

Prepared for

District Department of Energy and Environment

1200 1st Street NE
Washington, D.C. 20002

ADDITIONAL CHARACTERIZATION OF SHORELINE WORK PLAN

**Former Potomac River Generating Station
Alexandria, Virginia**

On Behalf of

NRG Potomac River LLC
1400 North Royal Street
Alexandria, Virginia 22314

Prepared by

Geosyntec 
consultants

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Project Number: MEM1108

September 2015

Revision 1

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LIST OF ACRONYMS

ASTM	American Society for Testing Materials
CAP	Corrective Action Plan
CSM	Conceptual Site Model
DOEE	District of Columbia Department of Energy and Environment
DPT	Direct Push Technology
DRO	Diesel Range Organics
GPS	Global Positioning System
GRO	Gasoline Range Organics
NPS	National Park Service
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PRGS	Potomac River Generating Station
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
SP	Geoprobe [®] Screen Point Groundwater Sampler
STPT	Storage Tank Program Technical Manual
SVOC	Semi-Volatile Organic Compound
TAT	Turn Around Time
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VADEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compound

1. INTRODUCTION

NRG Potomac River LLC owns the former Potomac River Generating Station (PRGS) located at 1400 North Royal Street in Alexandria, Virginia (“the Site”). Suspected fuel oil releases from two closed 25,000 gallon fuel oil underground storage tanks (USTs) were identified during closure of the USTs in 2013. Site assessment and remediation activities have progressed since that discovery under the direction Virginia Department of Environmental Quality (VADEQ) Storage Tank Program in general accordance with the VADEQ Storage Tank Program Technical Manual (STPT). The District of Columbia Department of Energy and Environment (DOEE) is the regulatory authority with jurisdiction over releases to the Potomac River. The Site location is shown on **Figure 1**.

Geosyntec Consultants, Inc. (Geosyntec) recently performed specific actions at the Site on behalf of NRG Potomac River, LLC in response to the 5 June 2014 DOEE directive. The 5 June 2014 DOEE directive requested that additional actions be taken by NRG Potomac River, LLC to assess potential hydrocarbon discharges to the Potomac River related to the on-going investigation and remediation at the PRGS. Specifically, the 5 June 2014 DOEE directive requested the following actions:

- Submission of copies of construction or engineering as-builts of the bulkhead and former screen house structure located adjacent to the Potomac River (see the Site Layout on **Figure 2**);
- A complete evaluation of the bulkhead adjacent to the Potomac River Generating Station Pump House including a visual inspection and identification of seeps, if found; and
- An investigation of the extent of groundwater contamination along the Potomac River shoreline.

Geosyntec performed the actions requested in the 5 June 2014 DOEE directive during the remainder of 2014, including the monitoring of select near-shore wells (**Figure 3**), and summarized the results in a report titled *Assessment of Groundwater Discharges to the Potomac River* dated 5 January 2015. Geosyntec provided the following conclusions in the 5 January 2015 report:

- Evaluations of structural features, including a sheet pile wall and the pump house/screen house, were performed and indicate that those features extend far below the water table and serve as barriers and/or diversions to groundwater flow, thereby limiting direct discharge of groundwater to the Potomac River.

- Structural assessments also identified several structures, particularly subgrade piping leading to outfalls to the Potomac River, that likely have served as preferential flow paths facilitating migration of hydrocarbons toward the shoreline in the northeastern portion of the study area.
- Several seeps with very low flow rates (quantified at less than 0.03 gallons per minute) were occurring through holes in the sheet pile wall; however, the water quality of the seeps did not suggest that the water contained TPH or other constituents that posed a substantial risk to the Potomac River.
- Free phase product or LNAPL, has not been identified in any of the wells near the shoreline and, although dissolved hydrocarbons were detected in many of the wells along the shoreline, the concentrations of PAHs and VOCs for which surface water standards exists were either lower than the applicable standards or allowable groundwater standards at the point of discharge in all of the wells along the shoreline.

Upon review of the 5 January 2015 report, the DOEE provided their comments and made requests in a 12 May 2015 DOEE correspondence. More specifically, DOEE requested additional characterization of the following areas/sources:

- “The areas south of the screen house, and surrounding the end of the bulkhead where historic up-gradient data shows contaminant concentrations and a completed pathway for groundwater migration to the surface waters of the Potomac River.”
- “The extent of groundwater contamination found in the areas directly along the bulkhead and areas traveling around the bulkhead have not been fully delineated.”
- “Conventional contaminants, including heavy metals and polychlorinated biphenyl’s, associated with power generation plants have the potential to be mobilized by a migrating plume of hydrocarbons. The presence of these contaminants has not been investigated or characterized.”

In addition, the 12 May 2015 DOEE letter requested the following actions be taken by NRG Potomac River, LLC to address the data gaps:

- “Develop an additional shoreline work plan for review and approval, addressing the additional areas of concern, Study Area 5S and all the area directly along the extent of the bulkhead.”

- “Develop a quarterly groundwater sampling and analysis plan (SAP) to be submitted for review and approval.”

Geosyntec, on behalf of NRG Potomac River LLC, has prepared this *Additional Characterization of Shoreline Work Plan* (Work Plan) to address the requests in the 12 May 2015 DOEE letter. In parallel with the preparation of this *Additional Characterization of Shoreline Work Plan*, Geosyntec has also prepared a *Sampling and Analysis Plan* (SAP), which includes a *Quality Assurance Project Plan* (QAPP) as an appendix to the SAP as requested in the 12 May 2015 DOEE letter.

Upon receiving DOEE approval, NRG Potomac River LLC will implement the *Additional Characterization of Shoreline Work Plan*, SAP, and QAPP. Please note that scheduling this work is contingent on receipt of a special use permit from the owner of the property where the investigations are planned; the U.S. National Parks Service (NPS). Geosyntec will prepare a characterization report and an annual groundwater monitoring report summarizing the findings for submittal to NRG Potomac River, LLC and the DOEE.

2. PROJECT OBJECTIVES AND APPROACH

This section provides an overview of the characterization objectives and approach.

2.1 Project Objectives

The objective of the characterization is to delineate and evaluate the nature and extent of petroleum impacts in groundwater along the bulkhead at the Site. The data collected will also be utilized to evaluate the potential for contaminant-impacted groundwater to seep into the Potomac River at the Site. This Work Plan presents the overall approach to meet the project objectives and details of the proposed characterization.

