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WELL INSTALLATION PERMIT REQUEST FOR AREA OF CONCERN 523 CNC  
CHARLESTON SC  
10/02/2014  
RESOLUTION CONSULTANTS



# TRANSMITTAL

**TO: South Carolina  
Department of Health and Environmental Control**

**DATE:** October 2, 2014

\_\_\_\_\_  
Division of Waste Management  
\_\_\_\_\_  
Bureau of Land and Waste Management  
\_\_\_\_\_  
2600 Bull Street  
\_\_\_\_\_  
Columbia, South Carolina 29201  
\_\_\_\_\_  
(803) 896-6676

Certified Mail  
Airmail  
Courier/Messenger  
FAX

Federal Express/UPS

**ATTENTION:** Ms. Meredith Amick

**SUBJECT SITE:** AOC 523  
Charleston Naval Complex  
Charleston, South Carolina

**SUBMITTED HEREWITH:** Well Installation Permit Request  
AOC 523  
Charleston Naval Complex  
Charleston, South Carolina

Ms. Amick,

Please find attached one copy of the above referenced permit request for your review and comment. The hardcopy is in the mail.

Should you have questions or comments regarding this submittal, please contact Craig Ehde (843-228-7317) or Shawn Dolan (843-740-7356).

Thank you,  
Shawn

	Hardcopy	Email	
<b>Copy To:</b> BRAC PMO Paul Burgio	1	1	<b>By:</b> <u>Shawn E. Dolan</u> Ph: 843-740-7346
BRAC PMO Art Sanford	1	1	

September 19, 2014

Ms. Meredith Amick  
Corrective Action Section  
Division of Waste Management  
Bureau of Land and Waste Management  
South Carolina Department of Health and Environmental Control  
2600 Bull Street  
Columbia, South Carolina 29201

Subject: Well Installation Permit Request  
AOC 523, Charleston Naval Complex, South Carolina  
Contract Task Order Number JM62  
Resolution Consultants Project No. 60306139

Dear Ms. Amick:

On behalf of the Charleston Naval Complex, Resolution Consultants is submitting this request for your review and approval to install up to four (4) shallow groundwater monitoring wells and up to three (3) piezometers at the referenced site. The general site location is provided as Figure 1. Well and/ or piezometer locations are provided in Figure 2.

Well installation, development, and sampling will be performed in accordance with the South Carolina Well Standards and Regulations (R.61-71.H-I) and will be completed under the direct supervision of a South Carolina Certified Well Driller. A well application is included as Attachment A and monitoring well and piezometer schematics are included as Figures 3 and 4, respectively.

Up to 4 permanent monitoring wells and 3 temporary peizometers will be installed at the site, using hollow stem augers. A geologist/engineer will log geologic conditions and utilize a photo-ionization detector (PID) to screen organic vapors at 2-foot depth intervals during well drilling. The monitoring wells will be constructed with 2-inch diameter, Schedule 40 polyvinyl chloride casings and screens. Well screens will be 0.010-inch slotted, 10 feet long, and set slightly above the boring termination depth (approximately 13 feet bgs). The annular space around the wells will be filled with medium, #2 drillers sand from the bottom of the borehole to approximately 1 foot above the top of the well screen (2 to 13 feet bgs); a 1-foot thick layer of hydrated bentonite above the sand pack; and a bentonite-cement grout that will extend from the

Page 2

September 19, 2014

top of the bentonite seal to the ground surface. Piezometers will be constructed similarly as monitoring wells, but will be constructed with 1-inch diameter casings, with pre-packed screens.

Well installation and development activities are currently scheduled for October 13, 2014 through October 24, 2014, pending SCDHEC approval of the Final Sampling and Analysis Plan (SAP).

If you have any questions or comments regarding the information provided in this letter, please contact me at (843) 740-7356 or by email at [Shawn.Dolan@aecom.com](mailto:Shawn.Dolan@aecom.com). Thank you for your consideration and cooperation regarding this matter.

