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CNC CHARLESTON
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REGULATORY COMMITTEE CORRESPONDENCE REGARDING AREA OF CONCERN 571 (AOC 571) ZONE E CNC CHARLESTON SC

12/5/2002

CH2M HILL

AOC ~~577~~ 571 Zone E
Letter Requesting NFA

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December 5, 2002

Mr. David Scaturo
South Carolina Department of Health and
Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Re: AOC 571, Zone E, Charleston Naval Complex

Dear Mr. Scaturo:

Building 177 in Zone E of the Charleston Naval Complex (CNC) includes the locations of former paint booths. One of the paint booths (Paint Booth No. 33) located on the third floor of Building 177 was identified as Area of Concern (AOC) 571 in the *Final Zone E RCRA Facility Assessment (RFA)* (EnSafe, Inc. [EnSafe], 1995). The third floor of this building where AOC 571 is located is currently vacant.

Copies of relevant excerpts from the RFA, the *Final Zone E RCRA Facility Investigation (RFI) Work Plan, Revision 1* (EnSafe, 1995) and the *Zone E RFI Report, Revision 0* (EnSafe, 1997) are attached to this letter.

The enclosed copy of the RFA for AOC 571 presents information on the various paint booths at AOC 571. The RFA recommended that a RCRA Facility Investigation (RFI) be conducted for Paint Booth No. 33 due to evidence of a spill on the concrete from paint products. The RFA identified paints, solvents, and metals as materials of concern for this site. The Final Zone E RFI Work Plan recommended air and concrete core sampling for this site, based on the paint stains and noticeable paint-related odors detected during the RFA.

The RFI at this site included concrete core sampling. During the RFI sampling in March 1996, the AOC 571 area on the third floor of Building 177 was no longer in use, and the paint booth equipment and materials had been removed. Additionally, there was no indication of any fumes or particulate matter in the air from the former paint booth operations. Based on these observations, no air samples were collected. There is currently no likelihood of the fumes existing from this operation nearly seven years after the RFI was conducted.

Figure 10.35.1 from the Zone E RFI Report, Revision 0 shows the concrete core sampling locations. The three concrete core samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals. Low-level detections of VOCs, SVOCs, and metals consistent with paint products and concrete were detected in the samples as shown in Tables 10.35.2.1 and 10.35.3.2 from the RFI Report. The RFI Report recommended no corrective measures for the site.

The low-level detections of chemicals in the concrete core sample do not appear to be of concern. There is no indication that a release to the soil or groundwater occurred through the concrete floor of Building 177, as a result of the paint booth operations at AOC 571. No further investigation or corrective measures appear to be warranted at this site. Therefore, we respectfully request your concurrence on a recommendation for No Further Action (NFA) for AOC 571.

Sincerely,

CH2M HILL

Dean Williamson, P.E.

cc: Jerry Stamps/SCDHEC, w/att
Dann Spariosu/USEPA, w/att
Tony Hunt/US Navy, w/att
Gary Foster/SCDHEC, w/att

Attachments

Excerpts from the *Final RCRA Facility Assessment* at AOC 571 (EnSafe, 1995)

