

03.05-05/28/99-00530

**WORK PLAN
FOR
ADDITIONAL DIOXIN SAMPLING
AT SWMU 31/32
NAVAL STATION ROOSEVELT ROADS
CEIBA, PUERTO RICO
RCRA/HSWA Permit No. PR2170027203**

CONTRACT TASK ORDER 0223

MAY 28, 1999

Prepared for:

**DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
*Norfolk, Virginia***

Under the:

**LANTDIV CLEAN Program
Contract N62470-89-D-4814**

**Comprehensive Long-Term Environmental
Action Navy**

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	SITE DESCRIPTION.....	1
2.1	Site History	1
2.2	Previous Investigation	1
3.0	SCOPE OF INVESTIGATIONS	2
3.1	Rationale.....	2
3.2	Sampling Program.....	3
3.2.1	Sample Locations	3
3.2.2	Analytical Program.....	4
3.3	Other Investigation Considerations	4
4.0	REPORTING.....	5
5.0	SCHEDULE.....	5

List of Figures

Figure 2-1 - Soil Detections Above Screening Criteria SWMU 31/32

Figure 3-1 - Additional Soil Sampling Locations - SWMU 31/32

1.0 INTRODUCTION

This document provides a work plan for additional sampling at SWMU 31/32. During the performance of a Corrective Measures Study and the associated development of clean-up levels it was found that insufficient information was available to establish reasonable clean-up levels or to design an adequate corrective measure. Based on this finding, additional soil sampling activities are warranted.

2.0 SITE DESCRIPTION

2.1 Site History

SWMUs 31 and 32 are both located within the Public Works storage/staging yard adjacent to Building 31. SWMU 31 consisted of a curbed concrete pad used for the temporary storage of containers of waste oil. This unit has been replaced by a new facility that is used for the same purpose. SWMU 32 is a general storage area at the rear of the yard at which has been found discarded batteries, drums of fuel contaminated soils and various other discarded items.

The area actually addressed by this work plan is not really a part of either SWMU; however, the RCRA permit included its description with that of SWMU 31. Basically, the subject area is immediately adjacent to Building 31 at the backside of the yard. The 1984 Initial Assessment Study indicated that the area next to the building was used for storing containers of unidentified waste and that there were spills of the wastes evident on the soil. Presently, the area is covered with black top and contains gas cylinders stored in racks.

2.2 Previous Investigations

The RCRA permit issued in 1994 to Roosevelt Roads contained provisions for RCRA Facility Investigations (RFIs) at a number of SWMUs throughout the Station. Included were SWMUs 31 and 32 and the storage area next to Building 31. Only the results of the sampling for the storage area will be discussed since the other areas of the SWMUs were found to contain no evidence of significant environmental impact.

A total of 12 surface soil samples were obtained in the storage area during two stages of investigations. Initially, four samples were obtained in a pattern around the storage area. A risk assessment performed on the analytical data indicated a slight risk was present to on-site workers based on the dioxin levels found at sampling location 31SS04. Based on this finding, a second phase of sampling was undertaken with EPA approval.

Eight samples were obtained during the second phase of sampling. Dioxins were detected at levels above the Industrial RBC, at a number of locations. A risk assessment performed on the combined data that indicated the continuing presence of an unacceptable risk to on-site workers posed by the dioxin. [Note: Original risk assessment was performed using "total" dioxin values not congener specific data which constitutes a highly conservative approach.] The sampling locations and exceedances of comparison criteria are shown on Figure 2-1. The analytical data and risk assessments are contained in the following reports:

- Draft, RCRA Facility Investigation Report for Phase I Investigations at Operable Units 1, 6 and 7, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. Baker Environmental, Inc., July 1996.
- Draft, Additional Investigations Report, Operable Units 1, 6, and 7, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. Baker Environmental, Inc., May 1998.

3.0 SCOPE OF INVESTIGATIONS

3.1 Rationale

A streamlined Corrective Measures Study (CMS) was proposed for this area since soil removal and off-site disposal appeared to be the most efficient and cost-effective means to address the problem. The first step in the process was to develop clean-up levels which required a re-analysis of risk. During the performance of this step, the dioxin concentrations present were rigorously compared to toxicological risk factors. It was found that essentially all of the risk was being derived from total tetrachloro-dibenzofurans and total pentachloro-dibenzofurans which are congeners of 2,3,7,8 - tetrachloro-dibenzodioxin.

