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SAMPLING AND ANALYSIS PLAN AREA OF CONCERN 596 (AOC 596) ZONE G WITH
TRANSMITTAL CNC CHARLESTON SC
8/19/2002
CH2M HILL

AOC 596 Zone G

SAMPLING and ANALYSIS PLAN (RO)

CH2MHILL

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August 19, 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: Sampling and Analysis Plan for Area of Concern 596, Zone E

Dear Mr. Scaturo:

Enclosed please find four copies of the Sampling and Analysis Plan (SAP) for Area of Concern (AOC) 596 in Zone E of the Charleston Naval Complex (CNC). This SAP has been prepared to complete the RCRA Facility Investigation (RFI) activities for AOC 596 and to provide information that can be used to make decisions regarding the need for corrective measures at the site.

The principal author of this document is Sam Naik. Please contact him at (770) 604-9182, extension 255, if you have any questions or comments.

Sincerely,

CH2M HILL



Dean Williamson, P.E.

cc: Rob Harrell/Navy, w/att
Gary Foster/CH2M HILL, w/att

Sampling and Analysis Plan

Area of Concern 596, Zone E

**Charleston Naval Complex
North Charleston, SC**

Prepared for
**U.S. Navy Southern Division
Naval Facilities Engineering Command**

Prepared by
CH2M-Jones

August 2002

Contract N62467-99-C-0960

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1 Acronyms and Abbreviations

2	AOC	area of concern
3	BEQ	benzo[a]pyrene equivalent
4	CNC	Charleston Naval Complex
5	COPC	chemical of potential concern
6	EnSafe	EnSafe Inc.
7	EPA	U.S. Environmental Protection Agency
8	ft bls	feet below land surface
9	IDW	Investigation-derived waste
10	mg/kg	milligrams per kilogram
11	RFI	RCRA Facility Investigation
12	SAP	Sampling and Analysis Plan

1.0 Background

Previous investigations in the vicinity of Area of Concern (AOC) 596 in Zone E of the Charleston Naval Complex (CNC) have indicated the presence of elevated concentrations of benzo[a]pyrene equivalents (BEQs) in soil above their respective chemical of potential concern (COPC) screening criteria at one previous sampling location. CH2M-Jones has prepared this Sampling and Analysis Plan (SAP) to verify the concentrations of BEQs at this location as part of the RCRA Facility Investigation (RFI) and to provide information that can be used to make decisions regarding the need for corrective measures at this site.

2.0 Site Background and Setting

AOC 596 – Former Torpedo Storage, Building 101

AOC 596 is the site of a former torpedo storage area located in Building 101. Building 101 was built in 1919 and was used to store torpedoes until 1943. From 1943 to 1946, the building housed a machine shop. In 1946, the building was converted into a storehouse for diesel parts, and in 1947 it was used as a storage house for a galvanizing plant. From 1981 to the present, it has been used to store radioactive-contaminated material. Building 101 is currently vacant.

This area of Zone E is zoned M2 (industrial). Materials of concern identified in the *Final Zone E RFI Work Plan* (EnSafe Inc. [EnSafe]/Allen & Hoshall, 1995) include solvents, degreasers, explosives, propellants, and petroleum hydrocarbons.

Figure 1 shows the location of AOC 596 within Zone E of CNC.

3.0 RFI and CH2M-Jones Results

As part of the RFI field investigation, surface soil samples (0 to 1 foot below land surface [ft bls]) and co-located subsurface soil samples (3 to 5 ft bls) were collected in a single sampling event. Figure 2 shows RFI soil sample locations.

Based on an evaluation using current screening criteria, BEQs were identified as requiring additional evaluation at one boring location. BEQs were detected in surface soil at boring location E596SB006 at a concentration of 89.96 milligrams per kilogram (mg/kg) which exceeds the CNC surface soil BEQ sitewide reference concentration of 1.304 mg/kg. At this location, BEQs were detected in subsurface soil at a concentration of 2.116 mg/kg, which exceeds the CNC subsurface soil BEQ sitewide reference concentration of 1.400 mg/kg.

