Bureau of Underground Storage Tank Regulations (SFM, BUSTR) received information regarding the closure of the underground storage tank (UST) system(s) located at the aforementioned site. Upon review of the analytical results and associated information, BUSTR is not requiring further corrective actions at this time of any contamination resulting from petroleum UST systems activity at the site.

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

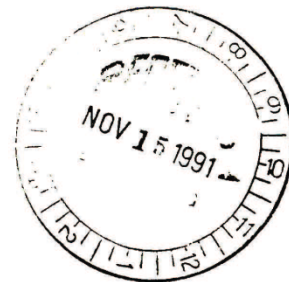
If you have questions about this determination, please contact me at (216) 425-9848. To assist our office in expediting a review of your correspondence, please reference the incident number (679298-03 through 05) and place it in the right hand corner of all your correspondence. Thank you for your cooperation.

Sincerely,

Thomas J. Kilbane  
Environmental Specialist

TJK/sk

cc: File #679298-03 through 05



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Sue

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Figure S-17. No Further Action Documentation for USTs RV-15 and RV-16 at Building U-3



1 **UST Identification:** RV-13 (North UST), RV-14 (South UST) (BUSTR ID 679298-03)

2  
3 **Functional Area:** Depot Administration Area

4  
5 **Building Location:** U-6

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** June 1971

10  
11 **Date of Removal:** February 1990

12  
13 **Size:** 12,000 gallons each

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** Diesel; potassium chromate inhibitor and water last stored in UST to prevent  
18 corrosion

19  
20 **Support Function:** Diesel Motor Fuel Station

21  
22 **Architectural Drawing:** Portage Ordnance Depot Drawing No. 6988.607 showing U-6 layout with  
23 USTs is included in Appendix I. A portion of the schematic is provided as Figure S-18.

24  
25 **Photographs:** No historical photographs were located for this site. Some photographs were included  
26 as part of the closure report provided in Appendix G.

27  
28 **Evidence of Spills:** Fuel odors were observed in a nearby manhole; however, no evidence of a spill  
29 has been documented or observed. It is believed that this spill was associated with AST activities at  
30 adjacent Building U-5.

31  
32 **Removal Documentation and Closure Sampling:** Closure activities are documented in the *Review*  
33 *of Underground Storage Tank Closure* (Cardamone Construction 1990). Both USTs were removed  
34 of contents and cleaned prior to excavation and removal. Depth to top of UST is 1.5 ft bgs. USTs  
35 were excavated, removed, and disposed off-site. Soil removed from the excavation was screened  
36 using a PID.

37

Sample ID	BTEX (ppb)	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
Bottom West	ND	ND	18	14
Bottom East	ND	ND	NA	NA
South Pump Island	ND	110	NA	NA
Line from South Pump	ND	55	NA	NA

38 BTEX = benzene, toluene, ethylbenzene, and xylenes

39 TPH = Total Petroleum Hydrocarbon

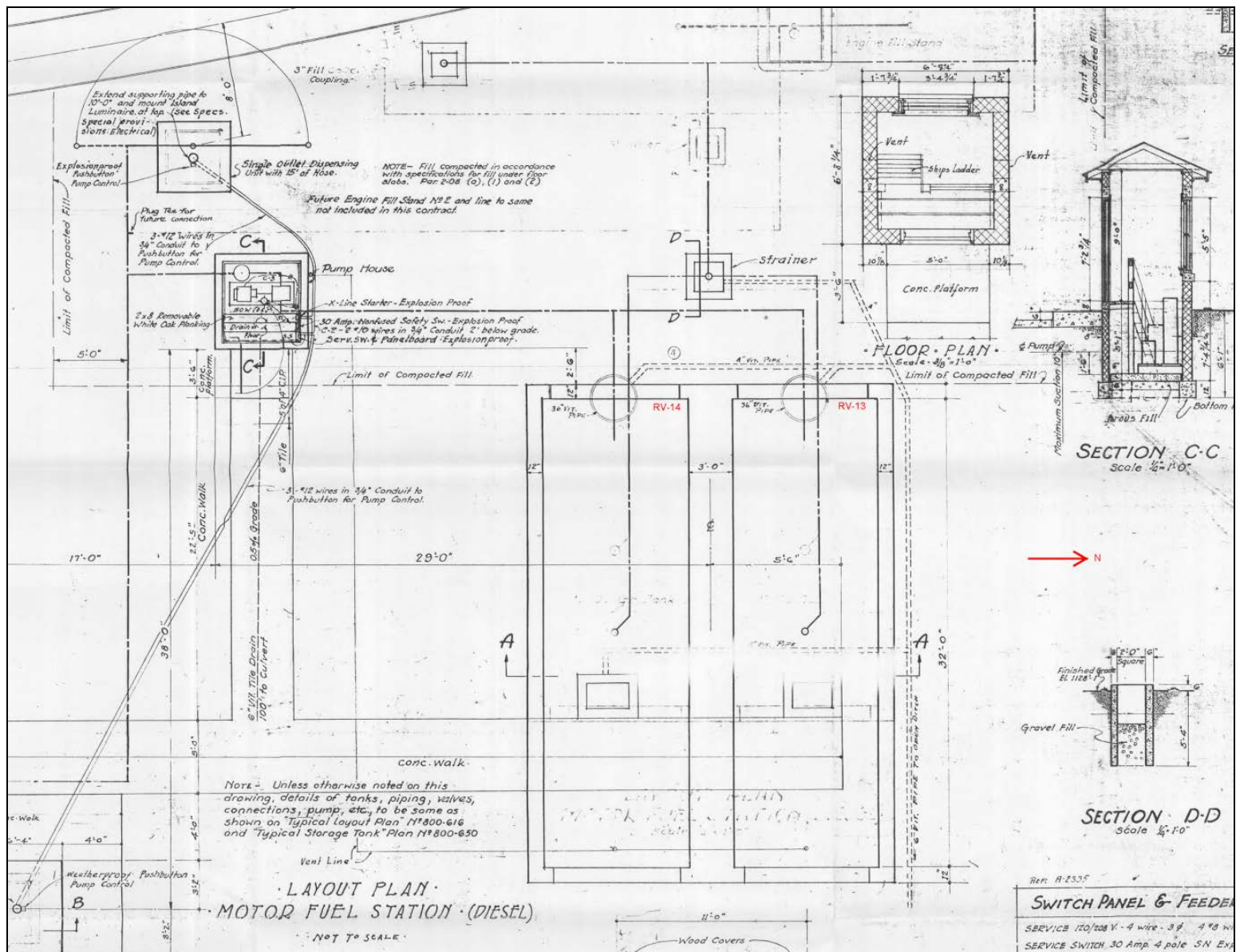
40 NA = Not Applicable

41 ND = Not Detected

42 ppb = parts per billion

43 ppm = parts per million

- 1 **Regulatory Status:** Documented NFA from BUSTR, November 14, 1991. NFA is provided below
- 2 as Figure S-19.
- 3
- 4 **Further Action Recommended for Environmental Assessment and Closure:** None.



1  
2

Figure S-18. Schematic for RV-13 and RV-14 at Building U-6



**Ohio Department of Commerce**

George V. Voinovich, Governor

Division of State Fire Marshal • Bureau of Underground Storage Tank Regulations  
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Portage County  
679298-03 through 05

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

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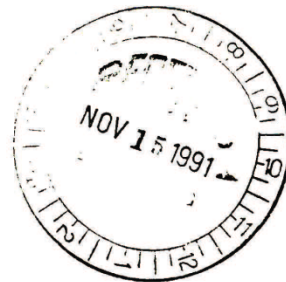
Sincerely,

*Thomas J. Kilbane*

Thomas J. Kilbane  
Environmental Specialist

TJK/sk

cc: File #679298-03 through 05



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File  
Wayne*

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Figure S-19. No Further Action Documentation for RV-13 and RV-14 at Building U-6

1 **UST Identification:** RV-10 (BUSTR ID: 679298-08)

2  
3 **Functional Area:** Charleston Gatehouse; Post #24

4  
5 **Building Location:** F-4

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** June 1969

10  
11 **Date of Removal:** February 1990

12  
13 **Size:** 500 gallons

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** Fuel oil; last stored chromate inhibitor with water

18  
19 **Support Function:** Fuel source for gate house heating furnace

20  
21 **Architectural Drawing:** Portage Ordnance Depot Drawing 6988-519 showing gatehouses is  
22 included in Appendix I. USTs were not included on this schematic.

23  
24 **Photographs:** Photographs of the UST removal were included in the closure report. No other  
25 historical photographs were found as part of this historical records review.

26  
27 **Evidence of Spills:** Upon excavation, some contaminated soil was observed. The UST pit excavation  
28 was extended until contaminated soil was removed. Documentation for the planned extended  
29 excavation is provided in Appendix G. Final extents were confirmed with analytical soil samples. The  
30 analytical results from the final excavation limits were presented in the 1990 Closure Report.

31  
32 **Removal Documentation and Closure Sampling:** Closure activities are documented in the *Review*  
33 *of Underground Storage Tank Closure* (Cardamone Construction 1990). This UST contained a  
34 potassium chromate inhibitor and water to prevent UST corrosion. The UST was removed of  
35 contents and cleaned prior to excavation and removal. The UST was excavated, removed, and  
36 disposed off-site. Soil removed from the excavation was screened using a PID. A summary of the  
37 sampling results of the final excavation are presented below. All samples are in parts per million  
38 (ppm).

39

Sample ID	BTEX	TPH	Total Lead	Total Chromium
East Bottom	ND	ND	ND	5.4
West Bottom	0.2	27	ND	ND

40 BTEX = benzene, toluene, ethylbenzene, and xylenes

41 TPH = Total Petroleum Hydrocarbon

42 ND = Not Detected

43  
44  
45 **Regulatory Status:** In a letter dated February 1, 1991, BUSTR provided notification to RVAAP that  
46 this UST was not regulated under BUSTR, but all information should be forwarded to Ohio EPA  
47 Central Office Division of Remedial Response. Information was forwarded with a cover letter dated

1 February 8, 1991, to the Ohio EPA. No documented response from the Ohio EPA was found during  
2 the historical records review. Correspondences are provided in Appendix G.

3

4 **Further Action Recommended for Environmental Assessment and Closure:** None. Documented  
5 UST removal and soil is under BUSTR action levels.