5.13 AOC #571 — Paint Shop, Building 177

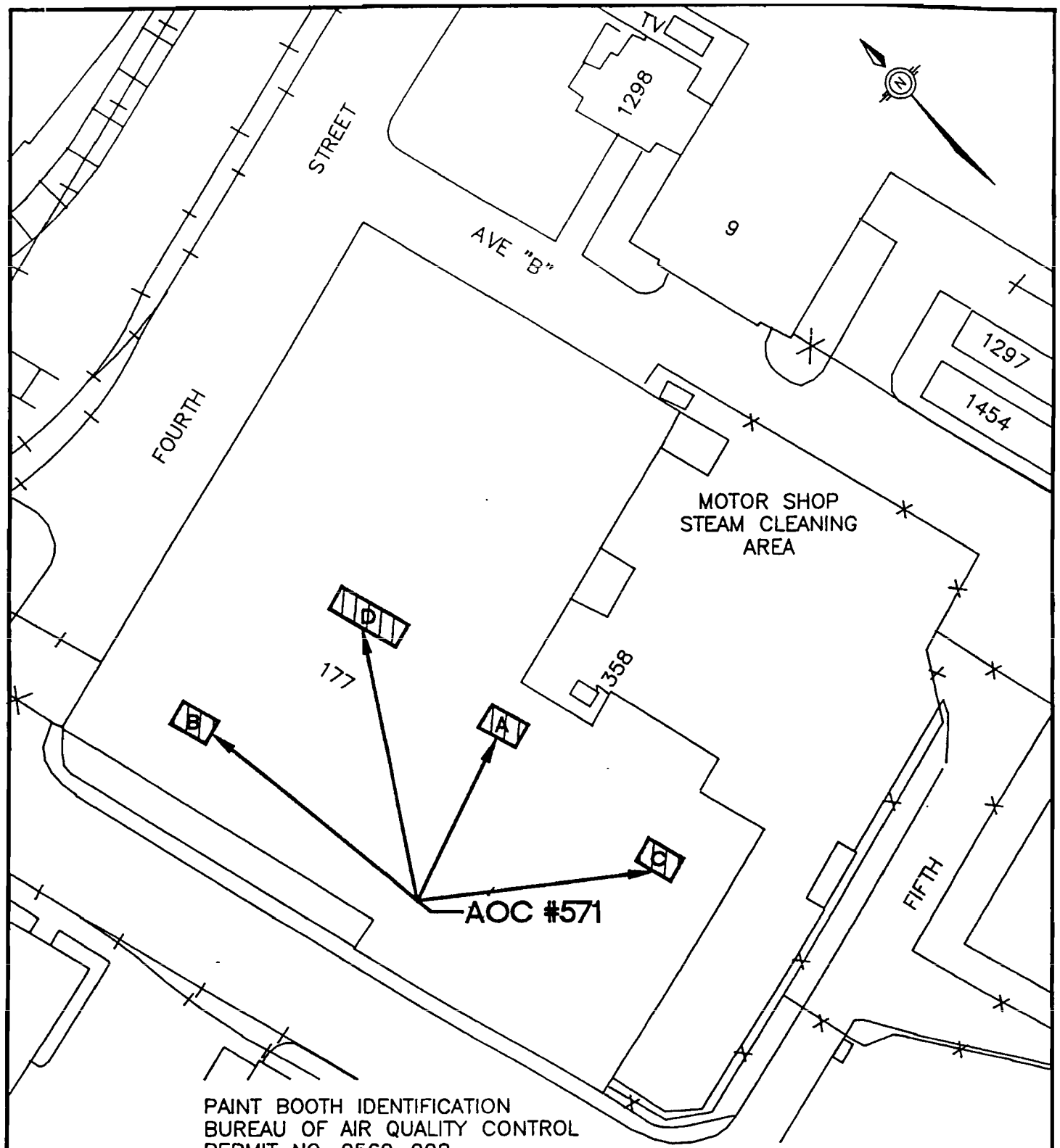
5.13.1 Unit Characteristics

AOC #571 consists of a paint shop located in Building 177. This unit includes four small paint booths which operate under the Bureau of Air Quality Control Permit Number 0560-0002. Each paint booth has been provided with a company point ID number designation. Information on each booth is provided in Table 5-4.

Table 5-4
AOC #571 Paint Booth Summary
Naval Base Charleston

Paint Booth Number	Operations	Dimensions	Stack Information	Operating Schedule
31	Dry-Filter Type Used to Paint Electrical Motors (First Floor)	20'x 9'x 10'	41-Foot Height 3-Foot Diameter	5 Hrs/Day 5 Days/Week 52 Weeks/Yr 1300 Hrs/Yr
32	Dry Filter Type for Use Only with Aerosol Cans (Second Floor)	5'x 3'x 4'	34-Foot height 2-Foot Diameter	4 Hrs/Day 5 Days/Week 52 Weeks/Yr 1040 Hrs/Yr
33	Wet Filter Type Used to Paint Miscellaneous Metal Parts; Equipped with Water Curtain to Capture Paint Particles (Third Floor)	12'x 14'x 8'	15-Foot Height 3.5-Foot Diameter	3 Hrs/Day 5 Days/Week 52 Weeks/Yr 780 Hrs/Yr
34	Dry Filter Type Used to Spray Ship Antennas (First Floor)	23'x 27'x 20'	50-Foot Height 2-Foot Diameter	4 Hrs/Day 5 Days/Week 52 Weeks/Yr 1040 Hrs/Yr

The individual stacks are not equipped with continuous emission monitors. Building 177 is located at map coordinates F-40 on Figure 5-B. The AOC location is shown in Figure 5-13.