2.2 Project Approach

Geosyntec proposes to advance fourteen (14) groundwater monitoring points along the bulkhead using track-mounted direct-push technology (DPT) as presented on **Figure 4**. The monitoring points will include the following:

- A total of seven locations will be installed along the land-side of the bulkhead/sheeting wall adjacent to the Potomac River.
- Two monitoring points, labelled TW-101, TW-109, and TW-110 will be installed in zone 5N between TW-07 and TW-02.
- Up to four sampling points, including TW-111 through TW-112 as shown on **Figure 4**, will be installed in zone 5S between TW-14 and MW-102. The location of the other two sampling points in zone 5S (TW-113 and TW-114) will be determined in the field, pending the accessibility in the area of zone 5S which could be complicated by several factors including a security fence, bridge and pier system, and surface drains.

The number of locations may need to be modified for circumstances such as underground obstructions which could result in an inability to penetration the space behind the bulkhead. DOEE would be notified of any deviation from the intent of the work plan.

The use of DPT is proposed as it is a compact piece of equipment that can most readily maneuver the tight working space along the bulkhead and NPS property. The DPT rig is anticipated to be able to penetrate the alluvial materials (sands, silts, clays) encountered at the Site during prior investigations. The DPT rig will be maneuvered as close to the bulkhead as possible while maintaining safe working conditions. Large sized cobble or gravel immediately behind the bulkhead (if present) may not be able to be penetrated with the DPT equipment. If

the DPT rig encounters shallow refusal, other drilling equipment may be required and will be planned for on a separate mobilization.

The monitoring points will be temporary in order to collect the necessary additional characterization. Permanent monitoring wells, if necessary, will be installed based on a review of the characterization information obtained from the subject investigation.

Installation of the temporary monitoring points will require preparing, submitting, and receiving a Supplemental Application for Special Use Permit to temporarily occupy the NPS trail along the bulkhead. This application will supplement that which was recently filed in order to install remediation wells on the NPS property. The monitoring points will be advanced to an approximate terminal depth of 40 feet below grade. Depth to water along the bulkhead is anticipated to range from approximately 3- to 7-ft below ground surface based on historical data and comparison to tide levels. A total of three groundwater samples will be collected from discrete elevations (i.e. 10-ft, 25-ft, and 40-ft below ground surface) within each monitoring point to collect information sufficient to determine the vertical extent of contamination along the bulkhead wall. Two dedicated soil borings will be advanced (one in 5S and one in 5N) to ascertain the lithology in these areas. If the lithology indicates a zone of lower hydraulic conductivity (e.g. a clay), then two of the samples will be collected above and below the lower flow zone to evaluate its continuity and ability to act as a barrier to vertical flow. The third sample will be collected from the terminal depth of the borehole.

Each sample will be analyzed for total petroleum hydrocarbons – diesel range organics (TPH – DRO), total petroleum hydrocarbons – gasoline range organics (TPH – GRO), select volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, total xylenes, methyl tert-butyl ether, tert-butyl alcohol, 1,2-dibromoethane and 1,2-dichloroethane, polyaromatic hydrocarbons (PAHs), and oil and grease in accordance with the 12 May 2015 DOEE letter. The results of the additional characterization will be summarized in report format along with conclusions about the vertical and horizontal extent of contamination, if any, along the bulkhead wall.

As part of the groundwater monitoring program described in the SAP, Geosyntec will conduct quarterly groundwater monitoring of the select well locations, referred to as the DOEE wells, as noted in the 12 May 2015 DOEE letter (**Figure 3**). The proposed monitoring consists of four quarters (one year) of monitoring. The monitoring well network may be sampled in conjunction with the monitoring of Site wells pursuant to the VADEQ-approved CAP in order to make use of sampling efficiencies and to provide comparative data correlated in time. As noted in the 12 May 2015 DOEE directive, all DOEE wells will be monitored for a standard parameter list during each quarter. During one of the four quarters, the wells will be sampled for additional

parameters consisting of metals, hardness, and polychlorinated biphenyls (PCBs). Furthermore, a single well location will be monitored during high and low tides to evaluate seasonal high and seasonal low tide fluctuations. A report containing the laboratory analytical data, field sampling and calibration logs and a brief narrative summarizing field events shall be provided to DOEE within thirty days of the completion of each groundwater sampling event.

3. PROPOSED FIELD CHARACTERIZATION

This section provides a general description of the rationale and methods that will be used to collect and analyze groundwater samples from the proposed temporary monitoring points behind the bulkhead wall. As requested by the 12 May 2015 DOEE letter, Geosyntec has also prepared a SAP and a QAPP that provides more detailed information regarding the collection and analysis of groundwater samples at this Site in parallel with the preparation of this work plan.

The field characterization involves the following four tasks: (i) utility locate for temporary monitoring points along the bulkhead wall; (ii) groundwater sampling from temporary monitoring points along the bulkhead wall; (iii) quarterly groundwater sampling from existing permanent monitoring wells; and (iv) quality assurance/quality control (QA/QC). Each component of the field characterization is described in the following sections.

3.1 Utility Location

Underground utilities in the proposed areas for drilling the temporary monitoring points along the bulkhead wall will be located and marked prior to beginning work. The proposed locations for drilling the temporary monitoring are shown on **Figure 4**. The proposed drilling locations will be demarcated using stakes, flags and / or white paint. The utilities will be marked by the state one call system (VA811) and a private utility locator. The final drilling locations may have to be adjusted in the field to provide a safe setback distance from underground utilities. The final location of each temporary monitoring point location will be field verified by: (i) measuring from Site features using right angles; or (ii) using a hand-held global positioning system (GPS) unit.

3.2 Temporary Monitoring Point Installation

The monitoring points will be temporary and permanent monitoring wells are not proposed at this time. The monitoring points will be advanced to an approximate terminal depth of 40 feet below grade. A total of three samples will be collected from discrete elevations within each monitoring points to collect information sufficient to determine the vertical extent of contamination along the bulkhead wall. The terminal depth of 40 feet is sufficient to satisfactorily penetrate the deep zone identified during the site investigation activities that were conducted during development of the *Corrective Action Plan* submitted to the VADEQ. Therefore it will be possible to compare deep groundwater data from the site monitoring wells that are sampled as part of the corrective action implementation against these data collected from the temporary monitoring points.