6

1 **UST Identification:** RV-47 (BUSTR ID: 679298-09)

2  
3 **Functional Area:** Freedom Gatehouse; Post #32

4  
5 **Building Location:** F-5

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** June 1968

10  
11 **Date of Removal:** February 1990

12  
13 **Size:** 500 gallons

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** No. 2 Fuel Oil; last stored chromate inhibitor with water.

18  
19 **Support Function:** Used to supply fuel oil for building process heat

20  
21 **Architectural Drawing:** Portage Ordnance Depot Drawing 6988-519 showing Gatehouses is  
22 included in Appendix I. USTs were not included on this schematic.

23  
24 **Photographs:** Photographs of the UST removal were included in the closure report. No additional  
25 photographs were found during this historical records review.

26  
27 **Evidence of Spills:** None

28  
29 **Removal Documentation and Closure Sampling:** Closure activities are documented in the *Review*  
30 *of Underground Storage Tank Closure* (Cardamone Construction 1990). The UST was removed of  
31 contents and cleaned prior to excavation and removal. The depth to the top of the UST was 2.3 ft bgs.  
32 The UST was excavated, removed, and disposed off-site. Soil removed from the excavation was  
33 screened using a PID. A summary of the sampling results of the final excavation are presented  
34 below.

35

Sample ID	BTEX	TPH	Total Lead	Total Chromium
Bottom South	ND	ND	NA	NA
Bottom North	ND	ND	23	11

36 BTEX = benzene, toluene, ethylbenzene, and xylenes

37 TPH = Total Petroleum Hydrocarbon

38 NA = Not Applicable

39 ND = Not Detected

40  
41 **Regulatory Status:** In a letter dated February 1, 1991, BUSTR provided notification to RVAAP that  
42 this UST was not regulated under BUSTR, but all information should be forwarded to Ohio EPA  
43 Central Office Division of Remedial Response. Information was forwarded with a cover letter dated  
44 February 8, 1991, to the Ohio EPA. No documented response from the Ohio EPA was found during  
45 the historical records review. Correspondences are provided in Appendix G.

46  
47 **Further Action Recommended for Environmental Assessment and Closure:** None. Documented  
48 UST removal and soil is under BUSTR action levels.

1 **UST Identification:** RV-88

2  
3 **Functional Area:** Firehouse #2 at McClintocksburg Rd and South Service Road

4  
5 **Building Location:** Building 1103

6  
7 **Date of Installation:** 1941

8  
9 **Date of Last Use:** 1954 or 1971 based on documentation found during records review

10  
11 **Date of Removal:** unknown

12  
13 **Size:** Unknown

14  
15 **Substance Stored:** No. 2 Diesel Fuel

16  
17 **Support Function:** Heating oil for building boiler

18  
19 **Architectural Drawing:** Building schematics BR5139-3, BR5140-2, and AR5116-1 are provided in  
20 Appendix I. No historical drawing indicated the location of the UST.

21  
22 **Photographs:** A historical photograph of Building 1103 is provided in Appendix H. A photograph  
23 illustrating the location of a vent/fill pipe at Building 1103 is illustrated in the *Investigation and*  
24 *Evaluation of Underground Storage Tanks* (USACE 1989) which is provided in Appendix G. Based  
25 on site drawings and photographs, it is most likely the UST was located on the east side of the  
26 building near the boiler.

27  
28 **Evidence of Spills:** None

29  
30 **Removal Documentation:** No removal documentation was located during this historical records  
31 review. Nozzle New's 1991 removal effort attempted to locate UST RV-88 by searching a 20 ft by 20  
32 ft by 4 ft grid in the suspected vicinity of the UST. Interviews indicated UST piping remains in place  
33 to document former UST location. No piping was observed during 2010 property visits despite  
34 records indicating the presence of 4-inch and 6-inch pipes.

35  
36 **Closure Sampling:** None known

37  
38 **Regulatory Status:** Not regulated by BUSTR

39  
40 **Further Action Recommended for Environmental Assessment and Closure:** Further action is  
41 recommended due to lack of documentation on removal and general lack of data.

42



1 **UST Identification:** RV-11 and RV-22 (BUSTR ID: 679298-02)

2  
3 **Functional Area:** Transportation Storage Area/East Classification Yard

4  
5 **Building Location:** Building 47-59

6  
7 **Date of Installation:** 1941

8  
9 **Date of Removal:** February 1990

10  
11 **Size:** 15,000 gallons each

12  
13 **UST Construction Material:** Steel

14  
15 **Substance Stored:** Diesel Fuel

16  
17 **Support Function:** Fuel Oil Supply for Railroad Yard Boiler House and Sand Drying Pit Operations

18  
19 **Architectural Drawing:** Drawings 1050.1, 1050.2, 1050.4, 1056.201, and 1056.301 illustrate the  
20 USTs and associated layout and are provided in Appendix I. There is a discrepancy from the closure  
21 report and site schematics on where some of the piping runs. However, all piping was removed during  
22 closure according to the report.

23  
24 **Photograph:** Historical photograph of 47-59 that shows the suction line as well as the clear notation  
25 of “diesel fuel” on the building is provided in Appendix H.

26  
27 **Evidence of Spills:** Each UST failed their tank tightness test in January 1990. Documentation of the  
28 tank tightness test is provided in Appendix G. Tanks were removed from service with all contents  
29 emptied following failure of the tank tightness test. Suspected release form submitted to BUSTR.  
30 Tank tightness test results and suspected release forms are provided in Appendix G.

31  
32 **Removal Documentation and Closure Sampling:** Closure activities are documented in the *Final*  
33 *Report for the Removal of Four Underground Storage Tanks* (R&R International 1990). All USTs  
34 were removed of contents and cleaned prior to excavation and removal. The depth to the top of the  
35 USTs was 6 ft bgs. USTs were excavated, removed, and disposed off-site. Bedrock was encountered  
36 during removal. Soil removed from the excavation was screened using a PID. Excavated UST and  
37 UST pit did not have any visual signs of contamination. Approximately 15-20 yards of contaminated  
38 soil was removed from the suction line near the building. A summary of the sampling results are  
39 presented below.

40

Sample ID	BTEX	TPH
RV 11 East	ND (< 2ppb)	22 ppm
RV 11 Center	ND (< 2ppb)	18 ppm
RV 11 West	ND (< 2ppb)	17 ppm
RV-22 North	ND (< 2ppb)	23 ppm
RV-22 Center	ND (< 2ppb)	18 ppm
RV-22 South	ND (< 2ppb)	44 ppm

41 BTEX = benzene, toluene, ethylbenzene, and xylenes

42 TPH = Total Petroleum Hydrocarbon

43 ND = Not Detected

44 ppm = parts per million

45 ppb = parts per billion

46

1 **Regulatory Status:** Documented NFA from BUSTR, April 9, 1992. NFA is provided as Figure  
2 S-20.

3

4 **Further Action Recommended for Environmental Assessment and Closure:** None

5



**Ohio Department of Commerce**

<input type="checkbox"/>	Information
<input type="checkbox"/>	Compliance
<input type="checkbox"/>	Applicable

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

( RAIL YD )

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



1  
2

Figure S-20. No Further Action Documentation for RV-11 and RV-22

1 **UST Identification:** RV-33 (BUSTR ID 679298-01)

2  
3 **Functional Area:** Winklepeck Burning Grounds

4  
5 **Building Location:** Deactivation Furnace (S-340/T-3401)

6  
7 **Date of Installation:** June 1965

8  
9 **Date of Removal:** February 1990

10  
11 **Size:** 2,000 gallons

12  
13 **Substance Stored:** Diesel Fuel

14  
15 **Support Function:** Fuel supply consumed for demilitarization/deactivation furnace.

16  
17 **Architectural Drawing:** No drawings were located of the deactivation furnace during the historical  
18 records review. Documentation indicates that the top of the UST is slightly above ground; sides  
19 mounded up on sides with dirt and weeds. The only site drawing to indicate UST location is from the  
20 1990 closure report and is provided as Figure S-21.

21  
22 **Photographs:** One historical photograph was located of the deactivation furnace. This photograph  
23 was taken prior to demolition of the furnace and is included in Appendix H. The UST had been  
24 removed prior to this photograph.

25  
26 **Evidence of Spills:** RV-33 failed its tank tightness test in January 1990. The UST was drained  
27 immediately after failure of test. Suspected release form submitted to BUSTR. Tank tightness test  
28 results and suspected release forms are provided in Appendix G.

29  
30 **Removal Documentation and Closure Sampling:** Closure activities are documented in the *Final*  
31 *Report for the Removal of Four Underground Storage Tanks* (R&R International 1990). The UST  
32 was removed of contents in January 1990 but cleaned prior to excavation and removal in February  
33 1990. Following removal, the UST was disposed off-site. Soil removed from the UST pit excavation  
34 was screened using a PID. Excavated UST and UST pit did not have any visual signs of  
35 contamination. However, approximately 4 yards of contaminated soil was removed from the fill pipe  
36 area. A summary of the sampling results are presented below.

37

Sample ID	BTEX	TPH
RV-33 North	ND (< 2ppb)	149 ppm
RV-33 Center	ND (< 2ppb)	305 ppm
RV-33 South	ND (< 2ppb)	158 ppm

38 BTEX = benzene, toluene, ethylbenzene, and xylenes

39 TPH = Total Petroleum Hydrocarbon

40 ND = Not Detected

41 ppb = parts per billion

42 ppm = parts per million

43  
44 **Regulatory Status:** Soil is beneath BUSTR action levels. However, BUSTR indicated that RV-33  
45 was not a regulated UST due to its use for storing fuel oil consumed for heating purposes and  
46 information was required to be forwarded to the Ohio EPA. Documentation of correspondence is  
47 included in Appendix G. No documented response from the Ohio EPA was found during the  
48 historical records review. Correspondence letters are provided in Appendix G.

- 1 **Further Action Recommended for Environmental Assessment and Closure:** None. Winklepeck
- 2 Burning Grounds deactivation furnace soil addressed under a CERCLA Record of Decision (ROD)
- 3 and analytical results are below BUSTR action levels.