PAINT BOOTH IDENTIFICATION
BUREAU OF AIR QUALITY CONTROL
PERMIT NO. 0560-002

A- COMPANY POINT ID. NO. 31
B- COMPANY POINT ID. NO. 32
C- COMPANY POINT ID. NO. 33
D- COMPANY POINT ID. NO. 34

RCRA FACILITY
ASSESSMENT
NAVAL BASE CHARLESTON
CHARLESTON, S.C.

FIGURE 5-13
AOC #571
PAINT SHOP, BUILDING 177

DWG DATE: 05/23/95 | DWG NAME: 29AOC9

5.13.2 Waste Characteristics

Paint materials used include enamel, primer, and thinner for Booth 31; spray lacquer, spray enamel, and spray primer for Booth 32; enamel, primer, thinner, and metal containing paints (such as lead and zinc chromate) for Booth 33; and enamel, primer, and thinner for Booth 34. The constituents of concern for this unit are VOCs and heavy metals.

The water curtain at Booth 33 is drained periodically to the sanitary sewer system. The sludge is then removed and disposed of as hazardous waste according to 40 CFR 260.

5.13.3 Migration Pathways

Soil, groundwater, surface water, and subsurface gas are unlikely pathways due to the containment provided by the building and the booth structures. Visual inspection of the floor revealed no cracking or deterioration in the vicinity of the unit. The potential for migration by the air pathway exists for this AOC due to the presence of volatile materials. Table 5-5 summarizes the total annual actual air emissions data for each booth, including VOCs, particulate matter, and hazardous air pollutants.

Table 5-5
AOC #571 Air Emissions Summary
Naval Base Charleston

Material Type	VOC (lbs/hr; tpy)	PM (lbs/hr; tpy)	HAP (lbs/hr; tpy)
Booth 31			
Enamel	0.420/0.060	0.024/0.004	0.0000/0.0000
Primer	0.240/0.040	0.001/0.000	0.2385/0.0358
Thinner	0.790/0.120	0.000/0.000	0.0793/0.0119
Booth 32			
Spray Lacquer	0.960/0.500	0.000/0.000	0.4327/0.2250
Spray Enamel	1.380/0.720	0.002/0.001	0.6154/0.3200

Table 5-5
AOC #571 Air Emissions Summary
Naval Base Charleston

Material Type	VOC (lbs/hr; tpy)	PM (lbs/hr; tpy)	HAP (lbs/hr; tpy)
Spray Primer	1.370/0.710	0.001/0.001	0.2885/0.1500
Booth 33			
Enamel	1.160/0.140	0.057/0.007	0.0000/0.0000
Primer	0.110/0.010	0.012/0.001	0.0000/0.0000
Thinner	0.920/0.110	0.006/0.001	0.0000/0.0000
Booth 34			
Enamel	0.930/0.300	0.046/0.015	0.0000/0.0000
Primer	0.110/0.040	0.012/0.004	0.0000/0.0000
Thinner	0.450/0.150	0.003/0.001	0.0000/0.0000

Notes:
VOC — Volatile Organic Compound
PM — Particulate Matter
HAP — Hazardous Air Pollutant
lb/hr — pounds per hour
tpy — ton per year

5.13.4 Evidence of Release

The preliminary review found no spill reports, inspection reports, or employee interviews which would indicate any release at this unit. However, paint fume odors were detected during the site visit, and approximately one half inch of dried paint was observed coating the walls and floor of Booth 33. No evidence was noted that any paint wastes had escaped the building.

Prior to the 1972 installation of the Naval Base Charleston sanitary/industrial wastewater sewer system, the water used to capture paint dust from the paint spray booths was discharged directly

to the Cooper River through the storm sewer system. However, discharges to the storm sewer system are being addressed as a separate unit.