Geosyntec will subcontract a Virginia-licensed driller to supply and operate the track-mounted DPT drilling equipment. Geosyntec will supply the field engineer/geologist and equipment necessary to oversee the drilling and collect the groundwater samples. Since the groundwater

samples at each temporary monitoring point will be collected from pre-defined depth intervals, no soil samples will be collected.

3.3 Groundwater Sampling

Groundwater samples will be collected using a Geoprobe® Screen Point (SP) groundwater sampler or equivalent DPT groundwater sampler utilizing a retractable screen. At each temporary monitoring point location, the retractable screen will be pushed into the ground until the screen can be exposed to the water-bearing sediments at the desired sample depth interval.

As discussed above, three groundwater samples will be collected at each temporary monitoring point location at pre-defined depth intervals. The shallow groundwater sample will be collected first, after which the SP groundwater sampler will be brought back to the ground surface, decontaminated and re-assembled for collecting the mid-depth sample. This process will be repeated for the deep sample. Reusable groundwater sampling equipment will be decontaminated with a liquinox detergent wash, or equivalent, and distilled water rinse before collecting each groundwater sample. Decontamination fluids will be containerized for off-Site disposal. After collecting the deep groundwater sample, each borehole will be properly sealed, and the ground surface will be repaired to match the surrounding material, thickness and grade.

Before collecting each groundwater sample, groundwater will be pumped from the temporary monitoring point using a peristaltic pump and clean ¼-inch nominal diameter low-density polyethylene (LDPE) tubing. The purpose of the pumping is two-fold. First, pumping will help “develop” the temporary monitoring point by removing sediment and enhancing good hydraulic communication with the water-bearing sediments. Second, pumping will “purge” the temporary monitoring point and will ensure fresh groundwater from the water-bearing sediments is used for sampling and analysis. Purge water will be pumped through a flow cell and a YSI Model 600XL multi-parameter monitoring device (or similar) will be used to monitor stabilization parameters including pH, temperature, specific conductance, dissolved oxygen, oxidation-reduction potential, and turbidity during the development of these monitoring points. Purge water will be containerized with decontamination fluids for off-Site disposal. Once gross solids are removed (<20NTU), additional purging of the temporary discrete monitoring points will not continue. Thus, the samples will be collected after minimal purging that will be sufficient to clear the screen of excess turbidity and ensure that stagnant water is not sampled, but that will not cause the well point to become over pumped (a dry well with lack of water).

Groundwater samples will be collected by filling clean pre-preserved, laboratory-provided sample bottles directly from the peristaltic tubing after it is disconnected from the flow cell. Each groundwater sample will be analyzed for TPH – DRO, TPH – GRO, select VOCs, PAHs, and oil and grease in accordance with the 12 May 2015 DOEE directive. Groundwater samples will be appropriately labeled, recorded on the chain-of-custody form, and preserved on wet ice in

a laboratory supplied cooler immediately following sample collection. Groundwater samples will be shipped under chain-of-custody protocol to Eurofins Lancaster Laboratories in Lancaster, Pennsylvania for analysis.

3.4 Groundwater Sampling from Permanent Monitoring Wells

This section provides a general description of the methods that will be used to collect quarterly groundwater samples from the permanent, existing monitoring wells at this Site. As requested by the 12 May 2015 DOEE letter, Geosyntec has also prepared a SAP and a QAPP that provides more detailed information regarding the collection and analysis of groundwater samples at this Site in parallel with the preparation of this work plan.

Prior to groundwater sample collection, a round of synoptic groundwater elevation measurements from all of the on-Site monitoring wells will be measured. Groundwater elevations will be measured from a reference point on the inner well casing to the nearest 0.01-foot (ft.) using a clean electronic water level indicator. Reusable water level and groundwater sampling equipment will be decontaminated with a liquinox detergent wash, or equivalent, and distilled water rinse before collecting each water level measurement and groundwater sample. Decontamination fluids will be containerized for off-Site disposal.

Groundwater samples will be collected using low-flow purging and sampling techniques. Monitoring wells will be purged using a peristaltic pump and clean ¼-inch nominal diameter LDPE tubing. Purge water will be pumped through a flow cell and a YSI Model 600XL multi-parameter monitoring device (or similar) will be used to monitor stabilization parameters including pH, temperature, specific conductance, dissolved oxygen, oxidation-reduction potential, and turbidity. Stabilization will be achieved when the parameter readings are within the ranges specified in the SAP. Purge water will be containerized with decontamination fluids for off-Site disposal.

After purging is complete and stabilization is achieved, groundwater samples will be collected by filling clean pre-preserved, laboratory-provided sample bottles directly from the peristaltic tubing after it is disconnected from the flow cell. Each groundwater sample will be analyzed for TPH – DRO, TPH – GRO, select VOCs, PAHs, and oil and grease in accordance with the 12 May 2015 DOEE directive. Groundwater samples will be appropriately labeled, recorded on the chain-of-custody form, and preserved on wet ice in a laboratory supplied cooler immediately following sample collection. The samples were shipped via courier under executed chains of custody form to Eurofins Lancaster Laboratories in Lancaster, Pennsylvania for analysis.

As noted in the 12 May 2015 DOEE directive, during one of the four quarters, the wells will be sampled for additional parameters consisting of metals, hardness, and PCBs. Furthermore, TW-03, which is the closest well to the end of the bulkhead will be monitored during high and low tides to evaluate seasonal high and seasonal low tide fluctuations. The schedule for these additional monitoring events is provided in the table below.