A thorough review of the analytical data showed that most of the dioxins were reported as "total". This indicates that the analyst identified a peak in the vicinity of where a certain chlorinated dioxin or dibenzofuran congener appear on the relative ion chromatogram generated by MS. These values are bracketed and summed to get a "total" number. Since the slight risk seen at the

site is essentially being driven by total congeners, it is of significant importance to establish whether the most toxic congener (namely 2,3,7,8-substituted) are present and at what concentration. Identifying the level of congener specific dioxin at the site, so that a proper understanding of the risks posed can be attained, is the first goal of the Phase III sampling program.

The occurrence pattern of dioxin was also examined during the early stages of the CMS process. It was found that providing reasonable estimates of materials to be removed was impossible given that detections of dioxins were present in the outermost ring of samples. This creates an "open-end" remediation which could grow significantly depending on the findings of the necessary confirmatory sampling during the clean-up. Establishing the horizontal extent of contamination is the second goal of the Phase III program so that the extent of remediation can be quantified prior to startup and so confirmatory sampling can be minimized.

3.2 Sampling Program

3.2.1 Sample Locations

A total of 18 sampling locations have been selected to meet the goals of the Phase III investigations. The sampling locations are shown on Figure 3-1.

The first five locations will correspond, as closely as possible, to the original locations 31SS04, 31SS05, 31SS06, 31SS07, and 31SS08.

A 50 foot spacing has been employed between the next two rings of sampling locations (adjusted for site constraints). The first ring of samples (designated "A" through "G") are 50 feet from the Phase II locations in a semi-circle around the storage area. The second ring of locations (designated "AA" through "EE") is 50 feet outside the first ring with a 50 foot spacing between samples.

Sampling will be performed in accordance with the approved RFI work plans. This will ensure that all the samples from the three phases have been obtained in a consistent manner and provide data which is comparable. In areas that are gravel covered, samples will be obtained in the zone from three to nine inches below ground surface. This approach, (which is consistent with previous work) will allow a sample to be obtained below the large gravel which works its way to

the surface in highly trafficked areas. Where the area is paved with blacktop, samples will be obtained below the asphalt and sub-base. This again is consistent with procedures employed in previous investigations.

The sampling strategy accomplished the following things:

- Provides information up to 100 feet from the storage area
- Provides congener specific information for locations previously sampled.
- Extends sampling to the toe of the extremely steep slope located northwest of the area, and
- Provides a density of sampling locations that will allow corrective measures to be adequately screened and selected.

3.2.2 Analytical Program

All samples will be analyzed by SW-846 method number 8290 using high resolution mass spectrometry. The high resolution will identify the individual congeners of dioxin and their concentrations. This will allow risks to be correctly assessed during the CMS process.

One duplicate sample will be obtained at a location to be field selected. This sample will be subjected to the same sample handling and analytical protocols the results of which will serve as a check on the data reproducibility.

All analytical data will be subjected to third party data validation. The validation will be done in accordance with Region II protocols.

3.3 Other Investigation Considerations

Investigation Derived Wastes (IDW)

The generation of IDW is not anticipated since only near surface soil sampling will be performed.

Decontamination

New stainless steel spoons will be employed for sampling which will be disposed after use. No decontamination of sampling devices will therefore be needed. Should excavation tools be

required (shovels, picks), they will be decontaminated between sampling locations in accordance with the EPA approved RFI work plans.

Surveying

The sampling locations will be surveyed by obtaining field measurements from the locations to permanent objects.