5.13.5 Exposure Potential

This unit is not in the vicinity of any residential areas or sensitive environments. Due to the location of this unit within the building, exposure potential would be limited to Naval Base Charleston personnel who may frequent the vicinity of the unit and future users of the site.

5.13.6 Recommended Action

NFI is recommended for paint booths 31, 32, and 34, due to the lack of evidence of releases from these units. However, an RFI is recommended for paint booth 33 due to the visible evidence of releases from the booth.

Excerpts from the *Final Zone E RFI Work Plan* for AOC 571 (EnSafe, 1995)

2.36 AOC 571, Paint Booth No. 33, Building 177

AOC 571 is a paint booth (No. 33) in Building 177. This site has been designated for an RFI. Table 2.72 describes the site.

Table 2.72
AOC 571
Site Information and Description

Number	Description	Materials Generated or Stored[1]	Potential Pathways[2]
AOC 571 Paint Booth (No. 33)	This site consists of a paint booth (No. 33) on the third floor of Building 177. The booth is used for painting miscellaneous metal parts. The booth is equipped with a water curtain to capture particulate matter. The booth is 12' x 14' x 8' with a 3.5' diam. 15' high stack. This booth operates under South Carolina Bureau of Air Quality Control Permit No. 0560-0002. Prior to 1972, water used to capture particulate matter from the booth was discharged directly into the storm sewer system. Currently, the waste water from the curtain at this booth is periodically drained into the sanitary sewer system. The sludge is then removed and disposed of as a hazardous waste.[1]	Paints Solvents Metals (VOCs, SVOCs, Metals)[3]	Air Floor Surface

Notes:
[1] Described in the Draft-Final RCRA Facility Assessment, Volume I, November 22, 1994
[2] Pathways scheduled for sampling are bold.
[3] Analyte groups associated with materials generated or stored.

2.36.1 Previous Investigations

This site has not been investigated previously.

2.36.2 Data Gaps

Currently no environmental media data have been collected to characterize this site or to support detailed evaluation of treatment alternatives, if necessary. To ensure data collection efforts are sufficient and meet the stated investigative objectives, the following data gaps hav been identified and will be resolved:

- There are no environmental data to establish whether COPCs are present for any of the potential migration pathways.

- No data exist to support a detailed evaluation of treatment alternatives where necessary.

2.36.3 Objectives

The objectives of the proposed field investigation are to fill the identified data gaps by establishing whether COPCs are present for the identified migration pathways. In order to fill these gaps, concrete core and air will be sampled. If COPCs are detected, the horizontal and vertical extent and rate of any air and surface runoff contamination will be delineated concurrently. Data collection efforts will also support the technical evaluation of treatment alternatives.

2.36.4 Sampling and Analysis Plan

To fulfill the RFI objectives, site-specific sampling and analysis requirements have been proposed. Table 2.73 summarizes the types of samples and analytical parameters. Proposed sample locations for AOC 571 are illustrated in Figure 2-35. All sampling will adhere to the NAVBASE *Final Comprehensive RFI Work Plan*. Soil, groundwater, surface water, and soil gas are unlikely migration pathways due to the containment provided by the building and the booth structure: it is on the third floor of Building 177. A visual inspection of the floor found no cracking or deterioration near the unit. However, paint odors were detected during the site visit, and approximately one-half inch of dried paint coated the walls and floor of Booth 33.