Item	Description	Proposed Schedule (First Year)
Quarterly Sampling Events (x 4 events per year) ^[1]	Wells included: TW-02, TW-03, TW-04, TW-05, TW-06, TW-07, TW-14 Standard Parameters ^[2] : TPH-DRO, TPH-GRO, Select VOCs, PAHs, Oil and Grease	August 2015 November 2015 February 2016 May 2016
Quarterly Sampling Event – Additional Parameters (x 1 event)	From all wells, collect Additional Parameters ^[2] (one quarter only): TAL Metals, Hardness, and PCBs.	August 2015
Quarterly Sampling Event – High & Low Tide Sample Collection (x 2 events)	From TW-03 , collect a high tide and low tide sample during (1) the seasonal high and (2) seasonal low flow cycles (a total of four samples). Samples to be analyzed for the Standard Parameters and Additional Parameters listed above.	November 2015

NOTES:

[1] All wells will be sampled using EPA/ASTM methods for low flow/low purge sampling methods

[2] Analytical methods for the subject parameters as noted in the 12 May 2015 DOEE correspondence (see pg. 3)

3.5 Quality Assurance / Quality Control

Sample bottles will be prepared by Eurofins Lancaster Laboratories using USEPA methods and shipped to Geosyntec Consultants. Sample bottles will be filled, capped tightly, labeled, sealed with a custody seal, and placed in a cooler with crushed ice. The sample label will identify the site name, sample identification number, date and time of collection, sampler's initials, preservative (if applicable), and analysis to be performed. This information will also be recorded

on a chain of custody. Coolers will be taped shut and samples will be shipped under chain-of-custody protocol to Eurofins Lancaster Laboratories. Chain of custody records will be maintained by field personnel.

During field activities, the following QA/QC samples will be collected and analyzed:

- Trip Blanks: Each sample cooler with samples to be analyzed for VOCs will contain one trip blank. Trip blanks will be provided by Eurofins Lancaster Laboratories. Trip blanks will be analyzed for VOCs by EPA Method 8260.
- Equipment Rinsate Blanks: One equipment rinsate blank will be collected per media sampled per day of field activities. The equipment rinsate blank will be collected by pouring (or for groundwater equipment, pumping) distilled water over and through sampling equipment and collecting the runoff in sample bottles. Equipment rinsate blanks will be analyzed for all the parameters listed in sections 3.2 and 3.3.
- Duplicates: Duplicate samples will be collected at a frequency of 10% (1 per 10) for each media sampled. Duplicate samples will be collected by alternatively filling a regular sample bottle and the duplicate sample bottle until both are full. Duplicate samples will be analyzed for the same parameters as the regular samples.

4. REPORTING

Geosyntec will provide DOEE with two reports. The first report will be a characterization report summarizing the installation of the temporary monitoring points along the bulkhead wall, and the analytical results for the groundwater samples collected from the temporary monitoring points. The second report will be an annual groundwater monitoring report summarizing the water level data and analytical results for the four quarters of groundwater monitoring conducted at the existing permanent wells.

The reports will include, but not be limited to, the following:

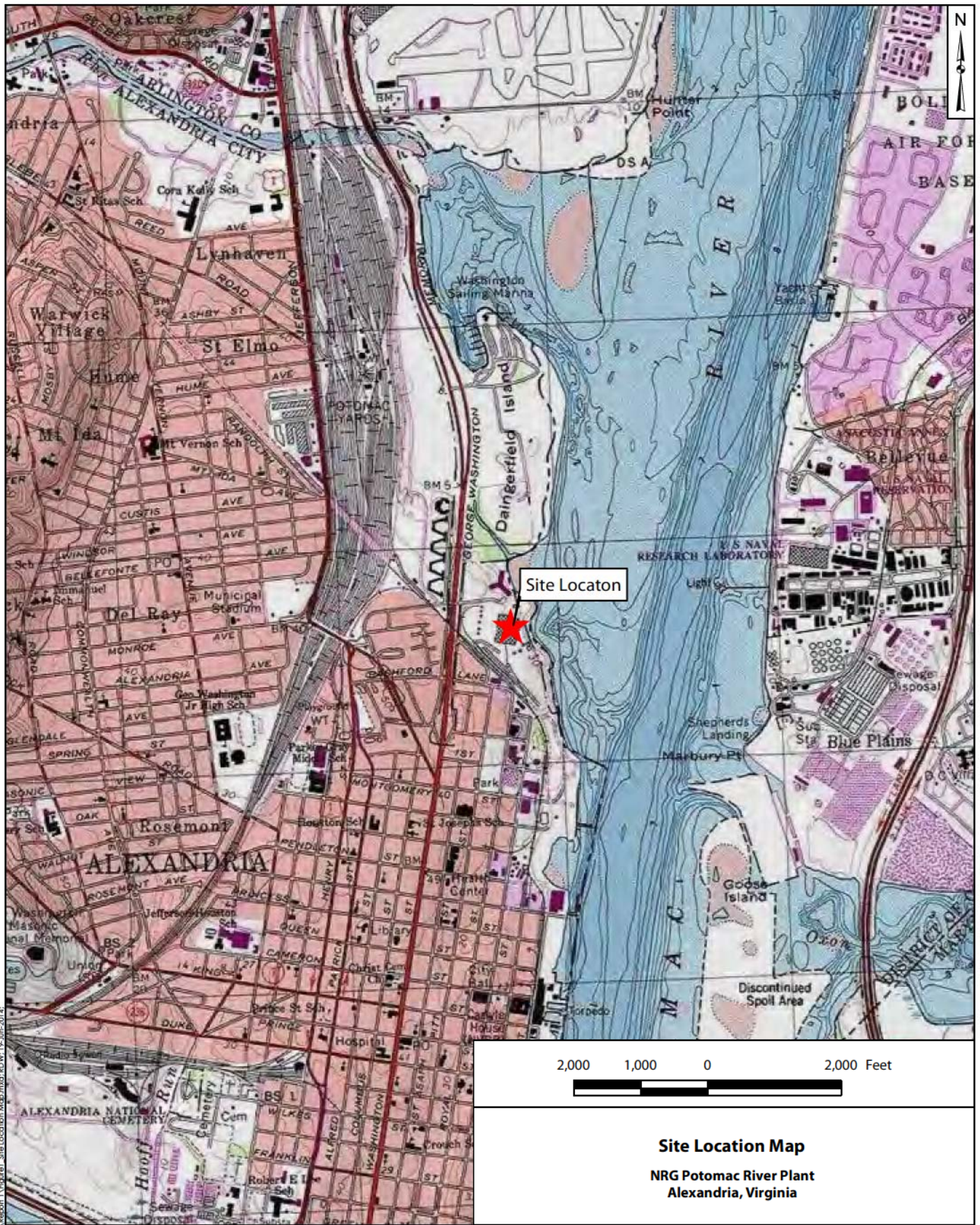
- Narrative discussion of the field characterization and quarterly sampling events;
- Soil Boring Logs, and groundwater sampling records;
- Field sampling forms including chain of custody forms;
- Laboratory analytical data reports;
- Data QA/QC review;
- Tabular and graphical summary of data including a comparison to applicable DOEE cleanup standards and/or background values;
- Figures showing the extent of impacts horizontally and vertically (cross sections and iso-concentration maps);
- Evaluation of data gaps, if any;
- Narrative discussion of CSM;
- Conceptual level drawings of CSM;
- Recommendations; and
- Approximate schedule of implementation for proposed future actions, if any.

