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C-49-03-3-151

March 15, 1993

Mr. Jim Colter (Code 1823)
Remedial Project Manager
Northern Division
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Reference: Contract No. N62472-90-D-1298, CTO No. 0089

Subject: Work Plan/Health & Safety Plan Addendum
Plant No. 3 Soil Gas Survey
NWIRP Bethpage, New York

Dear Mr. Colter:

Please find enclosed sixteen copies of the subject report for your use. This report addresses Navy and NYSDEC comments and subsequent discussions.

If have any questions or require additional information, please call me at (412) 921-8375.

Sincerely,

David D. Brayack, P.E.
Project Manager

Approved for submission by:

Matthew M. Soltis, CSP
Health & Safety Officer

for John J. Trepanowski
Program Manager

/DDB

cc: Mr. R. Boucher (Navy) w/o attachment
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File: 1953

BETHPAGE PHASE 2 RI/FS
CTO 0089, WORK PLAN/H&S PLAN ADDENDUM
PLANT NO. 3 SOIL GAS SURVEY
NWIRP BETHPAGE, NY

1.0 INTRODUCTION

This work is being performed under Contract N62472-90-D-1298, Contract Task Order (CTO 089) as part of the Phase 2 Remedial Investigation (RI) and a Feasibility Study (FS) to address environmental contamination at the Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, New York. A Phase 1 Remedial Investigation was completed in May 1992. The Phase 2 RI/FS is currently underway. A Phase 2 Work Plan Addendum (November 1992) and the Health & Safety Plan Addendum (December 1992) were developed for the Phase 2 RI/FS. This Work Plan/H&S Plan Addendum addresses additional Phase 2 RI activities, namely a two- to three-day soil gas survey for Plant No. 3. The primary purpose of the soil-gas program is to identify the potential for source areas of solvent contamination in Plant No. 3.

During the Phase 1 RI activities, Trichloroethene (TCE) at a concentration of 58,000 ug/l was found in groundwater at a depth of approximately 140 to 160 below grade surface (bgs) to the south and west of Plant No. 3 (HN-24I). The most significant contamination in this area appears to be associated with a 10-foot thick clay layer at this depth. Based on the TCE concentration, this contamination is also potentially DNAPL (dense non-aqueous phase liquid) in nature. Also supporting the potential DNAPL concept is the lack of significant TCE contamination in the shallower groundwater at this location. (Note: samples collected in January 1993 should indicate whether or not DNAPL is present.) Several potential sources of this contamination are currently being investigated. These sources include Site 1, Plant No. 3, and offsite areas hydraulically upgradient of the NWIRP (north and west).

In October 1992, Halliburton NUS conducted a visual inspection of Plant No. 3 for potential source areas of TCE contamination. The inspection did not indicate the presence of any major source areas of TCE contamination. However, several potential minor source areas of TCE were noted.

In January 1993, two intermediate-depth monitoring wells (160 feet bgs) were installed near the HN-24I, (HN-24I1 and HN-24I2 - see Figure 1-1). Based on preliminary data from these wells (HNu readings of split spoon head space and visual observations of the lithology), the potential for Site 1 to be the source of the contamination at HN-24I has been reduced (but not eliminated). This is based on the findings that the contamination was found at a greater depth (162 feet bgs) in HN-24I1 than at HN-24I. Also, the clay layer associated with the contamination in HN-24I was not observed in HN-24I1. In addition, the visual observations and HNu results from HN-24I2 (located nearer Plant No. 3) found both the clay layer and HNu readings similar to that found in HN-24I. This indicates that the source of this contamination may be further north than HN-24I2 (Plant No. 3) and/or further north and west.