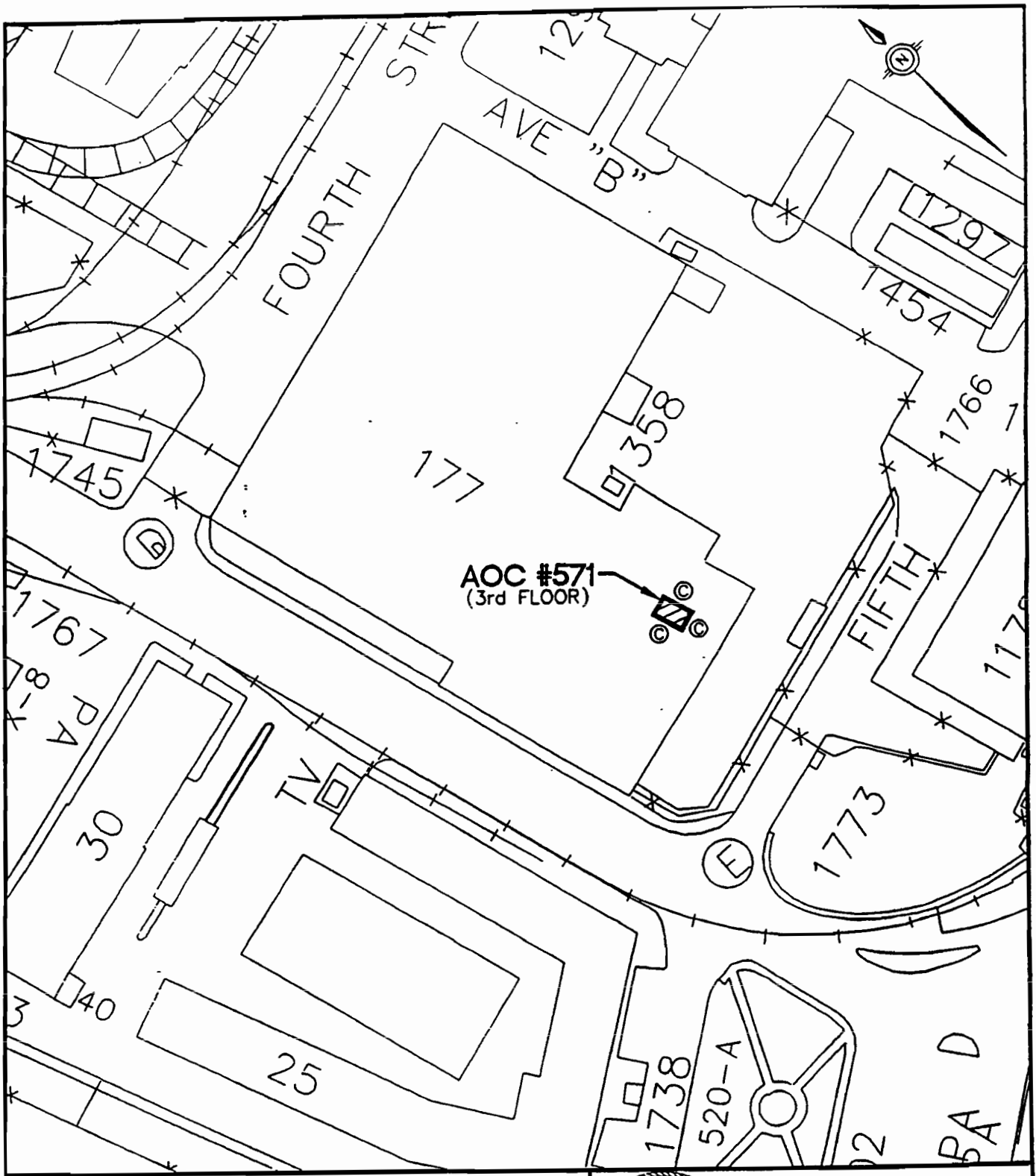
The paint booth is located against an interior wall. Three core samples will be collected from the concrete floor near the paint booth. The core samples will be arranged in a pattern surrounding the paint booth to detect any possible migration pathway of released paints or solvents. Three air samples will be collected, using the SUMMA canister method as noted in the CSAP, and analyzed for volatile organic chemicals.

Table 2.73
AOC 571
Sampling Plan

Matrix	Quantity	Analysis
Core Samples	3	VOA & SVOA w/ TICs, Metals.
Air	Random	

Notes:
The quantities presented are estimated numbers of samples believed to be needed to fulfill the objectives of the investigation. Expansion of the investigation may be necessary to meet the stated objectives.

All analysis to be performed per SW-846 except where other methods are specified. DQO Level III analysis, as specified in the sampling plan will be used, with a minimum of 10% duplicates analyzed for all Appendix IX constituents at DQO Level IV. Duplicates will be collected at the locations where contaminants are most likely to be present. The sample quantities presented do not include QA/QC samples.