5. SCHEDULE

NRG Potomac River LLC will expedite this work as quickly as possible. DOEE will be kept informed of the schedule as the project progresses. Upon receiving approval from DOEE to implement this work plan, Geosyntec will prepare and submit the necessary use permits with the National Park Service in order to occupy the park service property with the drilling equipment.

DOEE will be notified at least 5 days in advance of any field activities in order to provide notice to DOEE representatives that may wish to be present during the drilling activities.

FIGURES



Notes:

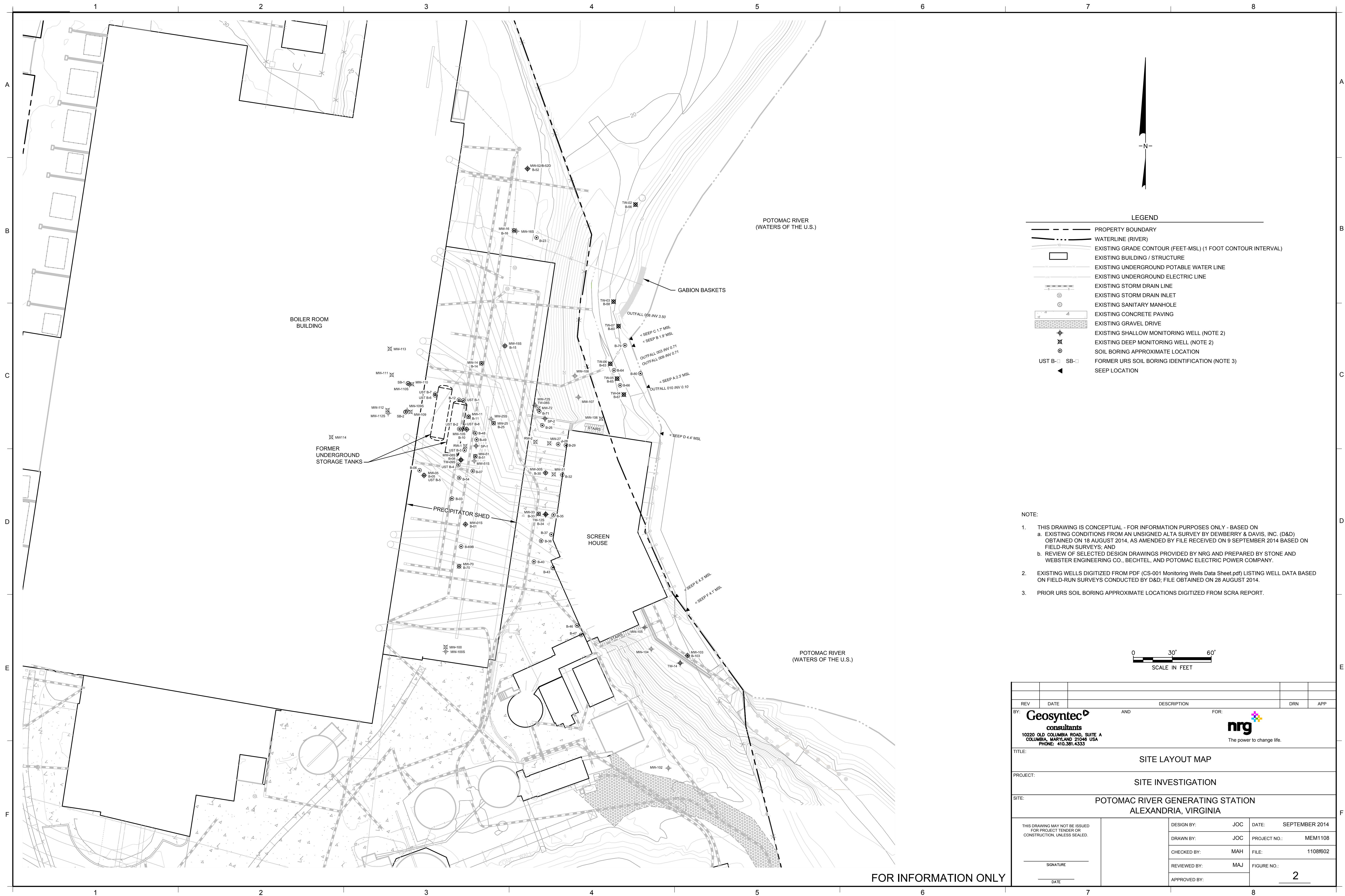
USGS Topographic Map accessed via ArcGIS Online and provided by Microsoft on 19 June 2014. Alexandria Quadrangle (1965, photorevised 1983, bathymetry 1982).