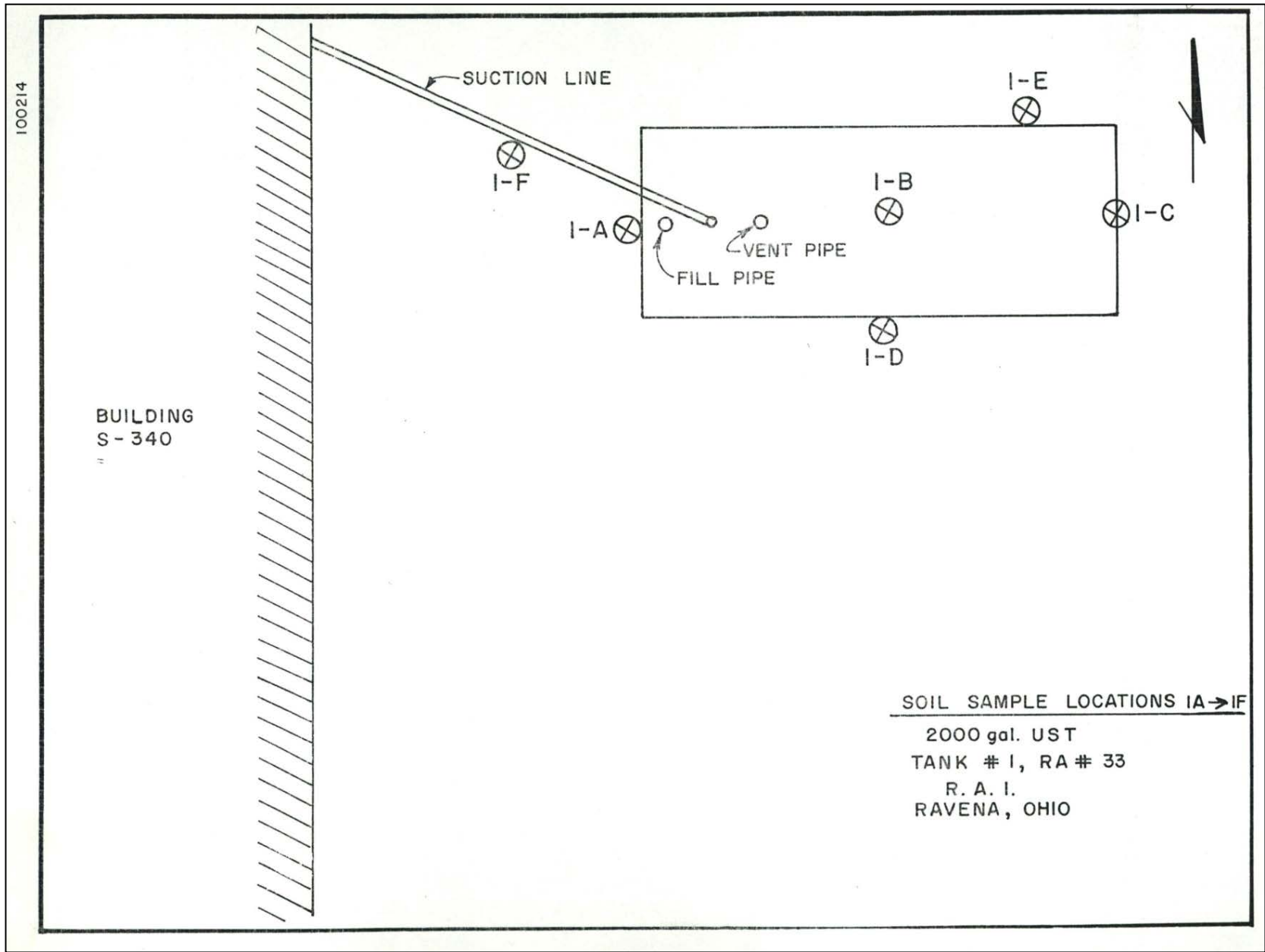


Figure S-21. Sketch of Deactivation Furnace UST (RV-33) from Closure Report

1 **UST Identification:** RV-55 and RV-56

2  
3 **Functional Area:** Load Line 1

4  
5 **Building Location:** Building CC-1; Powerhouse #1

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** 1971

10  
11 **Date of Removal:** 1991

12  
13 **Size:** 20,000 gallons each

14  
15 **Substance Stored:** No. 5 Heating Oil

16  
17 **Support Function:** Support powerhouse heating functions for Load Line 1

18  
19 **Architectural Drawing:** Historical schematics 6934.201 and 6934 304.301 are included in Appendix  
20 I. A portion of the schematic is included as Figure S-22 to illustrate UST location and nomenclature.

21  
22 **Photographs:** Historical photographs of Building CC-1 are provided in Appendix H. USTs and  
23 associated features cannot be seen in these photographs.

24  
25 **Evidence of Spills:** None

26  
27 **Removal Documentation and Closure Sampling:** No formal closure sampling was required since  
28 UST is exempt and not regulated by BUSTR. The USTs were located 2 ft bgs beneath a concrete pad.  
29 Fill lines for the USTs were located directly adjacent to the former railroad tracks. The UST was  
30 emptied, cleaned, and removed. Samples were collected from UST pit for TPH, BTEX, Total Pb, and  
31 Total Cr. The UST excavation was visibly clean and all PID measurements were <10 ppm. Sampling  
32 results and illustration of sample locations are included in the *UST Closure Report for the Ravenna*  
33 *Arsenal* (Nozzle New 1991). A summary of the sample results is provided below:

34

Sample ID	BTEX	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
UST #55 Sample 1	ND (< 2 ppb)	13	10.3	1.71
UST #55 Sample 2	ND (< 2 ppb)	10	10.1	2.07
UST #56 Sample 1	ND (< 2 ppb)	10	11.7	1.95
UST #56 Sample 2	ND (< 2 ppb)	14	11.7	1.94

35 BTEX = benzene, toluene, ethylbenzene, and xylenes

36 TPH = Total Petroleum Hydrocarbon

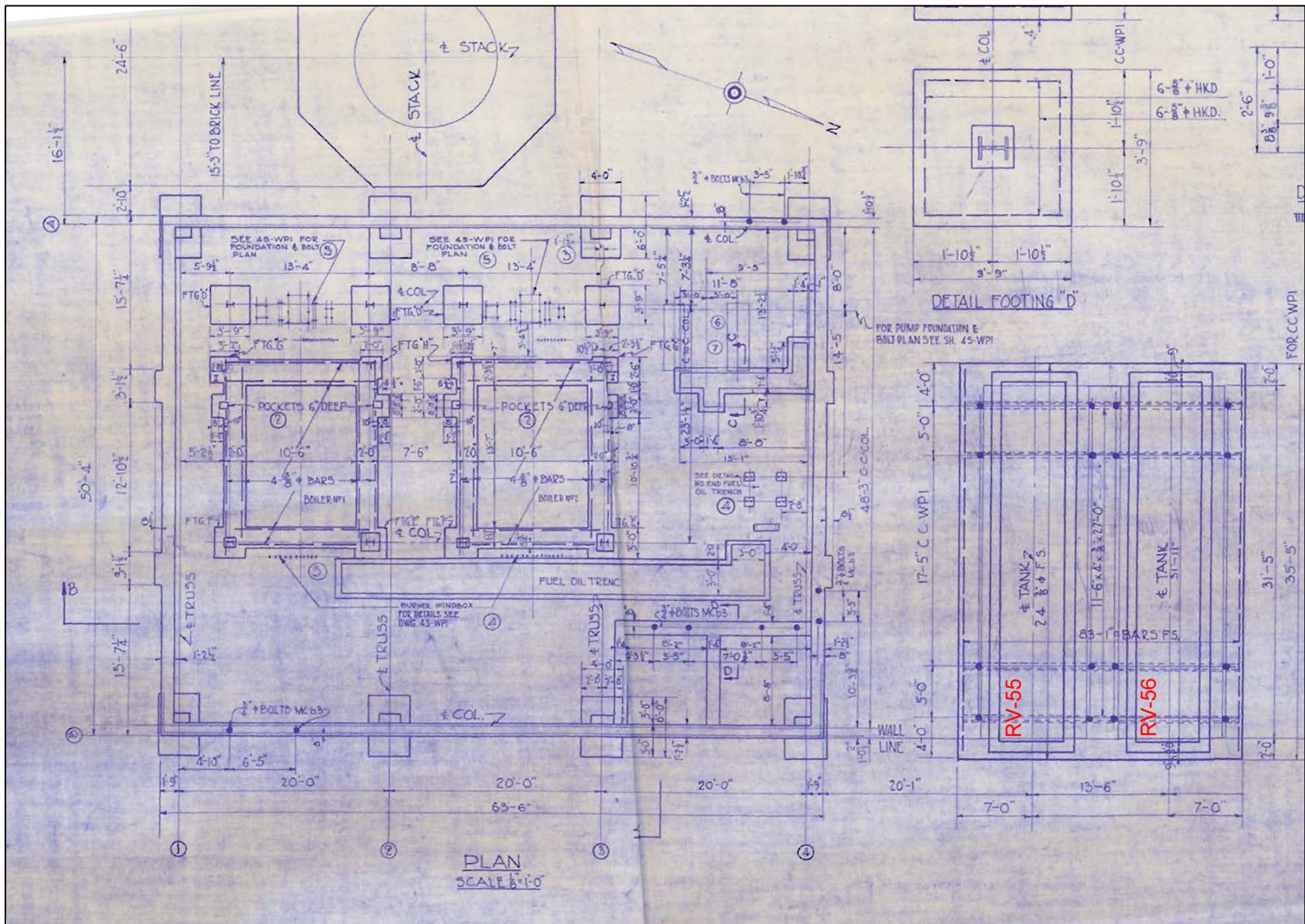
37 UST = Underground Storage Tank

38 ppb = parts per billion

39 ppm = parts per million

40  
41 **Regulatory Status:** Not applicable; not regulated under BUSTR.

42  
43 **Further Action Recommended for Environmental Assessment and Closure:** None. Sample  
44 results are less than BUSTR action levels. Soil at Load Line 1 is regulated under the CERCLA ROD.



1

Figure S-22. Schematic of USTs RV-55 and RV-56 Located at the Load Line 1 Powerhouse



1 **UST Identification:** RV-57 and RV-58

2  
3 **Functional Area:** Load Line 2

4  
5 **Building Location:** Building DC-1; Powerhouse #2

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** 1971

10  
11 **Date of Removal:** 1991

12  
13 **Size:** 15,000 gallons each

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** No. 5 Heating Oil

18  
19 **Support Function:** Support powerhouse heating functions for Load Line 2; process building heat

20  
21 **Architectural Drawing:** Historical schematics 6934.201 and 6934 304.302 are included in Appendix  
22 I. A portion of a schematic is included as Figure S-23 to illustrate UST location and nomenclature.