LEGEND

- ○ - EXISTING SOIL BORINGS
- ⊙ - EXISTING MONITORING WELLS
- ● - PROPOSED SOIL BORINGS
- ◒ - PROPOSED DEEP MONITORING WELLS
- ◓ - PROPOSED SHALLOW MONITORING WELLS
- ▲ - PROPOSED SEDIMENT SAMPLES
- Ⓒ - PROPOSED CORE SAMPLES
- Ⓖ - PROPOSED SURFACE SOIL SAMPLE
- Ⓢ - PROPOSED SURFACE WATER SAMPLES
- Ⓣ - PROPOSED THICKNESS SAMPLES
- Ⓦ - PROPOSED WIPE SAMPLES

GRAPHIC SCALE: 100 0 100 200

FINAL RFI
ZONE E WORKPLAN
NAVAL BASE CHARLESTON
CHARLESTON, S.C.

FIGURE 2-35
AOC #571
BUILDING 177
PAINT SHOP

DWG DATE: 6/2/95 | DWG NAME: FIGURE35

2.37 AOC 572, Motor Area, Building 177

AOC 572 is a former motor cleaning area in the fenced area south of Building 177. This site has been designated for an RFI. Table 2.74 describes the site.

Table 2.74
AOC 572
Site Information and Description

Number	Description	Materials Generated or Stored	Potential Pathways[2]
AOC 572 Motor Area	This site is a former motor cleaning area south of Building 177. This site at one time was used for steam cleaning electrical motors and equipment. No evidence of the steam cleaning activities are now present. While in operation, no containment structures were associated with the process. Wastewater drained from the site to the storm sewer system. No additional information could be found regarding the operating practices of this site.[1]	Solvents Petroleum Hydrocarbons Heavy Metals (VOCs, SVOCs, Metals)[3]	Air **Soil** **Soil Gas** **Groundwater** **Sediment** Surface Runoff Surface Water

Notes:
[1] Described in the Draft-Final RCRA Facility Assessment, Volume I, November 22, 1994
[2] Pathways scheduled for sampling are bold.
[3] Analyte groups associated with materials generated or stored.

2.37.1 Previous Investigations

This site has not been investigated previously.

2.37.2 Data Gaps

Currently no environmental media data have been collected to characterize these sites or to support detailed evaluation of treatment alternatives, if necessary. To ensure data collection efforts are sufficient and meet the stated investigative objectives, the following data gaps have been identified and will be resolved:

Excerpts from the *Draft Zone E RFI Report, Revision 0* for AOC 571 (EnSafe, 1997)

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10.35 AOC 571, Paint Booth No. 33, Building 177

