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FINAL WELL DECOMMISSIONING WORK PLAN NAS BRUNSWICK ME  
11/1/2012  
H&S ENVIRONMENTAL

*Final*  
**WELL DECOMMISSIONING  
WORK PLAN**

**FORMER NAVAL AIR STATION  
BRUNSWICK, MAINE**



**Prepared by:**

**Department of the Navy  
Naval Facilities Engineering Command  
BRAC Program Management Office - Northeast  
4911 South Broad Street  
Philadelphia, Pennsylvania 19112-1303**

**November 2012**

**H&S Environmental, Inc.**



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**Submitted to:**

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4911 South Broad Street  
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**Submitted by:**

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160 East Main Street, Suite 2F  
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**Contract No. N40085-10-D-9404  
Contract Task Order No. 0009**

**November 2012**

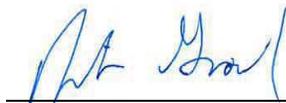


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Patrick Schauble, P.E.  
Program Manager

11/5/12

Date



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Jennifer Good, P.G.  
Project Manager

11/5/12

Date

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## **ACRONYMS AND ABBREVIATIONS**

AHA	Activity Hazard Analysis
BOL	Bill of Lading
BRAC	Base Realignment and Closure
CIH	Certified Industrial Hygienist
CTO	Contract Task Order
DoD	Department of Defense
DOT	Department of Transportation
ELAP	Environmental Laboratory Accreditation Program
H&S	H&S Environmental, Inc.
MEDEP	Maine Department of Environmental Protection
MIDLANT	Mid-Atlantic
MRRA	Midcoast Regional Redevelopment Authority
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NELAC	National Environmental Laboratory Accreditation Conference
O&M	Operations and Maintenance
OSHA	Occupational and Safety Health Administration
PGM	Program Manager
PJM	Project Manager
POC	Point of Contact
SHM	Safety and Health Manager
SS	Site Superintendent
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
TCLP	Toxicity Characteristic Leaching Procedure
TSDF	Treatment, Storage, and Disposal Facility
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency

## 1.0 INTRODUCTION

H&S Environmental, Inc. (H&S) has prepared this Well Decommissioning Work Plan for the Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic (MIDLANT) under Contract Number N40085-10-D-9404, Contract Task Order (CTO) No. 0009. This Work Plan describes the means, methods, and procedures that will be utilized for performance of well decommissioning activities at various sites located throughout the Former Naval Air Station (NAS) Brunswick, Maine.

The following documents were used as a basis for this Work Plan:

- *Maine Department of Environmental of Environmental Protection (MEDEP) Bureau of Remediation and Waste Management Guidance for Well and Boring Abandonment* dated 9 January 2009.
- U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual, EM385-1-1 dated 2008.
- U.S. Environmental Protection Agency (USEPA) Office of Solid Waste: *RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment* dated August 2002.

This document is applicable to services performed by H&S as the prime contractor as well as any subcontractors under H&S' control.

### 1.1 Site Background

The Former NAS Brunswick is located south of the Androscoggin River between Brunswick and Cooks Corner, Maine as depicted on **Figure 1**. The former base lies at the head of a peninsula with tidal areas nearby. The former base consisted of 3,094 acres of land of which approximately 75 percent is forested areas, grassland, miscellaneous shrubland, marsh, and open water. The remaining 25 percent consisted of former office buildings, barracks, recreational facilities, base housing, hangars, repair shops, and other facilities, as well as paved areas including flight ramps and runways.

Prior to operational closure in May 2011, the Former NAS Brunswick was an active base owned and operated by the Federal government through the Department of the Navy. The primary mission of the Former NAS Brunswick was flight operations related to anti-submarine warfare. Under the Base Realignment and Closure (BRAC) Program the Navy is currently in the process of conducting administrative and environmental actions to support future property transfer. The Former NAS Brunswick continues to participate in the Navy's Installation Restoration Program, which includes Long-Term Monitoring of various sites across the facility. Numerous monitoring wells exist to support this on-going monitoring program. However, obsolete monitoring wells also exist which are no longer needed for the monitoring program. The Navy and Environmental Stakeholders periodically evaluate existing monitoring wells to determine which wells still provide useful data to assess base wide environmental groundwater quality

issues. Wells which are no longer needed are recommended for closure in accordance with MEDEP requirements since they represent a conduit for potential contamination to enter the aquifer and degrade groundwater quality.

## **1.2 Project Objectives**

The primary objective of this project is to decommission obsolete monitoring wells at several sites at the Former NAS Brunswick. Associated activities include:

- Decommissioning of various monitoring wells (to be abandoned in place via tremie-grout procedures)
- Decommissioning of various monitoring wells (to be drilled out and then sealed via tremie-grout procedures)
- Waste Management (handling, temporary staging, characterization, and offsite transportation and disposal)
- Site Restoration

## **2.0 ORGANIZATION AND RESPONSIBILITIES**

### **2.1 Organizational Structure and Staffing**

Mr. Patrick Schauble, P.E. will serve as the Program Manager (PGM). Mr. Schauble and/or his delegates represent H&S in all matters related to the project.

Ms. Jennifer Good, P.G. will serve as the Project Manager (PJM) and as the Point of Contact (POC) for this task. Ms. Good is responsible for the execution of the project in accordance with the requirements contained in this Work Plan and the Site Safety and Health Plan (SSHP).

Mr. Edward Kearney, CIH will serve as the Safety and Health Manager (SHM). Mr. Kearney is a Certified Industrial Hygienist (CIH) whose Safety and Health responsibilities include oversight of the development and approval of the SSHP and providing Safety and Health technical assistance to the PJM and Site Safety and Health Officer (SSHO).

Mr. Victor LeClerc will serve as the SSSH and Site Superintendent (SS). As SSSH, Mr. LeClerc is responsible for coordinating and ensuring consistent application of safety and health practices and procedures for all staff, regardless of organizational affiliation. The SSSH is responsible for the implementation of the SSHP to ensure that the planned work objectives reflect adequate safety and health considerations. As SS, Mr. LeClerc is responsible for ensuring that all field activities are conducted in conformance with the requirements contained in this Work Plan. The SS is also responsible for ensuring that subcontractor submittals are prepared and submitted on time and will also coordinate all field activities to be performed by the subcontractor, with direct oversight by the PJM.

Mr. John Hudacek or Ms. Stacey Lee will serve as the alternate SSSH / SS.

### **2.2 Subcontractors**

H&S will procure qualified subcontractors to perform on-site well decommissioning activities, including over-drilling of wells (as needed), pressure grouting of wells using the tremie method, completing well locations to grade, site restoration (as needed), and waste staging, handling, characterization, transportation, and disposal.

The anticipated subcontractors on this project include the following:

- New Hampshire Boring, Inc. of Brockton, MA as the drilling subcontractor responsible for drilling and decommissioning activities;
- EQ Northeast, Inc. of Wrentham, MA as the waste handling subcontractor responsible for transporting and disposing of waste off-site;
- TestAmerica of Burlington, VT as the laboratory subcontractor responsible for the analysis of waste characterization samples.

### **3.0 REGULATORY CONSIDERATIONS**

#### **3.1 Safety and Health Requirements**

H&S employees will follow, at a minimum, the standards established by the U.S. Occupational Health & Safety Administration (OSHA), USACE Safety and Occupational Health Manual, EM 385-1-1, and applicable H&S' Corporate Safety and Health Program provisions, whichever is more stringent. Health and Safety measures are detailed in H&S' SSHP; in accordance with FAR 52.236-13, the plan is site-specific and includes an activity hazard analysis (AHA) for all tasks performed. The SSHP will be strictly followed and immediately accessible to all workers at the site at all times during this project.

#### **3.2 State and Local Requirements**

H&S will comply with state and local requirements applicable to the work to be performed under the Contract. Components of the work related to these requirements include, but are not limited to, the following:

- Well decommissioning will be performed in accordance with *Maine Department of Environmental of Environmental Protection Bureau of Remediation and Waste Management Guidance for Well and Boring Abandonment* dated 9 January 2009.
- Notification will be made to Maine Dig Safe no less than 72 hours but no greater than 30 days prior to performing any intrusive activity including over-drilling of existing monitoring wells.
- NAS Brunswick BRAC and Midcoast Regional Redevelopment Authority (MRRA) representatives will be consulted to determine what, if any, permits (work, excavation, or other) are required for this project. In addition, site access and security will be coordinated with the Navy BRAC PMO office at Former NAS Brunswick.
- Handling, staging, characterization, transporting, and disposal of waste generated as a result of this project.

## **4.0 PROJECT EXECUTION**

### **4.1 Project Management, Administration, and Coordination**

The PJM, Ms. Jennifer Good, P.G., will manage this project. She will utilize project support for safety management, cost and schedule, accounting, procurement, contract administration, and quality control from H&S' internal resources. Key members of the project staff for this task order are identified in Section 2.1, including the SS/SSHO. Field staffing during all onsite work activities will include the SSHO/SS on a full-time basis. The PJM will make periodic site visits to monitor the progress of the work for overall quality and project reporting.

The H&S PJM will maintain responsibility for overall task order performance, lead contact with the client regarding project contractual and financial matters, and will share responsibility for safety and quality performance with the field team.

Upon acceptance of this Work Plan detailing specific wells to be decommissioned and methods to be utilized, the H&S PJM will coordinate site access with the appropriate entities for execution of this project. This will include, but is not limited to, the BRAC PMO office as well as MRRA, as many of the wells are located on transferred property.

### **4.2 Pre-Construction Site Visit**

H&S will coordinate and attend a Pre-Construction site visit prior to commencement of field work. The purpose of the Pre-Construction site visit will be to review the Work Plan with project personnel and determine logistics and organizational details of the field execution. Key members of the H&S field team will be present, including the PJM and SSHO/SS, as well as the drilling subcontractor. Monitoring wells to be decommissioned will be located using field maps and if needed, a Trimble Geo XH or equivalent (specifications of which are included in **Appendix A**). During this time, H&S will also identify, with the BRAC and MRRA representative, the area which will be used for the temporary staging of waste material generated during the project. Site security, excavation permitting, and other local requirements which may pertain to the planned work tasks will also be discussed.

### **4.3 Mobilization and Site Preparation**

Prior to mobilizing to the site, a review of the existing utilities in the area will be performed with a representative from the BRAC PMO office to identify any potential utility concerns. The required Maine Dig Safe notification (72 hours in advance) will be performed. A third party utility locator is not deemed necessary for this work as intrusive activities will only be performed within existing boreholes.

Overhead utilities will also be identified prior to drilling operations and avoided during well closure operations. A minimum buffer of 10 feet will be maintained between drilling equipment and overhead wires.

After all pre-mobilization submittals have been approved and the Pre-Construction Site visit has been completed, H&S will mobilize required labor, equipment, and materials to the job site including the SS/SSHO and drilling subcontractor.

#### **4.4 Decommissioning of Monitoring Wells (abandoned in place)**

Monitoring wells that are able to be abandoned in place, as determined per requirements outlined in *Maine Department of Environmental of Environmental Protection Bureau of Remediation and Waste Management Guidance for Well and Boring Abandonment* (January 2009), will be decommissioned as described below.

Monitoring wells will be pressure grouted using the tremie method, beginning from the bottom of the well screen and continuing upward to ground surface. The cement/grout slurry will be mixed according to manufacturer's specifications to produce a pumpable consistency. The concrete well pad will be cracked from around the outer steel protective well casing, and well pad and outer protective casing removed. Well casings will then be cut below grade, and will be filled with cement/grout mixture to approximately two feet below the cut casing. After the grout settles and is allowed to cure, the remaining well annulus will be filled with concrete. For decommissioned wells located in grass, topsoil will be used to level the hole until flush with the surrounding area, and grass seed will be planted on the surface. For decommissioned wells in paved areas, an asphalt cold patch material will be used to patch the surface and make it flush with the surrounding area.

A list of monitoring wells to be abandoned in place and associated specifications is included in **Table 1**. Geographical locations of the wells are presented on **Figure 2**. Well boring and construction logs are included in **Appendix B**.

#### **4.5 Decommissioning of Monitoring Wells (drilled out and sealed)**

Several monitoring wells will be decommissioned that are not able to be abandoned in place. Because no boring or construction logs or details exist for these wells, it cannot be demonstrated that the wells were properly constructed and hydraulic seals placed in order to prevent hydraulic short-circuiting between separate water-bearing zones. These wells will be drilled out and sealed via the tremie method, as described below.

##### **4.5.1 Overdrilling and Decommissioning Activities**

The concrete well pad will be cracked from around the outer steel protective well casing, and well pad and outer protective casing removed. Plastic sheeting will be placed around the well head prior to over-drilling to contain any cuttings. The monitoring wells (with inner casing diameters of two inches) will be overdrilled using a 4.25-in outer diameter hollow stem auger. Each borehole will be advanced below the bottom of the well screen until natural material is encountered to ensure the sand pack and other well construction materials are removed. A photo-ionization detector (PID) will be used by the SSHO to monitor air quality during all drilling activities. Soil cuttings and debris resulting from overdrilling will be shoveled into 55-gallon steel drums, and waste cuttings will be managed as described in Section 4.6 below. The

borehole will be pressure grouted using the tremie method, beginning from the bottom and continuing upward to ground surface. The cement/grout slurry will be mixed according to manufacturer's specifications to produce a pumpable consistency. After the grout is installed, the hollow stem augers will be removed from the borehole. Well casings will be cut below grade, and will be filled with cement/grout mixture to approximately two feet below the cut casing. After the grout settles and is allowed to cure, the remaining well annulus will be filled with cement or native soil. For decommissioned wells located in grass, topsoil will be used to level the hole until flush with the surrounding area, and grass seed will be planted on the surface. For decommissioned wells in paved areas, an asphalt cold patch material will be used to patch the surface and make it flush with the surrounding area.

A decontamination pad consisting of heavy plastic sheeting with perimeter berms will be constructed at an on-site location for decontamination of downhole equipment (e.g. augers), the rig, and other equipment which will allow for the collection and disposal of all decontamination-generated fluids. All large downhole equipment and materials used in drilling will be decontaminated using high pressure/temperature steam cleaning or a brush, detergent, and water for small equipment. Equipment will be decontaminated prior to use, between locations, and before leaving the site at the completion of work. Decontamination fluids will be containerized and managed as described in Section 4.6 below.

A list of monitoring wells to be abandoned and associated specifications (as available) is included in **Table 1**. Geographical locations of the wells are presented on **Figure 2**.

## **4.6 Waste Management (Handling / Staging, Characterization, and Disposal)**

### **4.6.1 Waste Handling / Staging**

#### **4.6.1.1 Drill Cuttings and Decontamination Fluids**

Waste in the form of drill cuttings, decontamination fluids, etc. will be containerized in 55-gallon steel drums and properly staged on site pending receipt of analytical results from waste characterization samples. Solid and liquid waste will be containerized separately, placed in a Conex™ box by the drilling subcontractor and properly secured pending disposal. All materials will be labeled properly in accordance with OSHA and Department of Transportation (DOT) regulations, and compliance with OSHA Hazard Communication (29 CFR 1910.1200) will be maintained. Based on prior sampling data, it is anticipated that all waste will be non-hazardous; however, this will be confirmed through waste characterization samples as discussed below.

#### **4.6.1.2 Construction Debris**

Construction debris will be generally sorted in real time on site into categories for respective recycling/disposal. Debris will include concrete from decommissioned well pads as well as cut steel casings from decommissioned wells, which will be decontaminated as necessary prior to disposal. The waste will either be recycled as appropriate or transported to a local Subtitle D landfill for disposal by the drilling subcontractor upon completion of the decommissioning field tasks.

## **4.6.2 Waste Characterization**

### **4.6.2.1 Waste Characterization Sampling**

Waste material will be sampled in accordance with the standard operating procedures (SOPs) outlined in **Appendix C** and analyzed in accordance with USEPA SW-846 analytical methods. Analytical results will be used to profile the waste streams and obtain acceptance at a suitable licensed disposal facility.

For solid waste samples, a stainless steel trowel will be used to collect a discrete, representative sample of each drum. These samples will be composited in a stainless steel bowl to obtain one composited waste characterization sample. Because samples to be analyzed for VOCs cannot be composited in the field, a discrete sample from the material in each drum will be collected to be composited by mass at the laboratory into Toxicity Characteristic Leaching Procedure (TCLP) VOC soil samples.

Liquid wastes generated from decontamination activities will also be sampled by collecting one discrete sample for the analyses discussed below.

All equipment utilized for sample collection will be disposable; therefore, no decontamination of sampling equipment or collection of rinsate blanks are required.

Waste characterization samples will be analyzed for parameters detailed in **Table 2**. Analytical methods, sample holding times, and required sample containers and preservatives for each parameter to be quantified are also summarized in **Table 2**.

### **4.6.2.2 Analytical Laboratory Information**

Waste characterization samples will be submitted to TestAmerica of Burlington, VT, a National Environmental Laboratory Accreditation Conference (NELAC), Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) certified, laboratory.

Laboratory information is as follows:

TestAmerica Burlington  
30 Community Drive, Suite 11  
South Burlington, VT 05403  
Phone: 802.660.1990  
Fax: 802.660.1919  
Contact: Rick Carr  
Laboratory Certification Numbers: 2011011 (State of Maine), ADE-1492 (DoD ELAP)

### **4.6.2.3 Sample Identification**

All samples will be identified using a unique sample tracking number designated by an alphanumeric code identifying the site, sample medium, location, and date. Any other pertinent information regarding sample identification will be recorded in the field logbooks.

The alpha-numeric (A-N) coding to be used in the sample system is described below.

AAAA - AAAA - AA - AAAA or NN - MMDDYYYY  
(Installation ID) - (Site ID) - (Medium) - (Number) - (Date)

Where:

- Installation Identifier: NASB
- Site Identifier: Site Name (e.g. AIR-4, ONFF, etc.)
- Medium Identifier: SD for sediment samples, AQ for aqueous samples
- Number Identifier: Two digit sample number for a given area (e.g. 01, 02, 03). In general, only one sample will be collected from a given area; however, for VOC subsamples to be composited at the laboratory, samples will be denoted as 01, 02, 03, etc where 01, 02, and 03 indicate the drum number.
- Date: All samples will be dated to identify the associated sampling period.

#### 4.6.2.4 Sample Collection Documentation

A project-specific field logbook will be used to keep daily records of significant events, observations, and measurements. The field logbook also will be used to document all sampling activities. Logbook entries will be made with indelible ink to provide a permanent record, and any errors in the logbook will be verified, crossed through, and initialed by the person discovering the error. The field logbooks are intended to provide sufficient data and observations to reconstruct events that occurred during project activities. The following items are examples of information that may be included in a field logbook:

- Name, date, and time of entry
- Names and responsibilities of field crew members
- Name and titles of any site visitors
- Descriptions of field procedures, and problems encountered
- Samples collected at each location
- Sample identification numbers of all samples collected
- Date and time of collection
- Sample collector
- Sample collection method
- Decontamination procedures (if applicable)
- Weather conditions
- Site observations
- Site sketches
- Health and Safety issues including personal protective equipment
- Log of photographs – photographs will be taken of each well location prior to and after decommissioning activities

#### *4.6.2.5 Field Sample Handling and Chain-of-Custody Procedures*

Prior to sample collection, sample containers will be labeled with the sample location number, sampler's name, date, and analytical fraction. Following collection, samples will be placed on ice in a secure cooler or in a box, as applicable, and attended by H&S personnel or placed in locked vehicles or designated storage areas until shipment to an off-site laboratory. Samples will be shipped to the laboratory in coolers packed with bubble wrap, or equivalent packing material, to cushion the samples and prevent breakage. Ice will be added to the coolers to maintain the required temperature (4° C) of the samples. A container filled with water and labeled "temperature blank" will be included in each cooler. The temperature of this blank will be measured by the laboratory upon sample receipt to verify acceptable sample preservation temperature. The coolers will be taped and sealed with a signed custody seal to ensure that chain of custody is maintained. Samples will be shipped to the laboratory to ensure that maximum sample holding times are not exceeded. The maximum allowable sample holding times for each analysis are presented in **Table 2**.

Custody of samples must be maintained and documented at all times to ensure the integrity of each sample from collection through analysis. Chain of custody begins when samples are collected in the field and is maintained by storing the samples in secure areas until custody can be passed on. All samples will be delivered to the laboratory accompanied by a chain-of-custody form that will describe the sample identifiers, dates and times of sample collection, analytical parameters, and persons responsible for the sample integrity. The chain-of-custody form is a two-part form: the original accompanies the samples to the analytical laboratory, and the copy will be archived in the project files.

The condition of the shipping cooler/box, custody seals, coolant, integrity and condition of the samples and presence and accuracy of the chain-of-custody documentation will be recorded by the laboratory upon sample receipt.

#### *4.6.3 Waste Disposal*

Upon receipt of waste characterization analytical results, EQ Northeast, a Maine-licensed transporter, will transport waste to an approved Treatment, Storage, and Disposal Facility (TSDF). H&S will coordinate signing of waste manifests and / or bill of ladings (BOLs) with the BRAC office at Former NAS Brunswick and will submit return copies of these waste manifests to the BRAC office.

The TSDF that will be utilized for this project is:

EQ Detroit, Inc.  
1923 Frederick  
Detroit, MI 48211  
Phone: 313.923.0080  
Fax: 313.923.3375  
EPA ID #: MID 980 991 566

EQ Northeast's transporter permits and the TSDF operating license are included in **Appendix D**.

#### **4.7 Site Restoration**

The site will be cleaned up and all disturbed areas will be returned to pre-existing conditions to the extent practical. This includes filling ruts, preventing erosion, removing debris and waste materials generated as a result of the well closure process, and reseeding and vegetating as required to match preconstruction conditions. The PJM will conduct a site inspection prior to demobilization to ensure any issues are properly addressed.

#### **4.8 Demobilization**

H&S will demobilize equipment and personnel from the site upon completion of decommissioning and site restoration activities. Generated waste and the associated Conex™ box will be removed from the site once waste characterization results are received.

#### **4.9 Work Completion Documentation**

Upon completion of all field activities, H&S will submit work completion documentation in the form of a Well Closure Report. This report will summarize well decommissioning activities performed, providing photographic documentation and a Well Abandonment Record for each decommissioned well. These Well Abandonment Records will be included by MEDEP in the permanent site file.

## **5.0 PROJECT SCHEDULE**

It is anticipated that field work will be conducted in November / December 2012. Well decommissioning activities are expected to take up to 10 working days. Generated waste will be disposed of immediately following receipt of waste characterization results. Submittal of the Final Well Closure Report is anticipated to occur by January 2013.

## **6.0 REFERENCES**

- Maine Department of Environmental of Environmental Protection (MEDEP). 2009. *MEDEP Bureau of Remediation and Waste Management Guidance for Well and Boring Abandonment*. January.
- U.S. Army Corps of Engineers. 2008. *Safety and Health Requirements Manual, EM385-1-1*.
- U.S. Environmental Protection Agency Office of Solid Waste. 2002. *RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment*. August.

## **TABLES**

**Table 1**  
**Summary of Wells to be Decommissioned**  
**Former Naval Air Station Brunswick, Maine**  
**Fall 2012**

Site No.	Well ID	Well Construction Log	Boring Log	GPS Coordinates <sup>(1)</sup> (x,y)		Inner Casing Diameter (inches)	Total Depth of Well <sup>(2)</sup> (ft bgs)	Rationale for Abandonment
Dyers Gate	Dyers Gate Well	See note below <sup>(3)</sup>		---	---	6	264	MEDEP Request
Eastern Plume	P-113 (Mere Brook)	No	No	561858.315	382376.144	--	25	Prior concurrence based on EA 2000 Letter
	P-114 (Mere Brook)	No	No	562006.291	382195.201	--	25	Prior concurrence based on EA 2000 Letter
	P-115 (MW-04)	No	No	562272.546	381941.642	--	15	Prior concurrence based on EA 2000 Letter
	P-131 (Mere Brook)	No	No	561523.448	382689.882	--	25	Prior concurrence based on EA 2000 Letter
AIR 4 (New Navy Tank Farm)	MW-NASB-011	No	No	3015650.819	390116.921	2	9	FOST
	MW-NASB-013	No	No	3015573.567	390184.292	2	13	FOST
	MW-NASB-015	No	No	3015695.514	390078.183	2	15	FOST
	MW-NASB-016	No	No	3015599.153	390104.244	2	16	FOST
	MW-NASB-018	No	No	3015695.405	390161.663	2	18	FOST
	MW-NASB-019	No	No	3015657.315	390036.183	2	19	FOST
Old Navy Fuel Farm (Temporary Wells)	DP-01	Yes	Yes	3015928.64	389099.91	1	14	Temporary well, no longer needed
	DP-07	Yes	Yes	3016189.07	389236.14	1	16	Temporary well, no longer needed
	DP-12	Yes	Yes	3016157.94	389144.37	1	18	Temporary well, no longer needed
	DP-17	Yes	Yes	3016333.47	389028.88	1	18	Temporary well, no longer needed
	DP-22	Yes	Yes	3016178.22	388856.08	1	20	Temporary well, no longer needed
	DP-24	Yes	Yes	3016529.94	389090.01	1	12	Temporary well, no longer needed
	DP-28	Yes	Yes	3016497.08	389411.31	1	16	Temporary well, no longer needed
	DP-30	Yes	Yes	3016644.48	389302.48	1	8.2	Temporary well, no longer needed
	DP-39	Yes	Yes	3016258.44	388766.08	1	16	Temporary well, no longer needed
	DP-43	Yes	Yes	3015869.92	388938.57	1	18	Temporary well, no longer needed
	DP-44	Yes	Yes	3015922.97	388812.72	1	20	Temporary well, no longer needed
	DP-45	Yes	Yes	3015856.71	388784.70	1	18	Temporary well, no longer needed
Old Navy Fuel Farm (Permanent Wells)	MW-NASB-49	No	Yes	564093.4272	388975.8012	2	15	Between Fitch Ave and Ave B, no exceedances as of 6/10, in 2003 recommended for gauging only, no sampling
	MW-NASB-208	No	No	563639.714	388383.189	2	20	
	MW-NASB-208BR	Yes	Yes	563642.60	388392.34	2	20	S. of Fitch Ave, no exceedances as of 6/10
	MW-NASB-209	No	No	563344.775	388293.729	2	20	S. of Fitch Ave, no exceedances as of 6/10
	MW-NASB-209R	Yes	Yes	563292.58	388319.12	2	10	S. of Fitch Ave, no exceedances as of 6/10, in 2003 recommended for gauging only, no sampling
	MW-NASB-245	Yes	Yes	563891.02	388372.99	2	10	S. of Fitch Ave, no exceedances as of 6/10, in 2003 recommended for gauging only, no sampling
	MW-NASB-701	Yes	Yes	563584.48	388880.01	2	12.5	Well damaged and irreparable
	MW-NASB-703	Yes	Yes	563833.97	389031.73	2	10	Well damaged and irreparable

**Table 1  
Summary of Wells to be Decommissioned  
Former Naval Air Station Brunswick, Maine  
Fall 2012**

Site No.	Well ID	Well Construction Log	Boring Log	GPS Coordinates <sup>(1)</sup>		Inner Casing Diameter (inches)	Total Depth of Well <sup>(2)</sup> (ft bgs)	Rationale for Abandonment
				(x,y)	(x,y)			
Sites 1&3	MW-102	Yes	Yes	561630.669	382708.933	2	17	Prior concurrence based on EA 2000 Letter
	P-126	Yes	No	561455.677	383430.845	0.75	10	Prior concurrence based on EA 2000 Letter
Site 8	MW-803	Yes	Yes	562604.697	391729.95	2	16	Prior concurrence based on EA 2000 Letter
	MW-813	Yes	Yes	562621.652	391818.29	2	52	Prior concurrence based on EA 2000 Letter
	MW-814	Yes	Yes	562704.15	391832.924	2	79	Prior concurrence based on EA 2000 Letter

Notes:

ft bgs = feet below ground surface

Gray shading indicates that no well construction log or boring log is available and well therefore will be overdrilled prior to sealing via the tremie-grout method. No shading indicates tremie-grout method will be utilized without the need to first drill out the well.

(1) Survey Data in U.S. State Plane NAD 1927 or 1983 coordinate system.

(2) Total well depths based on well construction logs or details, with the exception of FOST AIR-4. Well depths for FOST AIR-4 are based on previous field measurements obtained by others and will be verified by H&S in the field prior to beginning decommissioning activities.

(3) Well construction log for the Dyers Gate Well is not available; instead well construction details are based on email communication from MEDEP on 18 March 2004.