Sincerely,



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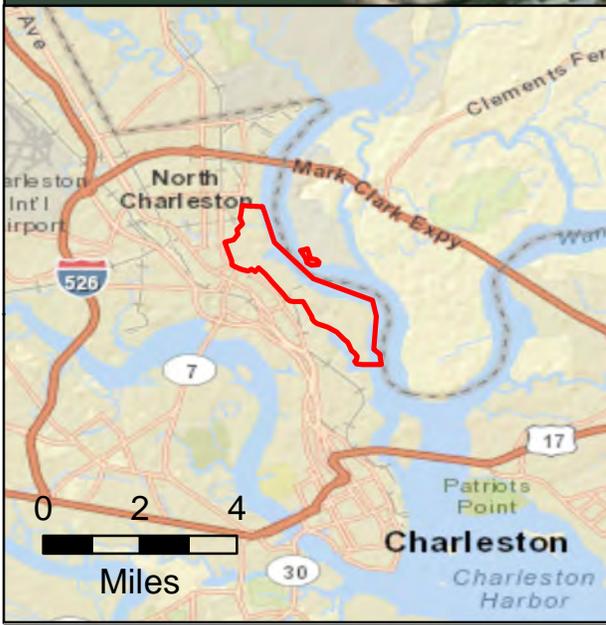
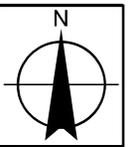
Shawn Dolan, P.G.

Project Manager

Resolution Consultants

cc: David Criswell, NAVFAC  
Art Sanford, BRAC PMO  
Resolution Consultants, file

Path: L:\work\GIS\CNC\maps\AOC 523\QAPP\Fig1\_AOC523\_QAPP.mxd



**Legend**

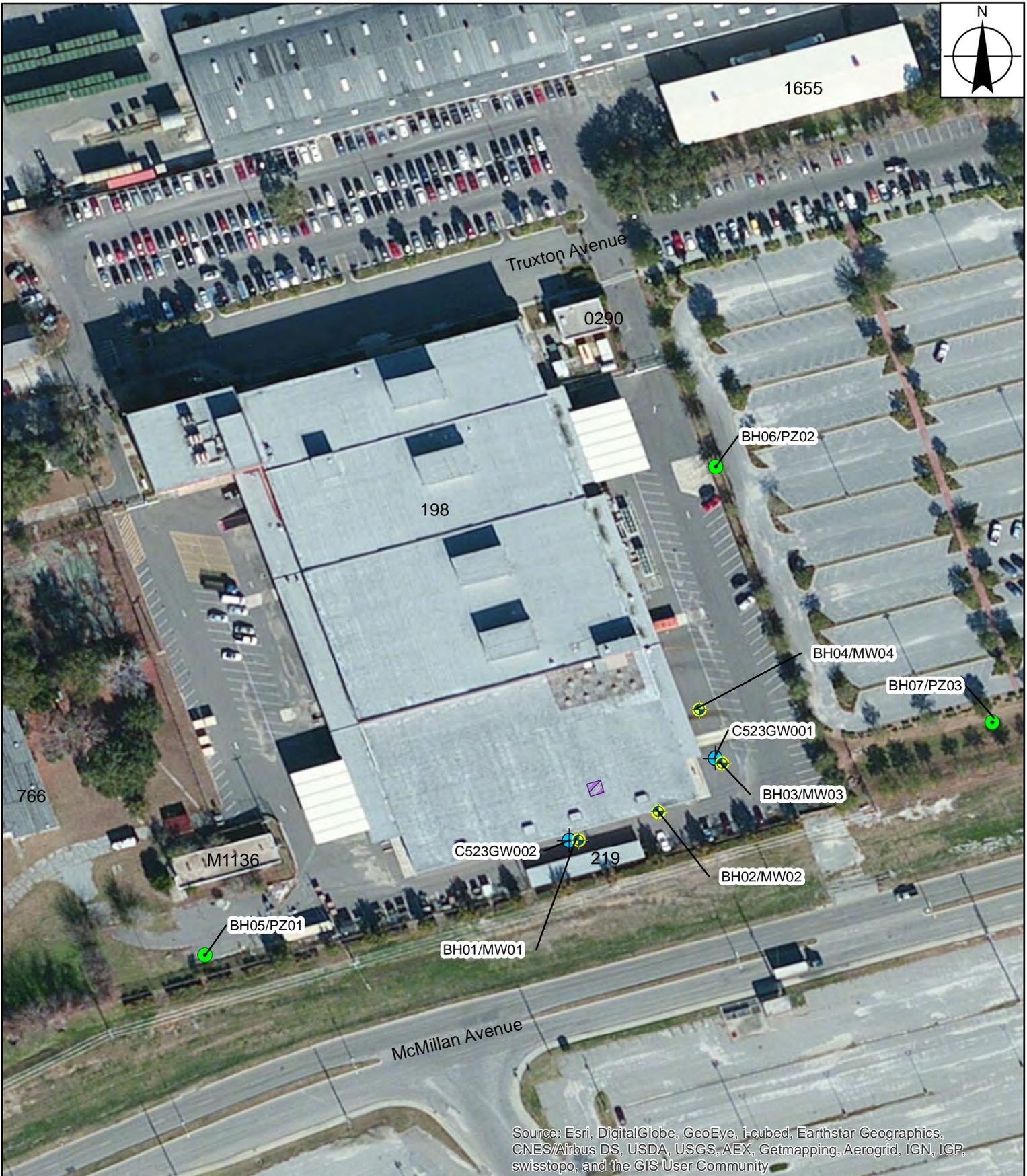
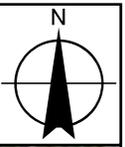
- Charleston Naval Complex
- ★ AOC 523