1 Figure 3 shows the BEQ concentrations in surface and subsurface soil samples from the RFI
2 and the proposed verification sampling location.

3 **4.0 Sampling and Analysis Plan**

4 In order to verify the concentration of BEQs in the surface and subsurface samples taken
5 from boring location E596SB006, one additional boring is being proposed at that location.
6 This soil boring will be identified as E596SB014, and two samples will be collected from this
7 boring and analyzed for BEQs.

8 Figure 3 shows the proposed boring location. Table 1 shows the sampling parameters and
9 coordinates. The surface soil sample will be collected from the 0 to ft bls depth interval and
10 the subsurface soil sample will be collected from the 3 to 5 ft bls depth interval.

11 Sampling will follow the soil sampling procedures and the Health and Safety Plan outlined
12 in the other SAPs used at the CNC.

13 Investigation-derived waste (IDW) will be managed according to procedures outlined in
14 other SAPs being used at the CNC.

15 **5.0 References**

16 EnSafe Inc. *Zone E RFI Report, Revision 0, NAVBASE Charleston*. November 1997.

17 EnSafe Inc./Allen & Hoshall. *Final RCRA Facility Assessment, Naval Base Charleston*. June
18 1995.

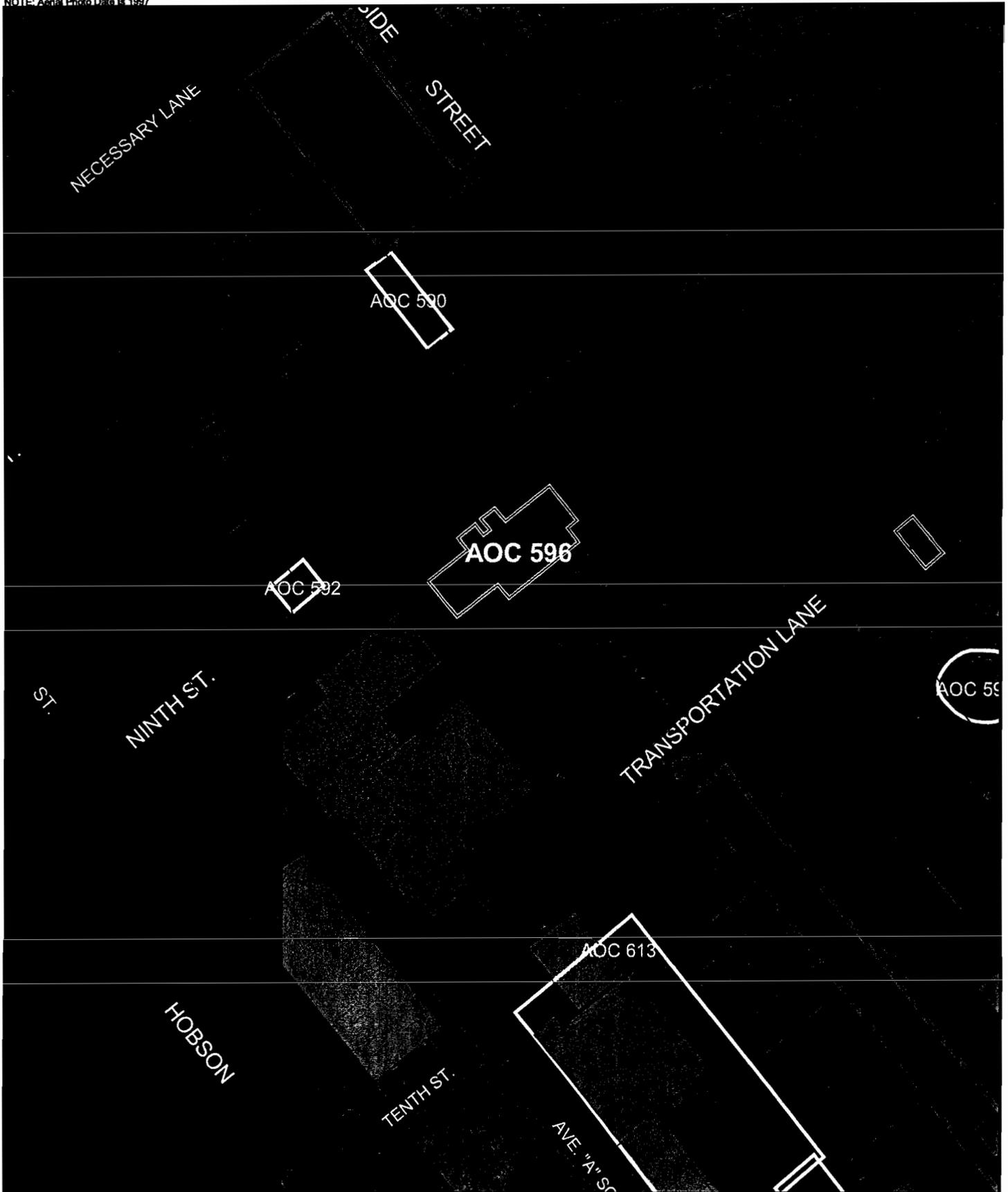
19 EnSafe Inc./Allen & Hoshall. *Final Zone E RFI Work Plan, Revision 1, Naval Base Charleston*.
20 June 1995.