**Table 2  
Waste Characterization Sampling Summary  
Former Naval Air Station Brunswick, Maine  
Fall 2012**

Analytical Parameter	Matrix	US EPA SW-846 Method	Container Type	Preservative	Holding Time
Complete TCLP -VOCs -SVOCs -Metals (including Hg) -Pesticides -Herbicides	Soil / Sediment	1311	1 x 2oz (TCLP VOCs); 1 x 8oz (TCLP non-volatiles)	cool 4 deg C	TCLP ICP Metals: 6 months to TCLP Leach, 6 months to analyze. TCLP Mercury: 28 days to TCLP Leach, 28 days to analyze. TCLP Volatiles: 14 days to leach, 14 days to analyze. TCLP SVOCs: 14 days to leach, 7 days to extract, 40 days to analyze. Pesticides: 14 days to extract, 40 days to analyze. Herbicides: 14 days to extract, 40 days to analyze.
Reactivity (Sulfide/Cyanide)	Soil / Sediment	9034/9012A	1 x 4 oz	cool 4 deg C	14 days
Ignitability	Soil / Sediment	1030 or 1010	1 x 4 oz	cool 4 deg C	14 days
TPH	Soil / Sediment	MA EPH/VPH	1 x 8 oz	cool 4 deg C	14 days to extract, 40 days to analyze.
TCL VOCs	Aqueous	8260B	3 x 40 mL VOA vials	HCl, cool 4 deg C	14 days
TCL SVOCs	Aqueous	8270C	2 x 1L Amber	cool 4 deg C	7 days
Total TAL Metals (including Hg)	Aqueous	6010C/7471B	1 x 500 mL plastic	Nitric acid	ICP Metals: 6 months. Mercury: 28 days
Pesticides	Aqueous	8081A	2 x 1L Amber	cool 4 deg C	7 days to extract, 40 days to analyze.
Herbicides	Aqueous	8151A	2 x 1L Amber	cool 4 deg C	7 days to extract, 40 days to analyze.
Reactivity (Sulfide/Cyanide)	Aqueous	9034/9012A	1 x 500 mL plastic	cool 4 deg C	14 days
Ignitability	Aqueous	1010	1 x 250 mL plastic	cool 4 deg C	14 days
TPH	Aqueous	MA EPH/VPH	2 x 1L Amber (EPH); 3 x 40 mL VOA Vial (VPH)	HCl; cool 4 deg C	7 days to extract, 40 days to analyze (EPH); 14 days to analyze (VPH).

Notes:

HCl = hydrochloric acid

H<sub>2</sub>SO<sub>4</sub> = sulfuric acid

SVOC = semi-volatile organic compound

TAL = target analyte list

TCL = target compound list

TCLP = Toxicity Characteristic Leaching Procedure

TOC = total organic carbon

TPH = total petroleum hydrocarbons

VOC = volatile organic compound

## **FIGURES**

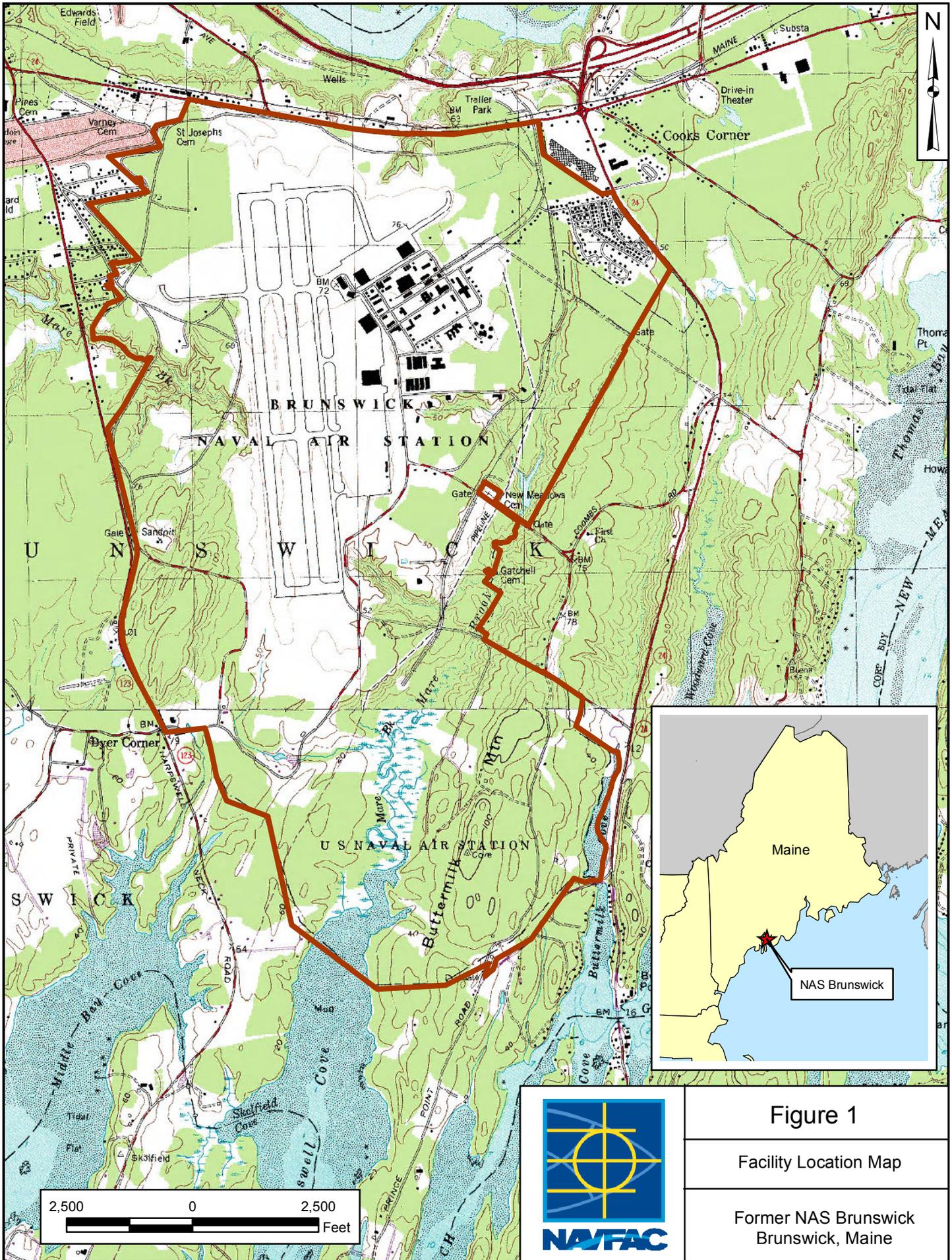
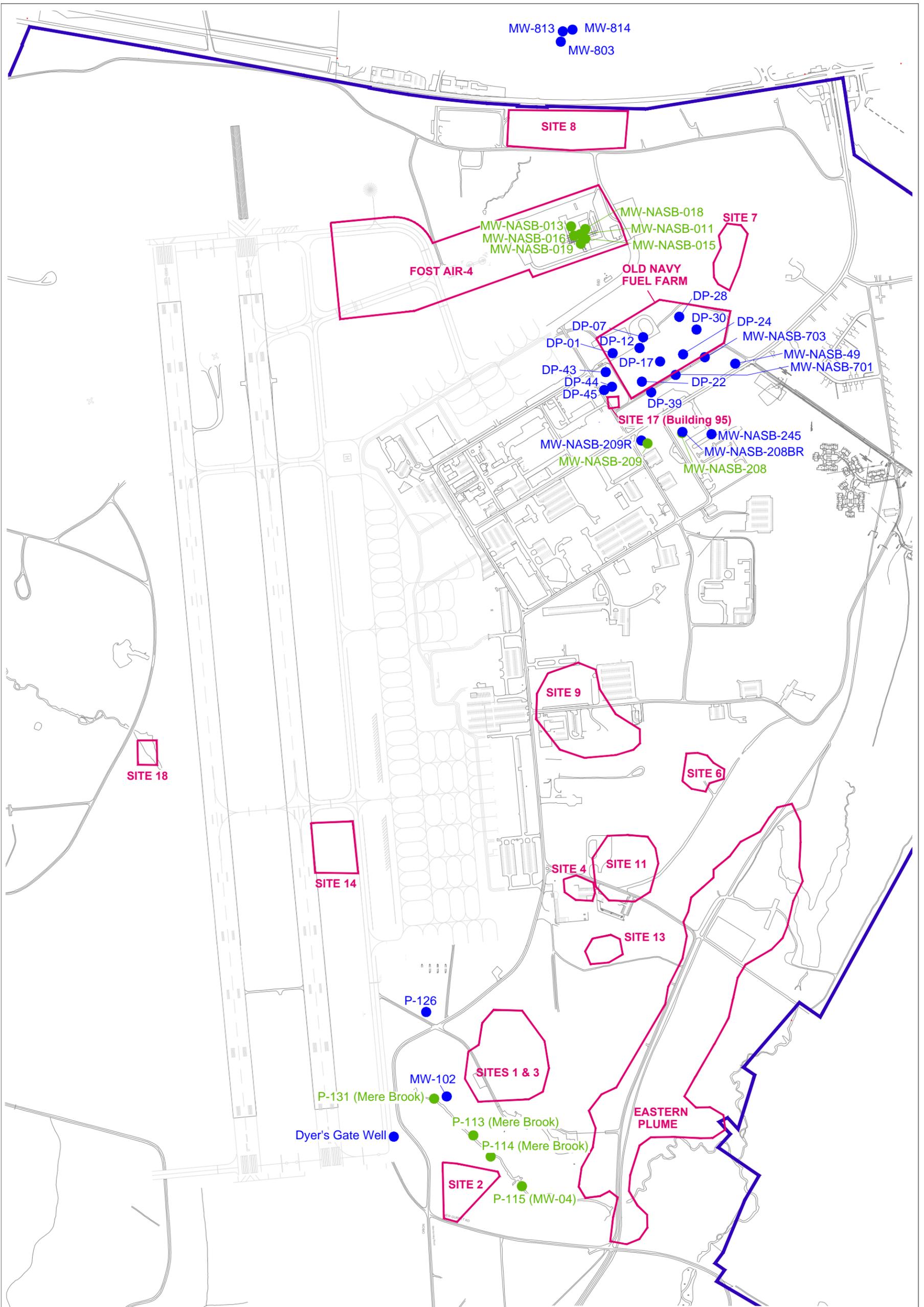


Figure 1

Facility Location Map

Former NAS Brunswick  
Brunswick, Maine



LOCATION OF PROPOSED MONITORING WELLS FOR DECOMMISSIONING

FORMER NAVAL AIR STATION  
BRUNSWICK, MAINE



DATE  
10/12/2012

FIGURE  
2



## **APPENDIX A**

### **TRIMBLE GEO XH SPECIFICATIONS**

### KEY FEATURES

Real-time H-Star technology for decimeter to subfoot accuracy in the field

High-resolution VGA display for crisp and clear map viewing

Bluetooth and wireless LAN connectivity options

1 GB onboard storage plus SD slot for removable cards

Windows Mobile version 6.1 operating system

Rugged handheld with all-day battery



### THE PERFECT SOLUTION FOR HIGH-ACCURACY ASSET MANAGEMENT

For high-accuracy GIS data collection and asset relocation, the Trimble® GeoXH™ handheld is the perfect integrated solution. Engineered with Trimble H-Star™ technology, the GeoXH handheld delivers decimeter (10 cm / 4 inch) to subfoot (<30 cm) accuracy when you need it, making it the ideal device for electric and gas utilities, water and wastewater services, land reform projects, and other applications where on-the-spot positioning is crucial.

The GeoExplorer® 3000 series combines a Trimble GPS receiver with a rugged handheld computer, built for all-day use and packed with connectivity options. Technology this clever has never been more convenient.

#### Subfoot accuracy when you need it

When your GIS database requires the highest levels of accuracy, the GeoXH handheld is the answer. Using revolutionary Trimble H-Star technology, the GeoXH handheld delivers real-time subfoot accuracy with the internal antenna, and decimeter accuracy with an optional Trimble Tornado™ external antenna. Back-office data processing is eliminated, streamlining asset inventories and as-built mapping jobs.

Need to relocate assets in the field? The GeoXH handheld has you covered. Buried and hidden assets can be tracked down with ease, as the real-time high accuracy gets you straight to the point. Cables and pipes can be excavated without wasted effort or risk of damage to nearby assets. When you postprocess with Trimble office software you can be confident of achieving decimeter level accuracy with greater consistency at longer baselines, in tougher environments, and with shorter occupations.

#### Packed full of power

With a powerful 520 MHz processor, 128 MB RAM, and 1 GB of onboard storage, the GeoXH handheld is a high performance device designed to work as hard as you do. The handheld gives you all the power you need to work with maps and large data sets in the field, and its high resolution VGA display allows for crisp and clear viewing of your data.

The GeoXH handheld is powered by the industry-standard Windows Mobile® version 6.1 operating system so you can choose a

software solution designed for your field requirements, whether off-the-shelf or purpose-built.

The Windows Mobile 6.1 operating system includes familiar Microsoft® software, including Word Mobile, Excel Mobile, and Outlook® Mobile, giving you all the tools you need for a seamless exchange of data between the field and the office.

#### Get the data you need, when you need it

With the GeoXH handheld you have the flexibility to work exactly the way you want to. Use the built-in wireless LAN connection to access your organization's secure network and get the most up-to-date information. You can also wirelessly connect to other devices such as Bluetooth®-enabled laser rangefinders and barcode scanners for convenient cable-free solutions that keep you productive in the field. Cellular connectivity can be added to the GeoXH handheld via the TDL 3G cellular modem. Connecting via wireless LAN or Bluetooth, the TDL 3G provides continuous network/internet access to real-time map data, web-based services, Trimble VRS™ corrections, and live update of field information.

#### Built for the field

The GeoXH handheld has an integrated battery, good for a full day's work; simply charge the battery overnight and you're ready to go again. The GeoXH handheld will last the distance, and its rugged design can take a lot of punishment. Rain, hail or shine, it's built to keep working, whatever the weather throws at you.

#### When accuracy is critical

Rugged design and powerful functionality are the hallmarks of the GeoExplorer series. And now with H-Star technology providing decimeter to subfoot accuracy in real time, the 3000 series GeoXH handheld is your ultimate solution for high-accuracy asset management.

When accuracy is critical, the GeoXH handheld delivers—with unprecedented efficiency and reliability, when and where you need it.

# GEOEXPLORER 3000 SERIES GEOXH HANDHELD

## STANDARD FEATURES

### System

- Windows Mobile 6.1 (Classic edition)
- VGA display (480 x 640), sunlight-readable color touchscreen
- Integrated Bluetooth 1.2 wireless technology
- Integrated 802.11b/g wireless LAN
- Ergonomic cable-free handheld
- Rugged and water-resistant design
- All-day internally rechargeable Li-ion battery
- Marvell 520 MHz XScale processor
- 128 MB RAM
- 1 GB non-volatile Flash data storage
- Sealed SD/SDHC card slot
- Integrated speaker and microphone

### GPS

- Integrated high-performance GPS/SBAS<sup>1</sup> receiver and L1/L2 antenna
- H-Star technology for subfoot (<30 cm) real-time accuracy or decimeter (10 cm / 4 inch) accuracy after postprocessing
- Decimeter accuracy is also available in real-time with the optional external Tornado antenna
- RTCM and CMR real-time correction support
- TSIP and NMEA<sup>2</sup> protocol support
- Trimble EVEREST™ multipath rejection technology

### Standard Software

- GPS Controller for control of integrated GPS and in-field mission planning
- GPS Connector for connecting integrated GPS to external ports
- Microsoft Office Mobile
- Transcriber (handwriting recognition)

### Standard Accessories

- Support module
- AC Power supply with International adapter kit
- USB data cable
- Stylus (x 2)
- Screen protectors (2-pack)
- Quick Start Guide
- Getting Started CD
- Hand strap
- Pouch

## OPTIONAL FEATURES

### Optional Software

- Trimble TerraSync™ software
- Trimble GPSCorrect™ extension for Esri ArcPad software
- Trimble GPS Pathfinder® Tools Software Development Kit (SDK)
- Trimble GPS Pathfinder Office software
- Trimble GPS Analyst™ extension for Esri ArcGIS Desktop software
- Trimble TrimPix™ Pro system

### Optional Accessories

- TDL 3G cellular modem accessory
- Power/serial clip (9-pin RS-232 serial connector and power input)
- Vehicle power adaptor<sup>3</sup>
- Null modem cable<sup>3</sup>
- Backpack kit
- Hard carry case
- Tornado antenna
- 2 meter range pole
- Range pole bracket
- Trimble GeoBeacon™ receiver
- Anti-glare screen protectors (2-pack)

## TECHNICAL SPECIFICATIONS

### Physical

Size	21.5 cm x 9.9 cm x 7.7 cm (8.5 in x 3.9 in x 3.0 in)
Weight	0.81 kg (1.79 lbs) with battery
Processor	520 MHz Marvell PXA-270 XScale processor
Memory	128 MB RAM and 1 GB internal Flash storage
Battery	Internal 7500 mAh lithium-ion 27.8 Watt-hours, rechargeable in unit

### Power usage

Low (no GPS or backlight)	1.8 Watts
Normal (with GPS and backlight <sup>4</sup> )	3.2 Watts
High (with GPS, backlight <sup>4</sup> , Bluetooth, and wireless LAN) <sup>5</sup>	4.3 Watts

### Environmental

Operating temperature	-20 °C to +60 °C (-4 °F to 140 °F)
Storage temperature	-30 °C to +70 °C (-22 °F to 158 °F)
Casing	Dust-proof and resistant to heavy wind-driven rain per IP 65 standard Slip-resistant grip, shock and vibration resistant
Drop	1.2 m (4 ft) MIL-STD-810F, Method 516.5, Procedure IV

### Input/Output

Expansion	SD card slot (SD or SDHC storage cards)
Display	8.9 cm (3.5 in) VGA (480 x 640 pixel) TFT, 16 bit (65,536) colors LED backlight
Interface	Touch screen, 10 hardware control keys, power status LED Audio system events, warnings, and notifications Soft Input Panel (SIP) virtual keyboard and handwriting recognition software
Audio	Microphone and speaker, record and playback utilities
I/O	USB 1.1 client via support module Serial via optional 9-pin RS-232 power/serial clip adaptor
Radios <sup>6</sup>	Bluetooth 1.2, Wireless LAN 802.11b/g

### GPS

Channels	26 (12 L1 code and carrier, 12 L2 carrier, 2 SBAS)
Integrated real-time	SBAS <sup>1</sup> (dual-channel tracking)
Update rate	.1 Hz
Time to first fix	.30 seconds (typical)
Protocols	Data output: TSIP, NMEA-0183 v3.0 (GGA, VTG, GLL, GSA, ZDA, GSV, RMC) <sup>2</sup> Real-time corrections: RTCM 2.x, RTCM 3.0, CMR, CMR+

### Accuracy (HRMS)<sup>7</sup> after differential correction

Real-time positioning	H-Star <sup>8</sup> with internal antenna (within a VRS network, or <80 km) . . . Subfoot (<30 cm)
H-Star <sup>8</sup> with optional Tornado antenna	Short baseline (within a VRS network, or <30 km) . . . . . 10 cm Long baseline (30–80 km) . . . . . Subfoot (<30 cm)
Code corrections (SBAS <sup>1</sup> or external correction source) . . . . .	Submeter
Postprocessed positioning	H-Star horizontal accuracy . . . . . 10 cm + 1 ppm <sup>9</sup> Carrier postprocessed accuracy with 45 minutes tracking satellites . . . 1 cm + 2 ppm <sup>10</sup> Code postprocessed . . . . . 50 cm

- 1 SBAS (Satellite Based Augmentation System). Includes WAAS available in North America only, EGNOS available in Europe only, and MSAS available in Japan only.
- 2 NMEA output of real-time H-Star corrected data is not supported.
- 3 Power/serial clip also required.
- 4 With backlight at default setting (50% brightness).
- 5 Power draw will vary depending on radio usage.
- 6 Bluetooth and wireless LAN type approvals are country specific. GeoExplorer 3000 series handhelds have Bluetooth and wireless LAN approval in the U.S. and in most European countries. For further information please consult your local reseller.
- 7 Horizontal Root Mean Squared accuracy, 1-sigma (68%). Except in conditions where most GPS signals are affected by trees, or buildings, or other objects. Except when using VRS corrections, accuracy varies with proximity to base station by +1 ppm for code postprocessing and real-time.
- 8 H-Star specified accuracy is typically achieved within 2 minutes. Requires data to be collected using Trimble field software.
- 9 The following factors increase the availability of decimeter (10 cm / 4 inch) accuracy after H-Star postprocessing: longer elapsed time tracking uninterrupted L1/L2 carrier phase data, use of the optional external Tornado antenna, tracking of more satellites with L2 measurements, shorter distance to the base station(s), and use of more (than one) base stations for postprocessing.
- 10 45 minute carrier capability applies only to the GPS Pathfinder Office software and is limited to 10 km from the base station.

Specifications subject to change without notice.



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## **APPENDIX B**

### **WELL CONSTRUCTION / BORING LOGS**

DYER'S GATE

From: Dearborn, Larry L [Larry.L.Dearborn@maine.gov]

**Sent: Thursday, March 18, 2004 16:48**

To: 'dgainer@ecc.net'; 'WilliamsA@nasb.navy.mil'; 'williams.christine@epamail.epa.gov'; 'olando.monaco@navy.mil'; 'clepagegeo@aol.com'

Cc: Sait, Claudia B

Subject: Construction Data for New Dyers Gate Well - NASB Brunswick

Good Afternoon All,

Upon talking with Tony and having talked with Darren, I called C & R Well Drilling to learn more about the new well. At this time I have been told the following information:

1. total drilling depth is 264 ft
2. bedrock was encountered at 82 ft
3. a total of 98 ft of well casing was set; the lower 166 ft of the well is open-hole (no screen used)
4. the permanent well pump is a Grundfos submersible and is set at 206 ft bgs
5. the static water level was 11 ft bgs
6. a 24-hr pumping test was run with rates of 2 gpm, 5 gpm and 10 gpm
7. after pumping 3 hours at 2 gpm the water level was 17 ft bgs, and stable
8. after pumping 5 gpm for about 18 hrs or so, the water level was 41 ft, and stable
9. a rate of 10 gpm was maintained for a few hours, and the water level declined to 81 ft bgs
10. a standard residential water analysis was run. It passed drinking water criteria (VOCs, pesticides, etc were not run)
11. at this time, the permanent pump is not wired and cannot provide a water sample

ECC posed the question of whether an environmental sample could be collected from a temporary pump set shallow within the well casing.

DEP is recommending that the environmental sample be taken at or close to the depth that the permanent pump is set, so as to best represent the water quality that the guardhouse occupants might drink.

Please send any comments you might have to Darren and Tony. Please cc the State.

Respectfully,

Larry Dearborn

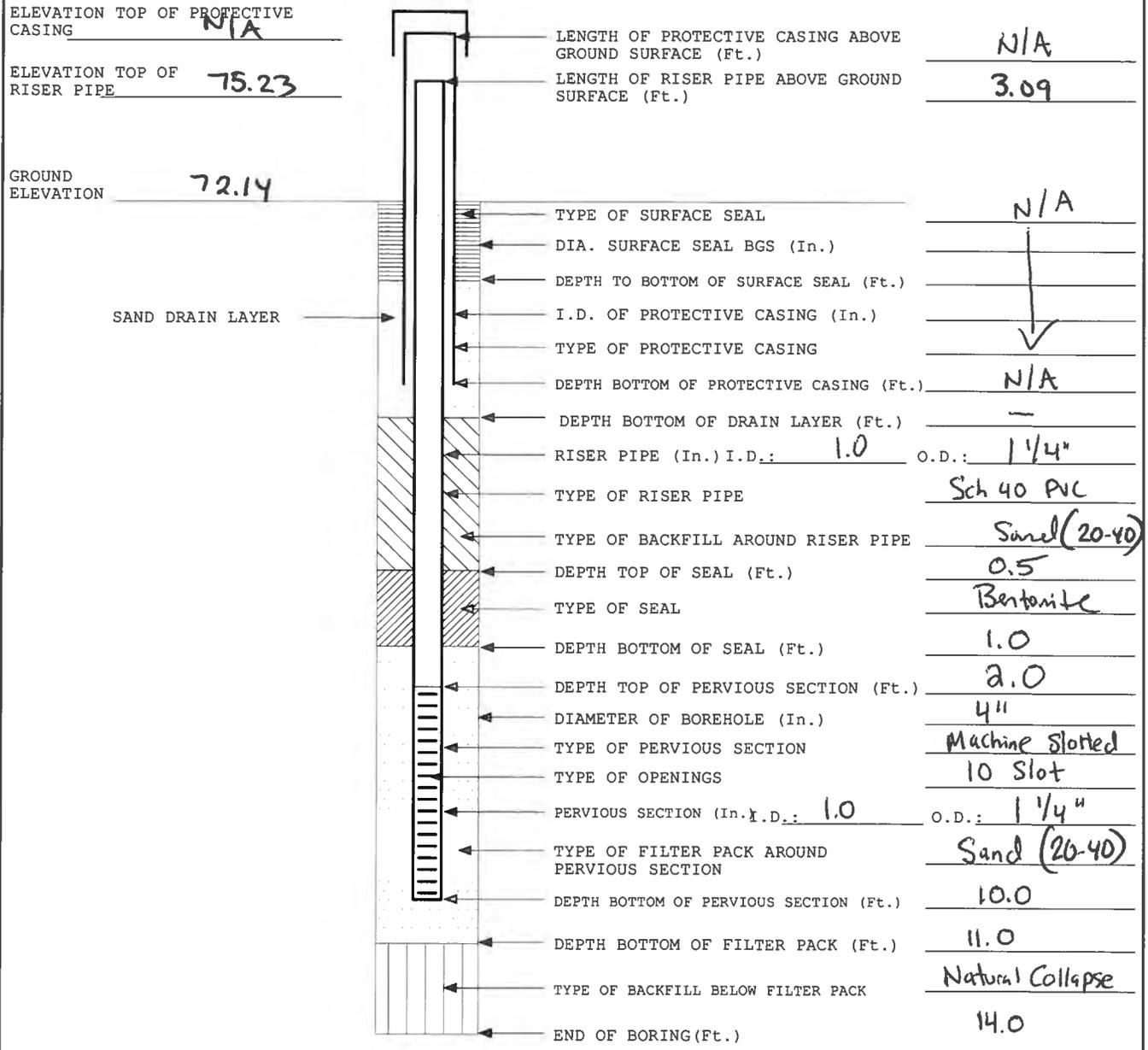
Maine DEP - Augusta

OLD NAVY FUEL FARM

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB-ONFF- Site Assessment</u>	PROJECT NO: <u>112602063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-01 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-01</u>
CONTRACTOR: <u>MAI</u>	DRILLER: <u>S. Brown</u>
LOGGED BY: <u>B. Geringer</u>	DATE: <u>6/28/11</u>
CHECKED BY: <u>C. Race</u>	DATE: <u>07/08/11</u>
BORING LOCATION: <u>389099.91</u> <u>3015928.64</u>	
PAGE: 1 OF 1	



GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR:

PROJECT NO.:

LOGGED BY:

DRILLED BY (Company/Driller):

GRD. SURFACE ELEVATION:

NASB-Old Navy Fuel Farm Site Assessment

112G02063 / 0000.2530

B. Geringer

MAI / S. Brown

BORING NO.:

START DATE:

COMPLETION DATE:

MON. WELL NO.:

CHECKED BY:

NASB-ONFF-DP01

6/28/11

6/28/11

DP01

CDR

TRANSCRIBED BY:

ELEVATION FROM:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MATL CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
2	1.4 / 2.0	0838				Black/gray	(0.0-0.4) Asphalt Road base (Sand & Gravel)		Dry	P=0.7 P=2.0
						Dr. Brown	(0.4-1.1) Sand (F-M) Asphalt Chunk (1.1-1.4) Silt & Scl (F)	SP 5m/pt	Moist	P=0.3 P=2.0
4	1.8 / 2.0	0842				Dr. Brown	Sand (F), Some Silt, roots - Pest like		Moist	P=1.0 P=0.7
						↓	↓		↓	P=0.6 P=0.7
6	1.4 / 2.0	0848				Dr. Brown	(0.0-0.4) SAA		Wet at 0.4'	P=0.7 P=0.5
				SAND		Brown	(0.4-1.4) Sand (F-M)	SP	Wet	P=0.4
						↓	(0.0-4.0) SAA		↓	P=0.4
8	/					↓	↓		↓	P=0.4
						↓	↓		↓	P=0.5
10	4.0 / 4.0	0853				Gray	↓		↓	P=0.7
						↓	(0.0-0.4) - SAA		Wet	P=0.3
12	/					↓	(0.4-4.0) - Clay - T. Silt	CL	Moist	P=0.1
				CLAY		↓	↓		↓	P=0.0
14	4.0 / 4.0	0900				↓	↓		↓	P=0.2
						↓	↓		↓	F=4.0
				EOB						

