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REVISED WORK PLAN FOR SUPPLEMENTAL MONITORING NATURAL ATTENUATION SAMPLING AT SITE 8 WITH TRANSMITTAL LETTER NETC NEWPORT RI
5/11/2012
TETRA TECH

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C-NAVY-05-12-5051W

May 11, 2012

Project Number 112G02124

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Reference: CLEAN Contract No. N62470-08-D-1001
Contract Task Order No. WE19

Subject: Revised Work Plan for Supplemental Monitored Natural Attenuation Sampling in 2012
Site 8, NUSC Disposal Area, Naval Station Newport, Rhode Island

Dear Ms. Lombardo and Ms. Crump:

On behalf of Ms. Maritza Montegross, Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic, Tetra Tech, Inc. (Tetra Tech) is providing this work plan for two supplemental groundwater sampling events at the Naval Undersea Systems Center (NUSC) Disposal Area (Site 8) at the Naval Station (NAVSTA) Newport, Rhode Island. This plan was prepared in response to EPA and RIDEM comments stating that additional sampling data are needed in support of Site 8 remedial alternatives which incorporate monitored natural attenuation (MNA) of contaminants in groundwater. This work plan also incorporates comments received by EPA on April 18, 2012 and RIDEM on May 1, 2012 regarding which wells should be sampled.

These sampling events are considered to be supplemental, performed for informational purposes, and will use sampling procedures which are consistent with previous work plans already approved for Site 8 by EPA and RIDEM. Tetra Tech will conduct the first of the two planned groundwater sampling events in May 2012. The start date for the second sampling event is to be determined, but will be coordinated with EPA and RIDEM after evaluation of the results from the first sampling event.

Background

Previous groundwater sampling at Site 8 included an initial event in September 2003, for the Study Area Screening Evaluation (SASE) (Tetra Tech, 2005), and a larger event during May-September 2008, for the Remedial Investigation (RI) (Tetra Tech, 2010a). Various chlorinated volatile organic compounds (CVOCs) and metals were detected in bedrock groundwater at concentrations associated with unacceptable risks to human health.

The Navy conducted other supplemental sampling events, as follows:

- in August 2010, for the Supplemental RI (SRI) (Tetra Tech, 2011a), in order to fill data gaps identified during the RI, and to support the ongoing Feasibility Study (FS);
- in March 2011 (Tetra Tech, 2011b), to further evaluate MNA as a likely groundwater remedy for CVOCs at Site 8 (Round 1).

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Under this work plan, the Navy will perform two additional groundwater sampling events (Rounds 2, 3) in order to provide more information to support the use of MNA as part of a remedial action for CVOCs and metals in groundwater at Site 8. This work plan is consistent with the plan that was approved for the March 2011 MNA sampling event at Site 8 (Tetra Tech, 2011c).

MNA Analyte Summary

Some MNA parameters are measured in the field during the course of sample collection and are available for past NUSC groundwater sampling results. These parameters generally include pH, oxidation-reduction potential (ORP), and dissolved oxygen (DO). Other parameters are measured in the field using test kits (e.g., ferrous iron) or are determined by a Navy-certified analytical laboratory (e.g., CVOCs and their degradation products, metals, anions, and dissolved gases). Previous sampling of Site 8 groundwater with respect to MNA parameters is summarized here:

- 2003 – no samples were analyzed for MNA parameters
- 2008 – 23 of 51 samples were analyzed for MNA parameters
- 2010 – 13 of 26 samples were analyzed for MNA parameters
- 2011 – 20 of 21 samples were analyzed for MNA parameters

Along with the data to be collected during 2012, the data from past sampling events will be used to help evaluate trends for CVOCs and metals concentrations in groundwater. Results from past sampling events are summarized in the 2011 MNA Technical Memorandum (Tetra Tech, 2011b).