23  
24 **Photographs:** Historical photographs are provided in Appendix H. USTs are not clearly visible in  
25 these historical photographs.

26  
27 **Evidence of Spills:** None

28  
29 **Removal Documentation and Closure sampling:** No formal closure sampling was required since  
30 UST is exempt and not regulated by BUSTR. The USTs were located 3 ft bgs beneath a concrete pad.  
31 Fill lines for the USTs were located directly adjacent to the former railroad tracks. The UST was  
32 emptied, cleaned, and removed. Samples were collected from UST pit for TPH, BTEX, Total Pb, and  
33 Total Cr. The UST excavation was visibly clean and all PID measurements were <10 ppm. Sampling  
34 results and illustration of sample locations are included in the *UST Closure Report for the Ravenna*  
35 *Arsenal* (Nozzle New 1991). A summary of the sample results is provided below:

36

Sample ID	BTEX	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
UST #57 Sample 1	ND (< 2 ppb)	15	7.05	12.2
UST #57 Sample 2	ND (< 2 ppb)	15	7.58	14.1
UST #58 Sample 1	ND (< 2 ppb)	13	15.8	10.6
UST #58 Sample 2	ND (< 2 ppb)	10	6.63	13.2

37 BTEX = benzene, toluene, ethylbenzene, and xylenes

38 TPH = Total Petroleum Hydrocarbon

39 ND = Not Detected

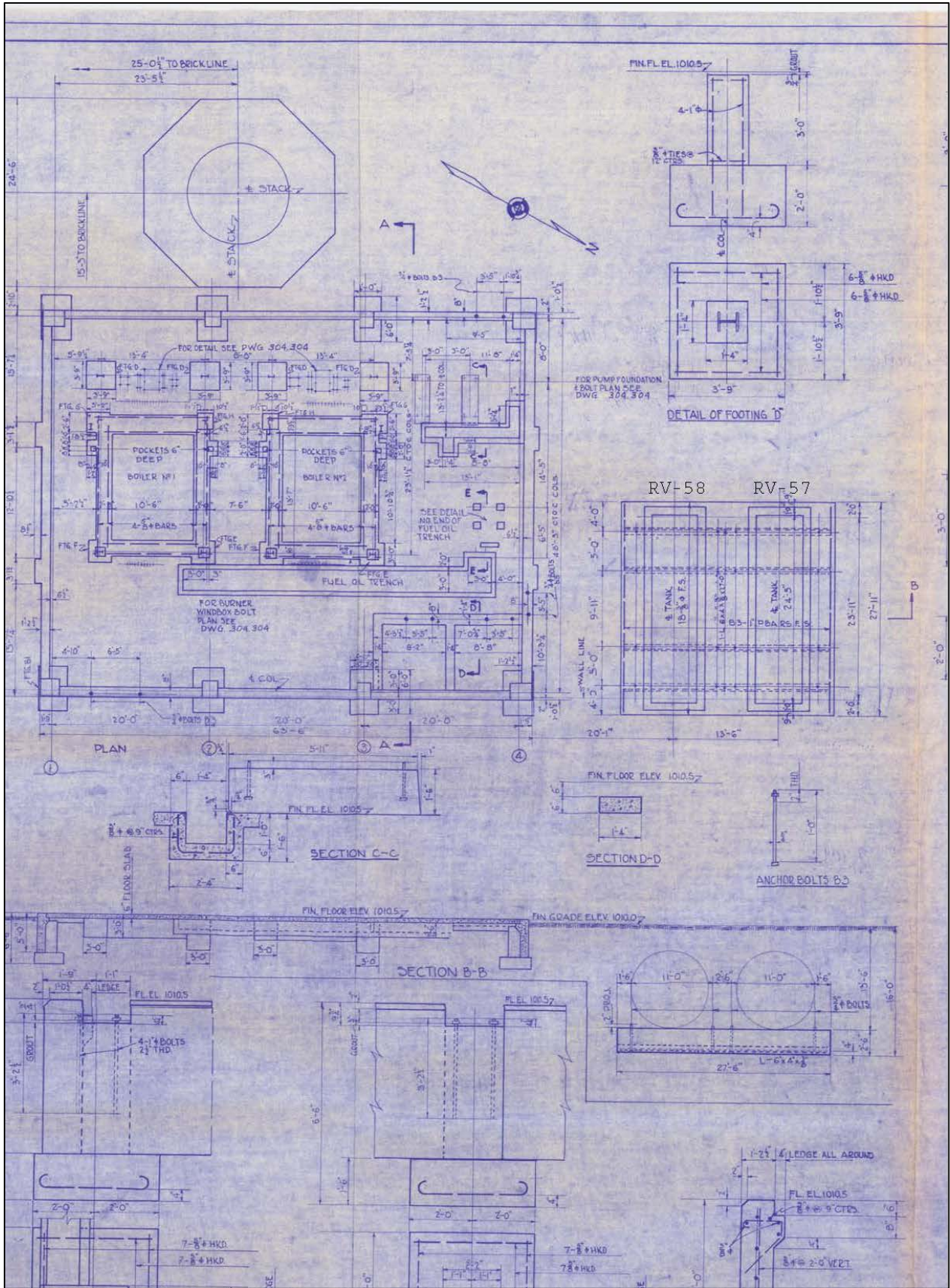
40 UST = Underground Storage Tank

41 ppb = parts per billion

42 ppm = parts per million

43  
44 **Regulatory Status:** Not applicable; not regulated by BUSTR.

- 1 **Further Action Recommended for Environmental Assessment and Closure:** None. Sample
- 2 results less than BUSTR action levels. Soil at Load Line 2 is regulated under the CERCLA ROD.
- 3



1  
2

Figure S-23. Schematic of USTs RV-57 and RV-58 Located at the Load Line 2 Powerhouse DC-1

1 **UST Identification:** RV-20 and RV-21

2  
3 **Functional Area:** Load Line 2

4  
5 **Building Location:** Building DB-27

6  
7 **Date of Installation:** 1969

8  
9 **Date Last Used:** 1971

10  
11 **Date of Removal:** 1991

12  
13 **Size:** 15,000 gallons each

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** No. 5 Heating Oil

18  
19 **Support Function:** Support Powerhouse industrial heating boiler functions for Load Line 2

20  
21 **Architectural Drawing:** UST schematics shown in Drawing 37-01-01 Sheet 56 and Sheet 78 are  
22 provided in Appendix I. A portion of a schematic is included as Figure S-24 to illustrate the location  
23 and nomenclature of USTs.

24  
25 **Photographs:** No historical photographs were located for DB-27 during the historical records review.

26  
27 **Evidence of Spills:** None

28  
29 **Removal Documentation and Closure Sampling:** No formal closure sampling was required as the  
30 UST is exempt and not regulated by BUSTR. The top of the USTs were located 2 ft bgs. Fill lines for  
31 the USTs were located directly adjacent to the former railroad tracks away from the USTs. It is  
32 undocumented whether fill lines were removed or abandoned in place. USTs were emptied, cleaned,  
33 and removed. Samples were collected from UST pit for TPH, BTEX, Total Pb, and Total Cr.  
34 Groundwater was encountered within the UST pit and was also sampled. The UST excavation was  
35 visibly clean and all PID measurements were <10 ppm. Sampling results and illustration of sample  
36 locations are included in the *UST Closure Report for the Ravenna Arsenal* (Nozzle New 1991). A  
37 summary of the sample results is provided below:

38

Sample ID	BTEX (ppb)	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
UST #20 Sample 1	ND (<2 ppb)	10	9.76	15.7
UST #20 Sample 2	ND (<2 ppb)	12	10.1	15.4
UST #21 Sample 1	ND (<2 ppb)	10	8.64	14.6
UST #21 Sample 2	ND (<2 ppb)	< 10 ND	9.34	16.5
UST Cavity Water	ND <2µg/L	ND <1mg/L	ND <0.01 mg/L	ND <0.01 mg/L