F=1.0  
F=7.6  
F=59.2  
F=167.3  
F=181.0  
F=176.4  
F=117.7  
F=178.8  
F=122.8  
F=202.4  
F=102.1  
F=128.1  
F=98.5  
F=9.3  
F=15.0  
F=11.8  
F=5.6  
F=4.3  
F=4.0

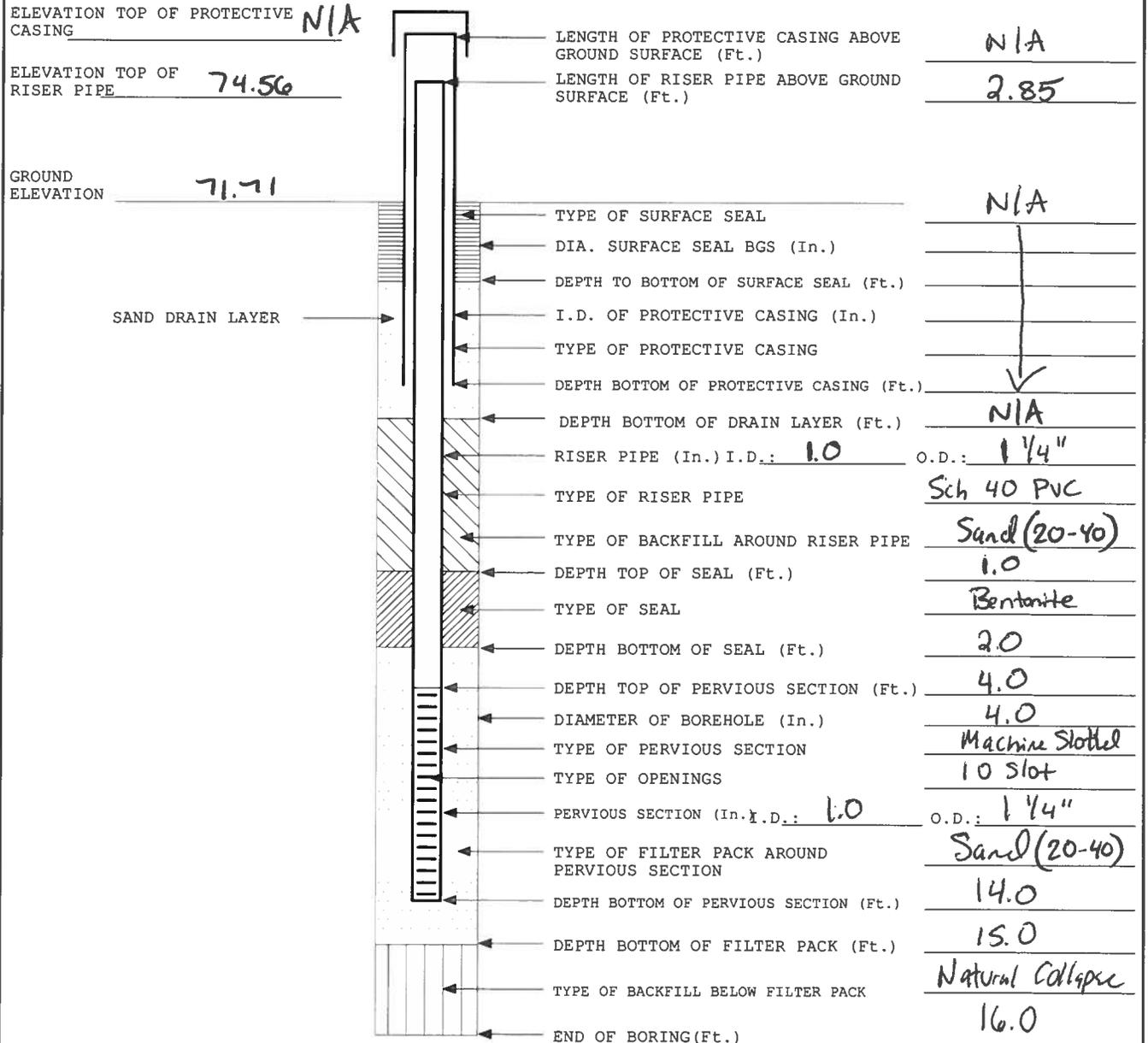
TYPE OF DRILLING RIG:	Geoprobe 6620 DT	Tetra Tech NUS, Inc. 
METHOD OF ADVANCING BORING:	Direct Push Technology	
METHOD OF SOIL SAMPLING:	Dual Tube - Acetate Sleeve	
METHOD OF ROCK CORING:	N/A	
GROUNDWATER LEVELS:		
OTHER OBSERVATIONS:		BORING NO.: NASB-ONFF-DP01
		PAGE: 1 OF 1

Collected Soil Sample at 3-4' bgs - NASB-ONFF-DP01-0304 @ 0905  
 Installed temp well - Screened 2-10' bgs

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB-ONFF - Site Assessment</u>	PROJECT NO: <u>112G02063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-07 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-07</u>
CONTRACTOR: <u>MAI</u>	DRILLER: <u>S. Brown</u>
LOGGED BY: <u>B. Geringer</u>	DATE: <u>6/28/11</u>
CHECKED BY: <u>C. Race</u>	DATE: <u>07/08/11</u>
	BORING LOCATION: <u>389236.14</u> <u>3016189.07</u>



GENERAL NOTE :

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR: NASB-Old Navy Fuel Farm Site Asesment  
 PROJECT NO.: 112G02063 / 0000.2530  
 LOGGED BY: B.Geringer  
 DRILLED BY (Company/Driller): MAI / S.Brown  
 GRD. SURFACE ELEVATION: \_\_\_\_\_

TRANSCRIBED BY: \_\_\_\_\_  
 ELEVATION FROM: \_\_\_\_\_

BORING NO.: NASB-ONFF-DP 07  
 START DATE: 6/28/11  
 COMPLETION DATE: 6/28/11  
 MON. WELL NO.: DP-07 Temp Well  
 CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
2	1.5 / 2.0	1252				Drk Brown	(0.0-0.3) Sand (F), T-Silt, roots	SP	Dr	P=0.8 F=0.9 P=0.2 F=0.0
						Brown / Lt Brown	(0.3-1.5) Sand (F-M), T-C, sand, some gravel	GP	↓ Asphalt chunk	P=0.2 F=0.0 P=8.6 F=6.3
4	1.5 / 2.0	1256				Drk Brown	(0.0-0.3) SAA (0.3-0.6) Silt, Sand (F) <sup>Peak like</sup>	SM/PT	Moist	P=50.7 F=223.9 P=8.3 F=75.7
						Brown	(0.6-1.5) - Sand (F-M)	SP	↓ Slight Petro odor	P=3.8 F=109.1 P=2.6 F=67.2
6	1.8 / 2.0	1302				↓	(0.0-1.8) - SAA		Moist	P=1.2 F=37.5 P=1.1 F=63.8
						↓			↓	P=1.3 F=101.3 P=6.0 F=244.6
8	2.0 / 2.0	1306		SAND		Brown	(0.0-2.0) - SAA		Wet	P=3.1 F=419
						Lt Gray	↓		↓	P=3.7 F=189.1
10	/					↓	(0.0-3.7) SAA		Wet	P=2.1 F=88.3 P=0.7 F=33.5
						↓			↓	P=0.2 F=90.8
12	4.0 / 4.0	1311				Gray	↓		↓	P=0.1 F=25.6
						↓	(3.7-4.0) Sand (F), some silt	SM	↓	P=0.0 F=12.9
14	/					Gray	(0.0-2.0) SAA		Wet	P=0.1 F=5.9
						↓			↓	P=0.0 F=3.1
16	/ 4.0	1315		CLAY		↓	(2.0-4.0) Clay - <sup>by</sup> Silt some silt	CL	Moist	P=0.0 F=2.6
						↓			↓	

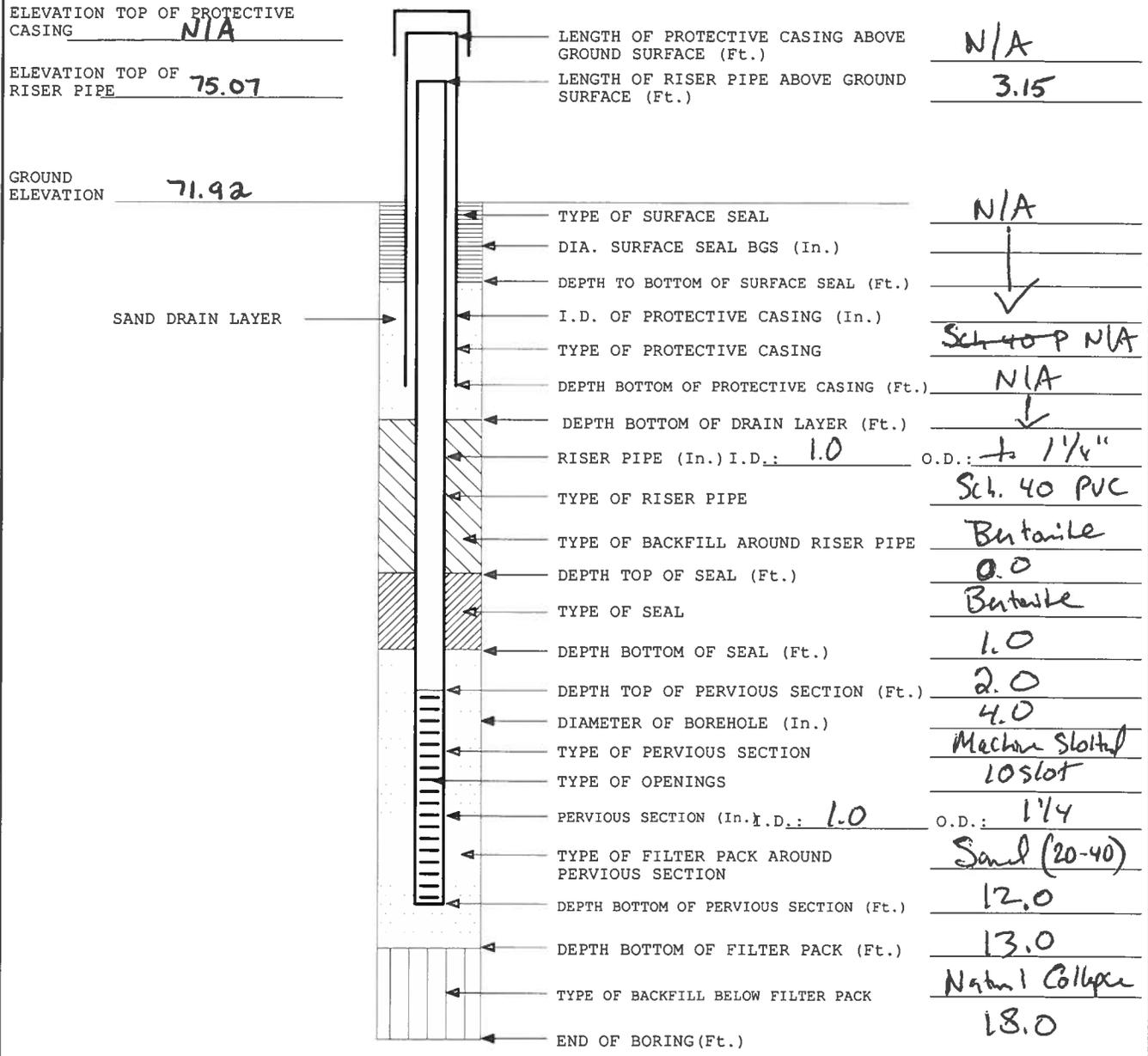
TYPE OF DRILLING RIG: <u>Geoprobe 6620 DT</u>	Tetra Tech NUS, Inc. 
METHOD OF ADVANCING BORING: <u>Direct Push Technology</u>	
METHOD OF SOIL SAMPLING: <u>Dual Tube - Acetate Sleeve</u>	
METHOD OF ROCK CORING: <u>N/A</u>	
GROUNDWATER LEVELS: _____	
OTHER OBSERVATIONS: _____	BORING NO.: <u>NASB-ONFF-DP 07</u> PAGE: <u>1</u> OF <u>1</u>

Collected Sample at 2-3' bgs - NASB-ONFF-DP07-0203 @ 1325  
 Installed temp well - Screen 4-14' bgs

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB-ONFF Site Assessment</u>	PROJECT NO: <u>112602258</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-12 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-12</u>
CONTRACTOR: <u>MAT</u>	BORING LOCATION: <u>389144.37</u>
LOGGED BY: <u>B. Geringer</u>	<u>3016157.94</u>
CHECKED BY: <u>C. Rouse</u>	PAGE: 1 OF 1
DRILLER: <u>S. Brown</u>	
DATE: <u>6/30/11</u>	
DATE: <u>07/08/11</u>	



GENERAL NOTE :

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR: NASB-Old Navy Fuel Farm Site Asement  
 PROJECT NO.: 112G02063 / 0000.2530  
 LOGGED BY: B.Geringer  
 DRILLED BY (Company/Driller): MAI / S.Brown  
 GRD. SURFACE ELEVATION: \_\_\_\_\_

TRANSCRIBED BY: \_\_\_\_\_  
 ELEVATION FROM: \_\_\_\_\_

BORING NO.: NASB-ONFF-DP12  
 START DATE: 6/30/11  
 COMPLETION DATE: 6/30/11  
 MON. WELL NO.: DP-12  
 CHECKED BY: OPC

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]	
2	1.3 / 2.0	1325	SAND			Dk Brown (0.0-0.3) Sand(F), T-Silt, roots Lt. Brown (0.3-1.1) - Sand(F-m)	SP	Dry	P=0.7 P=0.7	F=2.4 F=2.5	
					Brown (1.1-1.3) - Sand(F-m) - Asphalt chunks			↓	↓	P=0.5 P=0.4	F=2.4 F=27.0
4	1.1 / 2.0	1330			Dk Brown (0.0-1.1) - Sand(F-m), T-Silt - Asphalt chunk at 0.1			↓	Moist	P=0.8 P=1.4	F=25.9 F=34.8
					↓	↓	↳ T-Gravel	↓	moist	P=1.8 P=2.0	F=165.2 F=49.0
6	0.5 / 2.0	1334			Brown (0.0-0.5) - Sand(F-m) ; Gravel			GP	Wet	P=3.1	F=11.0
					↓	↓		↓	↓		
8	/				Brown (0.0-0.4) - Sand(F-m) ; Gravel			↓	Wet	P=3.1	F=15.9
					↓	↓	(0.4-2.1) - Sand(F-m)	SP	↓	P=2.2	F=84.7
10	2.1 / 4.0	1338			Gray			↓	↓	P=2.5	F=26.5
					↓	↓		↓	↓	P=1.5	F=14.8
12	/		SAND / SILT			(0.0-2.5) - SAA		Wet	P=2.3	F=11.5	
					↓	↓		↓	↓	P=1.9	F=26.5
14	3.4 / 4.0	1343				(2.5-3.4) - Sand(F) + Silt	SM	↓	P=1.2	F=35.0	
			SILT / CLAY			Gray (0.0-0.6) - Silt ; Sand(F)	↓	Wet	P=0.7	F=19.2	
16	/				↓	↓	(0.6-4.0) - Silty Clay	CL	↓	P=1.3 P=0.9	F=7.0 F=10.0

TYPE OF DRILLING RIG: <u>Geoprobe 6620 DT</u>	 Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING: <u>Direct Push Technology</u>	
METHOD OF SOIL SAMPLING: <u>Dual Tube - Acetate Sleeve</u>	
METHOD OF ROCK CORING: <u>N/A</u>	
GROUNDWATER LEVELS: _____	
OTHER OBSERVATIONS: _____	BORING NO.: <u>NASB-ONFF-DP12</u> PAGE: <u>1</u> OF <u>2</u>

Collected Sample at 4-8' @ 1410 - Collected Sample at 4' interval due to poor recovery  
 Installed top Well 2-12 bgs (Screen)

BORING LOG FOR: NASB-Old Navy Fuel Farm Site Asesment  
 PROJECT NO.: 112G02063 / 0000.2530  
 LOGGED BY: B.Geringer  
 DRILLED BY (Company/Driller): MAI / S.Brown  
 GRD. SURFACE ELEVATION: \_\_\_\_\_

TRANSCRIBED BY: \_\_\_\_\_  
 ELEVATION FROM: \_\_\_\_\_

BORING NO.: NASB-ONFF-DP 12  
 START DATE: 6/30/11  
 COMPLETION DATE: 6/30/11  
 MON. WELL NO.: DP-12  
 CHECKED BY: UM

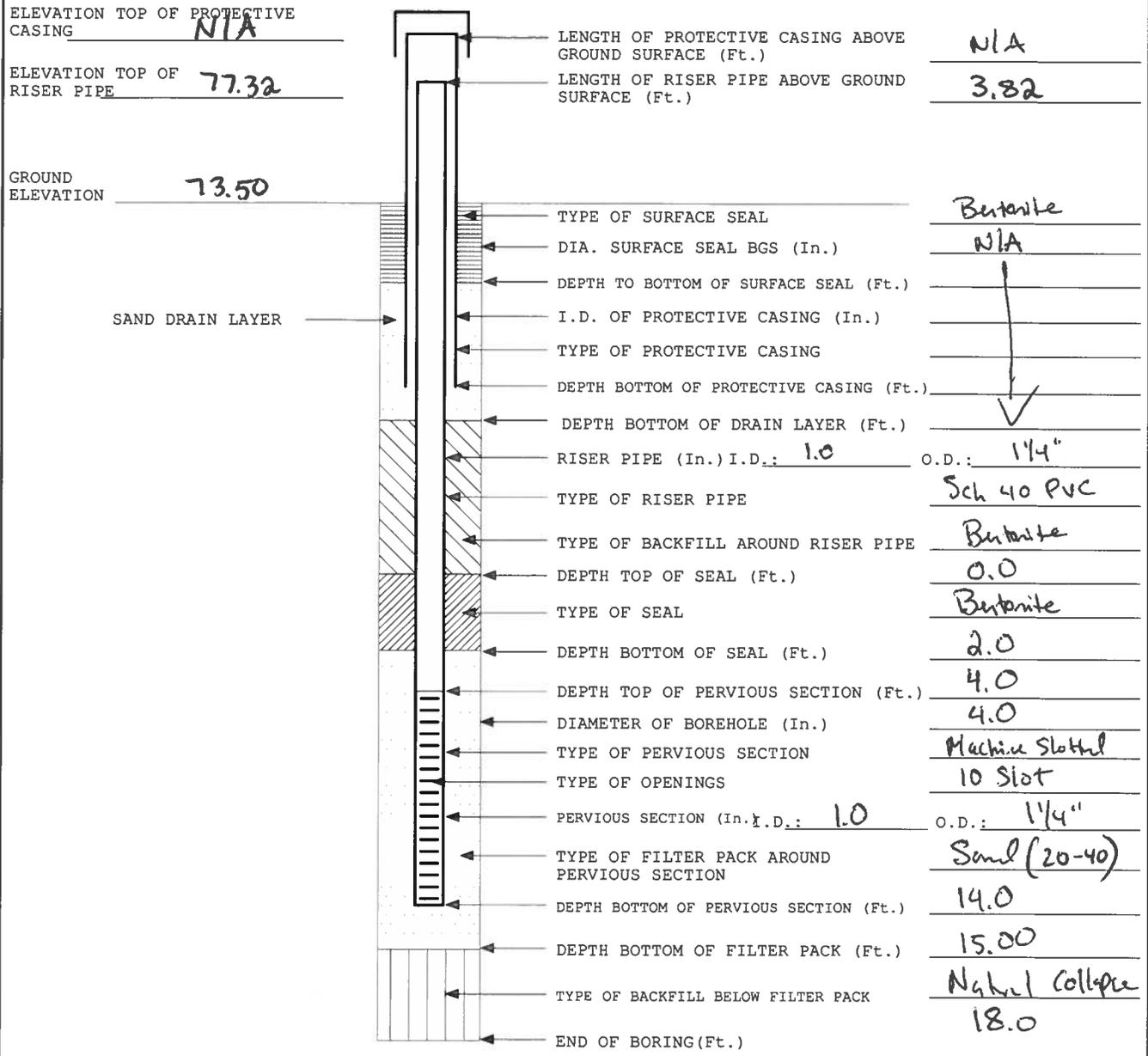
DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSI. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = (FID, (PPM))
18	4.0 / 40	1350			Gray	SAA	CL	Wet	P=0.9	F=12.4
					↓	↓	↓	↓	P=1.2	F=16.1
	/									
	/									
	/									
	/									
	/									
	/									
	/									
	/									
	/									
	/									

TYPE OF DRILLING RIG: <u>Geoprobe 6620 DT</u>	 Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING: <u>Direct Push Technology</u>	
METHOD OF SOIL SAMPLING: <u>Dual Tube - Acetate Sleeve</u>	
METHOD OF ROCK CORING: <u>N/A</u>	
GROUNDWATER LEVELS: _____	
OTHER OBSERVATIONS: _____	BORING NO.: <u>NASB-ONFF-DP 12</u> PAGE: <u>2</u> OF <u>2</u>

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB- ONFF- Site Assessment</u>	PROJECT NO: <u>112602063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-17 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-17</u>
CONTRACTOR: <u>MAF</u>	DRILLER: <u>S. Brown</u>
LOGGED BY: <u>B. Geringer</u>	DATE: <u>07/01/11</u>
CHECKED BY: <u>C. Race</u>	DATE: <u>07/08/11</u>
	BORING LOCATION: <u>389028.88</u> <u>3016333.47</u>
	PAGE: 1 OF 1



GENERAL NOTE:

- Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR: NASB-Old Navy Fuel Farm Site Asesment  
 PROJECT NO.: 112G02063 / 0000.2530  
 LOGGED BY: B.Geringer  
 DRILLED BY (Company/Driller): MAI / S.Brown  
 GRD. SURFACE ELEVATION: \_\_\_\_\_

TRANSCRIBED BY: \_\_\_\_\_  
 ELEVATION FROM: \_\_\_\_\_

BORING NO.: NASB-ONFF-DP 17  
 START DATE: 07/01/11  
 COMPLETION DATE: 07/01/11  
 MON. WELL NO.: DP-17 - Temp Well  
 CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MATL CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = (FID, PPM)		
2	1.2 / 2.0	716	SAND			Brown	(0.0-0.3) - Sand(f-m), T-Silt	SP	Dry	P=0.4 P=0.4	F=1.7 F=1.8	
							↓	(0.3-1.2) - Sand(f-m)		↓	P=0.4 P=0.4	F=1.5 F=1.7
4	1.5 / 2.0	0721				Brown	(0.0-0.2) - SAA - (0.2-0.4) - Concrete		Dry	P=0.4 P=0.4	F=2.2 F=24.4	
						Dk Brown	(0.4-1.5) - Sand(f-m), T-Silt rock at 1.0		Moist	P=0.4 P=0.4	F=100.8 F=36.1	
6	1.7 / 2.0	0726				Dk. Brown	(0.0-0.2) - SAA	SM/PT	Moist	P=0.4 P=1.4	F=232.5 F=175.0	
						Dk. Brown/Brown	(0.2-0.5) - Silt-T-Sand(f) - wood - peatline			↓	P=0.9 P=1.3	F=500.8 F=970.1
							(0.5-1.7) Sand(f) & Silt			↓	P=2.3 P=2.7	F=130.7 F=329.6
8	/					Brown	Sand(f-m) - (0.0-3.4)	SP	Wet at 1'			
							↓			Wet	P=1.7	F=687.5
10	3.4 / 4.0	0730				LT Brown				↓	P=1.1	F=688
							↓			↓	P=0.5	F=306
12	/					LT. Brown	(0.0-4.0) - SAA		Wet		P=0.8	F=449.6
							↓			↓	P=1.2	F=281.6
14	4.0 / 4.0	0735					↓	Organic Lense at 2.2		↓	P=1.1	F=807.9
						Gray				↓	P=1.1	F=926.5
							↓	(0.0-3.0) - SAA		Wet	P=1.9	F=333.7
16	/					↓			↓	P=2.8	F=131.1	

TYPE OF DRILLING RIG: <u>Geoprobe 6620 DT</u>	 Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING: <u>Direct Push Technology</u>	
METHOD OF SOIL SAMPLING: <u>Dual Tube - Acetate Sleeve</u>	
METHOD OF ROCK CORING: <u>N/A</u>	
GROUNDWATER LEVELS: _____	
OTHER OBSERVATIONS: _____	BORING NO.: <u>NASB-ONFF-DP 17</u> PAGE: <u>1</u> OF <u>2</u>

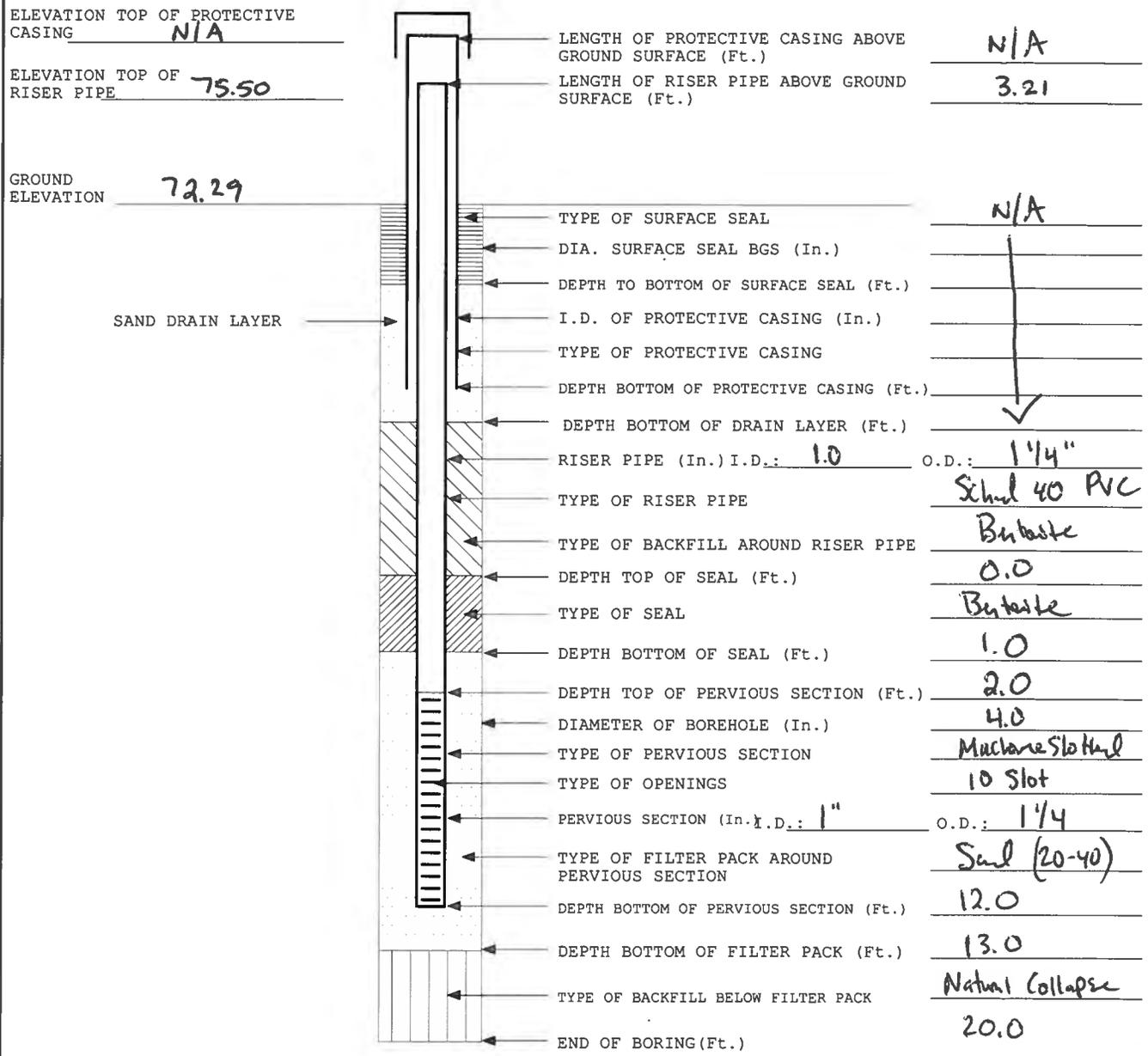
Collected Soil Sample from 6-7' bgs at 0755  
 Installed temp mw. Screen 4-14' bgs



OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB- CNFF- Site Assesunt</u>	PROJECT NO: <u>112602063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-22 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-22</u>
CONTRACTOR: <u>MAI</u>	BORING LOCATION: <u>388856.08</u>
LOGGED BY: <u>B. Geringer</u>	<u>3016178.22</u>
CHECKED BY: <u>C. Race</u>	PAGE: 1 OF 1
DRILLER: <u>S. Brown</u>	
DATE: <u>6/30/11</u>	
DATE: <u>07/08/11</u>	



GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR:  
 PROJECT NO.:  
 LOGGED BY:  
 DRILLED BY (Company/Driller):  
 GRD. SURFACE ELEVATION:

NASB-Old Navy Fuel Farm Site Asement  
 112G02063 / 0000.2530  
 B.Geringer  
 MAI / S.Brown

TRANSCRIBED BY:  
 ELEVATION FROM:

BORING NO.: NASB-ONFF-DP 22  
 START DATE: 6/30/11  
 COMPLETION DATE: 6/30/11  
 MON. WELL NO.: DP-22  
 CHECKED BY: CDR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MATL CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]	
2	1.0 / 2.0	0740	SAND			Dk Brown (0.0-1.0) - Silt(F-M), T-Silt, rock 0.9-1.0	SP	Dry	P=0.1	F=3.3	
										P=1.0	F=4.0
4	2.0 / 2.0	0745				Lt Brown (0.0-0.7) - Silt(F-M)		Moist	P=0.9	F=4.2	
						Dk Brown (0.7-1.1) - Silt, T-Silt(F) - Peat line, roots		SM/PT		P=1.8	F=9.3
						Brown/gray (1.1-2.0) - Sand(F-M)		SP	Wet at 1.5'	P=0.9	F=17.6
						Brown/gray (0.0-4.0) - SAA			Wet	P=0.7	F=5.4
6	/					Lt. Brown				P=0.9	F=8.7
							Silt line at 2.0 & 2.7			P=0.8	F=49.7
8	3.5 / 4.0	0750								P=0.9	F=128.1
										P=0.7	F=63.2
10	/					Lt. Brown (0.0-4.0) - SAA			Wet	P=1.3	F=15.7
										P=0.8	F=20.4
12	4.0 / 4.0	0755								P=0.7	F=66.8
										P=1.7	F=127.0
14	/					Lt. Brown (0.0-3.2) - SAA - roots at 2.2-2.4			Wet	P=1.7	F=29.9
						Gray				P=1.6	F=13.3
16	4.0 / 4.0	0800		Silt/SAND		2.2			P=0.9	F=35.4	
						(3.2-4.0) - Silt & Snd(F)	SM	Moist	P=0.3	F=37.4	

TYPE OF DRILLING RIG: Geoprobe 6620 DT	Tetra Tech NUS, Inc. 	
METHOD OF ADVANCING BORING: Direct Push Technology		
METHOD OF SOIL SAMPLING: Dual Tube - Acetate Sleeve		
METHOD OF ROCK CORING: N/A		
GROUNDWATER LEVELS:		
OTHER OBSERVATIONS:	BORING NO.: NASB-ONFF-DP 22	PAGE: 1 OF 2

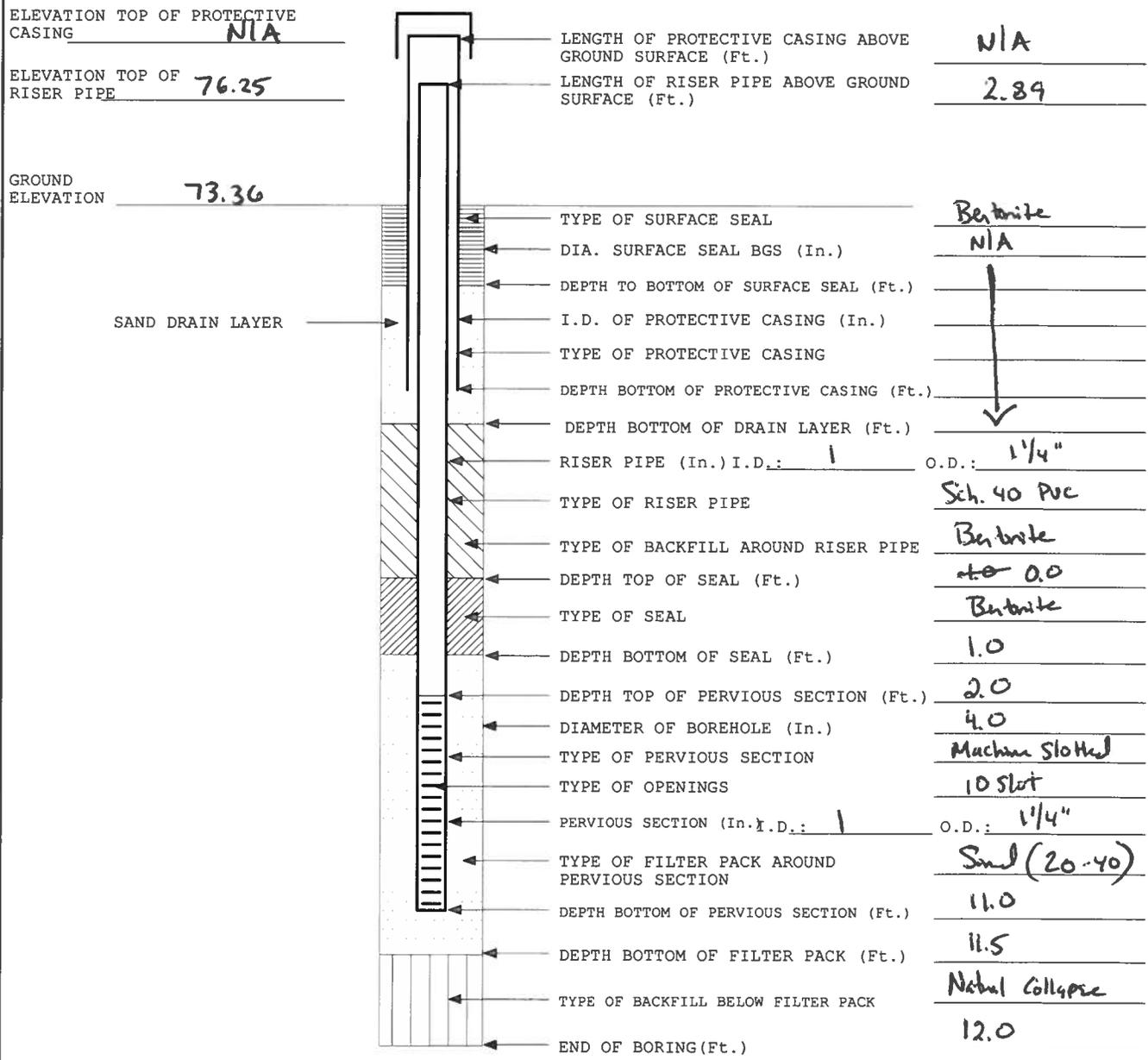
Collected Sapu from 2.5-3.5' bgs at 820  
 Installed temp mw screen 2-12' bgs



OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB- ONFF- Site Assessment</u>	PROJECT NO: <u>112602063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-24 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-24</u>
CONTRACTOR: <u>MAI</u>	DRILLER: <u>S. Brown</u>
LOGGED BY: <u>B. Geringer</u>	DATE: <u>07/06/11</u>
CHECKED BY: <u>C. Race</u>	DATE: <u>07/08/11</u>
BORING LOCATION: <u>389090.01</u> <u>3016529.94</u>	
PAGE: 1 OF 1	



GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR: NASB-Old Navy Fuel Farm Site Assessment  
 PROJECT NO.: 112G02063 / 0000.2530  
 LOGGED BY: B.Geringer  
 DRILLED BY (Company/Driller): MAI / S.Brown  
 GRD. SURFACE ELEVATION: \_\_\_\_\_

TRANSCRIBED BY: \_\_\_\_\_  
 ELEVATION FROM: \_\_\_\_\_

BORING NO.: NASB-ONFF-DP 24  
 START DATE: 07/06/11  
 COMPLETION DATE: 07/06/11  
 MON. WELL NO.: DP 24 (Temp Well)  
 CHECKED BY: CDR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = (FID, PPM)
2	1.1 / 2.0	1102	SAND		Dk Brown	(0.0-0.3) - Sand(f-m) T-Silt, roots	SP	Dry	P=1.7 P=1.9	F=0.0 F=0.0
					LT Brown	(0.3-1.1) - Sand(f-m)		↓	P=1.4 P=1.5	F=0.0 F=0.0
4	1.4 / 2.0	1104	SAND		↓	(0.0-0.7) - SAA		Moist	P=2.5 P=3.4	F=0.0 F=0.0
					Dk Brown	(0.7-1.4) - Sand(f-m), T-Silt & Gravel		↓	<del>P=3.6</del> P=2.6	F=0.0 F=0.0
6	/				↓	(0.0-0.8) - SAA		Wet	P=3.1	F=0.0
					Brown	(0.8-2.7) - Sand(f-m)		↓	P=1.1	F=0.0
8	2.7 / 4.0	1107	SAND		↓	↓		↓	P=2.3	F=2.0
					↓	↓		↓	P=1.6	F=0.0
10	/				Brown	(0.0-2.4) - SAA		Wet	P=2.1	F=0.0
			CLAY		↓	↓		↓	P=4.9	F=0.0
12	4.0 / 4.0	1112			Gray	(2.4-2.7) - Silt & Sand(f), roots, organic	SM	↓	P=4.6	F=0.0
			BOB		(2.7-4.0) - Clay - T-Silt	CL	Moist	P=1.5	F=0.0	
	/									
	/									

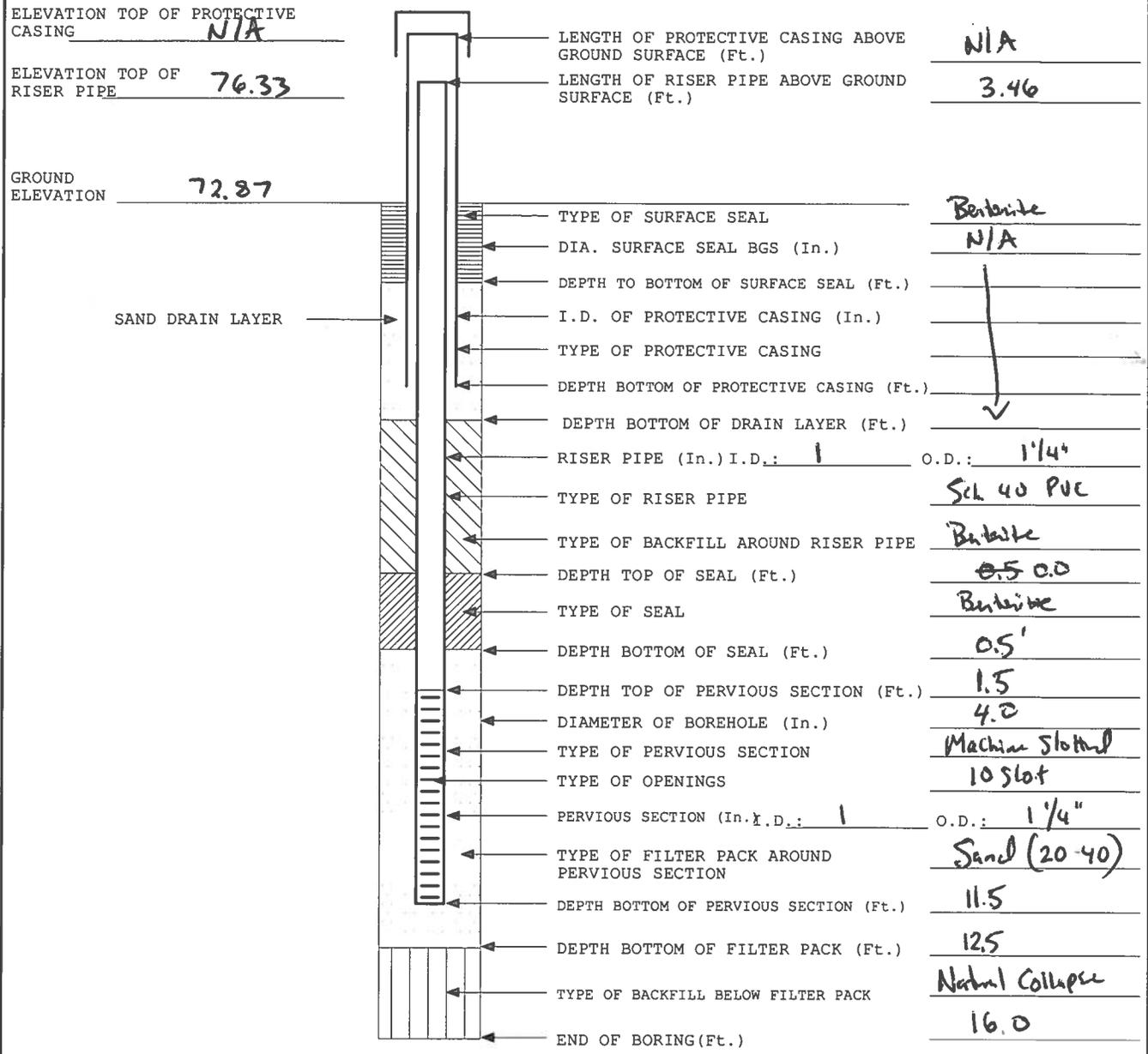
TYPE OF DRILLING RIG: <u>Geoprobe 6620 DT</u>	 Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING: <u>Direct Push Technology</u>	
METHOD OF SOIL SAMPLING: <u>Dual Tube - Acetate Sleeve</u>	
METHOD OF ROCK CORING: <u>N/A</u>	
GROUNDWATER LEVELS: _____	
OTHER OBSERVATIONS: _____	BORING NO.: <u>NASB-ONFF-DP 24</u> PAGE: <u>1</u> OF <u>1</u>

Collected Sample at 3-4' @ 1120 (LAB QC)  
 Installed temp mw, Screened 2-11' bgs

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB- ONFF- Site Assessment</u>	PROJECT NO: <u>112602063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-28 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-28</u>
CONTRACTOR: <u>MAI</u>	DRILLER: <u>S. Brown</u>
LOGGED BY: <u>B. Germyer</u>	DATE: <u>07/01/11</u>
CHECKED BY: <u>C. Ruce</u>	DATE: <u>07/08/11</u>
	BORING LOCATION: <u>389411.31</u> <u>3016497.08</u>
	PAGE: 1 OF 1



GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR:  
 PROJECT NO.:  
 LOGGED BY:  
 DRILLED BY (Company/Driller):  
 GRD. SURFACE ELEVATION:

NASB-Old Navy Fuel Farm Site Assessment  
 112G02063 / 0000.2530  
 B. Geringer  
 MAI / S. Brown

TRANSCRIBED BY:  
 ELEVATION FROM:

BORING NO.: NASB-ONFF-DP 28  
 START DATE: 07/01/11  
 COMPLETION DATE: 07/01/11  
 MON. WELL NO.: DP-28 Temp Well  
 CHECKED BY: CDR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
2	1.0 / 20	1020	SAND	Dr. Brown	(0.0-0.4) - Sand(F) some silt, roots		SM/SP	Dry	P=0.4 P=0.5	F=0.0 F=0.0
				Brown	(0.4-1.0) - Silt(F)		SP	↓	P=0.1 P=0.1	F=0.0 F=0.0
4	1.4 / 20	1025		↓	(0.0-1.4) - SAA - Gravel seam at 0.1			moist Wet at 0.4'	P=0.4 P=0.4	F=0.0 F=0.0
				↓					P=0.4 P=0.6	F=0.0 F=0.0
6	/			Brown	(0.0-2.8) - SAA			Wet	P=0.1	F=0.0
				↓					P=0.3	F=0.0
8	2.8 / 40	1030				- wood/roots at 2.6			P=0.3	F=0.0
				↓					P=0.1	F=0.0
10	/			Brown	(0.0-3.3) - SAA			Wet	P=0.3	F=0.0
				LT Brown					P=0.2	F=0.0
12	4.0 / 4.0	1034			Gray			Micro seam at 3.2	P=0.5	F=0.0
				↓		(3.3-4.0) - Sand(F) & Silt, Some Clay		SC	↓	P=0.3
14	/		SILT SAND	Gray	(0.0-3.0) Silt & Sand(F), Some clay			Moist	P=0.6	F=0.0
			↓					P=0.2	F=0.0	
16	4.0 / 4.0	1039	CLAY					↓	P=0.2	F=0.0
			↓		(3.0-4.0) - Clay, T. Silt		CL	↓	P=0.1	F=0.0

TYPE OF DRILLING RIG: Geoprobe 6620 DT	Tetra Tech NUS, Inc. 	
METHOD OF ADVANCING BORING: Direct Push Technology		
METHOD OF SOIL SAMPLING: Dual Tube - Acetate Sleeve		
METHOD OF ROCK CORING: N/A		
GROUNDWATER LEVELS:		
OTHER OBSERVATIONS:	BORING NO.: NASB-ONFF-DP	PAGE: 1 OF 1

FID not starting - will screen samples when it starts  
 Collected sample against logs at 1050  
 1.5.25

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

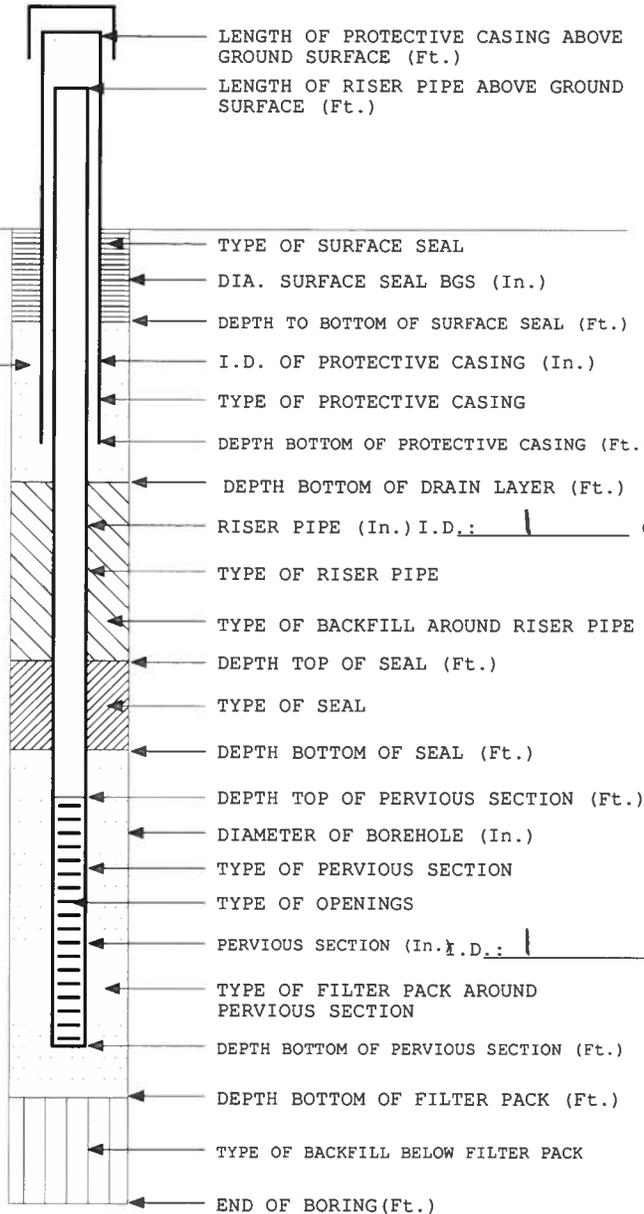
PROJECT NAME: <u>NASB- ONFF- Site Assessment</u>	PROJECT NO: <u>112G02063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-30 (Tap well 11)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-30</u>
CONTRACTOR: <u>MAI</u>	DRILLER: <u>S. Brown</u>
LOGGED BY: <u>B. Geringer</u>	DATE: <u>07/01/11</u>
CHECKED BY: <u>C. Race</u>	DATE: <u>07/08/11</u>
	BORING LOCATION: <u>389302.48</u> <u>3016644.48</u>
	PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING NIA

ELEVATION TOP OF RISER PIPE 75.91

GROUND ELEVATION 72.49

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.) NIA

LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.) 3.42

TYPE OF SURFACE SEAL Buttite

DIA. SURFACE SEAL BGS (In.) NIA

DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)

I.D. OF PROTECTIVE CASING (In.)

TYPE OF PROTECTIVE CASING

DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)

DEPTH BOTTOM OF DRAIN LAYER (Ft.)

RISER PIPE (In.) I.D.: 1 O.D.: 1 1/4

TYPE OF RISER PIPE Sch. 40 PVC

TYPE OF BACKFILL AROUND RISER PIPE Buttite

DEPTH TOP OF SEAL (Ft.) 0.0

TYPE OF SEAL Buttite

DEPTH BOTTOM OF SEAL (Ft.) 1.0

DEPTH TOP OF PERVIOUS SECTION (Ft.) 2.0

DIAMETER OF BOREHOLE (In.) 4.0

TYPE OF PERVIOUS SECTION Machete slot

TYPE OF OPENINGS 10 slot

PERVIOUS SECTION (In.) I.D.: 1 O.D.: 1 1/4"

TYPE OF FILTER PACK AROUND PERVIOUS SECTION Sand (20-40)

DEPTH BOTTOM OF PERVIOUS SECTION (Ft.) 8.0

DEPTH BOTTOM OF FILTER PACK (Ft.) 8.0

TYPE OF BACKFILL BELOW FILTER PACK NIA

END OF BORING (Ft.) 8.2

GENERAL NOTE:

- Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR: NASB-Old Navy Fuel Farm Site Asesment  
 PROJECT NO.: 112G02063 / 0000.2530  
 LOGGED BY: B.Geringer  
 DRILLED BY (Company/Driller): MAI / S.Brown  
 GRD. SURFACE ELEVATION: \_\_\_\_\_

TRANSCRIBED BY: \_\_\_\_\_  
 ELEVATION FROM: \_\_\_\_\_

BORING NO.: NASB-ONFF-DP30  
 START DATE: 7/1/11  
 COMPLETION DATE: 7/1/11  
 MON. WELL NO.: DP-30 Temp well  
 CHECKED BY: CDR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MATL CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = (FID, PPM)
2	1.4 / 2.0	1300	Inter-bedded			Dk Brown	(0.0-0.4) Sand(F-m), T-silt, roots	SP	Dry	P=0.5 F=0.0
						Brown	(0.4-1.4) Sand(F-m), few silt/clay chunks	↓	↓	P=0.4 F=0.0
4	1.4 / 2.0	1303					(0.0-1.4) - SAA - Interbedded silt layers	SM	moist	P=0.4 F=0.0
										P=0.2 F=0.0
										P=0.4 F=0.0
										P=2.2 F=0.0
6	/					Brown Dk Brown	(0.0-0.3) - SAA (0.3-0.6) - Silt & Sand(F) - roots	↓	wet	P=4.4 F=0.0
						Brown/orange	(0.6-1.1) - Sand(F-m)	SP	↓	P=0.6 F=0.0
8	3.0 / 4.0	1305				Tan	(1.1-2.0) - Silt & some clay	SC	moist	P=0.4 F=0.0
						Lt Brown	(2.0-3.0) - Sand(F-m)	SP	wet	P=0.4 F=0.0
				Refusal at 8.2						

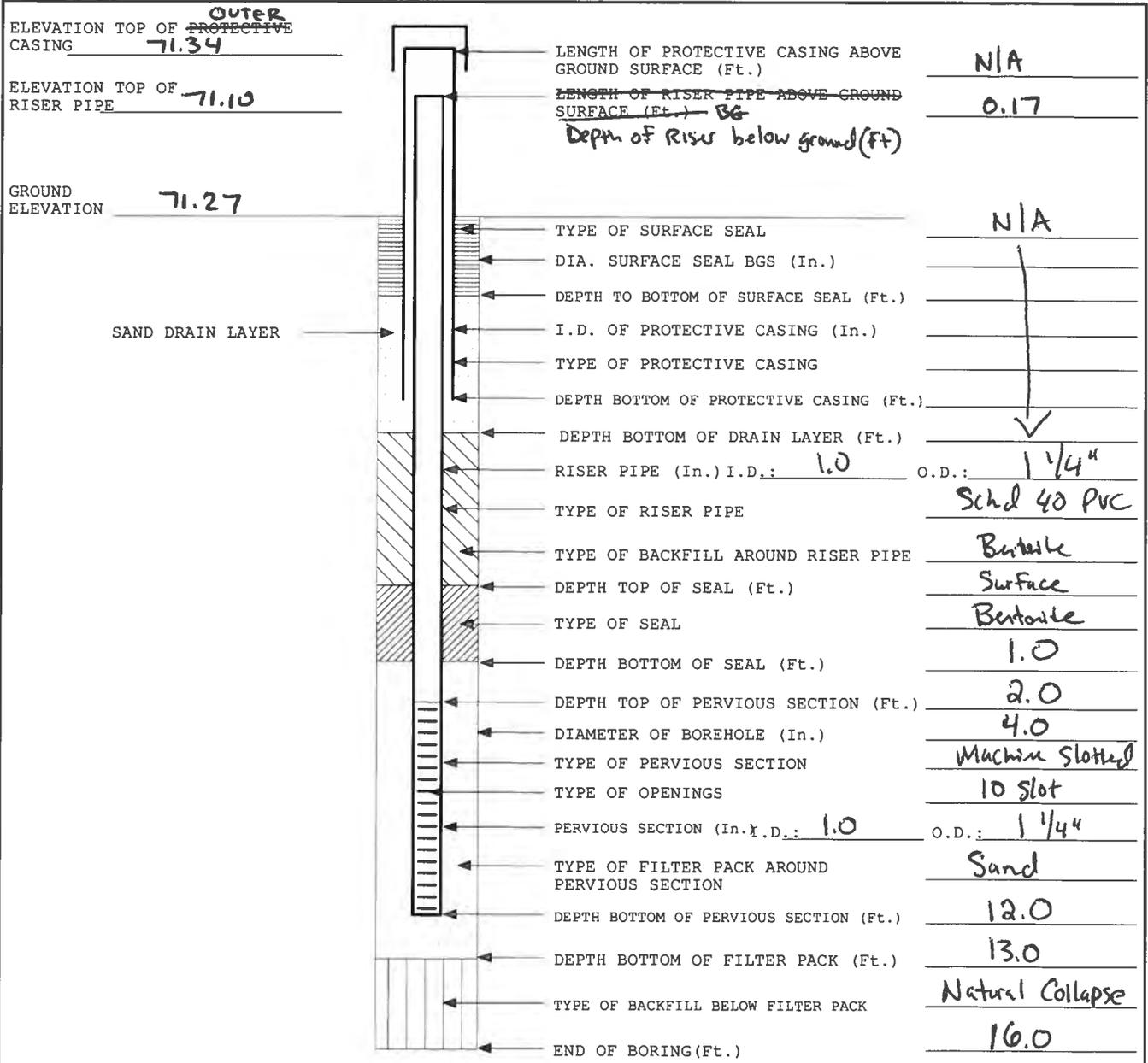
TYPE OF DRILLING RIG: <u>Geoprobe 6620 DT</u>	 Tetra Tech NUS, Inc.	
METHOD OF ADVANCING BORING: <u>Direct Push Technology</u>		
METHOD OF SOIL SAMPLING: <u>Dual Tube - Acetate Sleeve</u>		
METHOD OF ROCK CORING: <u>N/A</u>		
GROUNDWATER LEVELS: _____		
OTHER OBSERVATIONS: _____	BORING NO.: <u>NASB-ONFF-DP</u>	PAGE: _____ OF _____

Refusal at 8.2 - Shift in shoe, move a few feet, refusal at 8.2 again - rock in tip  
 Collected sample at 4.5' at 1320 (DP003); Installed MW, Screen 2-8'

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB-ONFF- Site Assesment</u>	PROJECT NO: <u>112602063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-39 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-39</u>
CONTRACTOR: <u>MAI</u>	DRILLER: <u>S. Brown</u>
LOGGED BY: <u>B. Geringer</u>	DATE: <u>6/29/11</u>
CHECKED BY: <u>C. Race</u>	DATE: <u>07/08/11</u>
	BORING LOCATION: <u>388766.08</u> <u>3016258.44</u>
	PAGE: 1 OF 1



GENERAL NOTE :

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR: NASB-Old Navy Fuel Farm Site Asement  
 PROJECT NO.: 112G02063 / 0000.2530  
 LOGGED BY: B.Geringer  
 DRILLED BY (Company/Driller): MAI / S.Brown  
 GRD. SURFACE ELEVATION: \_\_\_\_\_