Sampling Plan

Up to 27 wells will be sampled during each of the two 2012 events (Table 1 and Figure 1). The groundwater samples will be analyzed for target compound list (TCL) volatile organic compounds (VOCs), target analyte list (TAL) metals, and selected MNA parameters listed below. The selected sampling locations were based on those wells that had been sampled in the past and other considerations, as summarized in Table 1. The wells selected for 2012 sampling are consistent with those sampled during the 2011 MNA sampling event, in order to support contaminant and geochemical concentration trend analyses. The selected locations are within or near the contaminant plumes in the North Meadow, South Meadow, and Building 179 areas of Site 8.

Field work will be performed in accordance with the previously approved RI Work Plan Addendum (Tetra Tech, 2010b) that was used during the SRI. For some details of some field task protocols, the Work Plan Addendum refers to Section 3.2.1 of the RI Work Plan, Revision 2 (Tetra Tech, 2007).

The proposed 2012 field work will include the following:

- Well Sampling: The selected wells (Table 1) will be sampled using low-flow methods, as described in Section 3.2.1.11 of the RI Work Plan.

- Sample Analyses: The samples will be sent for laboratory analysis of TCL VOCs, TAL metals, and the following MNA parameters: ammonia, chloride, nitrite, nitrate, orthophosphate, sulfate, sulfide, total organic carbon (TOC), and dissolved gases (methane, ethene, and ethane). Ferrous iron will be measured in the field using test kits.

- Quality Assurance: Analytical methods, project action limits, sample handling, control and documentation, laboratory procedures, validation, and analytical reports will be the same as those listed in the RI Work Plan, and the same sample nomenclature methodology will be used. Quality control samples will include one duplicate per 10 field samples and one VOC trip blank per 20 samples (or per cooler shipped to the lab). Applicable tables from the RI Work Plan include Table 3-2 (field quality control sample summary) and Table 3-3 (sample container, preservative, and holding time requirements).

- Support Activities: Provisions outlined in the RI Work Plan will be followed for additional field activities, including management of investigation-derived waste (IDW), cleaning and decontamination of field equipment, field equipment calibration, and inspection and acceptance requirements for supplies and sample containers, as described in RI Work Plan Sections 3.3.3, 3.3.4, 3.3.5, and 3.3.6, respectively.

Well redevelopment will not be conducted for the 2012 sampling events, because the wells were recently redeveloped in 2010.

Health and Safety

The existing site-specific Health and Safety Plan (Tetra Tech, 2010c) used during the SRI will be followed during these supplemental field activities.

Reporting

Upon completion of field activities and laboratory analyses, Tetra Tech will perform data validation in accordance with the Work Plan Addendum and will summarize the results in a brief technical memorandum for EPA and RIDEM review.

Please contact me at (978) 474-8449 or jim.ropp@tetratech.com should you have any questions or concerns about the work to be performed.

Sincerely,

James Ropp, P.E.
Project Manager

Encl. Tables 1, Figure 1 (1 hardcopy, email)

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File G02124-3.2 (w/ encl.)

References

Tetra Tech (Tetra Tech NUS, Inc.), 2005. Study Area Screening Evaluation for NUSC Disposal Area, Naval Undersea Warfare Center, Middletown, Rhode Island. January.

Tetra Tech, 2007. Work Plan for Remedial Investigation, Revision 2, for Site 08 – NUSC Disposal Area, Naval Station Newport, Middletown, Rhode Island. January.

Tetra Tech, 2010a. Remedial Investigation for Site 08, Naval Undersea Systems Center (NUSC) Disposal Area, Naval Station Newport, Rhode Island. January.

Tetra Tech, 2010b. Work Plan Addendum, Supplemental Remedial Investigation for Site 08, Naval Undersea Systems Center (NUSC) Disposal Area, Naval Station Newport, Rhode Island. June.

Tetra Tech, 2010c. Health and Safety Plan, Remedial Investigation for Site 08, Naval Undersea Systems Center (NUSC) Disposal Area, Naval Station Newport, Rhode Island. June.

Tetra Tech, 2011a. Technical Memorandum, Supplemental Remedial Investigation for Site 08, Naval Undersea Systems Center (NUSC) Disposal Area, Naval Station Newport, Rhode Island. December.