Geosyntec
 consultants

Columbia, Maryland

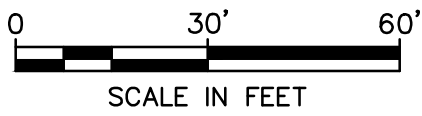
Figure

1



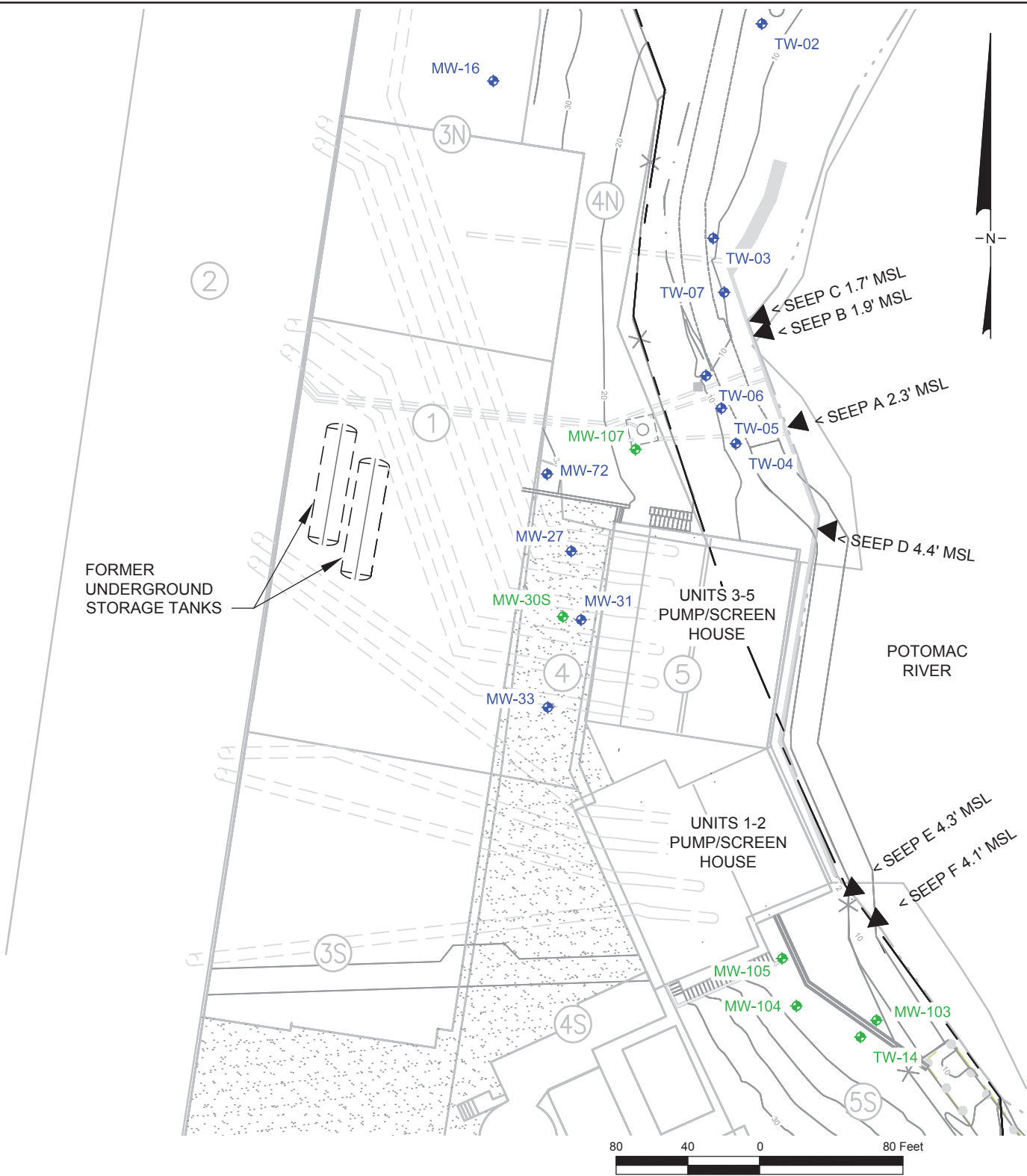
LEGEND	
	PROPERTY BOUNDARY
	WATERLINE (RIVER)
	EXISTING GRADE CONTOUR (FEET-MSL) (1 FOOT CONTOUR INTERVAL)
	EXISTING BUILDING / STRUCTURE
	EXISTING UNDERGROUND POTABLE WATER LINE
	EXISTING UNDERGROUND ELECTRIC LINE
	EXISTING STORM DRAIN LINE
	EXISTING STORM DRAIN INLET
	EXISTING SANITARY MANHOLE
	EXISTING CONCRETE PAVING
	EXISTING GRAVEL DRIVE
	EXISTING SHALLOW MONITORING WELL (NOTE 2)
	EXISTING DEEP MONITORING WELL (NOTE 2)
	SOIL BORING APPROXIMATE LOCATION
	FORMER URS SOIL BORING IDENTIFICATION (NOTE 3)
	SEEP LOCATION

- NOTE:
- THIS DRAWING IS CONCEPTUAL - FOR INFORMATION PURPOSES ONLY - BASED ON
 - EXISTING CONDITIONS FROM AN UNSIGNED ALTA SURVEY BY DEWBERRY & DAVIS, INC. (D&D) OBTAINED ON 18 AUGUST 2014, AS AMENDED BY FILE RECEIVED ON 9 SEPTEMBER 2014 BASED ON FIELD-RUN SURVEYS; AND
 - REVIEW OF SELECTED DESIGN DRAWINGS PROVIDED BY NRG AND PREPARED BY STONE AND WEBSTER ENGINEERING CO., BECHTEL, AND POTOMAC ELECTRIC POWER COMPANY.
 - EXISTING WELLS DIGITIZED FROM PDF (CS-001 Monitoring Wells Data Sheet.pdf) LISTING WELL DATA BASED ON FIELD-RUN SURVEYS CONDUCTED BY D&D; FILE OBTAINED ON 28 AUGUST 2014.
 - PRIOR URS SOIL BORING APPROXIMATE LOCATIONS DIGITIZED FROM SCRA REPORT.



REV	DATE	DESCRIPTION	DRN	APP
BY:	Geosyntec consultants	AND	FOR:	nrgr
10220 OLD COLUMBIA ROAD, SUITE A COLUMBIA, MARYLAND 21046 USA PHONE: 410.381.4333				
The power to change life.				
TITLE: SITE LAYOUT MAP				
PROJECT: SITE INVESTIGATION				
SITE: POTOMAC RIVER GENERATING STATION ALEXANDRIA, VIRGINIA				
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.		DESIGN BY: JOC	DATE: SEPTEMBER 2014	
SIGNATURE		DRAWN BY: JOC	PROJECT NO.: MEM1108	
DATE		CHECKED BY: MAH	FILE: 1108/602	
		REVIEWED BY: MAJ	FIGURE NO.: 2	
		APPROVED BY:		