TRANSCRIBED BY: \_\_\_\_\_  
 ELEVATION FROM: \_\_\_\_\_

BORING NO.: NASB-ONFF-DP 39  
 START DATE: 6/29/11  
 COMPLETION DATE: 6/29/11  
 MON. WELL NO.: DP-39 Temp Well  
 CHECKED BY: CDR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]	
2	2.0	0.8	1400	SAND		Dk Brown	(0.0-0.4) Sand(F), T-Silt, roots	SP	Dry	P=0.9 F=0.9	
						Brown	(0.4-0.8) Sand(F-m), T-Gravel		↓	P=1.2 F=1.1	
4	2.0	1.5	1404				↓	(0.0-0.5) SAA - few roots	↓	Dry	P=0.6 F=1.5 P=0.9 F=2.2
						Black Gray	(0.0-0.5) Silt-wood-peat line	SM/PT			P=0.4 F=2.3
							(0.7-1.5) Sand(F-m)	SP		moist	P=1.2 F=2.4
6	2.0		1414			LT Brown	(0.0-3.7) Sand(F-m)	SP		Wet	P=1.3 F=8.7
											P=1.2 F=15.6
8	4.0	3.7	1411								P=1.2 F=4.7
											P=0.6 F=37.8
10						LT Brown	(0.0-3.3) SAA			Wet	P=1.8 F=7.3
										P=1.8 F=15.0	
12	4.0	4.0	1416		Gray					P=0.9 F=37.0	
										P=0.9 F=4.4	
14				SILT LAY	Gray	(0.0-0.7) SAA				P=0.9 F=5.7	
										P=1.0 F=4.7	
16	4.0	3.2	1424	EOB			(1.0-3.2) Clay T-Silt	CL		P=1.0 F=17.8	
										P=0.7 F=5.5	

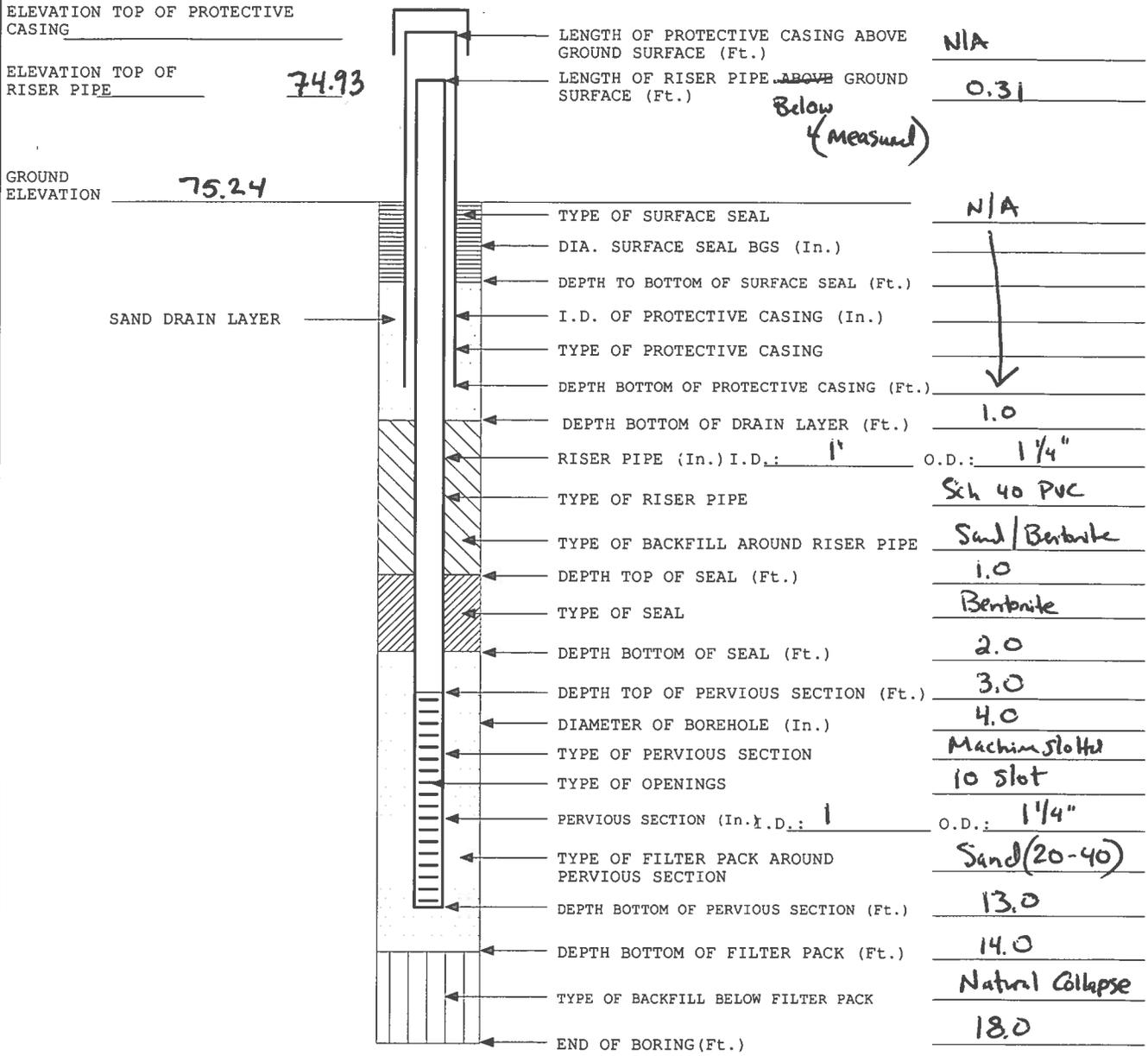
TYPE OF DRILLING RIG: <u>Geoprobe 6620 DT</u>	 Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING: <u>Direct Push Technology</u>	
METHOD OF SOIL SAMPLING: <u>Dual Tube - Acetate Sleeve</u>	
METHOD OF ROCK CORING: <u>N/A</u>	
GROUNDWATER LEVELS: _____	
OTHER OBSERVATIONS: _____	BORING NO.: <u>NASB-ONFF-DP</u> PAGE: <u>1</u> OF <u>1</u>

Collected Soil Sample at 3-4' bgs at 1435 (LAB QC)  
 Installed temp. mw - Screen 2-12' bgs

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB-ONFF Site Assessment</u>	PROJECT NO: <u>112602063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-43 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-43</u>
CONTRACTOR: <u>MAI</u>	DRILLER: <u>S. Brown</u>
LOGGED BY: <u>B. Geringer</u>	DATE: <u>07/06/11</u>
CHECKED BY: <u>C. Roca</u>	DATE: <u>07/08/11</u>
BORING LOCATION: <u>388938.57</u> <u>3015869.92</u>	
PAGE: 1 OF 1	



GENERAL NOTE :

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR:  
 PROJECT NO.:  
 LOGGED BY:  
 DRILLED BY (Company/Driller):  
 GRD. SURFACE ELEVATION:

NASB-Old Navy Fuel Farm Site Asement  
 112G02063 / 0000.2530  
 B.Geringer  
 MAI / S.Brown

TRANSCRIBED BY:  
 ELEVATION FROM:

BORING NO.: NASB-ONFF-DP 43  
 START DATE: 07/06/11  
 COMPLETION DATE: 07/06/11  
 MON. WELL NO.: DP-43  
 CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MATL CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]	
2		1.6 / 20	1225	SAND		Brown	(0.0-1.6) Sand (F-m), roots at toe 0.2	SP	Dry	P=1.9 F=0.0 P=1.9 F=0.0	
							↓	↓ - Silt line at 0.9		↓	P=2.2 F=0.0 P=1.5 F=0.0
4		1.8 / 20	1227				Brown	(0.0-1.8) - SAA		Dry	P=3.6 F=0.0 P=2.1 F=0.0
							↓	↓		moist	P=2.1 F=0.0 P=3.1 F=0.0
6		1.8 / 20	1230				Brown	(0.0-1.8) SAA		Wet + 1'	P=1.9 F=0.0 P=2.1 F=0.0
							↓	↓		wet	P=1.9 F=0.0 P=2.0 F=0.0
8		/					Brown	(0.0-3.4) - SAA			P=1.9 F=0.0
							↓	↓ Fe stain at 0.8			P=1.8 F=0.0
10		3.4 / 40	1233				Orange/Brown	↓			P=3.2 F=0.0
							↓	↓		✓	P=2.7 F=0.0
12		/					Brown	(0.0-4.0) - SAA		wet	P=2.6 F=0.0
							↓	↓			P=1.8 F=0.0
14		4.0 / 40	1237				lt Gray	↓			P=2.8 F=0.0
							↓	↓		✓	P=2.4 F=6.3
16		/						(0.0-2.3) - SAA		wet	P=2.2 F=0.0
							↓	↓	✓	↓	P=3.1 F=0.0

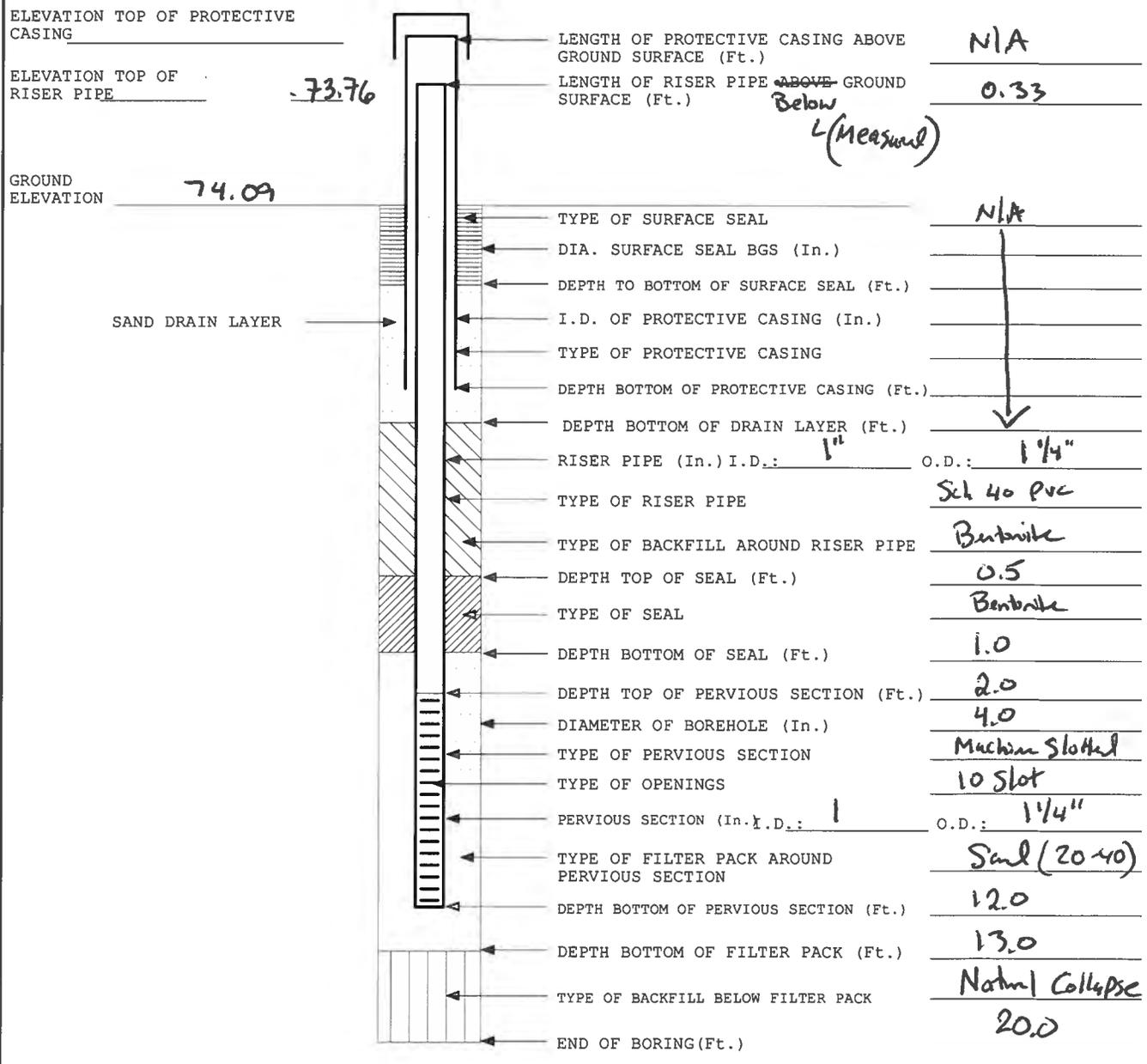
TYPE OF DRILLING RIG: Geoprobe 6620 DT	 Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING: Direct Push Technology	
METHOD OF SOIL SAMPLING: Dual Tube - Acetate Sleeve	
METHOD OF ROCK CORING: N/A	
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	BORING NO.: NASB-ONFF-DP 43 PAGE: 1 OF 2



OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB ONFF Site Assessment</u>	PROJECT NO: <u>112602063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-44 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-44</u>
CONTRACTOR: <u>MAI</u>	DRILLER: <u>S. Brown</u>
LOGGED BY: <u>B. Geringer</u>	DATE: <u>07/06/11</u>
CHECKED BY: <u>C. Race</u>	DATE: <u>07/08/11</u>
BORING LOCATION: <u>388784.70 388812.72</u> <u>3015856. 3015922.97</u>	
PAGE: 1 OF 1	



GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR: NASB-Old Navy Fuel Farm Site Assessment  
 PROJECT NO.: 112G02063 / 0000.2530  
 LOGGED BY: B. Geringer  
 DRILLED BY (Company/Driller): MAI / S. Brown  
 GRD. SURFACE ELEVATION: \_\_\_\_\_

TRANSCRIBED BY: \_\_\_\_\_  
 ELEVATION FROM: \_\_\_\_\_

BORING NO.: NASB-ONFF-DP 44  
 START DATE: 07/06/11  
 COMPLETION DATE: 07/06/11  
 MON. WELL NO.: DP-44 (TEMP Well)  
 CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MATL CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, PPM]
2	1.7 / 2.0	1400				Dk Brown	(0.0-0.3) - Sand(F-m), T-Silt	SP	Dry	P=1.0 F=0.0 P=1.7 F=0.0
						Lt Brown	(0.3-1.7) - Sand(F-m) (Some silt 1.5-1.7)		↓	P=3.1 F=0.0 P=2.4 F=0.0
4	1.7 / 2.0	1405				Brown	(0.0-0.3) - Sand(F-m) (0.2-1.1) - SAA		Moist	P=1.6 F=0.0 P=1.2 F=0.0
						Dk Brown	(1.1-1.7) - Sand(F-m), T-Gravel		Wet	P=0.6 F=0.0 P=1.1 F=17.6
6	/					Gray	(0.0-0.4) - Gravel & Some Sand(F-m)	GP	Wet	P=1.4 F=178.4
						Dk Brown	(0.4-0.7) - Silt & Some Sand(F) - Peat like	SM/PT	↓	P=2.0 F=605.9
8	1.8 / 4.0	1409				Brown	(0.7-1.3) - Sand(F-m)	SP	↓	P=1.5 F=475.6
						Brown	(0.0-4.0) - SAA		Wet	P=2.7 F=543.6
10	/									P=1.3 F=167.5
										P=2.9 F=305.1
12	4.0 / 4.0	1414				Lt Brown			↓	P=1.7 F=152.4
							0.0-3.3) SAA		Wet	P=1.8 F=29.7
14	/								↓	P=2.8 F=0.0
									↓	P=2.1 F=0.0
16	4.0 / 4.0	1420				Gray	(3.3-4.0) - Sand(F), Some silt	SM	Moist	P=2.0 F=0.0
									↓	P=2.8 F=0.0

TYPE OF DRILLING RIG: <u>Geoprobe 6620 DT</u>	 Tetra Tech NUS, Inc.	
METHOD OF ADVANCING BORING: <u>Direct Push Technology</u>		
METHOD OF SOIL SAMPLING: <u>Dual Tube - Acetate Sleeve</u>		
METHOD OF ROCK CORING: <u>N/A</u>		
GROUNDWATER LEVELS: _____		
OTHER OBSERVATIONS: _____	BORING NO.: <u>NASB-ONFF-DP</u>	PAGE: <u>1</u> OF <u>2</u>

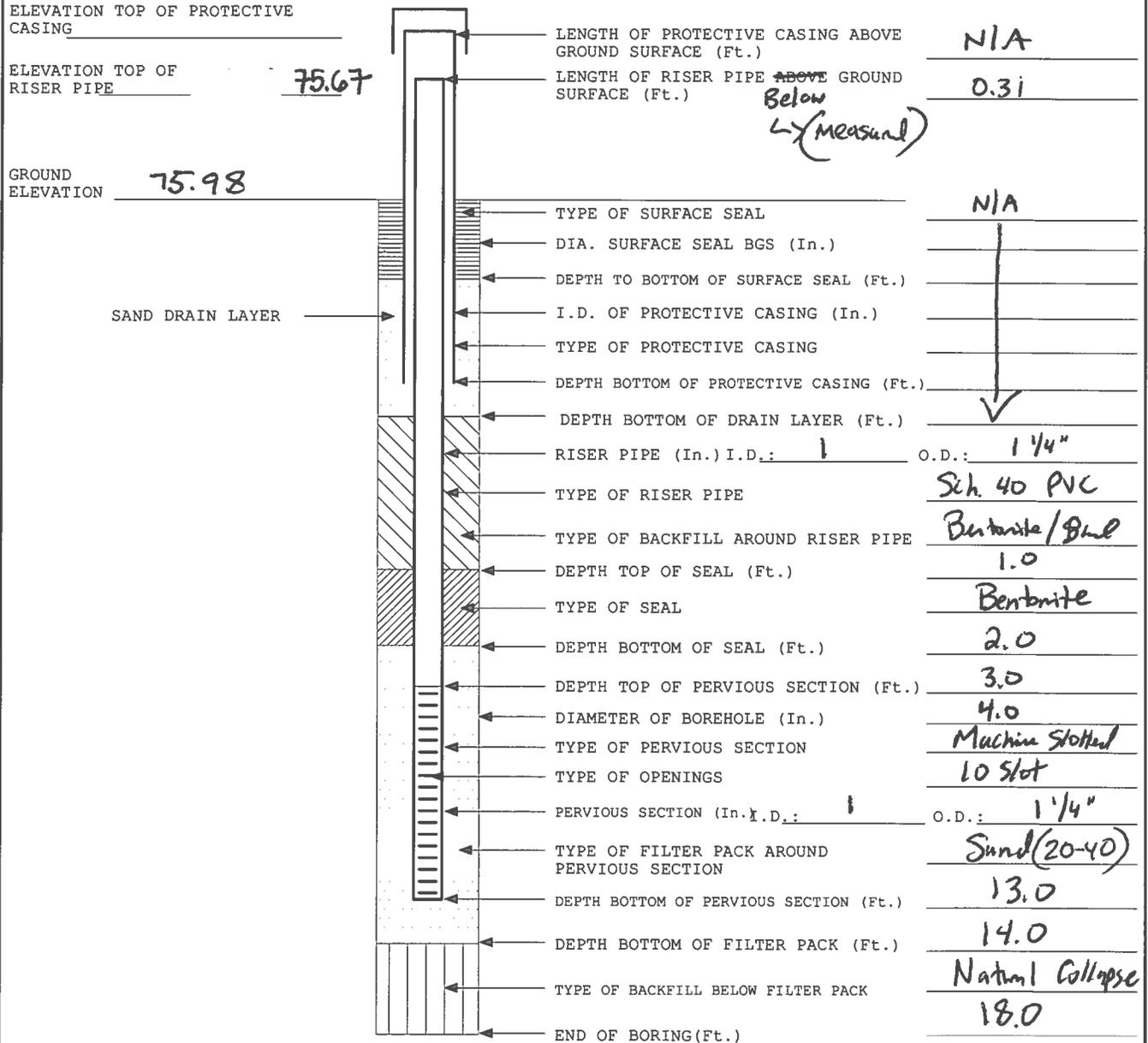
Collected Sample 5-6' bgs at 1430  
 Installed temp mw. Screened 2-12' bgs



OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: <u>NASB ONFF Site Assessment</u>	PROJECT NO: <u>112602063</u>
PROJECT LOCATION: <u>Former Naval Air Station Brunswick</u>	WELL NO: <u>DP-45 (Temp Well)</u>
CLIENT: <u>Navy</u>	BORING NO: <u>DP-45</u>
CONTRACTOR: <u>MAI</u>	BORING LOCATION: <u>388784.70</u>
LOGGED BY: <u>B. Geringer</u>	<u>3015856.71</u>
CHECKED BY: <u>C. Race</u>	PAGE: 1 OF 1
DRILLER: <u>S. Brown</u>	
DATE: <u>07/06/11</u>	
DATE: <u>07/08/11</u>	



GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR:

PROJECT NO.:

LOGGED BY:

DRILLED BY (Company/Driller):

GRD. SURFACE ELEVATION:

NASB-Old Navy Fuel Farm Site Assessment

112G02063 / 0000.2530

B. Geringer

MAI / S. Brown

TRANSCRIBED BY:

ELEVATION FROM:

BORING NO.:

START DATE:

COMPLETION DATE:

MON. WELL NO.:

CHECKED BY:

NASB-ONFF-DP45

07/06/11

07/06/11

DP-45

CR

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MATL CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]	
2	1.4 / 2.0	1516		SAND		Dk Brown (0.0-0.4) - Sand(f-m), T-Silt, roots		SP	Dry	P=0.7 P=0.5	F=0.0 F=0.0
						Brown/Orange (0.4-1.4) - Sand(f-m)			↓	P=0.3 P=0.4	F=0.0 F=0.0
4	1.6 / 2.0	1520				LT Brown (0.0-1.6) - SAA			Dry	P=0.7 P=0.3	F=0.0 F=0.0
						↓	↓		moist	P=0.2 P=0.4	F=0.0 F=0.0
6	1.5 / 2.0	1524				Brown (0.0-1.5) SAA			↓	P=0.3 P=0.4	F=0.0 F=0.0
						↓	↓		Wet at 1.2	P=0.5 P=0.4	F=0.0 F=0.0
8	/					Brown (0.0-2.9) - SAA			wet	P=0.6	F=0.0
						↓	↓	Some Fe staining	↓	P=0.3	F=0.0
10	2.9 / 4.0	1527				LT Brown		root at 1.7	↓	P=0.3	F=0.0
						↓	↓		↓	P=0.2	F=0.0
12	/					LT Brown (0.0-4.0) - SAA			Wet	P=0.3	F=0.0
						↓	↓		↓	P=0.3	F=0.0
14	4.0 / 4.0	1534						↓	P=0.3	F=0.0	
					↓	↓		↓	P=0.4	F=0.0	
16	/				LT Brown (0.0-3.5) - SAA			Wet	P=0.5	F=0.0	
					↓	↓		↓	P=0.4	F=0.0	

TYPE OF DRILLING RIG:	Geoprobe 6620 DT	
METHOD OF ADVANCING BORING:	Direct Push Technology	
METHOD OF SOIL SAMPLING:	Dual Tube - Acetate Sleeve	
METHOD OF ROCK CORING:	N/A	
GROUNDWATER LEVELS:		
OTHER OBSERVATIONS:		BORING NO.: NASB-ONFF-DP45      PAGE: 1 OF 2

Collected Sample 4'-5' bgs at 1545  
 Installed temp MW - Screened 3'-13' bgs





**O'BRIEN & GERE**  
ENGINEERS, INC.

MW-NASB-049 049

TEST BORING LOG

Report of Boring Number: MW-20  
Sheet 1 of 1 Date Completed: 10/24/91

Project location: Brunswick NAS, Maine  
Client: NAVFAC

EQUIPMENT SPECIFICATIONS  
Type: 2" ID Split Barrel Sampler  
Hammer: 140 Pound Fall: 30"

GROUND WATER ELEVATION DATA (MSL)  
Ground Water Elevation: 87.27 Date: 11/15/91  
87.14 Date: 12/05/91

Boring Co.: Soil Exploration Corporation  
Foreman: G. Junta  
OBG Geologist: R G Stromberg

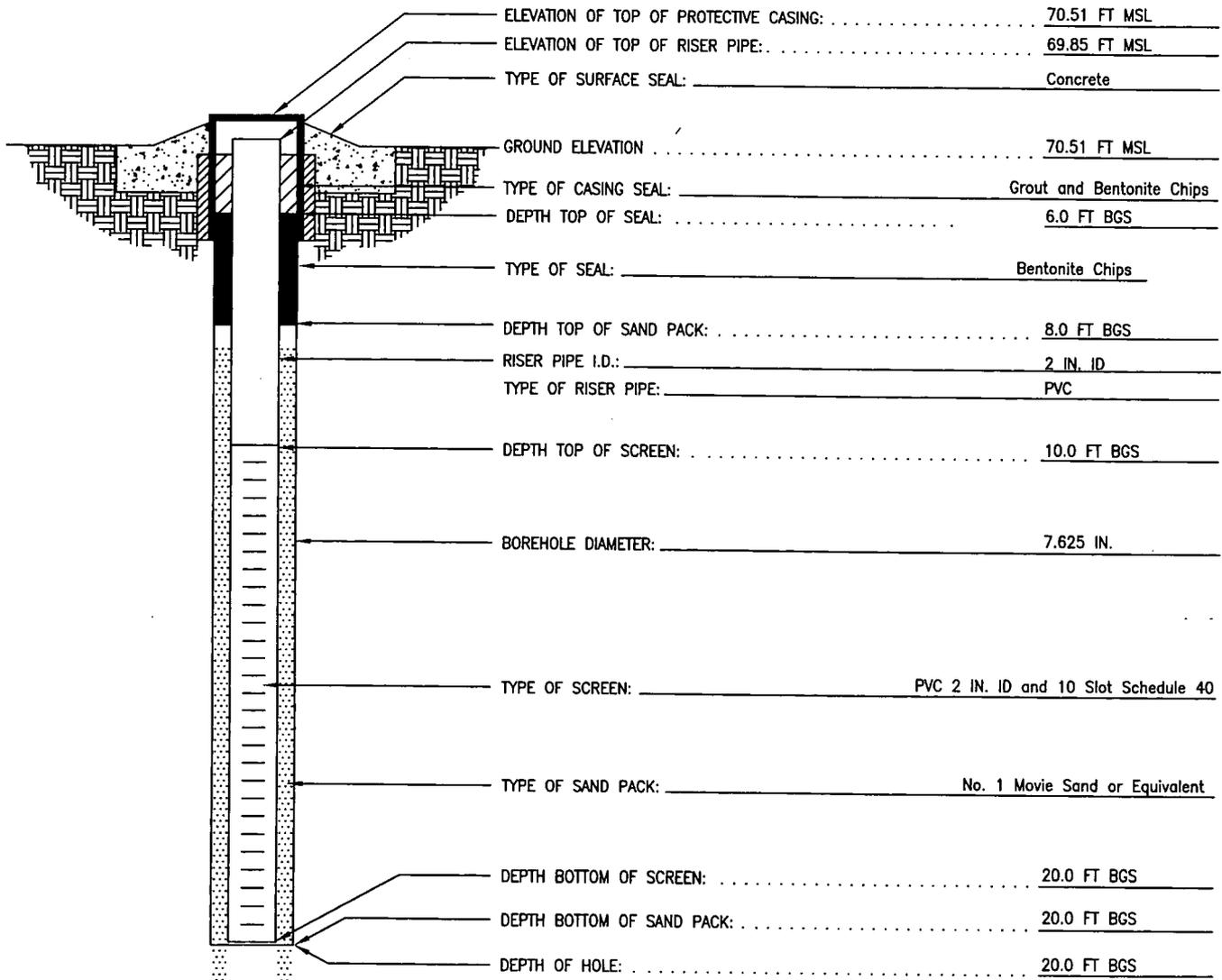
Screen Riser Gravel Pack  
Type PVC PVC Washed Sand  
Length 10' 7' 11'

Ground Surface Elevation: 90.83  
Top of Casing Elevation: 93.12

Depth Below Grade	Sample				Sample Description	Stratum Change	Equipment Installed	Field Testing		
	No	Depth (EL.)	Blows /6"	Penetr/Recovery				"N" Value	pH	Sp Cond
			Hand Excavated		Topsoil		Concrete			
2-4'	1		.....	-----	Loose, Orange - Brown - Tan, MEDIUM - FINE SAND / little silt, Moist	1'	Bentonite Seal			15
4-6'	2		No Blows	-----	Blueish - Gray, FINE SAND AND SILT / grading into silty clay	4'				15
8-10'	3		WOH	-----	Very Soft, Blueish Gray, SILTY CLAY, Wet	7'	WASHED SILTIC SAND			16
										14

Notes: Set well @ 15', 10' of screen and 5' of riser, sand packed to 5', bentonite seal to 3'. Concrete to ground surface.  
WOH = Weight of Hammer

Project: Naval Air Station Brunswick	Location: Old Navy Fuel Farm
Project No.: 29600.35.2491	Boring: MW-NASB-208BR
Geologist: Charles D. Springer	Driller: Northeast Diamond Drilling
Date Started: 16 March 04	Drilling Method: Hollow Stem Auger 4.25 ID
Date Completed: 16 March 04	Development Method: Pump and Surge
Northing: 388392.34	Easting: 563642.60