0 1,250 2,500  
 Feet

**FIGURE 1**  
 SITE LOCATION MAP  
 AOC 523 - CHARLESTON NAVAL COMPLEX  
 CHARLESTON, SOUTH CAROLINA




REQUESTED BY: TS	DATE: 1/17/2014
DRAWN BY: SCR	TASK ORDER NUMBER: JM62

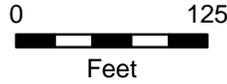


Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Path: L:\work\GIS\CNC\maps\AOC 523\Well Permit Application\Fig2\_AOC523\_WellPermit.mxd

### Legend

-  Proposed Piezometer Locations
-  Proposed Borehole and Monitoring Well Locations
-  Historical Soil and Groundwater Sampling Locations
-  Former Building 1142 Footprint

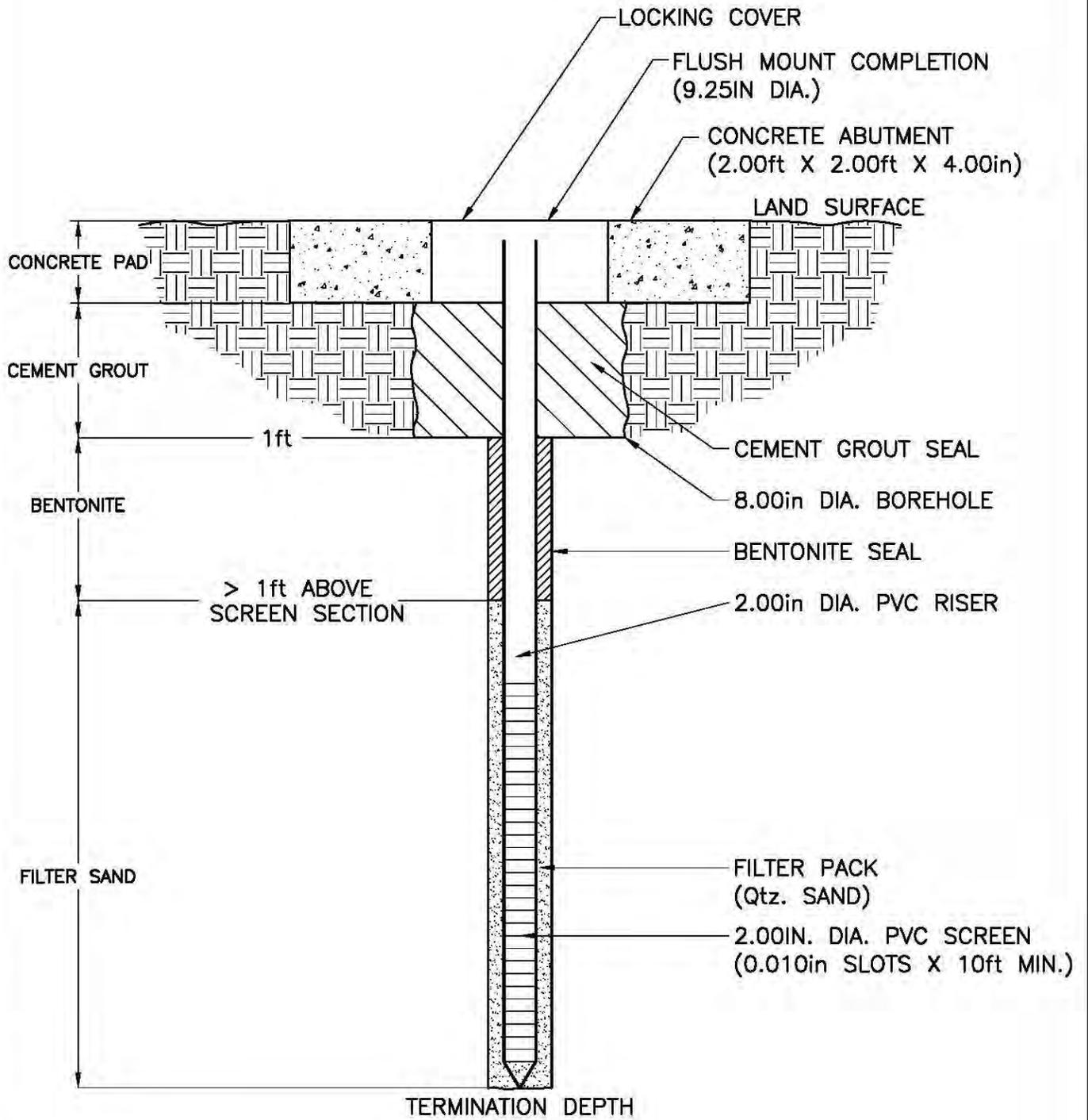


**FIGURE 2**  
PROPOSED DATA GAP INVESTIGATION LOCATIONS  
AOC 523 - CHARLESTON NAVAL COMPLEX  
CHARLESTON, SOUTH CAROLINA