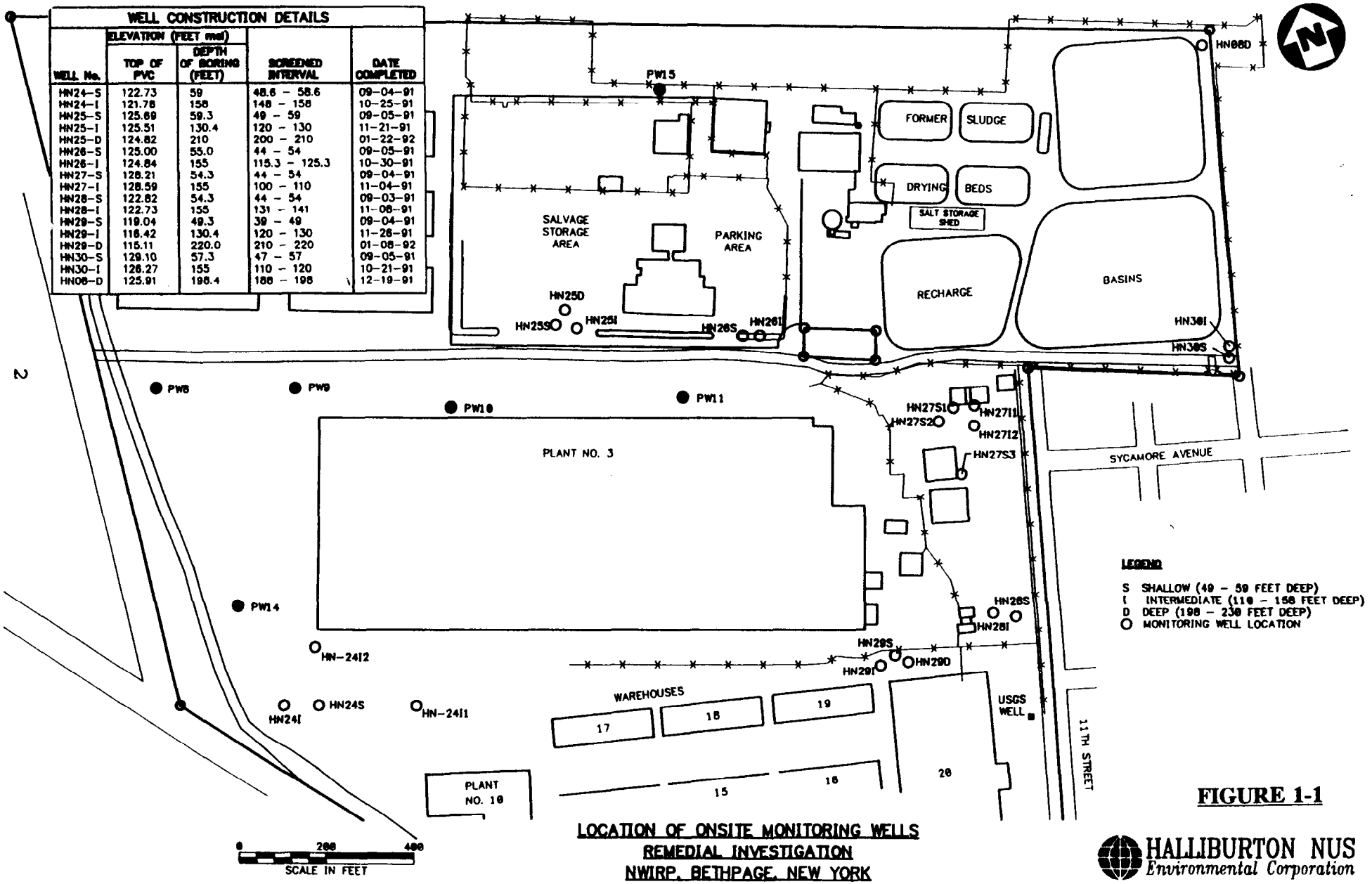


FIGURE 1-1

LOCATION OF ONSITE MONITORING WELLS
REMEDIAL INVESTIGATION
NWIRP, BETHPAGE, NEW YORK

HALLIBURTON NUS
Environmental Corporation

Another observation (from recently obtained Hooker/RUCO soil boring log sheets) is that this clay layer (and associated contamination) may extend north and west to, and potentially beyond, the Hooker/RUCO Superfund Site.

The following sections describe in detail the soil-gas procedure and equipment decontamination requirements (Section 2.0), and supplemental Health and Safety requirements (Section 3.0) for the Plant No. 3 soil gas survey.

2.0 FIELD ACTIVITIES

2.1 Soil Gas Survey

2.1.1 Rationale and General Approach

The purpose of the soil gas survey is to determine if there source areas of solvent-contaminated soils and groundwater (and particularly the groundwater in HN-24I) in Plant No. 3. Additionally, this data can be used to supplement the Phase 1 RI soil-gas survey and determine the need for remediation of soils under Plant No. 3. An OVA meter will be used to provide instantaneous readings of the organic concentration in the soil-gas at each potential source area. To determine if the concentration is significant, the reading will be compared to a set of background OVA readings for Plant No. 3. This soil gas survey is intended to be relatively non-intrusive and preliminary. Based on the findings, a more detailed survey may be required at a later date.

The soil-gas survey will be performed in and near each of the current and historic known or suspected areas where solvents were used and/or stored in Plant No. 3. A total of 24 to 37 soil gas points are planned, with the exact number based on the results obtained during the testing. Of these points, five locations will be used to determine background soil gas readings in or near Plant No. 3.

A minimum of one soil gas point will be placed in each potential source area. Additional soil gas points will be located in a specific area based on size of the process unit and the initial soil gas result for that area. Small non-complex areas would require only a single point to demonstrate the presence or absence of a source. For larger areas, only one very high soil gas reading (e.g. 100 ppm-v above background) is required to confirm the presence of a source. However, several consistently low soil gas readings would be required to confirm that the area is not a source. The background soil-gas samples will be obtained in roughly the four corners of the plant and the north central portion of the plant; however, these points will be located at least 100 feet away from any potential source areas.