21

1 **TABLE 1**
2 Analytical Summary for Supplemental Sampling Activities at AOC 596
3 *Sampling and Analysis Plan, AOC 596, Zone E, Charleston Naval Complex*

New Sample ID	Number of Sample Locations	Analyses	Northing/Easting	Analytical Method
E596SB014	1 location, with 2 depth intervals (0-1 ft bls and 3-5 ft bls)	SVOCs- BEQ list	374,568/2,319,250	SW-846 8270

4



-  Buildings
-  AOC Boundary
-  SWMU Boundary

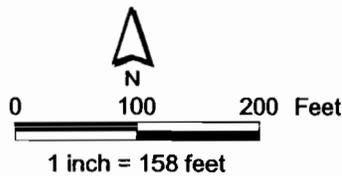
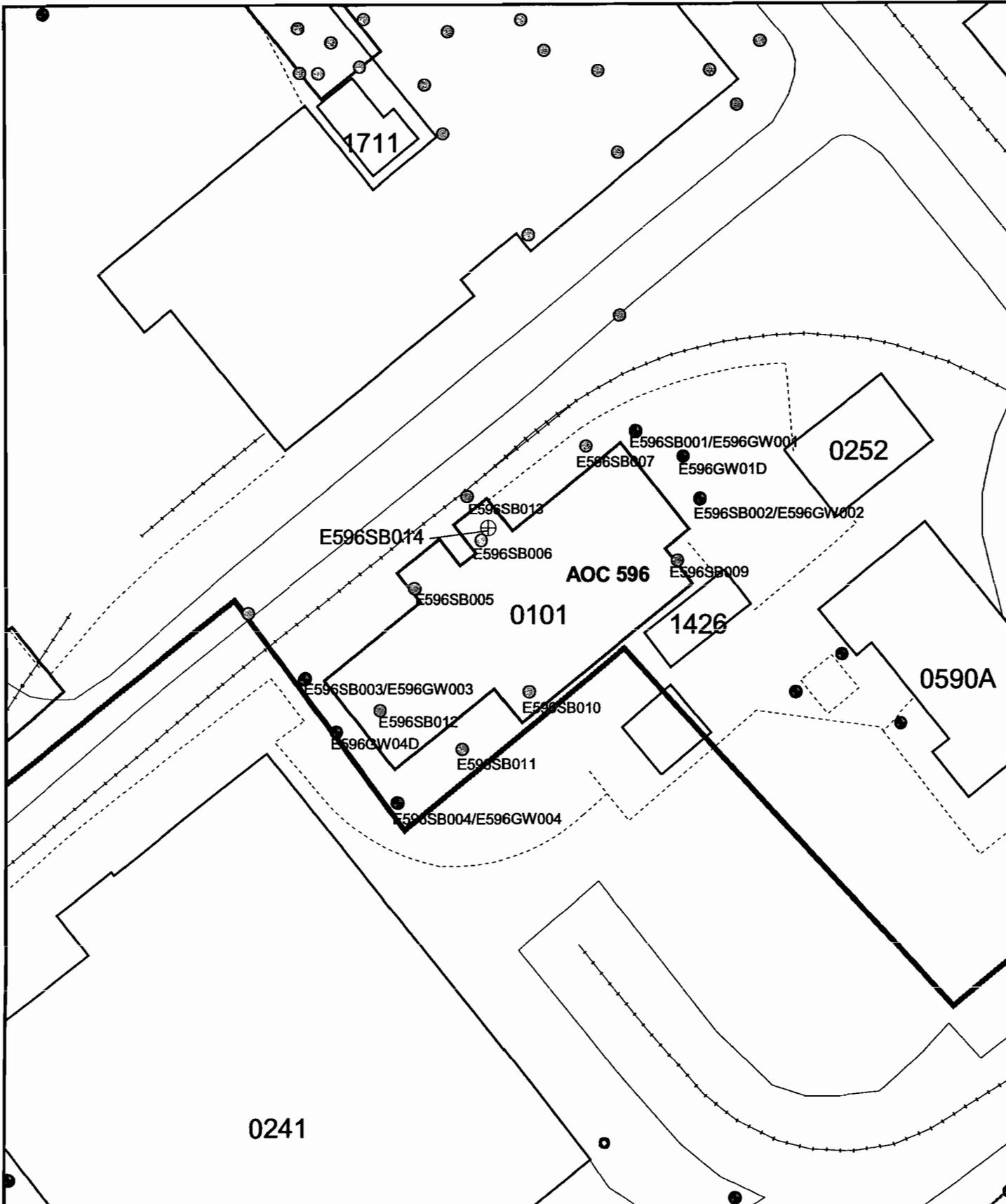


Figure 1
Site Map
AOC 596, Zone E
Charleston Naval Complex



- ⊕ Proposed Soil Sample Location
- ⊙ Groundwater Well
- ⊙ Surface Soil
- ⋈ Fence
- ⋈ Railroads
- ⋈ Roads - Lines
- ▭ AOC Boundary
- ▭ SWMU Boundary
- ▭ Buildings
- ▭ Zone Boundary