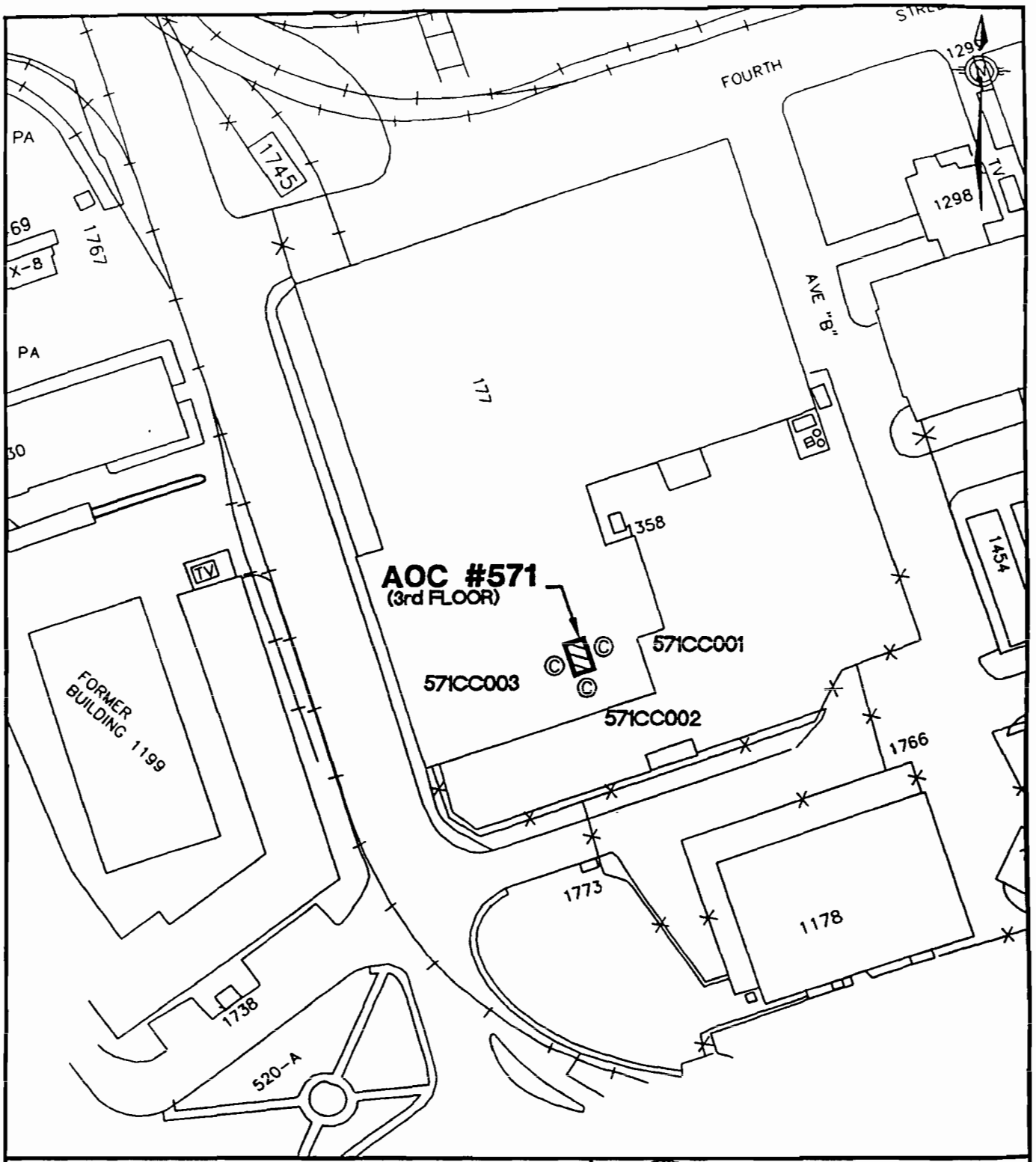
AOC 571 consists of a paint booth (No. 33) which is located on the third floor of Building 177. The booth has been used for painting miscellaneous metal parts, and is equipped with a water curtain to capture particulate matter. The dimensions of the booth are 12' x 14' x 8' with a 3.5' diameter, 15' tall stack. The paint booth operates under South Carolina Bureau of Air Quality Control Permit No. 0560-0002. Prior to 1972, water used to capture particulate matter from the booth was discharged directly into the storm sewer system. Currently, the waste water from the curtain is periodically drained into the sanitary sewer system. The sludge is then removed and disposed of as a hazardous waste.

Materials of concern identified in the *Final Zone E RFI Work Plan* include paints, solvents, and metals. Potential receptors that may be exposed to site contaminants include current and future building users and any site workers this area may support following base closure.

To fulfill the RFI objectives for AOC 571, air and concrete core samples were collected in accordance with the *Final Zone E RFI Work Plan*, and Section 3 of this report to determine whether any contamination resulted from onsite activities.

10.35.1 Concrete Core Sampling and Analysis

The *Final Zone E RFI Work Plan* proposed collecting three concrete core samples at AOC 571 from the locations shown in Figure 10.35.1. Three concrete core samples were collected and submitted for analysis at DQO Level III for VOCs, SVOCs, and metals. No samples were selected as duplicates at this site. Table 10.35.1.1 summarizes concrete core sampling and analysis at AOC 571.



LEGEND

- SOIL BORINGS
- © - CORE SAMPLES
- DEEP MONITORING WELLS
- SHALLOW MONITORING WELLS
- ▲ - SEDIMENT SAMPLES
- Ⓣ - THICKNESS SAMPLES
- Ⓦ - WIPE SAMPLES
- Ⓢ - SURFACE WATER SAMPLES

GRAPHIC SCALE 100 0 100 200

ZONE E
RFI REPORT
NAVAL BASE CHARLESTON
CHARLESTON, S.C.