The planned soil gas sampling locations are shown on Figure 2-1. These locations have to be checked in the field for utility clearances, avoidance of critical secondary containment units, and general aesthetics, prior to field activities.

Potential interferences to this test include the following: contamination from the groundwater; the building foundation allowing the vapors to concentrate in certain areas; and the building foundation allowing the vapors to migrate horizontally away from a source area. Factors considered in selecting this test method include the consideration that the estimated concentration of solvents in the shallow groundwater underneath Plant No. 3 is relatively low (except for the southeast corner which is Site 1-related) and the groundwater is relatively distant from the foundation (50 to 60 feet bgs - except for some of the secondary containment sumps which are 20 to 40 feet below grade). At an approximate soil temperature of 50°F, pure TCE (DNAPL) has a vapor pressure of about 50,000 ppm-v, whereas TCE in water at 100 ug/l has a corresponding vapor pressure of 7 ppm-v. Also, the vapor densities of chlorinated solvents that are found in the groundwater at the site, are heavier than air and would tend to sink toward the water table.

2.1.2 Sampling Procedures

The soil gas survey procedure consists of drilling a hole through the concrete foundation, driving a steel rod into the underlying soil, extracting the rod, and then testing soil gas at depth using a hollow wand and OVA meter. An impact-type drill will be used to drill a 5/8-inch hole through the concrete foundation or wall. During the drilling, a light water spray is used to provide cooling and to minimize dust generation. A 1/2-inch diameter steel rod will be driven to a distance of 3 to 5 feet below grade with a sledge hammer. The steel rod will be rotated and then extracted completely with a mechanical lever. A rigid plastic tube approximately 1/4-inch in diameter and 3 to 5 feet in length is then affixed to the OVA using a flexible tube and the plastic tube carefully placed in the hole (to avoid collapse of the sand) to near the bottom. The annular area between the wand and the concrete is sealed with a putty. The meter readings on the OVA instrument is then allowed to peak and the peak reading recorded in a site log book.

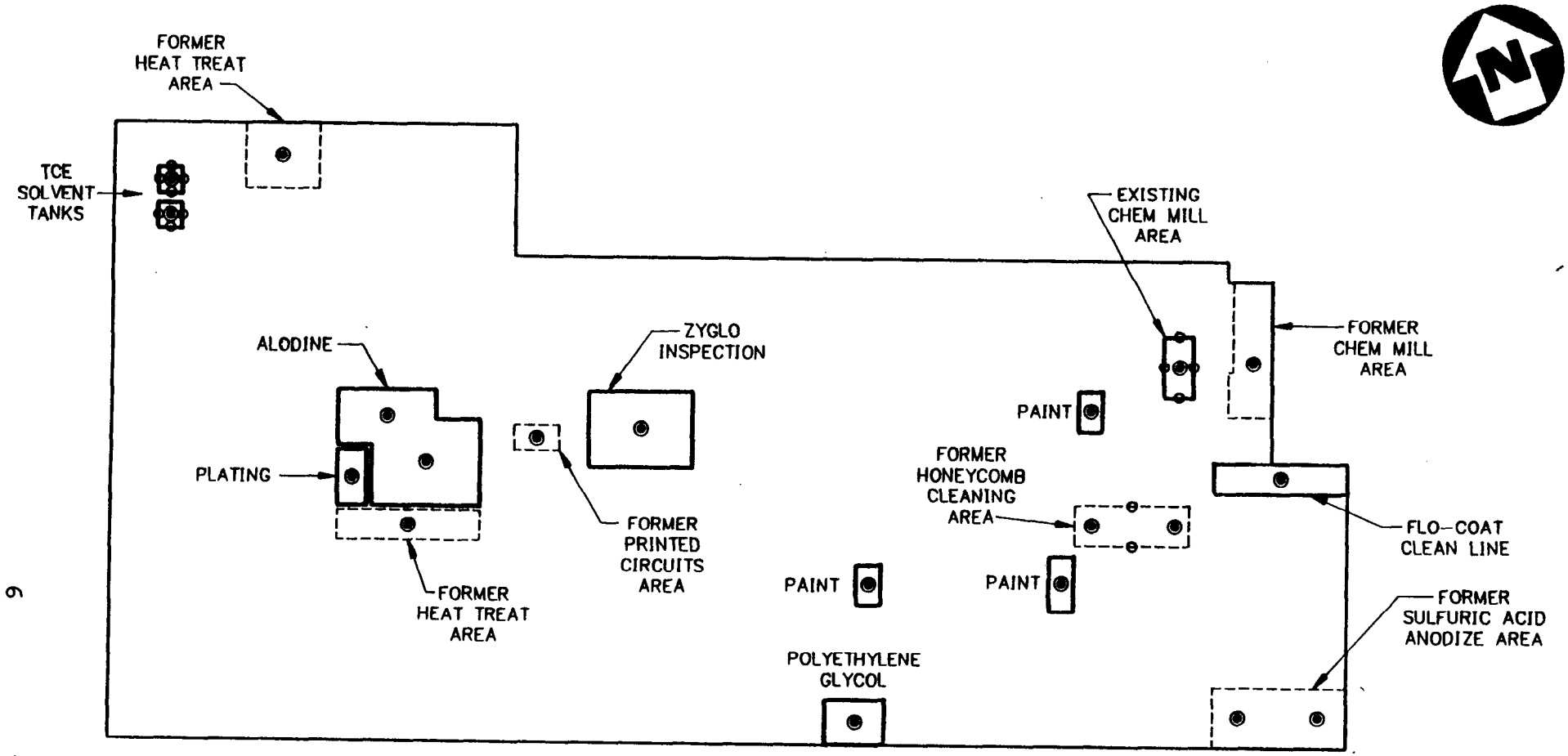
The hole will then be sealed using a non-shrink grout. Foundation material cuttings, PPE, and sample equipment are to be collected and placed in appropriate trash receptacles. Decontamination fluids are to be collected and discharged to the onsite wastewater treatment plant.