FILE: F:\Federal\DDO\NAVY\2960047\CAD\WELL\_208BR.DWG

 <b>EA ENGINEERING, SCIENCE, AND TECHNOLOGY</b>		<b>NAVAL AIR STATION BRUNSWICK BRUNSWICK, ME</b>		<b>WELL CONSTRUCTION DIAGRAM</b>			
PROJECT MGR AE	DESIGNED BY SAP	DRAWN BY SAP	CHECKED BY CDS	SCALE NONE	DATE 12 APRIL 04	PROJECT NO 29600.35.2491	FIGURE A-4



**EA Engineering, Science,  
and Technology**

**LOG OF SOIL BORING**

Coordinates: N: 388392.34 E: 563642.60  
 Surface Elevation: 70.51 ft MSL  
 Top of Casing Elevation: 69.85 ft MSL  
 Reference Elevation: 69.85 ft MSL  
 Reference Description: Top of Casing / Permanent Marker

Job No. 2960035.2491	Client United States Navy	Location NAS Brunswick, ME
Drilling Method: CME 75 / Hollow Stem Auger (4.25 inch ID / 7.625 inch OD)		Boring No. MW-NASB-208BR
Sampling Method: Continuous, 2 inch Stainless Steel Split Spoon		Sheet 1 of 1
Water Lev.    .650    6.30		Drilling
Time	1500    1600	Start    Finish
Date	16-Mar-04    17-Mar-04	16-Mar-2004    16-Mar-2004
Reference	Ground    TOC	1330    1530

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Samp. # / Samp. depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions:
	SS	24 / X	0	1 / 0-2	X	NC	0		Asphalt parking lot.
						NC	1	GM	0.0 - 0.2: Asphalt
						NC		SP	0.2 - 0.7: Fine to coarse gravel
						NC			0.7 - 2.0: Lt brn medium to fine SAND, some fine gravel
	SS	24 / 20	0	2 / 2-4	X	3	2	SP	2.0 - 2.2: Lt brn medium to fine SAND, little fine gravel
						4		SM	2.2 - 3.1: Dark brn medium to fine SAND, some silt
						5	3	SP	3.1 - 3.2: Lt brn medium to fine SAND
						5		SP	3.2 - 3.5: Lt grey medium to fine SAND, little fine gravel, little silt
	SS	24 / 24	0	3 / 4-6	X	3	4	SM	3.5 - 5.0: Dark brn medium to fine SAND, little silt
						3		SM	5.0 - 6.0: Dark brn fine SAND, little silt, organics, hydrogen sulfide odor
						4	5		
	SS	24 / 12	0	3 / 6-8	X	9	6	SP	6.0 - 7.0: Brn fine to medium SAND, trace fine gravel
						8			GW @ approximately 6.5 ft bgs
						7	7		
						4			
	SS	24 / 12	8	4 / 8-10	X	2	8	SP	8.0 - 8.3: Brn fine to medium SAND, trace fine gravel
						5		SM	8.3 - 8.6: Grey fine SAND and SILT (moist)
						9	9	ML	8.6 - 7.0: Grey SILT, little clay
						8			
	SS	24 / 24	10	5 / 10-12	X	4	10	SM	10.0 - 10.8: Grey fine SAND, little silt (wet)
						6		ML	10.8 - 11.5: Grey tight SILT, trace fine sand
						12	11	SM	11.5 - 12.0: Grey fine SAND, little silt
						13			
	SS	24 / 24	12	6 / 12-14	X	3	12	SP	12.0 - 12.2: Grey brn fine SAND
						3		ML	12.2 - 12.7: Grey tight SILT, trace fine sand
						4	13	CH	12.7 - 14.0: Grey CLAY
						3			
	SS	24 / 24	14	7 / 14-16	X	2	14	CH	14.0 - 14.7: Grey CLAY
						2		SM	14.7 - 14.8: Grey fine SAND, some silt
						2	15	CH	14.8 - 16.0: Grey CLAY
						2			
	SS	24 / 24	16	8 / 16-18	X	WH	16	CH	16.0 - 18.0: Grey CLAY
						1			
						1	17		
						↓			
	SS	24 / 24	18	9 / 18-20	X	WR	18	CH	18.0 - 20.0: Grey CLAY
						↓	19		
						↓			

Bottom of boring 20.0 ft below grade

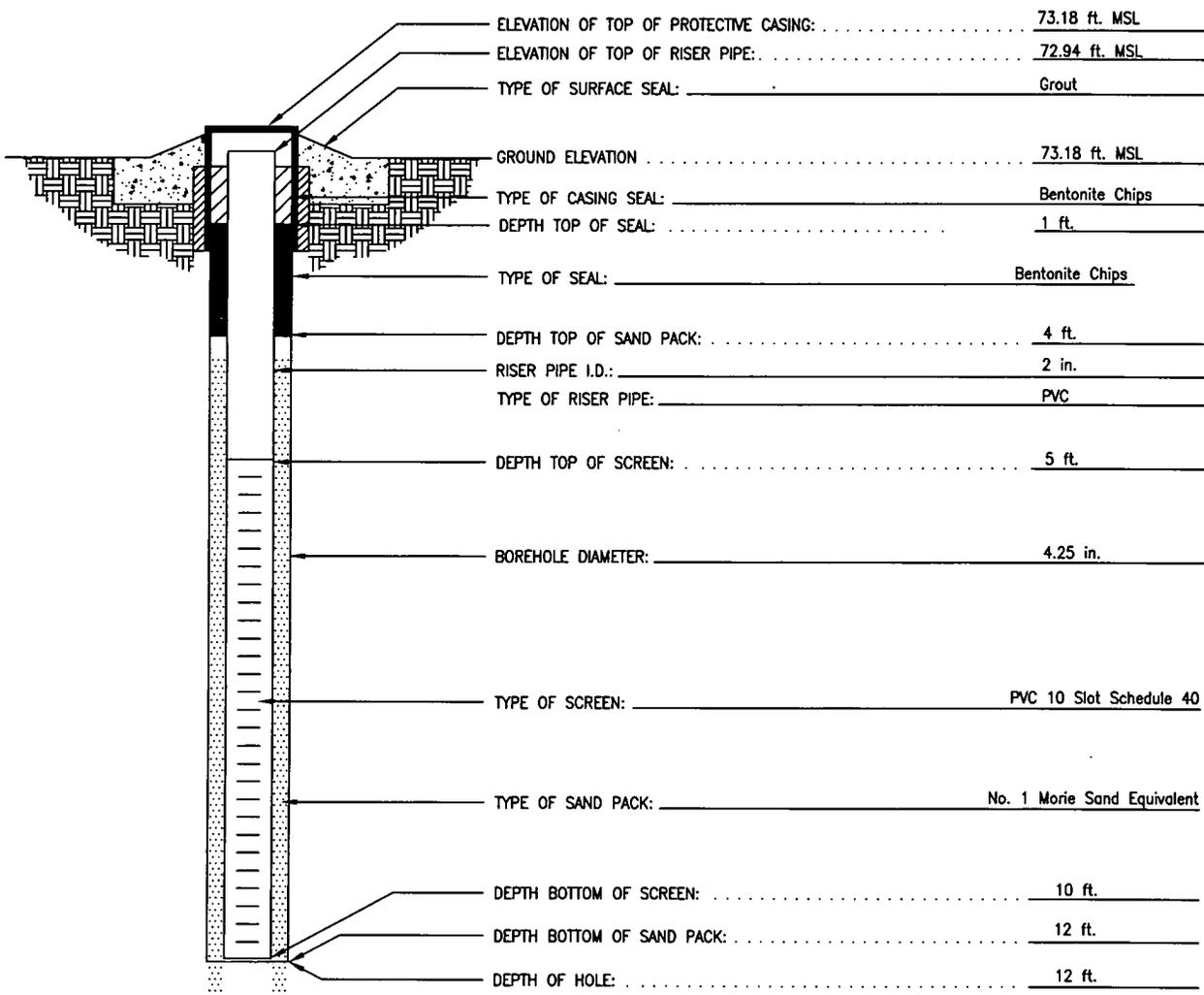
Logged by: Charles D. Springer  
 Drilling Contractor: Northeast Diamond Drilling

Date: 16 March 2004  
 Driller: Jason O'Leary / Rich Leonard

**WELL SPECIFICATIONS:**

Diam. of casing: 2" ID    Screen Interval: 10.0 - 20.0 ft bgs    Sandpack: 8.0 - 20.0 ft bgs    Concrete: 0.0 - 6.0 ft bgs  
 BOH: 20.0 ft bgs    Riser Interval: 0.0 - 10.0 ft bgs    Bentonite: 6.0 - 8.0 ft bgs    Cover: flush mounted road box

Project: Well Installation	Location: Old Navy Fuel Farm
Project No.: 29600.35.5325	Boring: MW-NASB-209R
Geologist: Suzanne Chase	Driller: Tom Schaefer - Maine Test Boring
Date Started: 9/26/00 1345	Drilling Method: Drive and Wash
Date Completed: 9/26/00 1545	Development Method: Surge; Purge
Northing: 388319.12	Easting: 563292.58



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		NAVAL AIR STATION BRUNSWICK BRUNSWICK, ME		WELL CONSTRUCTION DIAGRAM			
PROJECT MGR AE	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE NONE	DATE 1/18/01	PROJECT NO 29600.35	FIGURE



**EA Engineering, Science,  
and Technology, Inc.**

**LOG OF SOIL BORING**

Coordinates: N: 388319.12 E: 563292.58  
 Surface Elevation: 73.18 FT MSL  
 Well Riser Elevation: 72.94 FT MSL

Job. No. 29600.35.5325	Client NAVY	Location: Old Navy Fuel Farm
Drilling Method: Drive & Wash		Boring No. <b>MW-NASB-209R</b>
Sampling Method: 2" x 24" split barrel sampler		Sheet <b>1</b> of <b>1</b>
Drilling Water Level		Start 9-26-00
Date		Drilling Date/Times
Time		Finish 9-26-00
Surface Conditions: grass		

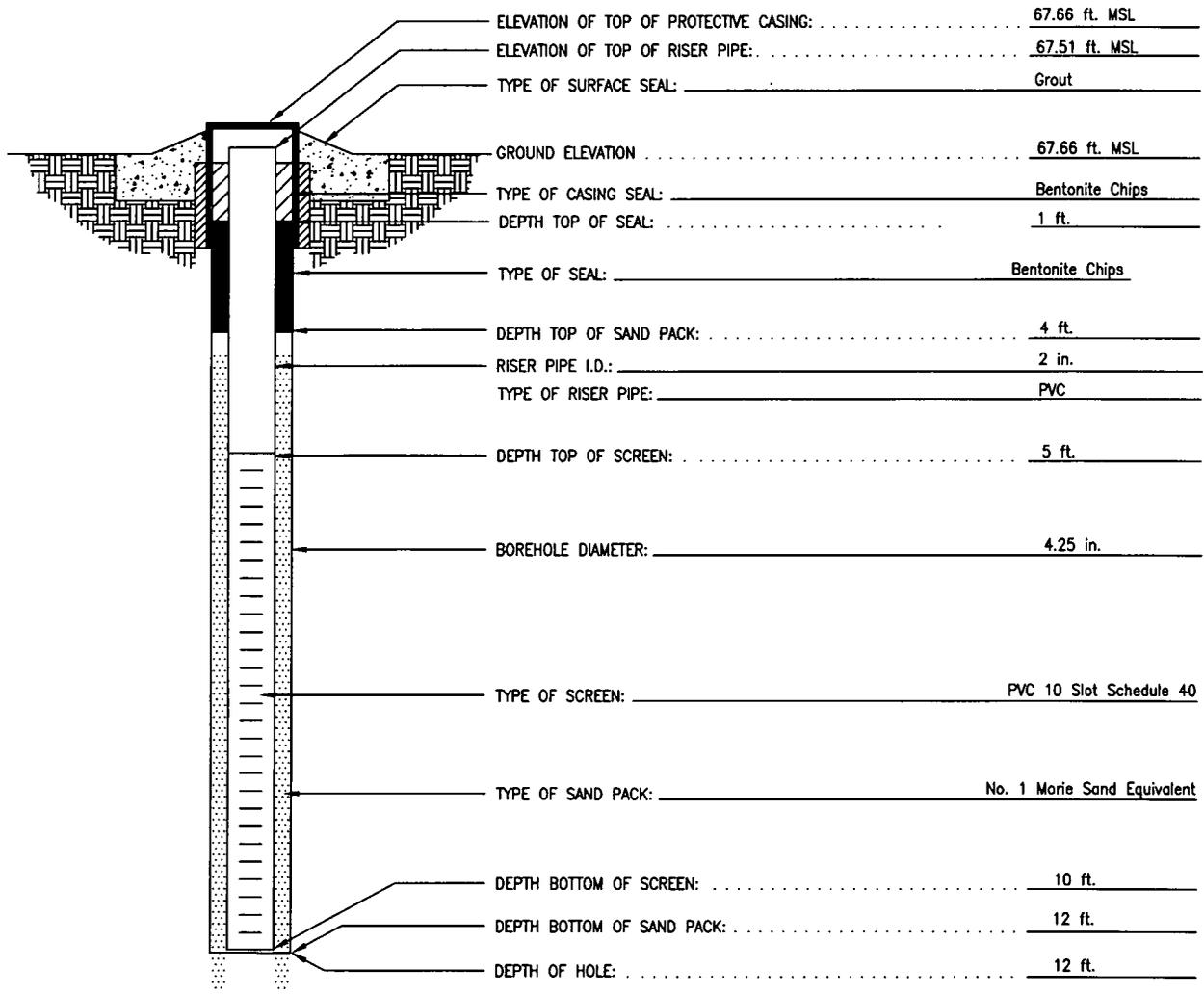
Sample Type	Inches Driven/In. Recvrd	Dpth Csg.	Samp # / depth (ft)	PID (ppm) Above bk.	Blows per 6"	Ft bgs	USCS Log	SOIL DESCRIPTION	COMMENTS
					1	0	Fill	6 in Dark brown, loose, dry, topsoil.	
					2		SW	6 in. Brown, medium dense, round, dry SAND.	
SS	24 12	0	1 2	52	8 4	1			
						2			
						3			
						4	SW	Drove casing to 5 ft. Cuttings consisted of Brown, fine, loose, round, dry, SAND. Small pieces of concrete and floortile observed in soil cuttings.	
					2	5			
					4				
SS	24 8	5	2 7	12	14 28	6	SW	Wet at 6.5 ft. Gray, fine, loose to dense, round, wet, SAND, wood chips throughtout soil sample.	
						7			
						8			
						9			
SS	24 18	10	3 12	158	2 5 6	10	CL	18 in. Gray, loose to medium dense, wet, silty CLAY.	
						11			
						12			
						13			
						14		Bottom of boring at 12 ft below grade.	
						15			
						16			
						17			
						18			
						19			

Logged by: Suzanne Y. Chase Date: 9/26/2000  
 Drilling Contractor: Maine Test Boring Driller: Tom Schaefer

**WELL SPECIFICATIONS:**

Diam. of Casing: 2 Screen Interval: 5-10 Sandpack: 4-12 Grout: none  
 Bottom of Hole: 12 Riser Interval: 0-5 Bentonite: 1-4 Cover: 7 in. curb box

Project: Well Installation	Location: Old Navy Fuel Farm
Project No.: 29600.35.5325	Boring: MW-NASB-245
Geologist: Suzanne Chase	Driller: Tom Schaefer - Maine Test Boring
Date Started: 9/26/00 1130	Drilling Method: Drive and Wash
Date Completed: 9/26/00 1326	Development Method: Surge; Purge
Northing: 388372.99	Easting: 563891.02



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		NAVAL AIR STATION BRUNSWICK BRUNSWICK, ME		WELL CONSTRUCTION DIAGRAM			
PROJECT MGR	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	DATE	PROJECT NO	FIGURE
AE				NONE	1/18/01	29600.35	



**EA Engineering, Science,  
and Technology, Inc.**

**LOG OF SOIL BORING**

Coordinates: N: 388372.99 E: 563891.02  
 Surface Elevation: 67.66 FT MSL  
 Well Riser Elevation: 67.51 FT MSL

Job No. 29600.35.5325	Client NAVY	Location: Old Navy Fuel Farm	
Drilling Method: Drive & Wash		Boring No. <b>MW-NASB-245</b>	
Sampling Method: 2" x 24" split barrel sampler		Sheet 1 of 1	
Drilling Water Level		Start 9-26-00	Drilling Date/Times
Date		1130	Finish 9-26-00 1326
Time			
Surface Conditions: grass			

Sample Type	Inches Driven/In. Recvrd	Dpth Csg.	Samp # / depth (ft)	PID (ppm) Above bk.	Blows per 6"	Ft bgs	USCS Log	SOIL DESCRIPTION	COMMENTS
					2	0	Fill	6 in. dark brown, loose, dry, topsoil.	
					3				
SS	24	0	1	68	5	1	SW	8 in. Light brown, medium dense, round, dry, SAND, some gray, fine, round GRAVEL.	
	14		2		12				
					12	2			
					14				
SS	24	0	2	45	13	3	SW	6 in. Gray, fine, round, dry, GRAVEL, with brown, medium dense, round, dry, SAND	
	18		4		12			12 in. Gray, medium dense, round, dry, SAND.	
					9	4			
					18				
SS	24	4	3	49	20	5	SW	3 in Gray, medium dense, round, moist, SAND	
	16		6		25			5 in. Dark brown, medium dense, round, moist, SAND.	
					13	6		8 in. Light brown, medium dense, round, moist, SAND.	
					13				
SS	24	6	4	92	16	7	SW	2 in. Gray, medium dense, round, moist, SAND.	
	12		8		16			10 in. Dark brown, dense, round, moist to wet, SAND.	
						8		Wet at 8 ft.	
						9			
SS	24	10	5	208	6	10	CL	18 in. Gray, very stiff, wet, CLAY.	
	18		12		11				
					11	11			
					15				
						12			
						13			
						14		Bottom of boring at 12 ft below grade.	
						15			
						16			
						17			
						18			
						19		SS = Split-spoon sampler	

Logged by: Suzanne Y. Chase

Date: 9/26/2000

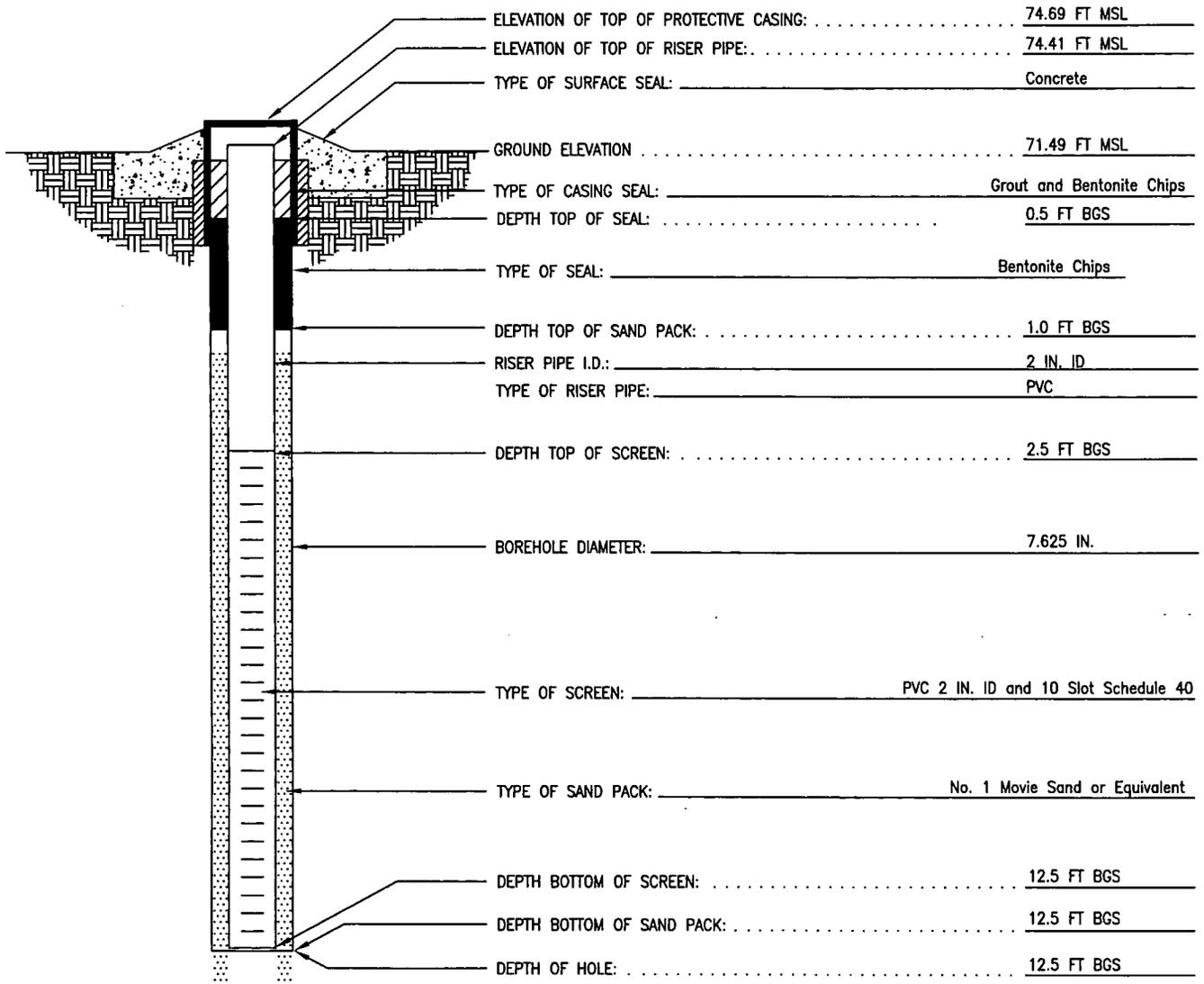
Drilling Contractor: Maine Test Boring

Driller: Tom Schaefer

WELL SPECIFICATIONS:

Diam. of Casing: 2 Screen Interval: 5-10 Sandpack: 4-12 Grout: none  
 Bottom of Hole: 12 Riser Interval: 0-5 Bentonite: 1-4 Cover: 7 in. curb box

Project: Naval Air Station Brunswick	Location: Old Navy Fuel Farm
Project No.: 29600.35.2490	Boring: MW-NASB-701
Geologist: Charles D. Springer	Driller: Northeast Diamond Drilling
Date Started: 15 March 04	Drilling Method: Hollow Stem Auger 4.25 ID
Date Completed: 15 March 04	Development Method: Pump and Surge
Northing: 388880.01	Easting: 563584.48



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EA ENGINEERING,  
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TECHNOLOGY

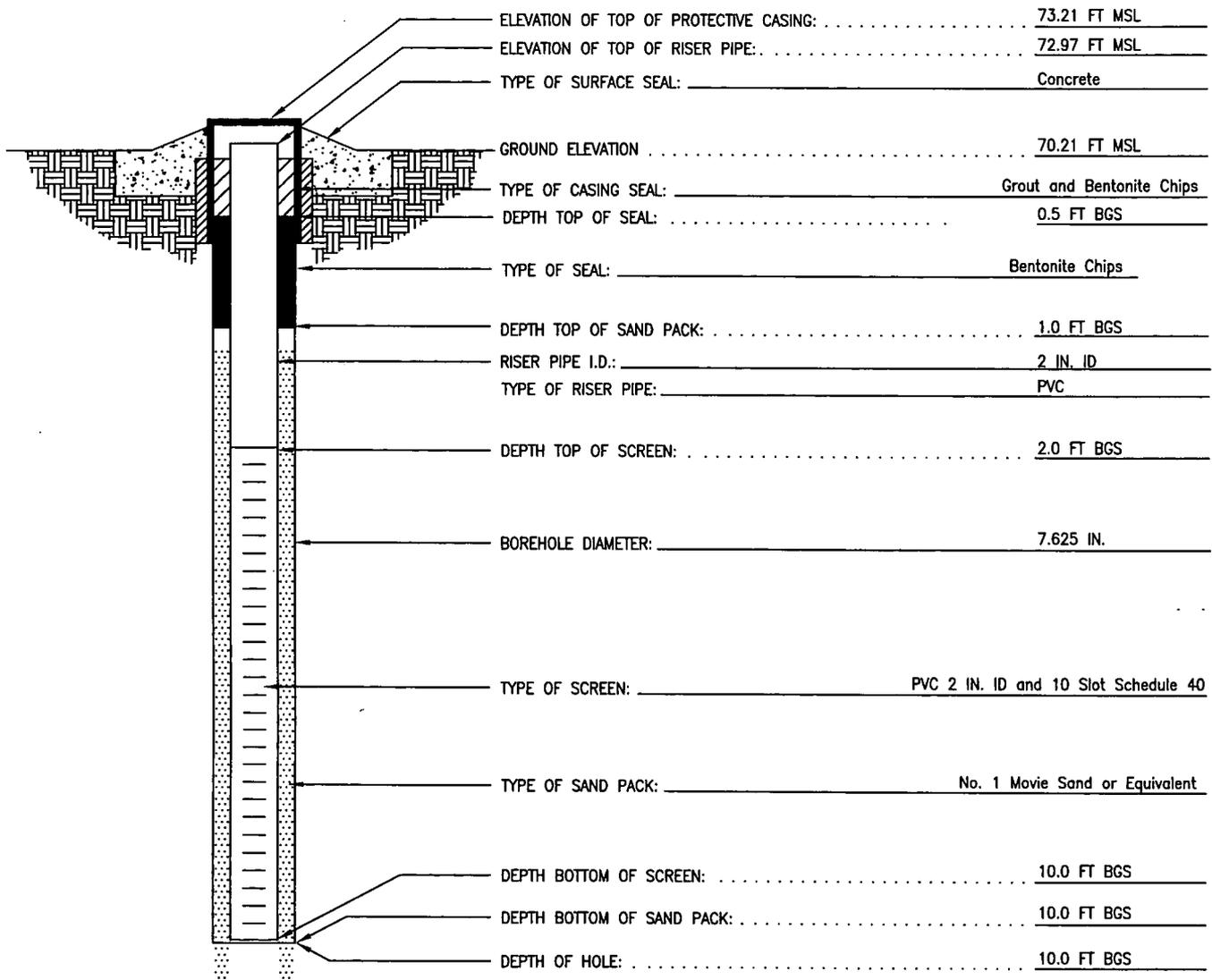
NAVAL AIR STATION  
BRUNSWICK  
BRUNSWICK, ME

WELL CONSTRUCTION DIAGRAM

PROJECT MGR AE	DESIGNED BY SAP	DRAWN BY SAP	CHECKED BY CDS	SCALE NONE	DATE 12 APRIL 04	PROJECT NO 29600.35.2490	FIGURE A-1
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Project: Naval Air Station Brunswick	Location: Old Navy Fuel Farm
Project No.: 29600.35.2490	Boring: MW-NASB-703
Geologist: Charles D. Springer	Driller: Northeast Diamond Drilling
Date Started: 15 March 04	Drilling Method: Hollow Stem Auger 4.25 ID
Date Completed: 16 March 04	Development Method: Pump and Surge
Northing: 389031.73	Easting: 563833.97



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		NAVAL AIR STATION BRUNSWICK BRUNSWICK, ME		WELL CONSTRUCTION DIAGRAM			
PROJECT MGR AE	DESIGNED BY SAP	DRAWN BY SAP	CHECKED BY CDS	SCALE NONE	DATE 12 APRIL 04	PROJECT NO 29600.35.2490	FIGURE A-3



**LOG OF SOIL BORING**

Coordinates: N: 389031.73 E: 563833.97  
 Surface Elevation: 70.21ft MSL  
 Top of Casing Elevation: 72.97 ft MSL  
 Reference Elevation: 72.97 ft MSL  
 Reference Description: Top of Casing / Permanent Marker

Job. No. 2960035.2490	Client United States Navy	Location NAS Brunswick, ME
Drilling Method: CME 75 / Hollow Stem Auger (4.25 inch ID / 7.625 Inch OD)		Boring No. MW-NASB-703
Sampling Method: Continuous, 2 inch Stainless Steel Split Spoon		Sheet 1 of 1
		Drilling
Water Lev.	4.50	7.23
Time	1615	0915
Date	15-Mar-04	17-Mar-04
Reference	Ground	TOC
Start	15-Mar-2004	16-Mar-2004
Finish	1500	0855