39 BTEX = benzene, toluene, ethylbenzene, and xylenes

40 TPH = Total Petroleum Hydrocarbon

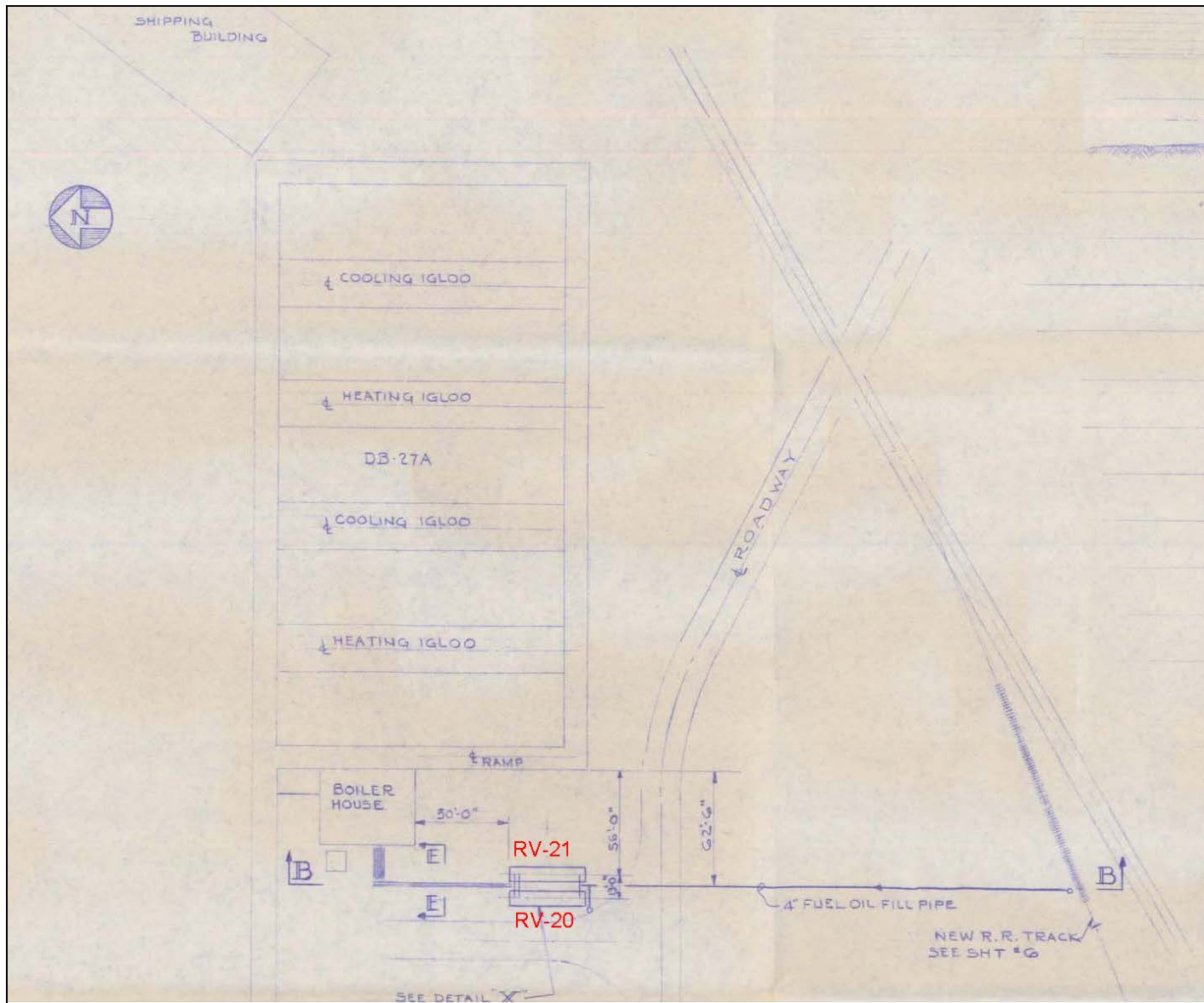
41 ND = Not Detected

42 UST = Underground Storage Tank

43 ppb = parts per billion

44 ppm = parts per million

- 1 **Regulatory Status:** Not applicable; not regulated by BUSTR.
- 2
- 3 **Further Action Recommended for Environmental Assessment and Closure:** None. Sample
- 4 results less than BUSTR action levels. Soil at Load Line 2 is regulated under the CERCLA ROD.



1

2

Figure S-24. Schematic of USTs RV-57 and RV-58 Located at the Load Line 2 Powerhouse DB-27

1 **UST Identification:** RV-63 and RV-64

2  
3 **Functional Area:** Load Line 4

4  
5 **Building Location:** Building G4; Powerhouse #7

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** 1971

10 **Date of Removal:** 1991

11  
12 **Size:** 20,000 gallons each

13  
14 **Substance Stored:** No. 5 Heating Oil

15  
16 **Support Function:** Support powerhouse industrial heating boiler functions for Load Line 4

17  
18 **Architectural Drawing:** UST schematics provided on drawings 404.301 and 400.3 and are available  
19 in Appendix I. A portion of a schematic is included as Figure S-25 to illustrate the location and  
20 nomenclature of USTs.

21  
22 **Photographs:** Historical photographs are provided in Appendix H. USTs are not visible in these  
23 historical photographs.

24  
25 **Evidence of Spills:** None

26  
27 **Removal Documentation and Closure Sampling:** No formal closure sampling was required as the  
28 USTs were exempt and not regulated by BUSTR. The top of the USTs were located 4 ft bgs beneath a  
29 concrete pad. USTs were emptied, cleaned, and removed. Samples were collected from UST pit for  
30 TPH, BTEX, Total Pb, and Total Cr. The UST excavation was visibly clean and all PID  
31 measurements were <10 ppm. Sampling results and illustration of sample locations are included in  
32 the *UST Closure Report for the Ravenna Arsenal* (Nozzle New 1991) which is provided in Appendix  
33 G. A summary of the sample results is provided below:

34

Sample ID	BTEX (ppb)	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
UST #63 Sample 1	ND (<2)	10	8.24	6.60
UST #63 Sample 2	ND (<2)	12	7.85	6.75
UST #64 Sample 1	ND (<2)	10	6.90	6.48
UST #64 Sample 2	ND (<2)	12	6.18	6.10

35 BTEX = benzene, toluene, ethylbenzene, and xylenes

36 TPH = Total Petroleum Hydrocarbon

37 ND = Not Detected

38 UST = Underground Storage Tank

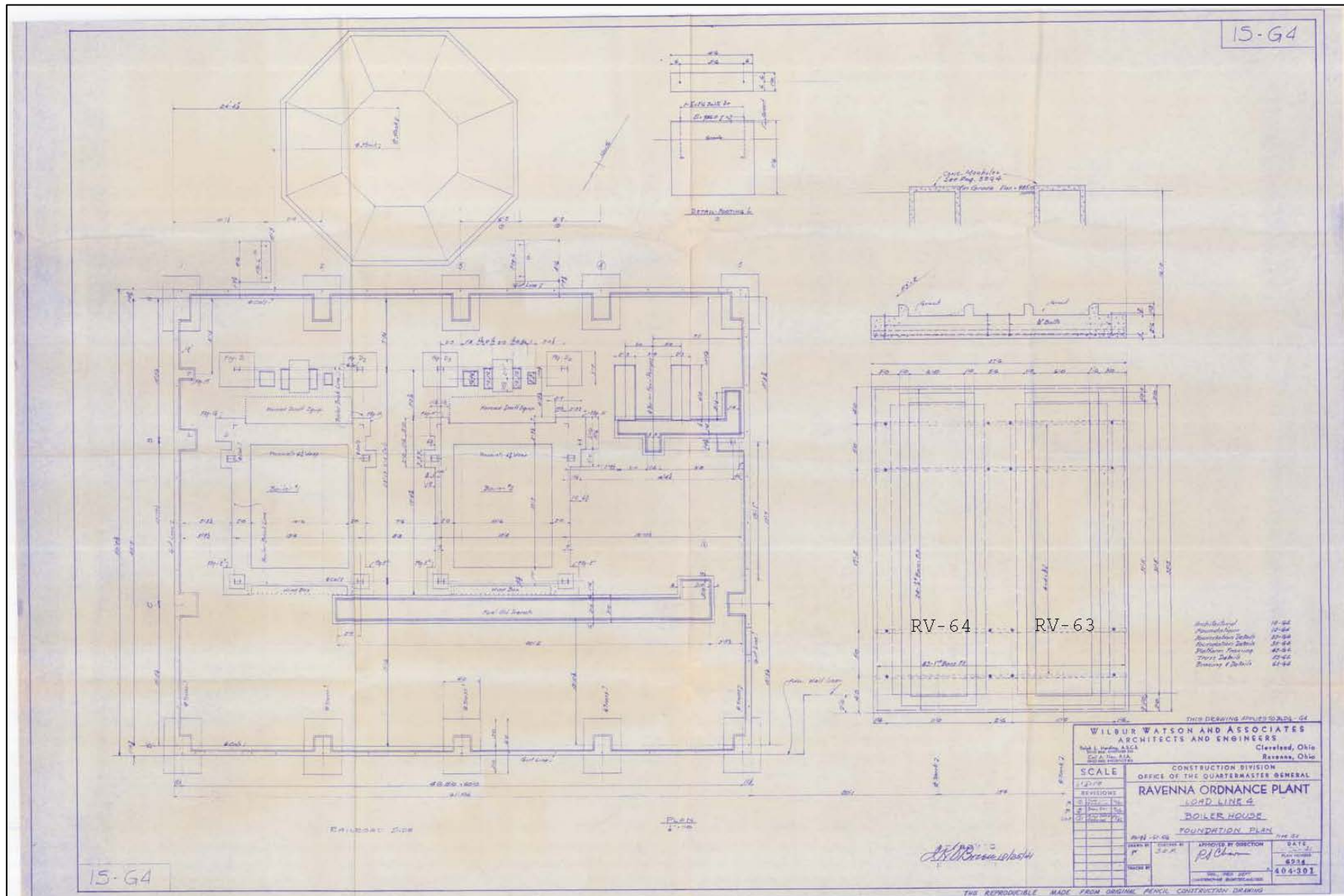
39 ppb = parts per billion

40 ppm = parts per million

41  
42  
43 **Regulatory Status:** Not applicable; not regulated by BUSTR.

- 1 **Further Action Recommended for Environmental Assessment and Closure:** None. Sample
- 2 results less than BUSTR action levels. Soil at Load Line 4 is regulated under the CERCLA ROD.





1

Figure S-25. Schematic of USTs RV-63 and RV-64 Located at the Load Line 4 Powerhouse G4

1 **UST Identification:** RV-59 and RV-60

2  
3 **Functional Area:** Powerhouse #4

4  
5 **Building Location:** Building 52-15

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** 1971

10  
11 **Date of Removal:** 1991

12  
13 **Size:** 20,000 gallons each

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** No. 5 Heating Oil

18  
19 **Support Function:** Support powerhouse industrial heating boiler functions for Fuze and Booster  
20 Load Lines

21  
22 **Architectural Drawing:** UST schematics are provided on drawings 609.301, 601.7, and 1152.501,  
23 and are available in Appendix I. A portion of a schematic is included as Figure S-26 to illustrate the  
24 location and nomenclature of USTs.

25  
26 **Photographs:** No historical photographs were located for Powerhouse #4 during the historical  
27 records review.