2.2 Decontamination

The steel rod, plastic wand, tubing, and drill bits used will be decontaminated by the following procedure:

1) Potable water and liquinox wash
2) Potable water rinse
3) Air dried

The decontamination procedure will be carried out between each soil-gas point. The effectiveness of the decontamination procedure (and in particular for the plastic wand and tubing) will be measured with the OVA. The equipment will be considered decontaminated if identical OVA readings for background air are obtained with and without the wand and tubing in line. If necessary, because of very significant contamination at certain locations, the tubing and wand may be discarded and new tubing and wand used.



NOTES

1. BUILDING AND UNIT LOCATIONS AND SIZES ARE APPROXIMATE.
2. FIVE BACKGROUND SOIL-GAS POINTS ARE TO BE IDENTIFIED IN THE FIELD.

0 150 300

APPROXIMATE SCALE IN FEET

LEGEND

● INITIAL SOIL-GAS SURVEY POINT

○ CONTINGENCY SOIL-GAS SURVEY POINT

FIGURE 2-1

PLANT 03 - SOIL-GAS SURVEY
NWIRP, BETHPAGE, NEW YORK

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2.3 Sample Designation and Recording

Sample results will be recorded on sample log sheets and in a site log book. Samples points will be identified sequentially starting with 01, as follows. Background soil gas samples will have the additional qualifier of "BG" added to the end of the identification number.

BP-PT3-SG-01 (Bethpage - Plant No. 3 - Soil Gas - Location No. 1)

2.4 Reporting

The results and conclusions will be presented with the RI report.

3.0 HEALTH AND SAFETY PLAN

The field activities as described in this Work Plan will be performed in accordance with the Health and Safety requirements and procedures specified in the Health and Safety Plan for Phase 2 Work Plan Addendum CTO 0089. A task-specific Health and Safety Plan is included in this section.

3.1 PPE Requirements

The following list of PPE will be required for the soil gas sampling activities: safety glasses with side shields; steel toe shoes; inner nitrile surgical and outer nitrile gloves (for soil gas sampling equipment); and cotton work gloves (for drilling). Personnel operating drills, and any other persons in the immediate vicinity, will also be required to wear hearing protection to minimize the potential for excessive noise exposures.

Level D respiratory protection will be used initially. The generation of cement dust will be controlled during drilling activities by using a water spray. If this technique is not determined to adequately control dust (as evidenced by visual dust generation or respiratory irritation), work will be halted and additional respiratory protection used. The CLEAN Health and Safety Manager will be contacted for guidance on proper respiratory protection selection.

3.2 Monitoring Equipment

Although an OVA will be used for the soil gas survey testing, a separate HNu (equipped with a 10.2 ev probe) will be used to continuously monitor the breathing zone. Initially, work will be performed in Level D. If elevated HNu reading are obtained in the breathing zone, work will stop and the air will be tested for vinyl chloride. In the absence of vinyl chloride, work may proceed in Level C. In the presence of vinyl chloride, may only be conducted in Level B, therefore, work would be halted until alternate arrangements can be made. If background readings in the workers' breathing zones are regained, work may continue in Level D, with continuous HNu monitoring performed. These procedures and requirements for Air Monitoring are explained in detail in Section 12.0 of The Health and Safety Plan for Phase 2 Work Plan Addendum CTO 0089.