Digital Picture #	Sample Type	In. Drvn / In. Recvrd	Dpth. Csg.	Samp. # / Samp. depth	PID (ppm)	Blows per 6 in.	Depth (feet)	USCS Log	Surface Conditions:
	SS	24 / 20	0	1 / 0-2	ND	3	0	SP	0.0 - 1.4: Dark brn fine SAND
						12		GM	1.4 - 1.5: Fine to Coarse GRAVEL, and brn medium sand
						24	1	SP	1.5 - 1.8: Orange Brn fine to medium SAND, little silt, trace gravel
						28			
	SS	24 / 19	0	2 / 2-4	0.80	17	2	SM	2.0 - 3.6: Orange Brn fine to medium SAND, little silt, trace gravel
						8			
						8	3		
						7			
	SS	24 / 20	0	3 / 4-6	0.35	4	4	SP	4.0 - 5.7: Lt brn fine to medium SAND
						4			
						3	5		Wet @ 4.5 ft bgs
						3			
	SS	24 / 24	0	3 / 6-8	0.75	1	6	SP	6.0 - 6.9: Lt brn fine to medium SAND
						2		SM	6.9 - 7.1: Dark brn SAND and grey SILT laminations
						3	7	CH	7.1 - 8.0: Grey CLAY
						4			
	SS	24 / 20	0	4 / 8-10	0.02	6	8	CH	8.0 - 9.7: Grey CLAY
						7			
						8	9		
						9			
							10		
									Bottom of boring 10.0 ft below grade
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		

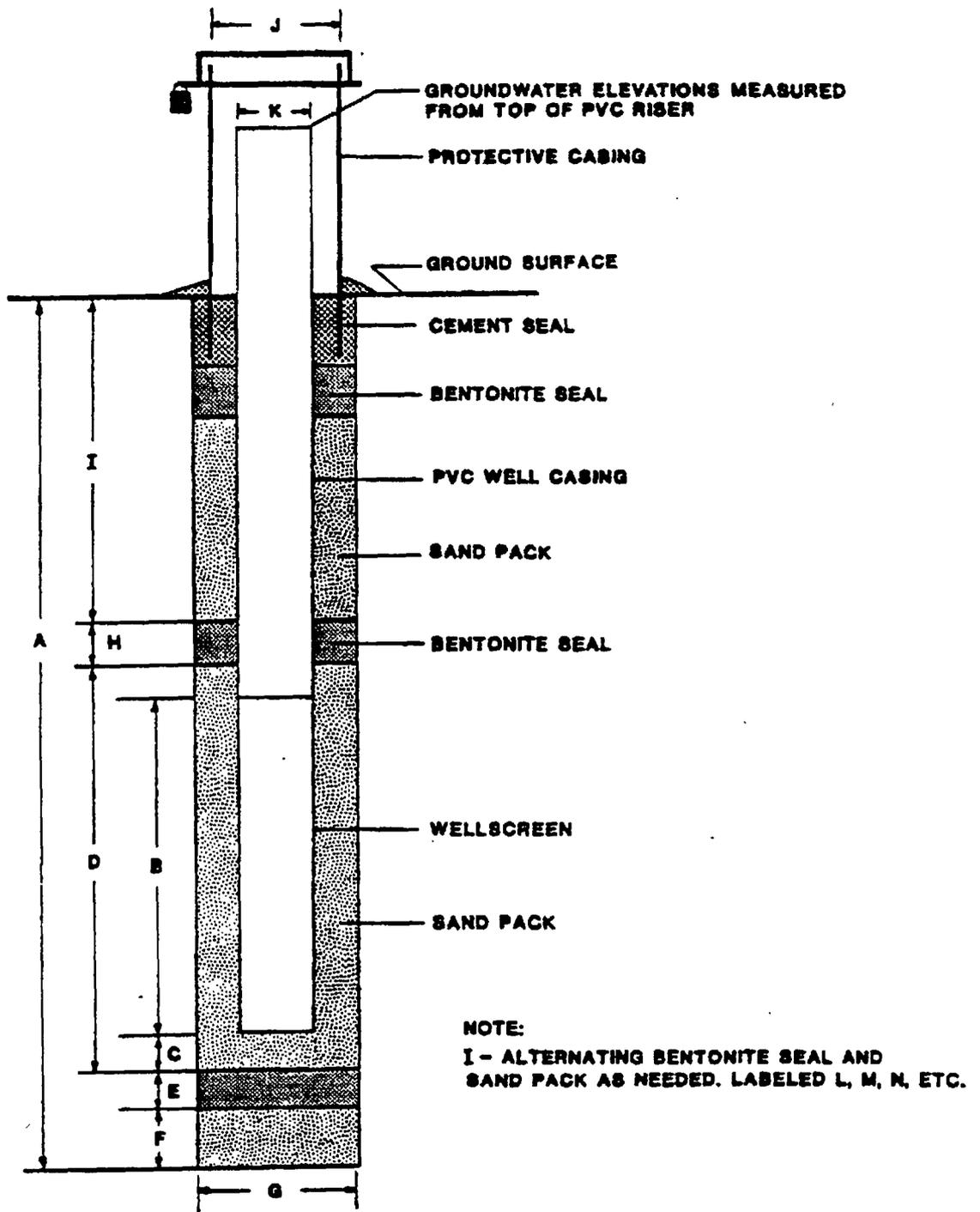
Logged by: Charles D. Springer  
 Drilling Contractor: Northeast Diamond Drilling

Date: 16 March 2004  
 Driller: Jason O'Leary / Rich Leonard

**WELL SPECIFICATIONS:**

Diam. of casing: 2" ID      Screen Interval: 2.0 - 10.0 ft bgs      Sandpack: 1.0 - 10.0 ft bgs      Concrete: 0.0 - 0.5 ft bgs  
 BOH: 10.0 ft bgs      Riser Interval: 0.0 - 2.0 ft bgs      Bentonite: 0.5 - 1.0 ft bgs      Cover: 3 ft steel protective stand pipe

SITES 1&3



NOT TO SCALE

**MONITORING WELL INSTALLATION DETAIL  
POLLUTION ABATEMENT CONFIRMATION STUDY  
VERIFICATION STEP - 1A**

APPENDIX A-6  
 MONITORING WELL INSTALLATION DATA  
 POLLUTION ABATEMENT CONFIRMATION STUDY  
 STEP 1A - VERIFICATION

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
<b>SITES 1, 2 and 3</b>																	
MW-101																	
Length of PVC (ft): 41.8																	
El. Bottom of Well (ft): 12.7	47.0	10.0	1.0	13.0	2.0	5.0	4.0	3.0	24.0	3.0	2.0	4.0	1.5	8.5	3.0	5.0	4.0
El. Ground Surface (ft): 51.7																	
Well Positioned In: Outwash/Marine Silt & Clay																	
MW-102																	
Length of PVC (ft): 16.7																	
El. Bottom of Well (ft): 13.1	17.0	5.0	1.0	7.0	2.0	3.0	4.0	1.5	3.5	3.0	2.0	1.0	2.5	NA	NA	NA	NA
El. Ground Surface (ft): 24.1																	
Well Positioned In: Outwash/Marine Silt & Clay																	
MW-103																	
Length of PVC (ft): 29.8																	
El. Bottom of Well (ft): 27.2	37.0	10.0	1.0	15.0	2.0	7.0	4.0	2.0	11.0	3.0	2.0	4.0	2.0	2.0	3.0	NA	NA
El. Ground Surface (ft): 54.2																	
Well Positioned In: Outwash/Marine Silt & Clay																	
MW-104																	
Length of PVC (ft): 22.6																	
El. Bottom of Well (ft): 0.1	22.0	10.0	3.0	15.0	0.0	0.0	4.0	2.0	5.0	3.0	2.0	1.5	3.5	NA	NA	NA	NA
El. Ground Surface (ft): 19.1																	
Well Positioned In: Outwash																	

Notes:

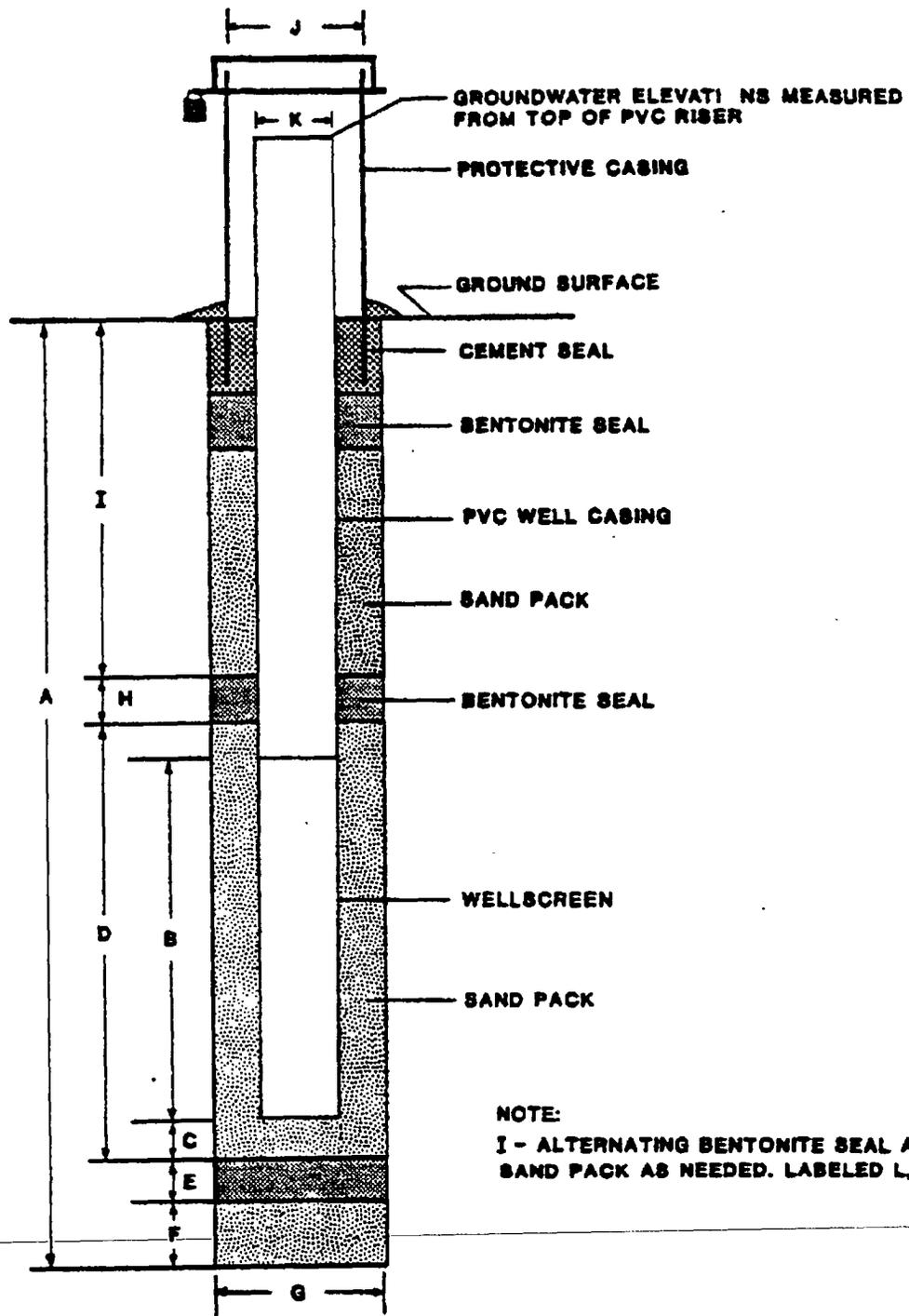
1. See schematic monitoring well installation detail for items A through S.

1.85.20T  
 0040.0.0





SITE 8



NOT TO SCALE

**MONITORING WELL INSTALLATION DETAIL  
POLLUTION ABATEMENT CONFIRMATION STUDY  
VERIFICATION STEP - 1A**

APPENDIX A-6 (cont.)  
 MONITORING WELL INSTALLATION DATA  
 POLLUTION ABATEMENT CONFIRMATION STUDY  
 STEP 1A - VERIFICATION

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
<b>MW-703</b>																			
Length of PVC (ft): 19.3																			
El. Bottom of Well (ft): 58.4	27.0	10.0	0.9	11.9	2.1	8.0	4.0	1.0	4.0	3.0	2.0	0.5	3.0	NA	NA	NA	NA	NA	NA
El. Ground Surface (ft): 74.4																			
Well Positioned In: Outwash Sand																			
<b>SITE B</b>																			
<b>MW-801</b>																			
Length of PVC (ft): 10.0																			
El. Bottom of Well (ft): 32.7	17.0	5.0	0.0	5.5	0.0	10.0	4.0	0.5	1.0	3.0	2.0	1.0	NA	NA	NA	NA	NA	NA	NA
El. Ground Surface (ft): 39.7																			
Well Positioned In: Outwash/Marine Silt & Clay																			
<b>MW-802</b>																			
Length of PVC (ft): 16.7																			
El. Bottom of Well (ft): 16.1	17.0	8.0	1.0	10.0	0.0	2.0	4.0	1.0	4.0	3.0	2.0	0.5	3.5	NA	NA	NA	NA	NA	NA
El. Ground Surface (ft): 30.1																			
Well Positioned In: Outwash/Marine Silt & Clay																			
<b>MW-803</b>																			
Length of PVC (ft): 9.5																			
El. Bottom of Well (ft): 20.2	16.0	4.0	0.5	5.0	0.0	7.5	4.0	1.0	2.0	3.0	2.0	0.5	1.5	NA	NA	NA	NA	NA	NA
El. Ground Surface (ft): 28.2 (est.)																			
Well Positioned In: Outwash/Marine Silt & Clay																			

Notes:

1. See schematic monitoring well installation detail for items A through S.

1.85.20T  
0043.0.0

<b>MAINE TEST BORIN S, INC.</b> BREWER, MAINE 04412		CLIENT <b>E.C. JORDAN Co.</b>		SHEET <u>1</u> OF <u>1</u> HOLE NO. <u>B-803</u>	
DRILLER <b>Ervin Giguere</b>		PROJECT NAME <b>Brunswick Naval Air Station</b>		LINE & STATION	
M.T.S. JOB NUMBER <b>84-201</b>		LOCATION <b>Brunswick, Maine</b>		OFFSET	
GROUND WATER OBSERVATIONS  AT _____ FT. AFTER _____ HOURS  AT _____ FT. AFTER _____ HOURS		CASING TYPE <u>4"</u> SIZE I.O. <u>4"</u> HAMMER WT <u>300</u> HAMMER FALL <u>16"</u>		SAMPLER <u>SS</u> <u>1 3/8"</u> <u>140</u> <u>30"</u>	
				CORE BARREL _____ DATE START <u>12-6-84</u> DATE FIN <u>12-6-84</u> SURFACE ELEV. <u>~ 28.2' EST.</u> GROUND WATER ELEV. _____	

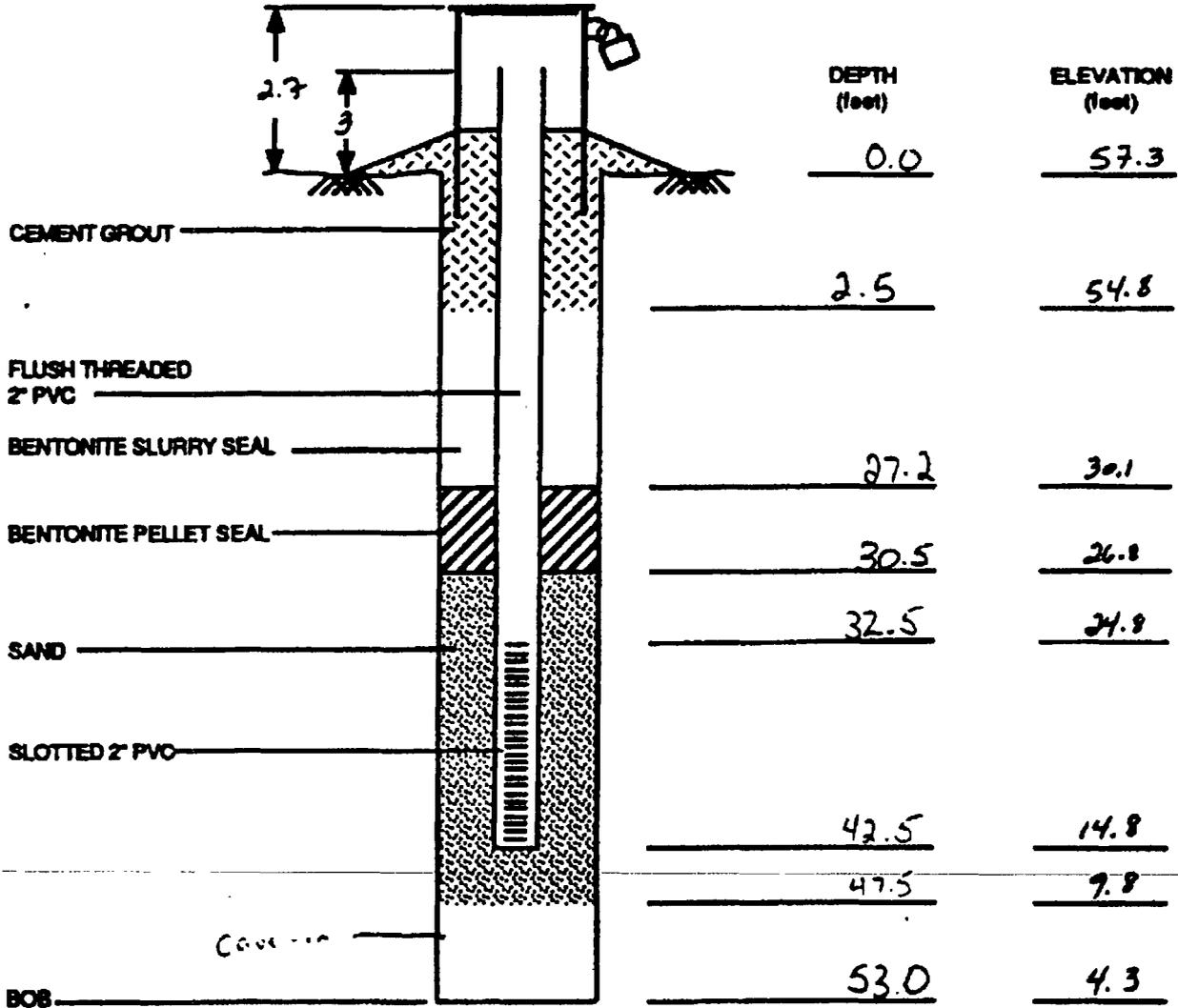
CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 8" ON SAMPLER			VANE READING	DEPTH	STRATUM DESCRIPTION
	NO.	O.D.	PEN.	REC.	DEPTH BOT.						
						0-8	8-12	12-16			
15											
17	1D	2"	24"		2.0	1	2	1	1	Brown silty fine to medium sand.	
22											
27											
21											
17											
23	2D	2"	24"		7.0	1	1	6	7	Brown silty mottled clay w/sand layers.	
42											
61											
67											
	3D	2"	24"		12.0	3	5	5	7		
	4D	2"	24"		14.0	4	5	4	6	Gray silty clay w/sand layers.	
	5D	2"	24"		16.0	1	2	2	4		
										Bottom of boring @ 16.0' Installed well.	

SAMPLES D = Splice Spoon C = 2" Shelby Tube U = 3 1/4" Shelby Tube	SOIL CLASSIFIED BY: <input checked="" type="checkbox"/> Driller - Visually <input type="checkbox"/> Soil Technician - Visually <input type="checkbox"/> Laboratory Tests	REMARKS
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HOLE NO. **B-803**

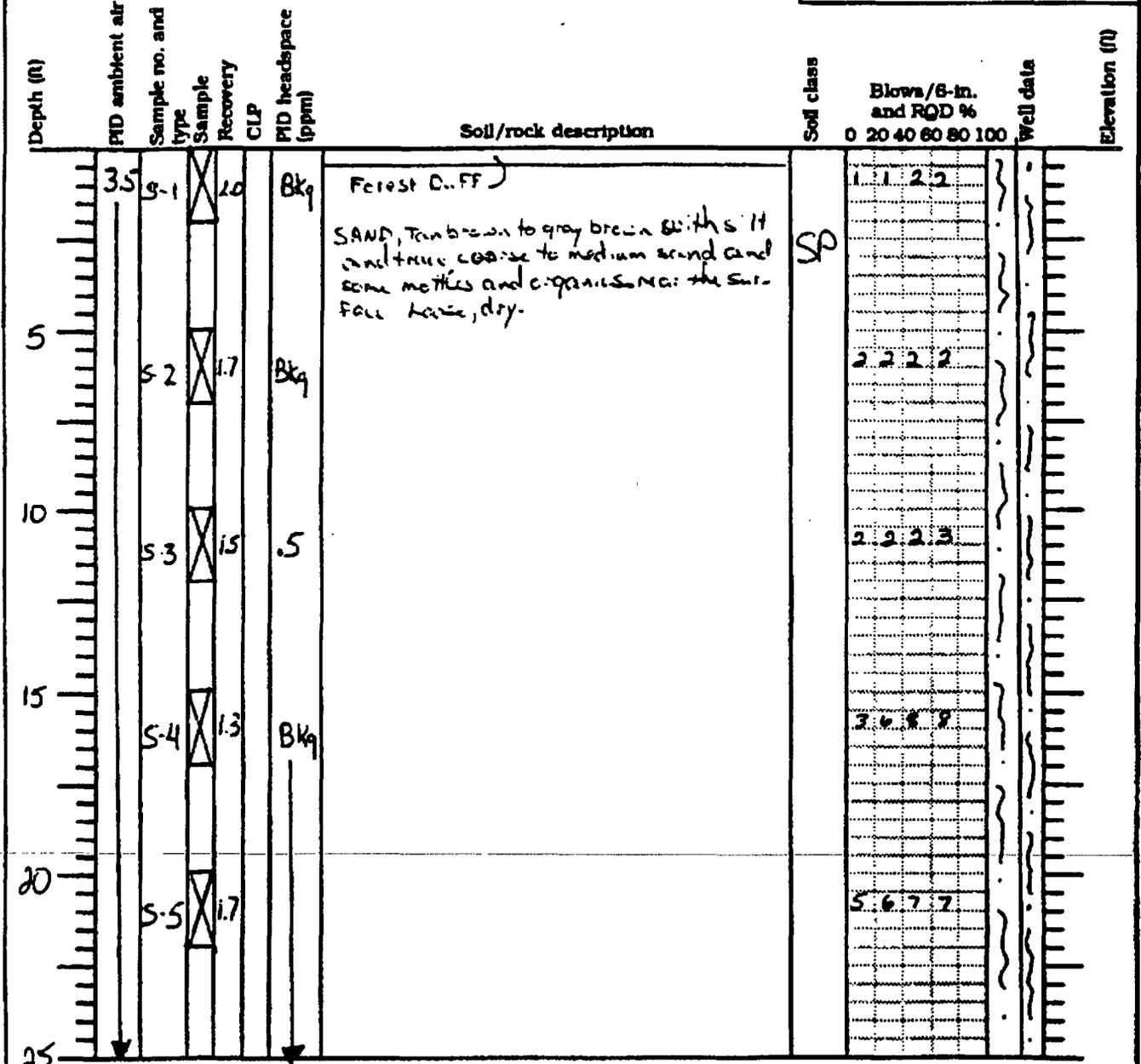
## WELL INSTALLATION DETAILS

PROJECT NO.: 4807-31	PROJECT NAME: NAVAL AIR STATION, BRUNSWICK, MAINE	WELL NO.: OW-813
INSTALLED BY: NEB	DATE INSTALLED: 8-29-89	BORING DIAMETER: 6 5/8 ID HSA
WELL DIAMETER: 2"	WELL MATERIAL: Sch 40 PVC	BACKFILL MATERIAL: #2 Sand, Bentonite Pellets, Volclay Grout



E.C. JORDAN CO.

<b>NAVAL AIR STATION, BRUNSWICK</b>			Boring no: <b>OW-813</b>
Client: <b>US. DEPARTMENT OF THE NAVY</b>			Project no: <b>4807-31</b>
Contractor: <b>NEW ENGLAND BORING CONTRS.</b>		Date started: <b>8-29-89</b>	Completed:
Method: <b>H.S.A.</b>	Casing size: <b>6 5/8</b>	PID: <b>10.6</b>	Protect'n level: <b>D</b>
Ground el: <b>57.9'</b>	Soil drilled: <b>53.0</b>	Rock drilled: <b>NA</b>	Total Depth: <b>53.0</b>
Logged by: <b>C. Lyons</b>	Ch'd by: <b>T.L.</b>	Date: <b>10-10-89</b>	<input checked="" type="checkbox"/> Below grnd:
			Page <b>1</b> of <b>3</b>



\*U = Thin wall tube    S = Split spoon    R = Rock

E.C. JORDAN

<b>NAVAL AIR STATION, BRUNSWICK</b>			Boring no: <b>OW-813</b>
Client: <b>US. DEPARTMENT OF THE NAVY</b>			Project no: <b>4807-31</b>
Contractor: <b>NEW ENGLAND BORING CONTRS.</b>		Date started: <b>8-29-89</b>	Completed: <b>8-29-89</b>
Method: <b>HSA</b>	Casing size: <b>6 5/8</b>	PID: <b>10.6</b>	Protect'n level: <b>0</b>
Ground el: <b>57.3'</b>	Soil drilled: <b>53.0</b>	Rock drilled: <b>NA</b>	Total Depth: <b>53.0</b>
Logged by: <b>C. Lyons</b>	Ch'd by: <b>JF</b>	Date: <b>10-16-89</b>	<input checked="" type="checkbox"/> Below grad:
			Page <b>2</b> of <b>3</b>

Depth (ft)	PID ambient air	Sample no. and type	Sample Recovery	CLP	PID headspace (ppm)	Soil/rock description	Soil class	Blows/6-in. and ROD %					Well data	Elevation (ft)	
								0	20	40	60	80			100
35		S-6	20		26.0	SAND, olive brown with silt and trace carbon to medium sand. Occasional oxidized sandy layers with clayey silt layers with depth. Wet, semi-dense. (Saturated portion of above soils)	SP	10	12	6	6				
		S-7	20				4	6	6	6					
30		S-8	18				6	6	7	8					
		S-9	20				7	7	7	9					
		S-10	20				6	6	7	7					
35		S-11	20				5	7	7	8					
		S-12	18				6	6	7	8					
40		S-13					8	8	8	9					
		S-14					8	9	8	10					
		S-15			42.9		CLAY/SILT, gray, with little to trace finesand. Fines are semi-plastic to plastic. Semi-stiff to stiff. Wet.	CL	7	9	10	10			
45		S-16				6		6	7	8					
		S-17				7		7	6	8					
50						2		2	2	2					

\*U = Thin wall tube    S = Split spoon    R = Rock

E.C. JORDAN

NAVAL AIR STATION, BRUNSWICK			Boring no: <b>OW-813</b>
Client: US. DEPARTMENT OF THE NAVY			Project no: <b>4607-S-1</b>
Contractor: NEW ENGLAND BORING CONTRA.		Date started: <b>8-29-89</b>	Completed: <b>8-29-89</b>
Method: <b>HSA</b>	Casing size: <b>6 5/8</b>	PID: <b>10.6</b>	Protect'n level: <b>D</b>
Ground el: <b>57.3'</b>	Soil drilled: <b>53.0</b>	Rock drilled: <b>NA</b>	Total Depth: <b>53.0</b>
Logged by: <b>C. Hyams</b>	Ch'd by: <b>T.C.</b>	Date: <b>10-16-89</b>	<input checked="" type="checkbox"/> Below grnd:
			Page <b>3</b> of <b>3</b>

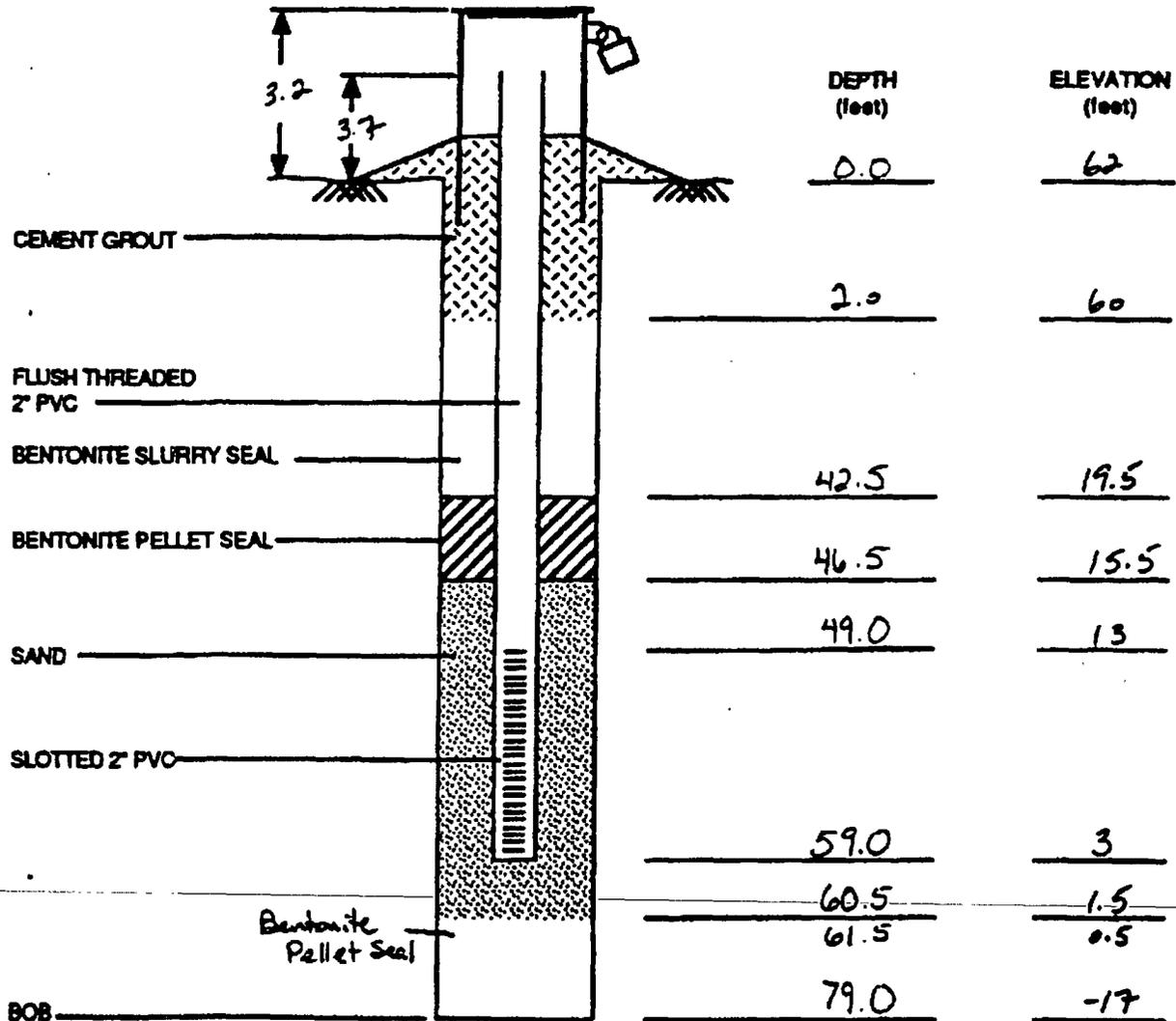
Depth (ft)	PID ambient air	Sample no. and type	Sample Recovery	CLP	PID headspace (ppm)	Soil/rock description	Soil class	Blows/6-in. and ROD %					Well data	Elevation (ft)
								0	20	40	60	80		
35		S-15	20		Blk	CLAY/SILT, gray, with 1:1H <sub>2</sub> O to trace FINE sand. Plastic. Fines. wet	CL	2	2	2	2			
35		S-14	20		Blk									
55						Bottom of Boring = 53.0								
60														
65														
70														
75														

\*U = Thin wall tube    S = Split spoon    R = Rock

E.C. JORDAN

## WELL INSTALLATION DETAILS

PROJECT NO.: 4807-31	PROJECT NAME: NAVAL AIR STATION, BRUNSWICK, MAINE	WELL NO.: OW-814
INSTALLED BY: N.E.B. DRILLER: Tim Carpenter HELPER: Steve Piel	DATE INSTALLED: 8/28/89	BORING DIAMETER: 6.25 I.D. HSA
WELL DIAMETER: 2"	WELL MATERIAL: Sch 40 PVC ID	BACKFILL MATERIAL: #2 Sand, Bentonite Pellets Volclay 5:1



E.C. JORDAN CO.