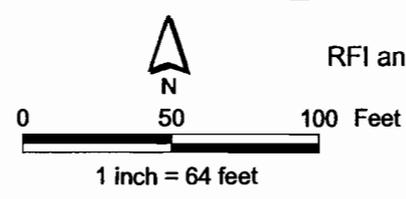
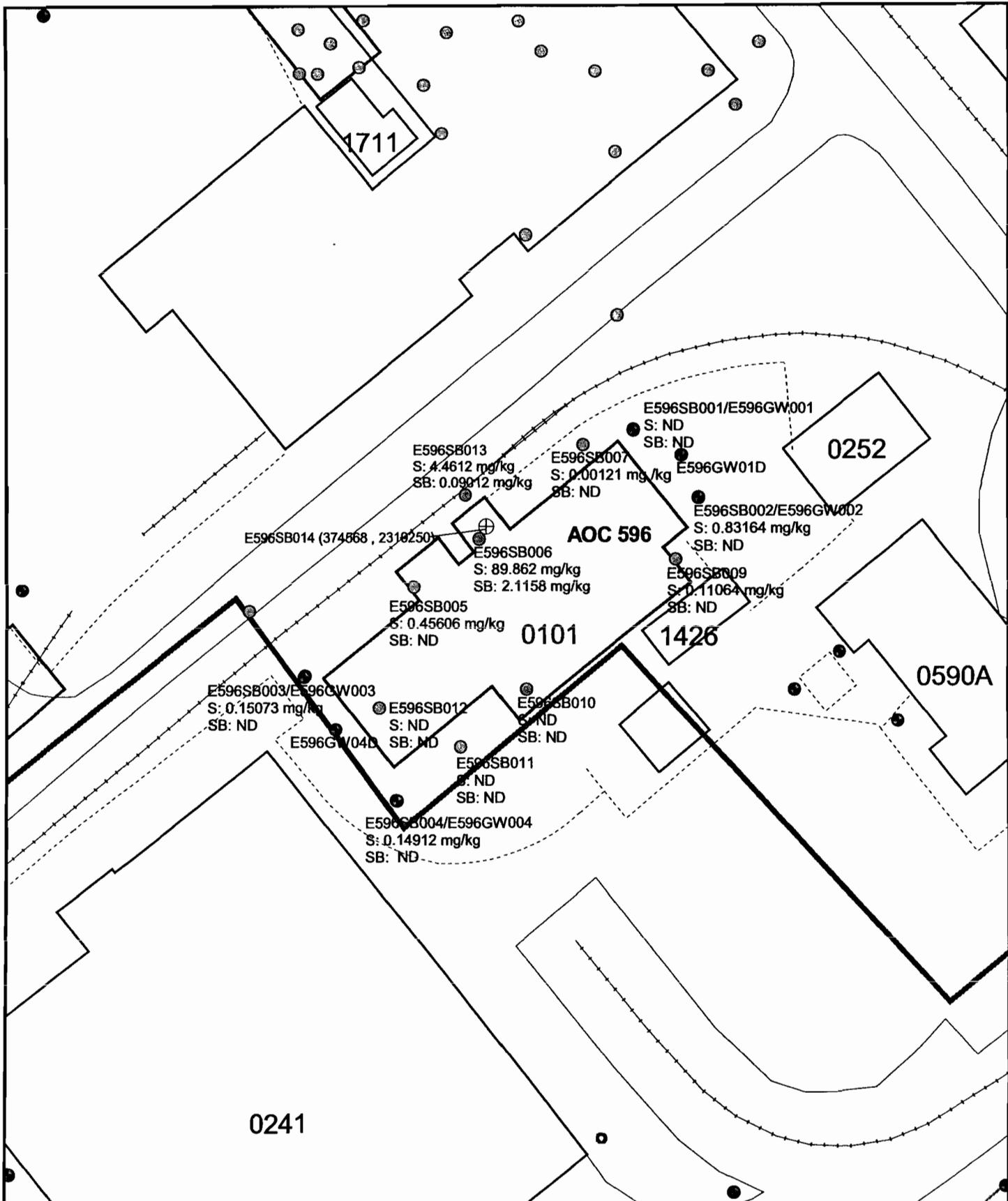


Figure 2
RFI and Proposed Soil Sampling Location Map
AOC 596, Zone E
Charleston Naval Complex



- ⊕ Proposed Soil Sample Location (Northing, Easting)
- Surface Soil
- ⊙ Groundwater Well
- ⋈ Fence
- ⋈ Railroads
- ⋈ Roads
- ▭ AOC Boundary
- ▭ Buildings
- ▭ Zone Boundary
- S: Surface Soil BEQ Concentration
- SB: Subsurface Soil BEQ Concentration

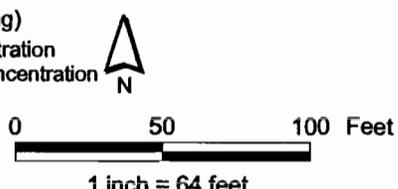


Figure 3
 BEQ Concentration and Proposed Soil
 Sampling Location Map
 AOC 596, Zone E
 Charleston Naval Complex