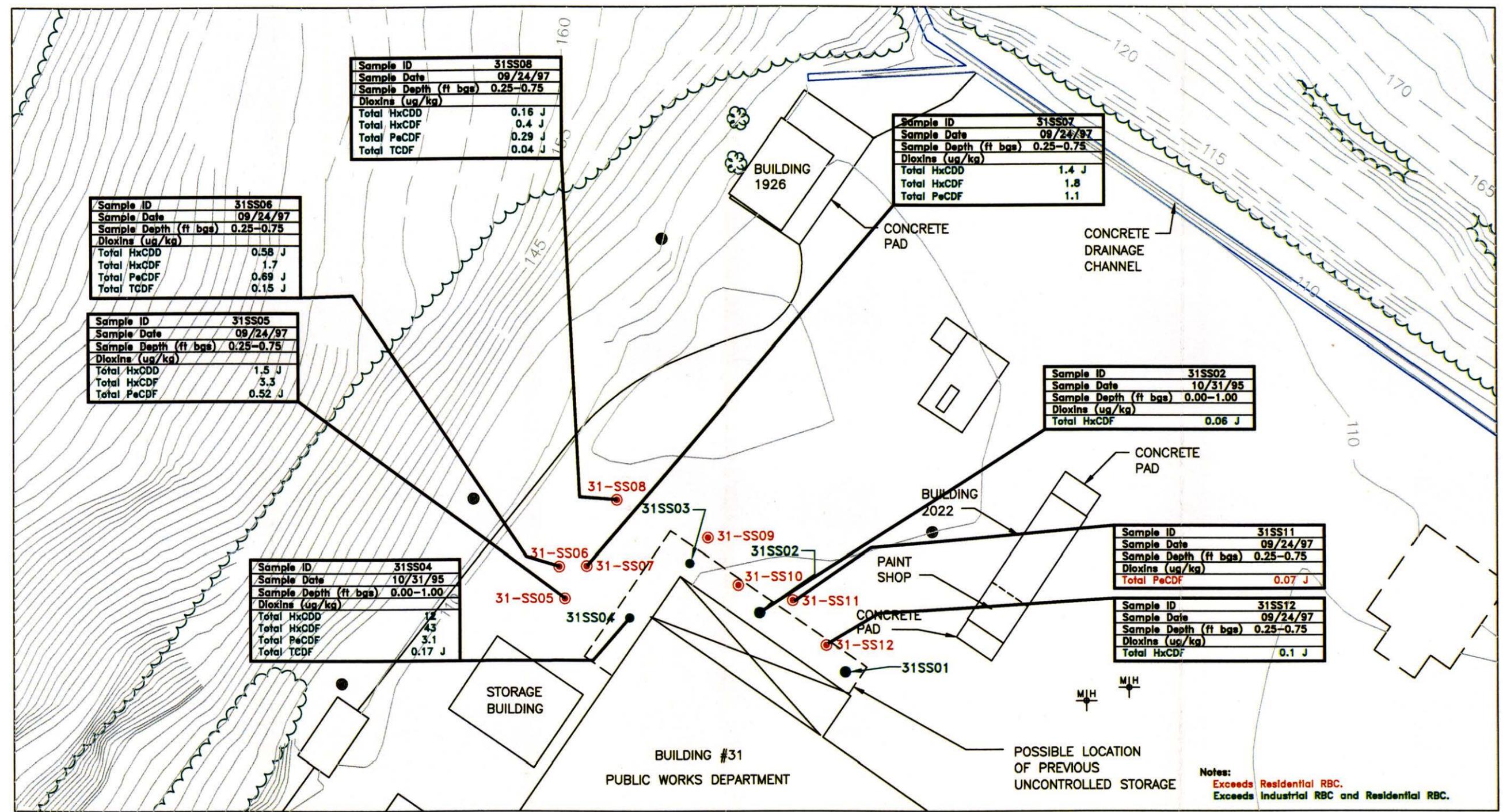
4.0 REPORTING

The results of the Phase III investigations will be provided in the CMS (either the CMS Task I report or streamlined CMS report as appropriate). Included will be the results of the sampling and the results of a new risk assessment employing the dioxin congener specific information. The new data and risk assessment will be used to develop clean-up goals if necessary.

5.0 SCHEDULE

A schedule for the investigations will be developed upon work plan approval. It is the Navy's intent to perform this work in conjunction with other investigations to minimize costs.

Figures



Notes:
 Exceeds Residential RBC.
 Exceeds Industrial RBC and Residential RBC.



LEGEND

- PREVIOUS SOIL SAMPLING LOCATION (PHASE I RFI)
- ⊙ SURFACE SOIL SAMPLING LOCATION (PHASE II RFI)
- 110— SURFACE ELEVATION CONTOUR