REQUESTED BY: TS	DATE: 9/17/2014
DRAWN BY: MEC	TASK ORDER NUMBER: JM62

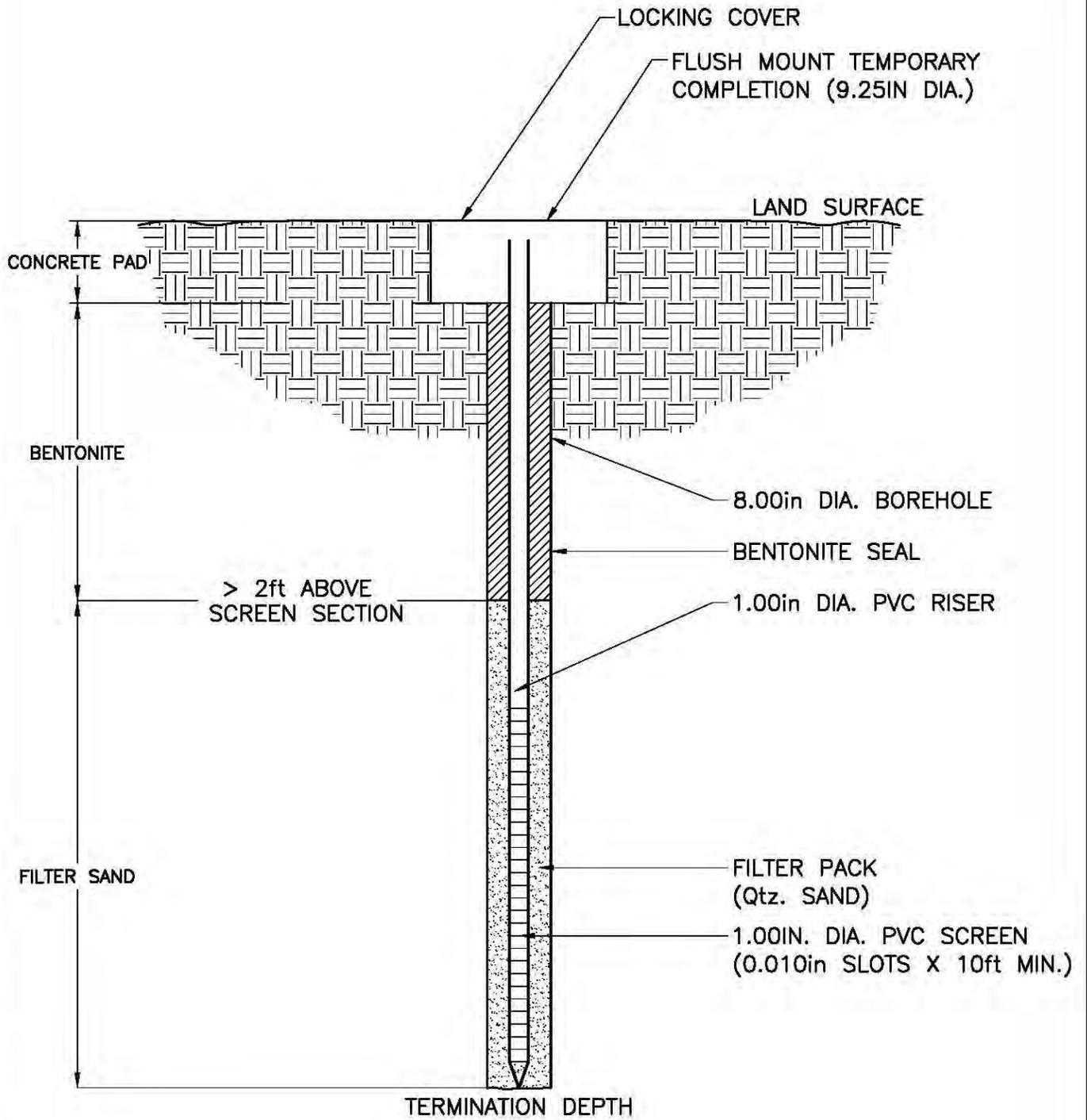
L:\WORK\RESOLUTION CONSULTANTS\60306139 - JMB2\7.0 DELIVERABLES\7.2 CADD\60306139-H01.DWG



NOT TO SCALE



FIGURE 3  
MONITORING WELL COMPLETION DETAILS  
AOC 523  
CHARLESTON NAVAL COMPLEX  
NORTH CHARLESTON, SOUTH CAROLINA



NOT TO SCALE

**FIGURE 4**  
**PIEZOMETER COMPLETION DETAILS**  
**AOC 523**  
**CHARLESTON NAVAL COMPLEX**  
 NORTH CHARLESTON, SOUTH CAROLINA



**Attachment A**

**Monitoring Well Application  
(DHEC 3736 Form)**



# Monitoring Well Application

<p>1. Proposed Location of Monitoring Well(s):</p> <p>Street Address:</p> <p>City (including Zip):</p> <p>County:</p> <p>Please attach Scaled Map or Plat</p>	<p>5. Intended Purpose of Well(s):</p> <p>Pre-Purchase                      <b>NOTE:</b> If this request is for an existing DHEC project, please enter the Program area and ID number below.</p> <p>Investigation</p> <p>Program Area:</p> <p>Project or Site ID #:</p>
<p>2. Well Owner's Information:</p> <p>Name (Last then First):</p> <p>Company:</p> <p>Complete Address:</p> <p>Telephone Number:</p>	<p>6. Proposed number of monitoring wells:</p>
<p>3. Property Owner's Information:</p> <p style="padding-left: 40px;">Check if same as Well Owner</p> <p>Name (Last then First):</p> <p>Company:</p> <p>Address:</p> <p>Telephone Number:</p>	<p>7. Proposed parameters to be analyzed (check all that apply), please specify analytical method beside check box:</p> <p>VOCs</p> <p>BTEX</p> <p>MtBE</p> <p>Naphthalene</p> <p>PAHs</p> <p>Metals</p> <p>Nitrates</p> <p>Base, Neutral &amp; Acid Ex.</p> <p>Pesticides/Herbicides</p> <p>Phenols</p> <p>Radionuclides</p> <p>PCBs</p> <p>Other (<u>specify below</u>)</p>
<p>4. Proposed Drilling Date:</p>	<p>8. Proposed construction details (complete and attach proposed monitoring well schematics):</p>