NAVAL AIR STATION, BRUNSWICK			Boring no: <i>OW-814</i>
Client: US. DEPARTMENT OF THE NAVY		Project no: 4807-31	
Contractor: NEW ENGLAND BORING CONTRS.	Date started: <i>8-24-89</i>	Completed: <i>8-29-89</i>	
Method: <i>H.S.A.</i>	Casing size: <i>6 5/8"</i>	PID: <i>10.6 gV</i>	Protect'n level: <i>D</i>
Ground el: <i>62'</i>	Soil drilled: <i>7'</i>	Rock drilled: <i>NA</i>	Total Depth: <i>79'</i>
Logged by: <i>L. MERRY/C. LIPSON</i>	Ch'd by: <i>T.L.</i>	Date: <i>10-16-89</i>	<input checked="" type="checkbox"/> Below grad:

Page 1 of 2

Depth (ft)	PID ambient air	Sample no. and type	Sample Recovery	CLP	PID headspace (ppm)	Soil/rock description	Soil class	Blows/6-in. and ROD %					Well data	Elevation (ft)
								0	20	40	60	80		
0		S-1	1.8			<i>PALLET DUFF for 1 1/2'</i>								
5		S-2	1.0			<i>SAND, tan brown to gray brown with little to some silt and trace coarse sand, loose and dry w/ organic mat'l. near surface.</i>	SP							
10		S-3	0.9											
15		S-4	0.3											
20		S-5	0.7											
26		S-6	1.1			<i>SAND, tan brown to gray brown; medium to fine with some silt and trace coarse sand; loose &amp; dry</i>	SP							
30		S-7	0.3											
35		S-8	0.5			<i>SAND, tan brown to olive brown, medium to fine with silt, wet, somewhat dense (saturation component of sands above)</i>	SP							
40		S-9	1.0											
40		S-10	1.0											
45		S-11	1.3											
45		S-12	2.0											
45		S-13	2.0											
45		S-14	1.8											
50		S-15	1.9											

\*U = Thin wall tube    S = Split spoon    R = Rock

E.C. JORDAN

NAVAL AIR STATION, BRUNSWICK			Boring no: 0W-814
Client: US. DEPARTMENT OF THE NAVY		Project no: 4607-31	
Contractor: NEW ENGLAND BORING CONTRS.		Date started: 8-24-89	Completed: 9-29-89
Meth d: HSA.	Casing size: 6 5/8"	PID: 10.6 5/16	Protect'n level: D
Ground el: 62'	Soil drilled: 79'	Rock drilled: NA	Total Depth: 79'
Logged by: L. HEALY/C. LYONS		Ch'd by: T.L.	Date: 10-16-89
			Below ground: <input checked="" type="checkbox"/>
Page 2 of 2			

Depth (ft)	PID ambient air	Sample no. and type	Sample Recovery	CLP	PID headspace (ppm)	Soil/rock description	Soil class	Blows/6-in. and RQD %					Well data	Elevation (ft)
								0	20	40	60	80		
55	BK	S-13	20		BK	SAND, OLIVE brown, medium to fine w/ SILT. Wet, semi-dense		10	17	20	26			
		S-14	20					3	6	6	6			
		S-15	20					10	11	12	8			
		S-16	20			CLAY/SILT, gray w/ some + little fine sand. Fines are slightly to moderately plastic, semi-stiff to stiff, wet		9	12	13	15			
		S-17	20					6	6	6	6			
		S-18	20					3	4	4	7			
		S-19	20					3	3	4	5			
		S-20	20					12	12	20	21			
		S-21	10					4	11	16	23			
		S-22	1.0					10	10	1	15			
		S-23	1.0					6	6	7	8			
		S-24	2.0					4	5	5	4			
		S-25	2.0					2	2	3	4			
		S-26	2.0			CLAY - gray, plastic, soft	CH	2	2	2	2			
		S-27	2.0											
80						B.O.B @ 79'								

\*U = Thin wall tube    S = Split spoon    R = Rock

E.C. JORDAN

**APPENDIX C**  
**SOIL SAMPLING SOP**

## H&S Field SOP

### SOIL SAMPLE COLLECTION

Soil samples may be collected using a variety of methods and equipment depending on the depth of the desired sample, the type of sample required (disturbed vs. undisturbed), and the soil type. Near-surface soils may be easily sampled using a spade, trowel, and scoop. Sampling at greater depths may be performed using a hand auger, continuous flight auger, a trier, a split-spoon, or, if required, a backhoe.

#### Collection of Surface Soil Samples

Collection of samples from near-surface soil can be accomplished with tools such as spades, shovels, trowels, and scoops. Surface material is removed to the required depth and a stainless steel or plastic scoop is then used to collect the sample. This method can be used in most soil types but is limited to sampling at or near the ground surface. Accurate, representative samples can be collected with this procedure depending on the care and precision demonstrated by the sample team member. A flat, pointed mason trowel to cut a block of the desired soil is helpful when undisturbed profiles are required. Tools plated with chrome or other materials should not be used. Plating is particularly common with garden implements such as potting trowels.

1. Carefully remove the top layer of soil or debris to the desired sample depth with a pre-cleaned spade.
2. Using a pre-cleaned, stainless steel scoop, plastic spoon, or trowel, remove and discard a thin layer of soil from the area which came in contact with the spade.
3. For samples not requiring volatile analysis, transfer the sample directly into an appropriate, labeled sample container with a stainless steel lab spoon, or equivalent and secure the cap tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into appropriate, labeled containers and secure the caps tightly; or, if composite samples are to be collected, place a sample from another sampling interval or location into the homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled containers and secure the caps tightly.
4. Samples requiring volatile analysis will be collected using a TerraCore® sampler or equivalent so as not to lose volatiles during sample collection.

#### Sampling at Depth with Augers and Thin Wall Tube Samplers

This system consists of an auger, or a thin-wall tube sampler, a series of extensions, and a "T" handle. The auger is used to bore a hole to a desired sampling depth, and is then withdrawn. The

sample may be collected directly from the auger. The following procedure is used for collecting soil samples with the auger:

1. Attach the auger bit to a drill rod extension, and attach the "T" handle to the drill rod.
2. It may be advisable to remove the first three to six inches of surface soil for an area approximately six inches in radius around the drilling location.
3. Begin augering, periodically removing and depositing accumulated soils onto a plastic sheet spread near the hole. This prevents accidental brushing of loose material back down the borehole when removing the auger or adding drill rods. It also facilitates refilling the hole, and avoids possible contamination of the surrounding area.
4. After reaching the desired depth, slowly and carefully remove the auger from the hole. When sampling directly from the auger, collect the sample after the auger is removed from the hole and proceed to Step 10.
5. Remove auger tip from the extension rods and replace with a pre-cleaned thin wall tube sampler. Install the proper cutting tip.
6. Carefully lower the tube sampler down the borehole. Gradually force the tube sampler into the soil. Do not scrape the borehole sides. Avoid hammering the rods as the vibrations may cause the boring walls to collapse.
7. Remove the tube sampler, and unscrew the drill rods.
8. Remove the cutting tip and the core from the device.
9. Discard the top of the core (approximately 1 inch), as this possibly represents material collected before penetration of the layer of concern. Place the remaining core into the appropriate labeled sample container. Sample homogenization is not required at this point.
- 10. If volatile organic analysis is to be performed, insert the dedicated modified plastic 10-ml syringe into the core in order to obtain a cohesive sample, transfer the sample into an appropriate, labeled sample container using the syringe, and secure the cap tightly. Samples to be analyzed for total VOC compounds are collected from freshly exposed soil. Approximately 5 grams of sample is obtained using the syringe. A modified plastic syringe is used to gather the soil plugs or solid material sample. (The modified syringe has had the front end sliced off and uses a plunger without lubricant.) If the plastic syringe is used, then field personnel extrude these soil plugs into vials containing preservatives (sodium bisulfate solution or methanol) for total VOC analysis. Vials will be pre-weighed and pre-preserved in the laboratory. Samples in vials are re-weighed after the sample aliquots are added to obtain the net sample weights at the laboratory. All weights must be recorded to within 0.2 g. **Note: VOC samples can not be composited and homogenized in the field. If a composite sample is required, a separate VOC****

**sample must be collected from each sub-sample location in a glass jar with minimal headspace and sent to the laboratory for compositing.**

11. For additional analyses, place the remainder of the sample into a stainless steel or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into appropriate, labeled containers and secure the caps tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled containers and secure the caps tightly.
12. If another sample is to be collected in the same hole, but at a greater depth, reattach the auger bit to the drill and assembly, and follow steps 3 through 11, making sure to decontaminate the auger and tube sampler between samples.
13. Abandon the hole according to applicable state regulations. Generally, shallow holes can simply be backfilled with the removed soil material.
14. Decontaminate auger using the appropriate method.

#### Quality Assurance/Quality Control

There are no specific quality assurance (QA) activities which apply to the implementation of these procedures. However, the following QA procedures apply:

1. All data must be documented on field data sheets or within site logbooks.
2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation, and they must be documented.

#### References

U.S. EPA Environmental Response Team, 2000. *Standard Operating Procedures. Soil Sampling (SOP 2012)*. February.

## **APPENDIX D**

### **WASTE HAULER PERMITS AND TSDf OPERATING LICENSE**

**EQ NORTHEAST, INC.**  
**State Hazardous Permits**

STATE	TYPE	PERMT #	EXPIRES	PERMITTED SINCE
Alabama	Haz.	MAD084814136	11/29/2013	1984
Arkansas	Haz Waste	H-615	06/19/2012	1990
Arizona	Haz. Regis.	HWR-12310	03/01/2013	1996
California	Haz	5876	12/31/2012	2009
Quebec	430 Regis	R-567590-6	05/31/2013	1999
Quebec	IGIF Regis.	1161515490	Perm.	1999
Ontario	Ex. Prov. Licen	1279764	Perm.	1998
Ontario	Haz Waste	A800913	Perm.	1998
Ontario	CVOR	108-664-361	06/08/2013	1992
Ontario	Operating Lic.	110288	Perm,	1993
Quebec	Haz	7610-06-01-0176411	07/21/2014	1984
Colorado	Haz.	HMP-02401	08/17/2012	1995
Connecticut	Asbestos	000339	05/31/2013	2000
Connecticut	Haz	CT-HW-30	06/30/2013	1983
Delaware	Haz	DE-HW-364	06/30/2014	1990
Delaware	Solid Waste	DE-SW-0364	06/30/2013	1992
Florida	Haz.	MAD084814136	08/01/2012	1992
U.S. D.O.T.	.Haz Reg.	060106003007OQ	06/30/2015	1992
Iowa	Trip Permit.			N/A
Idaho	Trip Permit			N/A
Illinois	Haz Permit	SWH Permit # 1715	01/01/2013	1985
Indiana	None Req			N/A
Kansas	Haz @ used Oil	MAD084814136	12/31/2012	1986
Kentucky	Haz Regis.	MAD-084-814-136	Perm.	1990
Louisiana	None Req.			N/A
Massachusetts	Haz.	71	12/31/2013	1981
Massachusetts	VID Card	#71	12/31/2012	1981

**EQ NORTHEAST, INC.**  
**State Hazardous Permits**

STATE	TYPE	PERMT #	EXPIRES	PERMITTED SINCE
Maryland	Haz	HWH-182	10/31/2012	1995
Maine	Haz/Oil	HWT-029,WOT-072	04/12/2013	1985
Maine	Non-Haz	Truck Specific	03/08/2013	1992
Michigan	LIW	LIW-0157372- MI	03/08/2013	1987
Michigan	Haz Alliance	UPW-0157372-OH	01/01/2013	1987
Minnesota	Haz Alliance	UPW-0157372-OH	01/01/2013	1995
Missouri	Haz Waste	H-1807	03/28/2013	1994
Missouri	Business	F00635706	04/30/2013	2005
Mississippi	None Req.			N/A
Montana	None Req.			N/A
North Carolina	None Req.			N/A
Nebraska	None Req.			N/A
New Hampshire	Haz	TNH-0356	06/30/2013	1985
New Jersey	Non-Haz	NJDEP SW 16195	06/30/2013	1985
New Jersey	Haz	NJDEP HW06879	06/30/2013	1984
New Mexico	Haz Regis.	# 0800441	12/08/2012	1997
Nevada	Haz Alliance	UPW-0157372-OH	01/01/2013	1995
New York	Trade Waste	TW 3609	01/31/2013	2010
New York	Haz	MA-025	05/31/2013	1989
Ohio	Haz Alliance	UPW-0157372-OH	01/01/2013	1989
Oklahoma	Haz Alliance	UPW-0157372-OH	01/01/2013	1994
Oregon	None. Req.			N/A
Pennsylvania	Haz.	PA-AH 0224	04/30/2013	1986
Pennsylvania	Non Haz.	WH3971	03/31/2013	2003
Rhode Island	Haz	RI-312	06/30/2013	1984
South Carolina	Haz and Solid	MAD084814136	06/24/2012	1983
Tennessee	Haz-Per	Mad 08-481-4136	01/31/2013	1986

**EQ NORTHEAST, INC.****State Hazardous Permits**

<b>STATE</b>	<b>TYPE</b>	<b>PERMT #</b>	<b>EXPIRES</b>	<b>PERMITTED SINCE</b>
Texas	Haz-Regis	41795	Perm.	1991
U.S. EPA	Registration	MAD 084814136	Perm.	1977
Utah	None Req.			N/A
Virginia	Haz.	MAD084184136	05/04/2019	1988
Vermont	Haz and Solis	MAD084184136	06/30/2013	1985
Washington	None Req.			N/A
West Virginia	Haz Alliance	UPW-0157372-OH	01/01/2013	1995
Wisconsin	Haz Permit.		09/30/2012	1992
Wyoming	None Req.			N/A



JENNIFER M. GRANHOLM  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



STEVEN E. CHESTER  
DIRECTOR

November 25, 2009

Mr. Scott Binder, Director of Operations  
EQ Detroit, Inc.  
1923 Frederick Street  
Detroit, Michigan 48211

Dear Mr. Binder:

SUBJECT: Amended Solid Waste Disposal Area Operating License 9220; EQ Detroit, Inc.; Waste Data System Number 399367

Solid Waste Disposal Area Operating License 99220 was issued June 30, 2009, for the municipal solid waste processing plant, known as EQ Detroit, Inc., located in the city of Detroit, Wayne County, Michigan. This license is being amended due to an agreement negotiated between EQ Detroit, Inc. and the Department of Environmental Quality (DEQ). Please add the enclosed amendment documentation to your current license.

If you have any questions, please contact Mr. Lawrence AuBuchon, Southeast Michigan District Supervisor, Waste and Hazardous Materials Division, at 586-753-3840.

Sincerely,

Steven R. Sliver Chief  
Storage Tank and Solid Waste Section  
Waste and Hazardous Materials Division  
517-373-1976

Enclosure

cc: Wayne County Department of Environment  
City of Detroit Clerk  
Ms. Kathleen Cavanaugh, Department of Attorney General  
Mr. Lawrence AuBuchon/Mr. Gregory Morrow, DEQ-Southeast Michigan  
Mr. Richard Brim, DEQ  
Facility File

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
Waste and Hazardous Materials Division**

**SOLID WASTE MANAGEMENT  
PART 115 of 1994 PA 451, AS AMENDED**

**SOLID WASTE DISPOSAL AREA OPERATING LICENSE AMENDMENT**

This license amendment modifies Solid Waste Disposal Area Operating License No. 9220 issued to EQ Detroit, Inc. on June 30, 2009. The operating license is amended as follows:

I. Item 10 on page 3 of this license is amended to read as follows:

"10. **SPECIAL CONDITIONS:**

At the time of issuance of this license, the applicant is not required to conduct groundwater monitoring at the Facility based on the evaluations presented in the Hydrogeologic Report and Groundwater Evaluation for the Frederick Street Facility, dated February 29, 1996, and the fact that all solid waste processing operations will be conducted in an enclosed building with a properly sloped/contained concrete floor. As provided for in Rule 299.4502, MDEQ may require groundwater monitoring in the future."

The licensee shall comply with all terms and conditions of Operating License No. 9220, including this amendment.

This license amendment is subject to revocation by the Director of the Michigan Department of Environmental Quality for any violations of the law under which it is issued, for any violation of the rules authorized thereunder, or any conditions noted. Failure to comply with the terms and provisions of this license amendment may result in legal action leading to civil and/or criminal penalties as stipulated in Part 115 of 1994 PA 451, as amended. This license shall be available through the licensee during the entire effective date and remains the property of the Director of the Michigan Department of Environmental Quality. This license is not transferable.



---

Steven R. Sliver, Chief  
Storage Tank and Solid Waste Section  
Waste and Hazardous Materials Division

Date: November 25, 2009



JENNIFER M. GRANHOLM  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



STEVEN E. CHESTER  
DIRECTOR

June 30, 2009

Mr. Scott Binder, Director of Operations  
EQ Detroit, Inc.  
1923 Frederick Street  
Detroit, Michigan 48211

Dear Mr. Binder:

**SUBJECT: Application for Solid Waste Disposal Area Operating License; EQ Detroit, Inc.; Waste Data System Number 399367; License Number 9220**

Staff of the Department of Environmental Quality (DEQ) has reviewed your application for a solid waste processing plant, known as EQ Detroit, Inc., located in the city of Detroit, Wayne County, Michigan. This review was conducted under the provisions of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Based upon our review of your application, your operating license is hereby granted. Enclosed is your license with operating stipulations.

If you have any questions, please contact Mr. Lawrence AuBuchon, Southeast Michigan District Supervisor, Waste and Hazardous Materials Division, at 586-753-3840.

Sincerely,

Steven R. Sliver Chief  
Storage Tank and Solid Waste Section  
Waste and Hazardous Materials Division  
517-373-1976

Enclosure

cc: Wayne County Department of Environment  
City of Detroit Clerk  
Mr. Lawrence AuBuchon, DEQ – Southeast Michigan  
Mr. Gregory Morrow, DEQ – Southeast Michigan  
Facility File

**SOLID WASTE DISPOSAL AREA OPERATING LICENSE**

This license is issued under the provisions of Part 115, Solid Waste Management of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.11501 et seq., and authorizes the operation of this solid waste disposal area (Facility) in the state of Michigan. This license does not obviate the need to obtain other authorizations as may be required by state law.

FACILITY NAME: EQ Detroit, Inc.

LICENSEE/OPERATOR: EQ Detroit, Inc.

FACILITY OWNER: EQ Detroit, Inc.

PROPERTY OWNER: EQ Detroit, Inc.

FACILITY TYPE(S): Solid Waste Processing Plant

FACILITY ID NUMBER: 399367

COUNTY: Wayne

LICENSE NUMBER: 9220

ISSUE DATE: June 30, 2009

EXPIRATION DATE: June 30, 2014

FACILITY DESCRIPTION: The EQ Detroit, Inc., facility, a Solid Waste Processing Plant, consists of 11.5 acres located at 1923 Frederick Street, city of Detroit, Wayne County, Michigan, as identified in Attachment A "Site Plan" and fully described in this license.

AREA AUTHORIZED FOR DISPOSAL OF SOLID WASTE: As identified in Attachment A and Items 5 and 6 of this license.

RESPONSIBLE PARTY: Mr. Scott Binder, Director of Operations  
EQ Detroit, Inc.  
1923 Frederick Street  
Detroit, Michigan 48211  
313-347-1300

**RENEWAL OPERATING LICENSE:** This License Number 9220 supersedes and replaces Solid Waste Disposal Area License Number 9004 issued to EQ Detroit, Inc., on March 12, 2004.

This license is subject to revocation by the Director of the Michigan Department of Environmental Quality (Director) if the Director finds that this Facility is not being constructed or operated in accordance with the approved plans, the conditions of a permit or license, Part 115, or the rules promulgated under Part 115. Failure to comply with the terms and provisions of this license may result in legal action leading to civil and/or criminal penalties pursuant to Part 115. This license shall be available through the licensee during its term and remains the property of the Director.

**THIS LICENSE IS NOT TRANSFERABLE.**



Steven R. Sliver, Chief, Storage Tank and Solid Waste Section  
Waste and Hazardous Materials Division

Licensee: EQ Detroit, Inc.  
Facility Name: EQ Detroit, Inc.  
Operating License Number: 9220  
Issue Date: June 30, 2009

The licensee shall comply with all terms of this license and the provisions of Part 115 and its administrative rules. This license includes the license application and any attachments to this license.

1. The licensee shall operate the Facility in a manner that will prevent violations of any state or federal law.
2. The attached map (Attachment A "Site Plan") shows the Facility, the area permitted for construction and/or placement and acceptance of waste, monitoring points, leachate storage units, site roads, other disposal areas, and related appurtenances, as applicable.
3. Issuance of this license is conditioned on the accuracy of the information submitted by the Operator/Applicant in the Application for License to Operate a Solid Waste Disposal Area (Application) received by the Michigan Department of Environmental Quality (MDEQ) on March 10, 2009, and any subsequent amendments. Any material or intentional inaccuracies found in that information is grounds for the revocation or modification of this license, and may be grounds for enforcement action. The licensee shall inform the MDEQ's Waste and Hazardous Materials Division, Southeast Michigan District Supervisor, of any inaccuracies in the information in the Application upon discovery.
4. This license is issued based on the MDEQ's review of the Application, submitted by EQ Detroit, Inc., for the EQ Detroit, Inc., solid waste processing plant, dated March 6, 2009, with revisions dated April 5, 2009. The Application consists of the following:
  - a. Application Form EQP 5507.
  - b. Application fee in the amount of \$500.00.
  - c. Certification of construction by Michael A. Olson, P.E., of Abletech, Inc., dated November 27, 2007.
  - d. Financial Assurance.

Financial Assurance Required:

The amount of financial assurance required for this Facility was calculated based on the requirements of Section 11523(1)(c), is indicated on the form EQP 5507A entitled, "Form A Financial Assurance Required," and is \$30,000.00.

The Facility has provided financial assurance totaling \$30,000.00, based on the requirements of Section 11523 of Part 115. The financial assurance mechanism used by the Facility is summarized below.

The following financial assurance has been received from the licensee to meet the amount of financial assurance required:

Irrevocable Letter of Credit	\$30,000.00
Total Amount Received:	\$30,000.00

5. The following documents approved with Construction Permit Number(s) 0356 issued to the City Environmental, Inc., on January 16, 1998, are incorporated in this license by reference:
  - a. Application documents titled "City Environmental, Inc., Frederick Street Solid Waste Processing Facility Act 451, Part 115 Construction Permit Application" dated September 1997 and received by the MDEQ on September 23, 1997.
  - b. Engineering Plan Set (consisting of Sheets G-1 through G-7, A-1 through A-5, S-1 through S-19, and P-1 through P-6) titled "Detroit, Michigan City Environmental, Inc., Frederick Street Treatment Complex Chemical Fixation Facility," prepared by McNamee Industrial Services, Inc., dated August 1997 and received by the MDEQ on September 27, 1997.

Licensee: EQ Detroit, Inc.  
Facility Name: EQ Detroit, Inc.  
Operating License Number: 9220  
Issue Date: June 30, 2009

6. The following additional documents, approved since the issuance of the construction permit(s) referenced in Item 5, are incorporated in this license by reference:
  - a. "Solid Waste Processing Plant Operations Plan, US Liquids of Detroit, Inc., Detroit, Wayne County, Michigan," dated June 2002 and prepared by CTI and Associates, Inc., and approved with modifications on September 12, 2002, which supersedes and replaces in its entirety the August 1997 "Operating Procedures" located in Section F of the 1997 construction permit application documents referenced in Item 5 above.
  - b. CTI drawing Sheet 1, dated March 8, 2004, received by the MDEQ on March 10, 2004.
  - c. EQ Detroit, Inc., drawing number A-2 titled "Facility Drawing," dated March 28, 2008, which depicts the location of the North Container Storage Area.
  - d. EQ Detroit, Inc., drawing number C10 titled "Chem Fix & North Container Containment," dated June 4, 2008, which provides some specifications for the North Container Storage Area.
7. Consent Order: N/A.
8. The licensee shall conduct hydrogeological monitoring in accordance with the approved hydrogeological monitoring plan, dated N/A. The sampling analytical results shall be submitted to the MDEQ's Waste and Hazardous Materials Division, Southeast Michigan District Office.
9. Modifications to approved engineering plans that constitute an upgrading, as defined in R 299.4106a(e), may be approved, in writing, by the Waste and Hazardous Materials Division, Southeast Michigan District Supervisor.

**10. SPECIAL CONDITIONS:**

- a. The applicant shall immediately report any fire incidents at the Facility to the MDEQ.
  - b. At the time of issuance of this license, the applicant is not required to conduct groundwater monitoring at the Facility based on the evaluations presented in the Hydrogeologic Report and Groundwater Evaluation for the Frederick Street Facility, dated February 29, 1996, and the fact that all solid waste processing operations will be conducted in an enclosed building with a properly sloped/contained concrete floor. The MDEQ may require groundwater monitoring in the future if there is reason to believe that the Facility has an increased potential to cause groundwater contamination.
11. **TERM:** This license shall remain in effect until its expiration date, unless revoked or continued in effect, as provided by the Administrative Procedures Act, 1969 PA 306, as amended, or unless superseded by the issuance of a subsequent license.

**END OF LICENSE**

ATTACHMENT A

FARNSWORTH ST.

FREDERICK ST.

FERRY ST.

ST. AUBIN AVE.

SITE PLAN



**E**

DATE: 02-04-09

DETROIT SITE

ORGAN BY: JAMES WATK

C-2G  
REV.