FOR INFORMATION ONLY



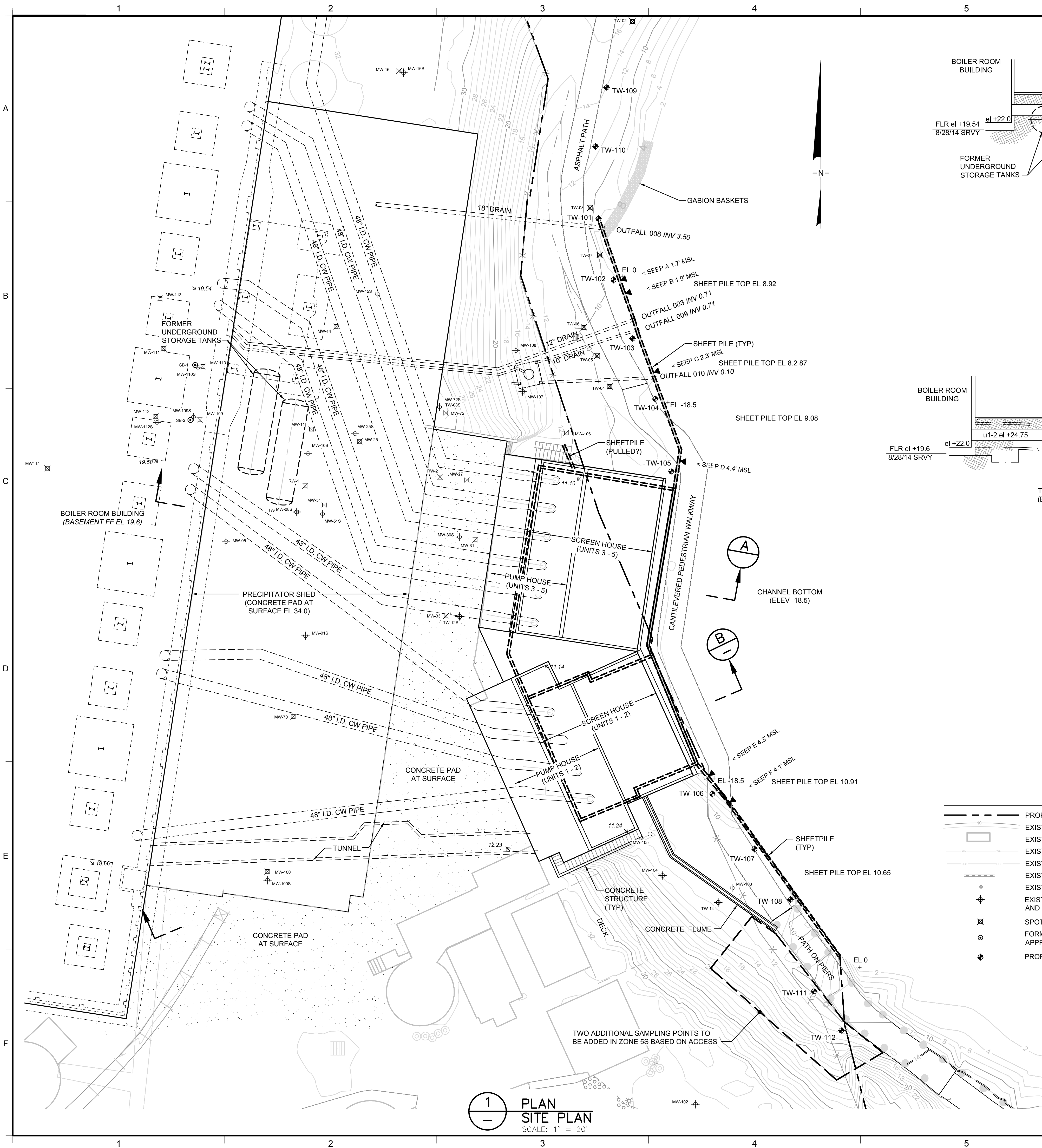
LEGEND

- Property Boundary
- Waterline (river)
- ◆ Groundwater Monitoring Well (Deep)
- ◆ Groundwater Monitoring Well (Shallow)
- 1 Study Area Zone Boundary and ID

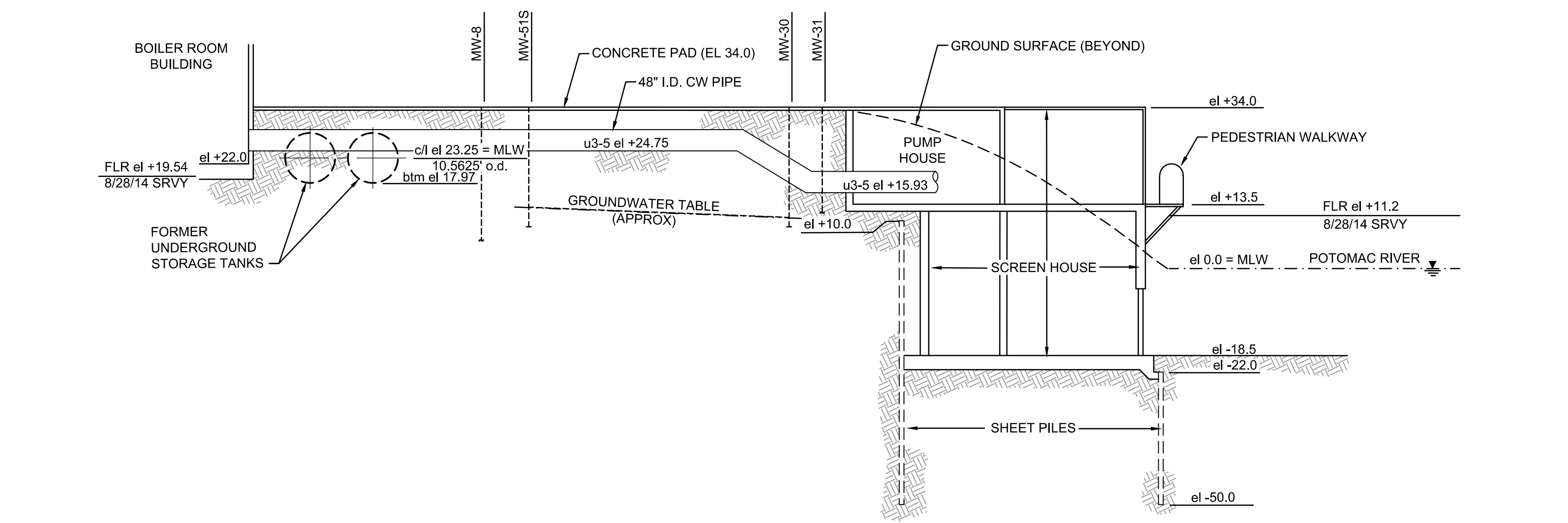
GROUNDWATER MONITORING WELL NETWORK FORMER POTOMAC RIVER GENERATING STATION ALEXANDRIA, VIRGINIA