28  
29 **Evidence of Spills:** None

30  
31 **Removal Documentation and Closure Sampling:** No formal closure sampling was required since  
32 UST is exempt and not regulated by BUSTR. USTs were emptied, cleaned, and removed. Samples  
33 were collected from UST pit for TPH, BTEX, Total Pb, and Total Cr. Groundwater was encountered  
34 during excavation of the UST within the UST pit and was also sampled. The UST excavation was  
35 visibly clean and all PID measurements were <10 ppm. Sampling results and illustration of sample  
36 locations are included in the *UST Closure Report for the Ravenna Arsenal* (Nozzle New 1991). A  
37 summary of the sample results is provided below:

38

Sample ID	BTEX (ppb)	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
UST #59 Sample 1	ND (< 2)	ND <10	10.5	6.23
UST #59 Sample 2	ND (<2)	ND <10	11.6	6.13
UST #60 Sample 1	ND (<2)	ND <10	10.5	6.15
UST #60 Sample 2	ND (<2)	ND <10	12.1	6.69
UST Cavity Water	ND (<2)	ND < 1mg/L	NA	NA

39 BTEX = benzene, toluene, ethylbenzene, and xylenes

40 TPH = Total Petroleum Hydrocarbon

41 NA = Not Applicable

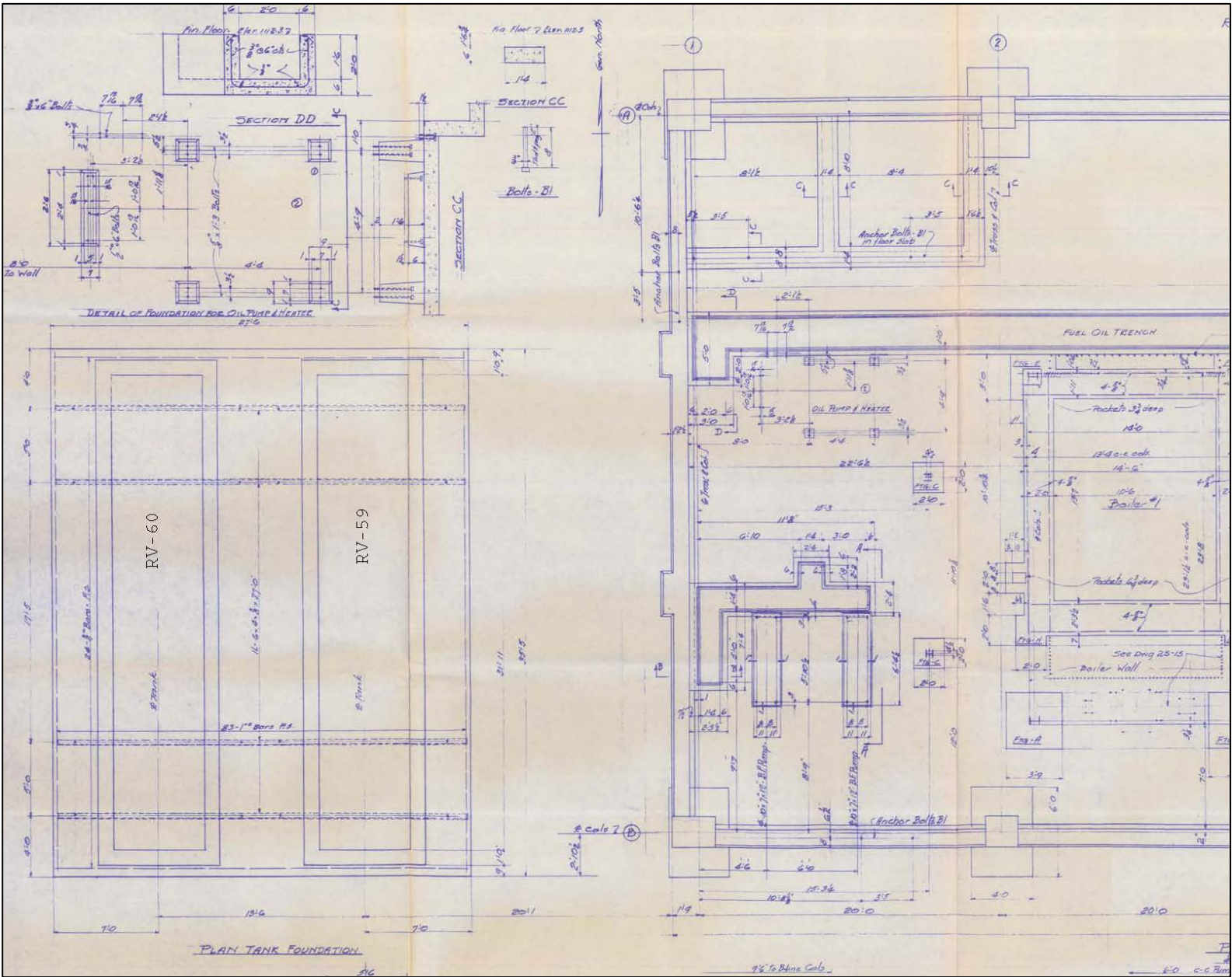
42 ND = Not Detected

43 UST = Underground Storage Tank

44 ppb = parts per billion

45 ppm = parts per million

- 1 **Regulatory Status:** Not applicable; not regulated by BUSTR.
- 2
- 3 **Further Action Recommended for Environmental Assessment and Closure:** None. Sample
- 4 results less than BUSTR action levels.



1

Figure S-26. Schematic of USTs RV-59 and RV-60 Located at Powerhouse #4

1 **UST Identification:** RV-61 and RV-62

2  
3 **Functional Area:** Powerhouse #5

4  
5 **Building Location:** Building 51-25

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** 1971

10  
11 **Date of Removal:** 1991

12  
13 **Size:** 20,000 gallons each

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** No. 5 Heating Oil

18  
19 **Support Function:** Support powerhouse industrial heating boiler functions for Fuze and Booster  
20 Load Lines

21  
22 **Architectural Drawing:** UST schematic provided on drawing 610.301 and is provided in Appendix  
23 I. A portion of the schematic is included as Figure S-27 to illustrate the location and nomenclature of  
24 USTs.

25  
26 **Photographs:** Historical photographs of the powerhouse and UST removal are provided in Appendix  
27 H.

28  
29 **Evidence of Spills:** None

30  
31 **Removal Documentation and Closure Sampling:** No formal closure sampling was required as the  
32 UST is exempt and not regulated by BUSTR. The top of the USTs were encountered at 4 ft bgs under  
33 a concrete pad. USTs were emptied, cleaned, and removed. Samples were collected from UST pit for  
34 TPH, BTEX, Total Pb, and Total Cr. The UST excavation was visibly clean and all PID  
35 measurements were <10 ppm. Sampling results and illustration of sample locations are included in  
36 the *UST Closure Report for the Ravenna Arsenal* (Nozzle New 1991). A summary of the sample  
37 results is provided below:

38

Sample ID	BTEX (ppb)	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
UST #61 Sample 1	ND (<2)	14	9.04	2.27
UST #61 Sample 2	ND (<2)	ND (<10)	9.63	2.09
UST #62 Sample 1	ND (<2)	13	10.6	3.35
UST #62 Sample 2	ND (<2)	ND (<10)	12.5	3.96

39 BTEX = benzene, toluene, ethylbenzene, and xylenes

40 TPH = Total Petroleum Hydrocarbon

41 ND = Not Detected

42 UST = Underground Storage Tank

43 ppb = parts per billion

44 ppm = parts per million

45

- 1 **Regulatory Status:** Not applicable; not regulated by BUSTR.
- 2
- 3 **Further Action Recommended for Environmental Assessment and Closure:** None. Below
- 4 BUSTR action levels.

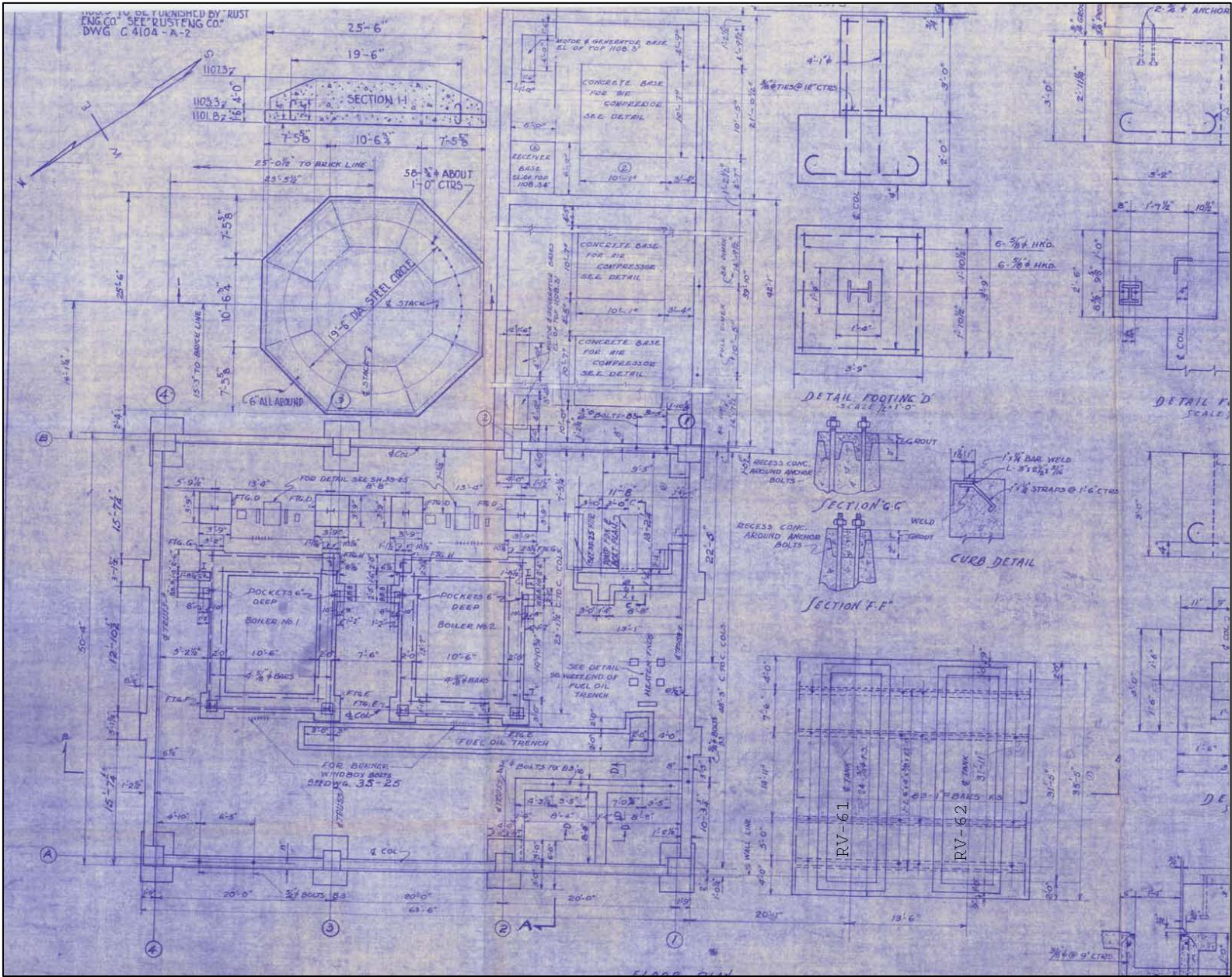


Figure S-27. Schematic of USTs RV-61 and RV-62 Located at Powerhouse #5

1 **UST Identification:** RV-29

2  
3 **Functional Area:** Load Line 12

4  
5 **Building Location:** FE-22

6  
7 **Date of Installation:** 1941

8  
9 **Date Last Used:** 1992

10  
11 **Date of Removal:** 1993

12  
13 **Size:** 1,000 Gallons

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** No. 2 Fuel Oil

18  
19 **Support Function:** No. 2 Fuel Oil used to heat the Change house building heater

20  
21 **Architectural Drawing:** No schematics were located during the historical records review. A sketch  
22 from the closure report is provided in Appendix I to illustrate UST location.