## **South Carolina Department of Health and Environmental Control (SCDHEC) summary of standards for monitoring well construction (per South Carolina Well Standards and Regulations R. 61-71)**

### **Approval and License Requirements**

Prior Department approval is required for the installation or abandonment of all monitoring wells including direct push, geoprobe or other temporary type monitoring wells. The attached monitoring well approval document should be completed, submitted and approved prior to construction of any monitoring well. A monitoring well is any well used to obtain water samples for water quality analyses or to measure groundwater levels. There are no fees for approvals. All monitoring wells must be drilled by a driller that is registered in South Carolina with the Board of Certification of the Environmental Systems Operators. If any of the information on the application including the proposed drilling date, well construction details or well placement changes, the Department (i.e. project manager issuing the well approval) must be notified 24 hours prior to well construction.

### **Location**

Due to the nature and purpose of a monitoring well, the depth and location requirements in respect to surface water bodies, potential contamination sources, etc., are variable, and shall be approved on a case by case basis by the Department.

### **Construction and Material**

Casing should be of sufficient strength to withstand normal forces encountered during and after well installation and be composed of material so as to minimally affect water quality analyses. Casing should have a sufficient diameter to allow for efficient sample collection (i.e., to provide access for sampling equipment). The diameter of the drilled hole needs to be large enough on all sides (1.5 inches of annular space) to allow forced injection of grout through a tremie pipe. All monitoring wells should have a cement pad or aggregate reinforced concrete at the ground surface which extends at least six inches beyond the bore hole diameter and six inches below ground surface to prevent infiltration between the surface casing and the bore hole. All monitoring wells should be grouted from the top of the bentonite seal to the surface with a neat cement, high solids bentonite or neat cement, bentonite mixture approved by the Department. A hydrated bentonite seal with a minimum thickness of 12 inches is to be placed above the filter pack to prevent infiltration of grout if the well has a filter pack. The monitoring well intake or screen design should minimize the amount of formational materials entering the well. The gravel pack should be utilized opposite the well screen as appropriate so that parameters analyses will be minimally affected. All monitoring wells should have a locking cap or other security device to prevent damage and/or vandalism. Any monitoring well which is destroyed, rendered unusable or is abandoned should be reported to the Department and be properly abandoned, revitalized or replaced as appropriate or required by permit or regulation.

### **Development**

Monitoring wells shall be properly developed. Development shall include the removal of formation cuttings and drilling fluids from the well bore hole. Development shall be complete when the well produces water typical of the aquifer being monitored.

## **Reporting Requirements**

A monitor well record form (1903) or equivalent to include the following should be completed and submitted to the Department within 30 days after completion of the monitoring wells:

Name and address of facility/owner;  
Surveyed or global positioning system location of monitor well(s) on a scaled map or plat;  
Driller and certification number;  
Date drilled;  
Driller's or Geologist's log;  
Total depth;  
Screened interval;  
Diameter and construction details;  
Depth to water table with date and time measured;  
Surveyed elevation of measuring point with respect to established benchmark;  
Monitoring well approval number issued by the Department.

Additionally, the groundwater and soil (if taken) analytical results should be submitted to the Department within 30 days of receipt from the laboratory.

## **Abandonment**

All monitoring wells shall be properly abandoned, when deemed appropriate by the Department. Any well that acts as a source of contamination shall be repaired or permanently abandoned immediately after receipt of notice from the Department. Abandonment shall be by forced injection of grout or pouring through a tremie pipe starting at the bottom of the well and proceeding to the surface in one continuous operation. The well shall be filled with either neat cement, bentonite-cement, or 20% high solids sodium bentonite grout, from the bottom of the well to the land surface.

- \* This summary of standards for monitoring well construction may not include a listing of all information necessary to obtain an approval to install monitoring wells. Final approval of monitoring well installation will be dependant upon the regulatory requirements for the Department program area for which the monitoring wells are to be installed.
  
- \* Some areas of the Department may require a detailed justification of the placement of monitoring wells and the depth of monitoring well screened zones prior to granting installation approval.