Geosyntec
consultants
COLUMBIA, MARYLAND

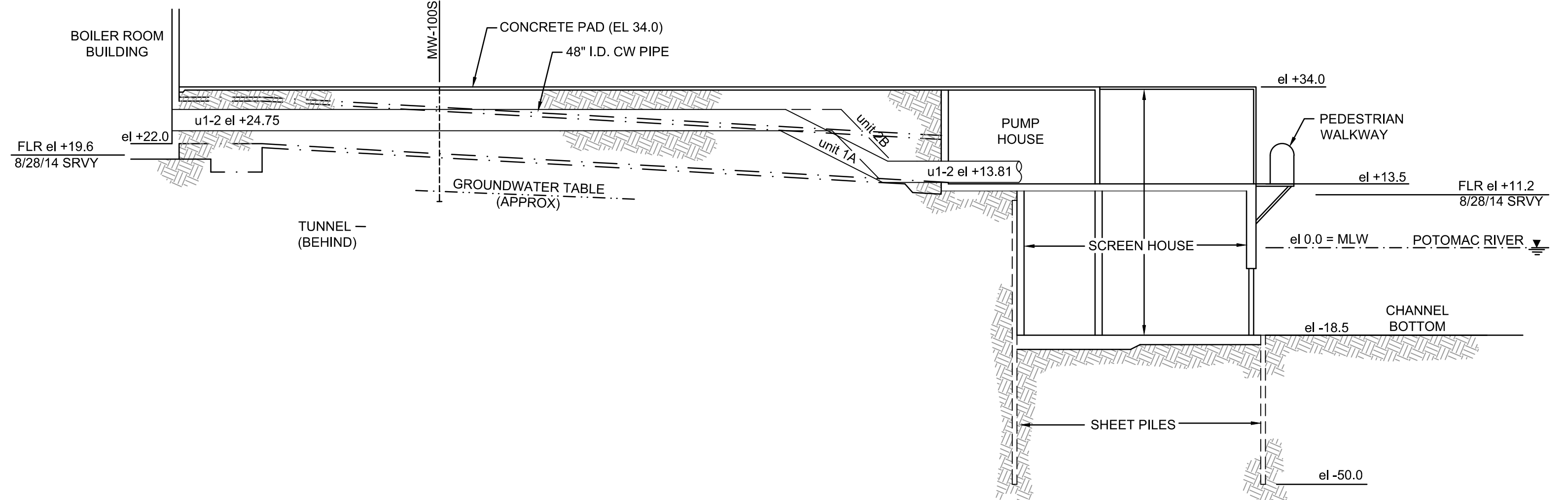
DATE: DECEMBER 2014	DOCUMENT NO.
PROJECT NO. MEM1108	FIGURE NO.



1 PLAN SITE PLAN SCALE: 1" = 20'



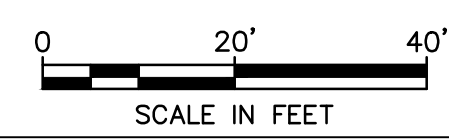
A SECTION A: UNITS 3 - 5 SCALE: 1" = 20'



B SECTION A: UNITS 1 - 2 SCALE: 1" = 20'

- NOTE:
- THIS DRAWING IS CONCEPTUAL - FOR INFORMATION PURPOSES ONLY - BASED ON:
a. EXISTING CONDITIONS FROM AN UNSIGNED ALTA SURVEY (NRG ALTA.dwg) BY DEWBERRY & DAVIS, INC. (D&D) OBTAINED ON 18 AUGUST 2014, AS AMENDED BY FILE (NRG Potomac Topo.dwg) RECEIVED ON 9 SEPTEMBER 2014 BASED ON FIELD-RUN SURVEYS; AND
b. REVIEW OF SELECTED DESIGN DRAWINGS PROVIDED BY NRG AND PREPARED BY STONE AND WEBSTER ENGINEERING CO., BECHTEL, AND POTOMAC ELECTRIC POWER COMPANY.
 - HORIZONTAL LOCATIONS ARE AS-BUILT EXCEPT BELOW GRADE FEATURES. DATA SHOWN IN ITALICS IS AS-BUILT DATA (SEE NOTE 1a ABOVE); DATA NOT IN ITALICS IS DESIGN DATA (SEE NOTE 1b ABOVE).
 - EXISTING WELLS DIGITIZED FROM PDF (CS-001 Monitoring Wells Data Sheet.pdf) LISTING WELL DATA BASED ON FIELD-RUN SURVEYS CONDUCTED BY D&D; FILE OBTAINED ON 28 AUGUST 2014.
 - PRIOR URS SOIL BORING APPROXIMATE LOCATIONS DIGITIZED FROM SCRA REPORT.

LEGEND	
	PROPERTY BOUNDARY
	EXISTING GRADE CONTOUR (FEET-MSL)
	EXISTING BUILDING / STRUCTURE
	EXISTING UNDERGROUND POTABLE WATER LINE
	EXISTING UNDERGROUND ELECTRIC LINE
	EXISTING STORM DRAIN LINE
	EXISTING STORM DRAIN INLET
	EXISTING GROUNDWATER MONITORING WELL AND TW WELL (NOTE 2)
	SPOT ELEVATION FROM FIELD-RUN SURVEY (NOTE 1)
	FORMER URS SOIL BORING
	APPROXIMATE LOCATION (NOTE 3)
	PROPOSED TEMPORARY VERTICAL PROFILE POINT



REV	DATE	DESCRIPTION	DRN	APP
BY: Geosyntec consultants AND FOR: nrg				
10220 OLD COLUMBIA ROAD, SUITE A COLUMBIA, MARYLAND 21046 USA PHONE: 410.381.4333				
The power to change life.				
TITLE: PROPOSED TEMPORARY GROUNDWATER MONITORING PONITS				
PROJECT: SITE INVESTIGATION				
SITE: POTOMAC RIVER GENERATING STATION ALEXANDRIA, VIRGINIA				
FOR INFORMATION ONLY		DESIGN BY:	MAJ	DATE: SEPTEMBER 2015
		DRAWN BY:	JOC	PROJECT NO.: MEM1108
		CHECKED BY:	MAH	FILE: 1108-652
		REVIEWED BY:	MAJ	FIGURE NO.: 4
		APPROVED BY:		