23  
24 **Photograph:** Historical photograph provided in Appendix H. Former UST and associated structures  
25 are not visible in this photograph.

26  
27 **Evidence of Spills:** None

28  
29 **Removal Documentation and Closure Sampling:** All closure activities are documented in the *Final*  
30 *Closure Report for RVAAP* (Autumn Technical Services 1993). The UST was removed of contents  
31 and cleaned prior to excavation and removal. The UST and piping were excavated, removed, and  
32 disposed off-site. Soil removed from the excavation was screened using a PID. The excavation was  
33 visually clean and showed no signs of contamination. A summary of the sampling results are  
34 presented below.

35

Sample ID	Sample Depth	BTEX (ppb)	TPH (ppm)	PAHs (ppm)	PID Reading (ppm)
845 North End	7.5'	NA	88	ND	53
846 South End	7.5'	ND (<2)	197	ND	94

36 BTEX = benzene, toluene, ethylbenzene, and xylenes

37 TPH = Total Petroleum Hydrocarbon

38 NA = Not Applicable

39 ND = Not Detected

40 PAH = Polycyclic Aromatic Hydrocarbon

41 PID = Photoionization Detector

42 ppm = parts per million

43 ppb = parts per billion

44  
45 **Regulatory Status:** Exempt; not regulated

46  
47 **Further Action Recommended for Environmental Assessment and Closure:** None. Samples do  
48 not exceed BUSTR action levels. Soil at Load Line 12 addressed under a CERCLA ROD.



1 **UST Identification:** RV-73

2  
3 **Functional Area:** Load Line 12

4  
5 **Building Location:** T-2501

6  
7 **Date of Installation:** 1981

8  
9 **Date Last Used:** 1992

10  
11 **Date of Removal:** 1993

12  
13 **Size:** 5,000 gallons

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** No. 2 Fuel Oil

18  
19 **Support Function:** Building and Melt-Out Process Heat

20  
21 **Architectural Drawing:** No schematics were located during the historical records review. A sketch  
22 from the closure report is provided in Appendix I to illustrate UST location.

23  
24 **Photographs:** No historical photographs were located during the historical records review.

25  
26 **Evidence of Spills:** None

27  
28 **Removal Documentation and Closure Sampling:** All closure activities are documented in the *Final*  
29 *Closure Report for RVAAP* (Autumn Technical Services 1993). The UST was removed of contents  
30 and cleaned prior to excavation and removal. The depth to the top of the UST was approximately 2 ft  
31 bgs. It was noted soil was mounded over the UST. The UST and piping were excavated, removed,  
32 and disposed off-site. Soil removed from the excavation was screened using a PID. The excavation  
33 was visually clean and showed no signs of contamination. A summary of the sampling results are  
34 presented below.

35

Sample ID	Sample Depth	BTEX (ppb)	TPH (ppm)	PAHs (ppm)	PID Reading (ppm)
833 North End	9.5 ft	ND (<2)	69	ND	41
834 South End	9.5 ft	ND (<2)	15	ND	8

36 BTEX = benzene, toluene, ethylbenzene, and xylenes

37 TPH = Total Petroleum Hydrocarbon

38 ND = Not Detected

39 PAH = Polycyclic Aromatic Hydrocarbons

40 PID = Photoionization Detector

41 ppm = parts per million

42 ppb = parts per billion

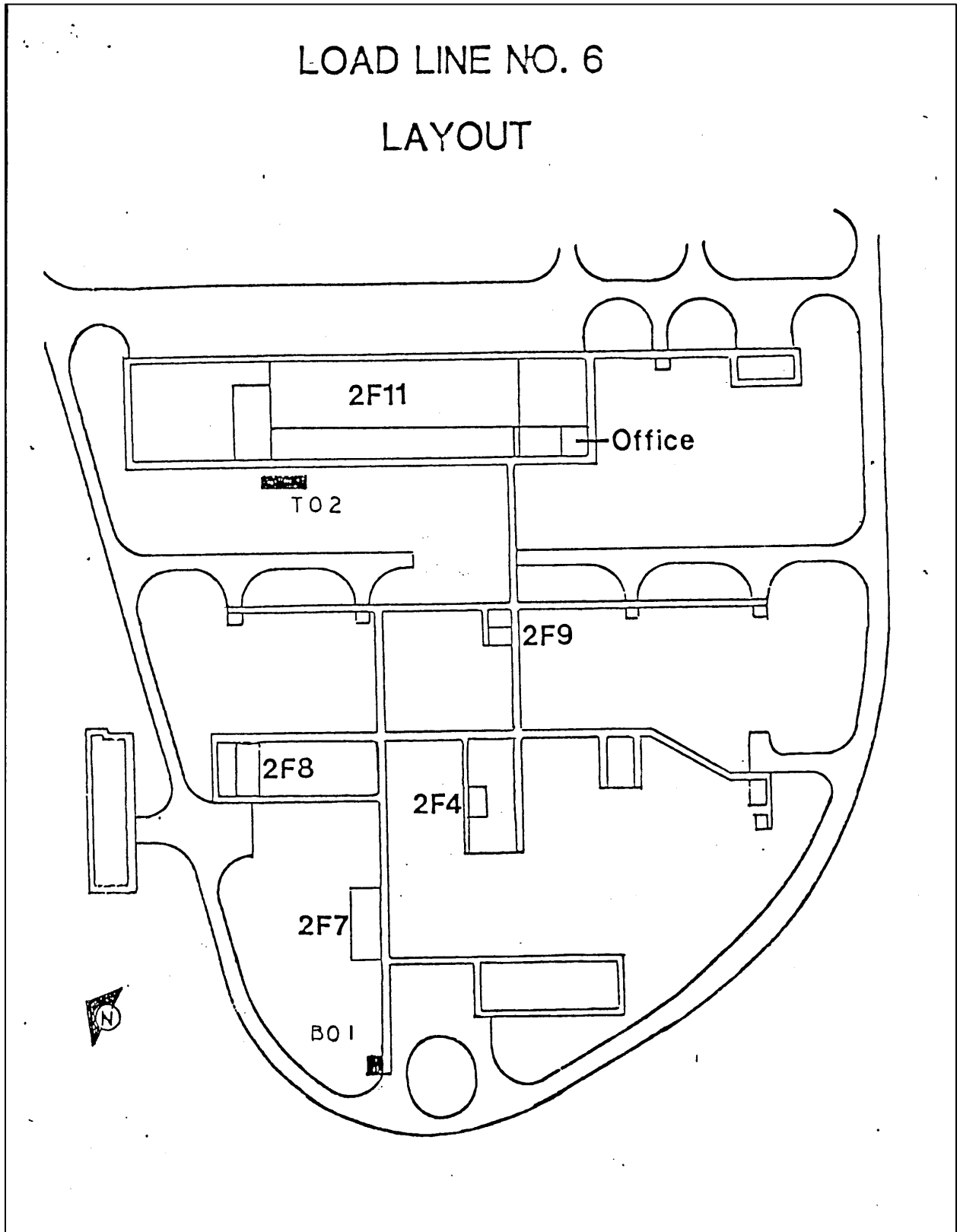
43  
44  
45 **Regulatory Status:** Exempt, not regulated by BUSTR.

46  
47 **Further Action Recommended for Environmental Assessment and Closure:** None. Samples do  
48 not exceed BUSTR action levels. Soil at Load Line 12 addressed under a CERCLA ROD.

1 **UST Identification:** RV-41, tenant UST Physics International defense research  
2  
3 **Functional Area:** Load Line 6  
4  
5 **Building Location:** 2F-11  
6  
7 **Date of Installation:** 1981  
8  
9 **Date of Removal:** 1993  
10  
11 **Size:** 6,000 gallons  
12  
13 **UST Construction Material:** Steel  
14  
15 **Substance Stored:** No. 2 Fuel Oil  
16  
17 **Support Function:** Tenant Owned Building and Process Heat  
18  
19 **Architectural Drawing:** No architectural drawing or schematics of this UST could be obtained. The  
20 only documentation is a site sketch showing the UST location, which is provided as Figure S-28 and  
21 in Appendix I.  
22  
23 **Photograph:** One historical photograph of 2F-11 was located as part of the historical record review.  
24 The UST and associated structures are not visible in this photograph.  
25  
26 **Evidence of Spills:** None  
27  
28 **Removal Documentation and Closure Sampling:** Permits to remove the UST were filed with  
29 BUSTR and supporting documentation including the permit, and State Fire Marshal inspections are  
30 provided in Appendix G. Despite documented removal, the condition of the UST pit and whether  
31 closure sampling was conducted is unknown.  
32  
33 **Regulatory Status:** Not regulated; exempt  
34  
35 **Further Action Recommended for Environmental Assessment and Closure:** Further action  
36 recommended due to lack of data. Soil at Load Line 6 to be addressed under a separate CERCLA  
37 decision.

# LOAD LINE NO. 6

## LAYOUT



1  
2

Figure S-28. Schematic of UST RV-41 Located at Load Line 6

1 **UST Identification:** RV-50

2  
3 **Functional Area:** Water Works #4

4  
5 **Building Location:** Waterworks #4

6  
7 **Date of Installation:** 1976

8  
9 **Date Last Used:** 1981

10  
11 **Date of Removal:** 1991

12  
13 **Size:** 1,000 gallons

14  
15 **UST Construction Material:** Steel

16  
17 **Substance Stored:** No. 2 Fuel Oil

18  
19 **Support Function:** Heating oil supply for building's boiler

20  
21 **Architectural Drawing:** Architectural drawings AS BLT 26-04-06 SW-18, M-68, and M-70 are  
22 included in Appendix I. Figure S-29 illustrates the location of the UST.

23  
24 **Photographs:** No historical photographs were located for this UST during the historical records  
25 review.

26  
27 **Evidence of Spills:** None

28  
29 **Removal Documentation and Closure Sampling:** No formal closure sampling was required  
30 because UST is exempt and not regulated by BUSTR. The depth to the top of the UST was 3 ft bgs.  
31 Samples were collected from UST pit for TPH, BTEX, Total Pb, and Total Cr. The UST pit was  
32 visibly clean and all PID measurements were <10 ppm. Sampling results and illustration of sample  
33 locations are included in the *UST Closure Report for the Ravenna Arsenal* (Nozzle New 1991). A  
34 summary of the sample results is provided below.