FIGURE 10.35.1
CONCRETE SAMPLE LOCATIONS
AOC #571
BUILDING 177
PAINT SHOP

DWG DATE: 09/02/97 | DWG NAME: 10-35-1

Table 10.35.1.1
AOC 571
Concrete Core Sampling Summary

Samples Proposed	Samples Collected	Analyses Proposed	Analyses Collected	Deviation
3	3	VOCs, SVOCs, metals	VOCs, SVOCs, metals	None

10.35.2 Nature of Contamination in Concrete

Organic compound analytical results for concrete are summarized in Table 10.35.2.1. Inorganic analytical results for concrete are summarized in Table 10.35.2.2. Appendix H contains the complete data report for all samples collected in Zone E.

Table 10.35.2.1
AOC 571
Organic Compounds Detected in Concrete Samples (μg/kg)

Compound	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
VOCs			
Acetone	2/3	10.0 - 13.0	11.5
Ethylbenzene	1/3	2.00	2.00
Methylene chloride	1/3	1.000	1.000
Xylene (Total)	1/3	29.0	29.0
SVOCs			
Butylbenzylphthalate	2/3	440 - 7,700	4,070
Di-n-butylphthalate	2/3	140 - 1,800	970
Di-n-octyl phthalate	1/3	2,200	2,200
bis(2-Ethylhexyl)phthalate	3/3	230 - 80,000	27,100
Phenanthrene	1/3	96.0	96.0

Note:
μg/kg = Micrograms per kilogram

Table 10.35.2.2
AOC 571
Inorganic Analytical Results for Concrete (mg/kg)

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Aluminum (Al)	3/3	4,620 - 5,120	4,890
Arsenic (As)	3/3	1.90 - 2.20	2.00
Barium (Ba)	3/3	28.5 - 91.0	50.1
Beryllium (Be)	3/3	0.250 - 0.260	0.257
Cadmium (Cd)	3/3	0.320 - 1.40	0.690
Calcium (Ca)	3/3	69,400 - 74,800	72,000
Chromium (Cr)	3/3	7.30 - 49.0	22.6
Cobalt (Co)	3/3	1.80 - 4.70	3.07
Copper (Cu)	3/3	9.20 - 14.8	11.2
Iron (Fe)	3/3	3,860 - 4,400	4,140
Lead (Pb)	3/3	5.40 - 21.3	13.2
Magnesium (Mg)	3/3	972 - 1,020	993
Manganese (Mn)	3/3	131 - 145	137
Mercury (Hg)	2/3	0.0300 - 0.0400	0.0350
Nickel (Ni)	3/3	3.90 - 6.80	4.93
Potassium (K)	3/3	492 - 624	564
Sodium (Na)	3/3	91.3 - 108	102
Vanadium (V)	3/3	6.10 - 6.70	6.47
Zinc (Zn)	3/3	219 - 327	282

Note:
mg/kg = Milligrams per kilogram

Volatile Organic Compounds in Concrete

Four VOCs were detected in concrete samples collected at AOC 571. RBCs for concrete do not exist for comparison of analytical results.

Semivolatile Organic Compounds in Concrete

Five SVOCs were detected in concrete samples collected at AOC 571. RBCs for concrete do not exist for comparison of analytical results.

Inorganic Elements in Concrete

Nineteen metals were detected in concrete samples collected at AOC 571. RBCs for concrete do not exist for comparison of analytical results.

10.35.3 Fate and Transport Assessment for AOC 571

AOC 571 is a paint booth on the third floor of Building 177. Environmental medium sampled as part of the AOC 571 RFI consisted of concrete. No direct correlation was evident between concrete at the site and underlying soil or groundwater. Because no soil, groundwater, or sediment samples were collected at AOC 571, migration pathways involving these media were not evaluated.

10.35.4 Human Health Risk Assessment

A formal risk assessment was not conducted for AOC 571 since concrete was the only medium sampled.

10.35.5 Corrective Measures Considerations

Concrete was the only medium sampled at AOC 571; therefore, no corrective measures were considered for the site.