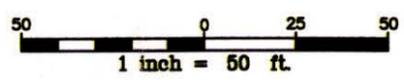
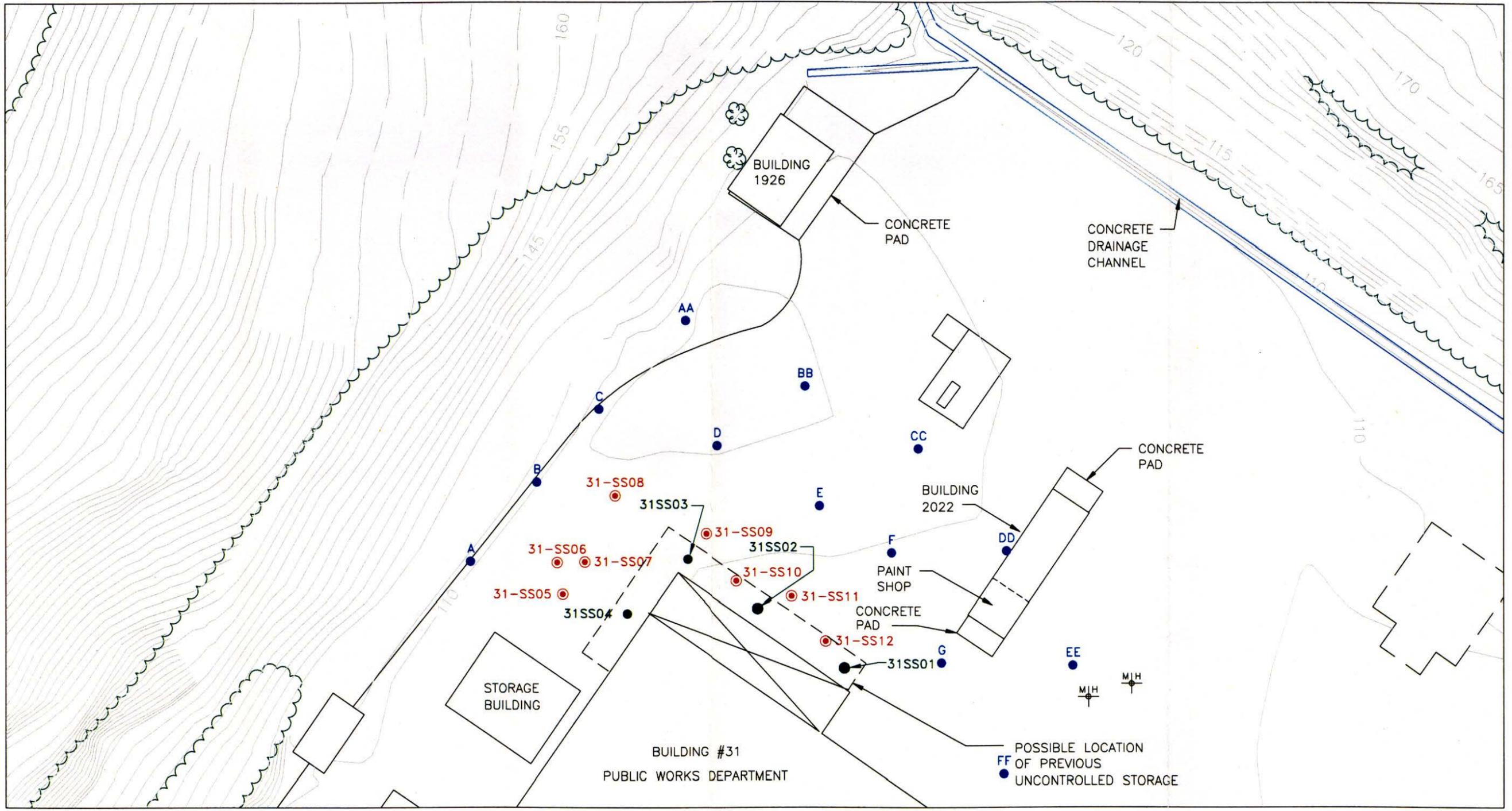


FIGURE 2-1
 SOIL DETECTIONS ABOVE SCREENING CRITERIA
 SWMU 31/32
 NAVAL STATION ROOSEVELT ROADS
 PUERTO RICO

SOURCE: LANTDIV, FEB. 1992/1997

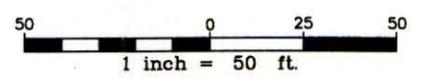
00530GBIY



LEGEND

- SURFACE SOIL SAMPLING LOCATION (PHASE III RFI)
- PREVIOUS SOIL SAMPLING LOCATION (PHASE I RFI)
- SURFACE SOIL SAMPLING LOCATION (PHASE II RFI)
- SURFACE ELEVATION CONTOUR

SOURCE: LANTDIV, FEB. 1992/1997



Baker
Baker Environmental, Inc.

FIGURE 3-1
ADDITIONAL SOIL SAMPLING LOCATIONS
SWMU 31/32
NAVAL STATION ROOSEVELT ROADS
PUERTO RICO