35

Sample ID	BTEX (ppb)	TPH (ppm)	Total Lead (ppm)	Total Chromium (ppm)
UST #50 Sample 1	ND (<2)	18	3.85	3.90
UST #50 Sample 2	ND (<2)	12	4.43	3.37

36 BTEX = benzene, toluene, ethylbenzene, and xylenes

37 TPH = Total Petroleum Hydrocarbon

38 ND = Not Detected

39 ppb = parts per billion

40 ppm = parts per million

41 UST = Underground Storage Tank

42  
43 **Regulatory Status:** Not regulated; exempt.

44  
45 **Further Action Recommended for Environmental Assessment and Closure:** None. Sample  
46 results are less than BUSTR action levels.

1 **UST Identification:** RV-51 (BUSTR ID: 67000501-N00008)

2  
3 **Functional Area:** Waterworks #3 and #4

4  
5 **Building Location:** Waterworks #3 and #4

6  
7 **Date of Installation:** August 1976

8  
9 **Date of Removal:** 1993

10  
11 **Size:** 550 gallons

12  
13 **UST Construction Material:** Steel

14  
15 **Substance Stored:** No. 2 Fuel Oil

16  
17 **Support Function:** Fuel supply for emergency electricity at Waterworks #3 and #4

18  
19 **Architectural Drawing:** Architectural drawings AS BLT 26-04-06 SW-18, M-68, and M-70 are  
20 included in Appendix I. Figure S-29 illustrates the location of the UST.

21  
22 **Photographs:** Historical photographs pre-UST removal provided in Appendix H. UST and associated  
23 features can be seen in these photographs.

24  
25 **Evidence of Spills:** None

26  
27 **Removal Documentation and Closure Sampling:** Samples were collected from UST pit for TPH  
28 and BTEX. The UST pit was visibly clean and all PID measurements were <10 ppm. Sampling  
29 results and illustration of sample locations are included in the Autumn Technical Services 1993  
30 closure report which is provided in Appendix G and summarized below.

31

<b>Sample ID</b>	<b>BTEX (ppb)</b>	<b>TPH (ppm)</b>	<b>PAHs (ppm)</b>
UST #51 Sample 843	ND (<2)	70	ND
UST #51 Sample 850	ND (<2)	16	ND

32 BTEX = benzene, toluene, ethylbenzene, and xylenes

33 TPH = Total Petroleum Hydrocarbon

34 PAH = Polycyclic Aromatic Hydrocarbon

35 ND = Not Detected

36 ppb = parts per billion

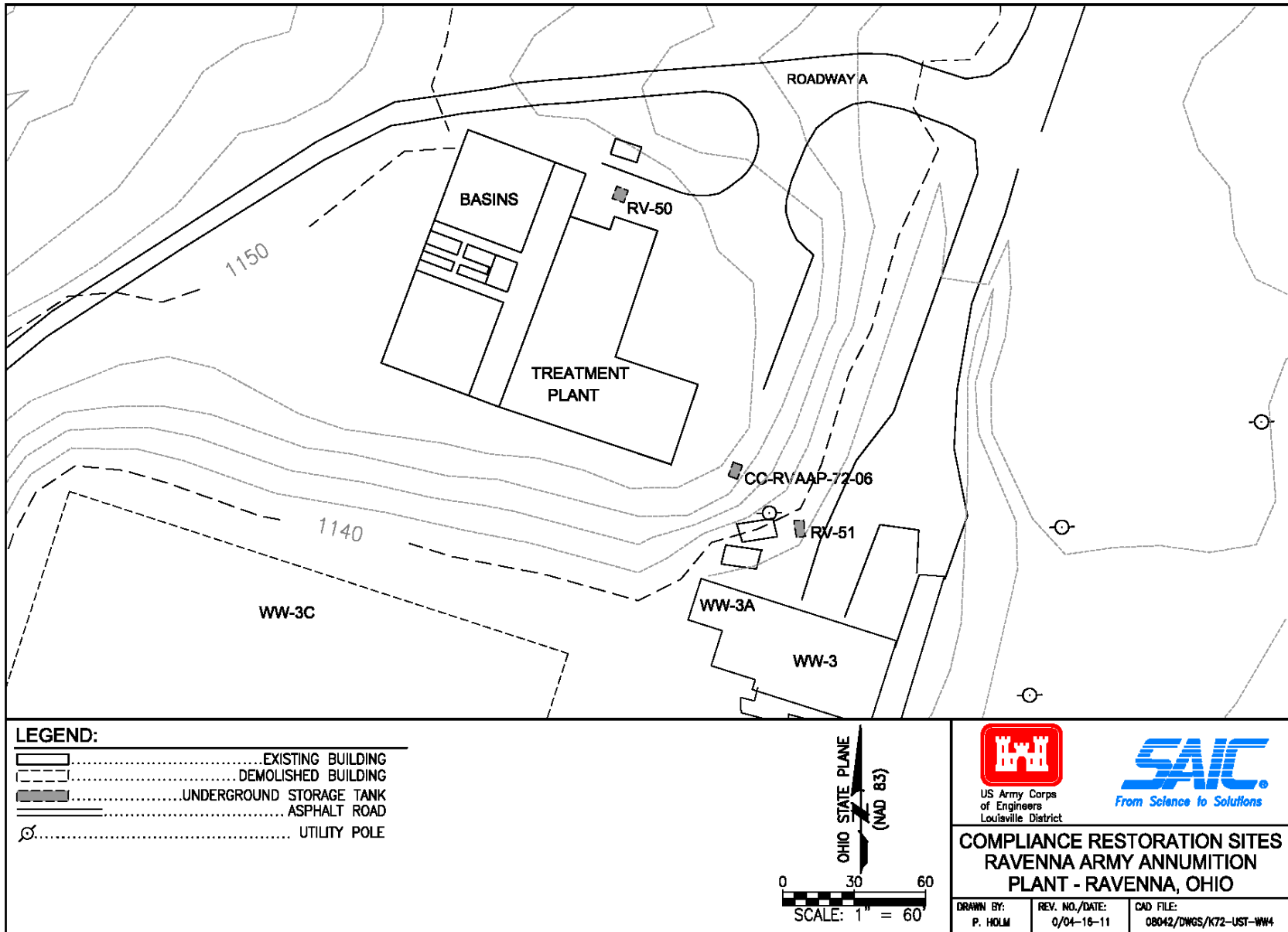
37 ppm = parts per million

38 UST = Underground Storage Tank

39  
40 **Regulatory Status:** NFA was issued for dated January 8, 2003, and is included as Figure S-30.

41  
42 **Further Action Recommended for Environmental Assessment and Closure:** None

1 **UST Identification:** CC-RVAAP-72-06  
2  
3 **Functional Area:** Waterworks #3 and #4  
4  
5 **Building Location:** Waterworks #3 and #4  
6  
7 **Date of Installation:** Unknown  
8  
9 **Date of Removal:** Unknown  
10  
11 **Size:** 280 gallons  
12  
13 **Substance Stored:** Unknown  
14  
15 **Support Function:** Unknown  
16  
17 **Architectural Drawing:** Architectural drawings AS BLT 26-04-06 SW-18, M-68, M-70, and 1147-  
18 320 are included in Appendix I. Figure S-29 illustrates the location of the UST.  
19  
20 **Photographs:** No historical photographs were located as part of the historical records report.  
21  
22 **Evidence of Spills:** None  
23  
24 **Removal Documentation and Closure Sampling:** None  
25  
26 **Regulatory Status:** Unknown  
27  
28 **Further Action Recommended for Environmental Assessment and Closure:** Further Action  
29 recommended due to lack of data and undocumented removal.



1 **Figure S-29. Location of Three USTs at Waterworks #3 and #4**



## Ohio Department of Commerce

Division of State Fire Marshal  
Bureau of Underground Storage Tank Regulations  
8895 E. Main St. • P.O. Box 687  
Reynoldsburg, OH 43068-9009  
(614) 752-7938 FAX (614) 752-7942  
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Bob Taft  
Governor

Gary C. Suhadolnik  
Director

January 08, 2003

MARK PETTERSON  
DEPT OF THE ARMY  
8451 STATE ROUTE 5  
RAVENNA, OH 44266

SITE: RAVENNA ARMY AMMUNITION PLANT  
1993 REMOVAL OF 1-550 GALLON  
DIESEL UST (WATER WORKS BLDG #4)  
8451 ST RT 5  
RAVENNA OH  
PORTAGE COUNTY  
RELEASE #67000501-N00008

RE: NO FURTHER ACTION STATUS REGARDING CLOSURE REQUIREMENTS

Dear Mr. Petterson:

The Bureau of Underground Storage Tank Regulations (BUSTR) has reviewed all information submitted for the referenced release. Based on this information, BUSTR requires no further action under Ohio Administrative Code 1301:7-9-12, effective September 1992.

Thank you for your cooperation. If you have any questions, please contact our office at (614) 752-7938.

Sincerely,

Kelly J. Gill  
Corrective Action Supervisor

xc: Site File



1 **UST Identification:** CC-RVAAP-72-08  
2  
3 **Functional Area:** Building 848  
4  
5 **Building Location:** Storage Area 8  
6  
7 **Date of Installation:** October 1971  
8  
9 **Date of Removal:** December 10, 1971  
10  
11 **Size:** 550 gallons  
12  
13 **Substance Stored:** No. 2 Fuel Oil  
14  
15 **Support Function:** Heating Oil  
16  
17 **Architectural Drawing:** No drawings of this UST system were found as part of this historical  
18 records review.  
19  
20 **Photographs:** No historical photographs were located as part of the historical records report.  
21  
22 **Evidence of Spills:** In November 1971, over the Thanksgiving holiday, a malfunction occurred with  
23 the fuel oil pump causing a release of approximately 400 gallons of fuel oil.  
24  
25 **Removal Documentation and Closure Sampling:** Removal was documented as part of spill report;  
26 no sampling was documented.  
27  
28 **Regulatory Status:** Exempt; not regulated by BUSTR.  
29  
30 **Further Action Recommended for Environmental Assessment and Closure:** Further Action  
31 recommended due to knowledge of spill and no confirmation soil sampling data.  
32