Tetra Tech, 2011b. Final March 2011 Monitored Natural Attenuation (MNA) Groundwater Sampling Results, Site 08, Naval Undersea Systems Center (NUSC) Disposal Area, Naval Station Newport, Rhode Island. August.

Tetra Tech, 2011c. Work Plan for Supplemental Monitored Natural Attenuation Sampling, Site 08, Naval Undersea Systems Center (NUSC) Disposal Area, Naval Station Newport, Rhode Island. March.

Wiedemeier, T. H., Swanson, M. A., Moutoux, D. E., Kampbell, D. H., Haas, P. E., Miller, R. N., Hansen, J. E., and Chappelle, F. H., 1998. Technical protocol for evaluating natural attenuation of chlorinated solvents in ground water. EPA/600/R-98/128, September.

TABLE 1
GROUNDWATER SAMPLING MATRIX
WORK PLAN FOR SUPPLEMENTAL MONITORED NATURAL ATTENUATION SAMPLING - 2012
SITE 8, NUSC DISPOSAL AREA
NAVAL STATION NEWPORT, RHODE ISLAND

MONITORING WELL	PAST SAMPLING EVENTS				PLANNED EVENTS	NOTES
	SASE 2003	RI 2008	SRI 2010	MNA Round 1 2011 (b)	MNA Rounds 2 & 3 2012 (c)	
MW01B	Y					
MW02B	Y	Y				
MW03B	Y	Y	Y	Y	Y	
MW04B	Y	Y	Y	Y	Y	
MW06A			Y			
MW06B			Y	Y	Y	Well upgradient of Building 179 area
MW07A			Y	Y	Y	
MW07B			Y	Y	Y	
MW08A			Y			
MW08B			Y	Y		
MW09A						
MW09B		Y	Y		Y	
MW11			Y			
MW12			Y	Y		
MW13A		Y				
MW13B			Y			
MW100B		Y			Y	
MW101B		Y	Y	Y	Y	
MW102B		Y			Y	
MW103B		Y	Y	Y	Y	
MW103S		Y			Y (metals only)	Extra sample due to high metals conc. (may be assoc. w/ turbidity)
MW104B		Y	Y	Y	Y	
MW105B		Y	Y		Y	
MW106B		Y				
MW106S		Y				
MW107B		Y				
MW108B		Y		Y		
MW109B		Y				
MW110B		Y		Y	Y	Downgradient edge of South Meadow plume
MW111B		Y				
MW112B		Y				
MW112S		Y				
MW113B		Y				
MW114B		Y				
MW115B		Y				
MW116B*		Y				
MW116B-D1*			Y			
MW116B-D2*			Y	Y	Y	Upgradient side of North Meadow Plume
MW117B*		Y				
MW117B-D1*			Y	Y	Y	Shallower well in couplet selected due to higher VOC levels
MW117B-D2*			Y		Y	
MW118B*		Y				
MW118B-D1*			Y	Y	Y	Shallower well in couplet selected due to higher VOC levels
MW118B-D2*			Y		Y	
MW119B		Y		No	Yes, if located	Unable to locate (presumed buried or destroyed)
MW120B		Y				
MW122		Y	Y	Y	Y	
MW123		Y				
MW124B		Y	(a)		Y	
MW125B		Y		Y	Y	
MW126B		Y				
MW127B			Y	Y	Y	
MW128B			Y	Y	Y	
MW129B			Y	Y	Y	
MW130B			Y	Y	Y	
total samples	**4**	**34**	**28**	**21**	**27**	

* - well modified by adding new screens for 2010 sampling event
(a) Sample was analyzed only for 1,2-propylene glycol dinitrate (which was not detected).
(b) MNA Round 1 samples were analyzed for VOCs and MNA (geochemical) parameters.
(c) MNA Rounds 2 and 3 samples are planned to be analyzed for VOCs, metals, and MNA (geochemical) parameters.

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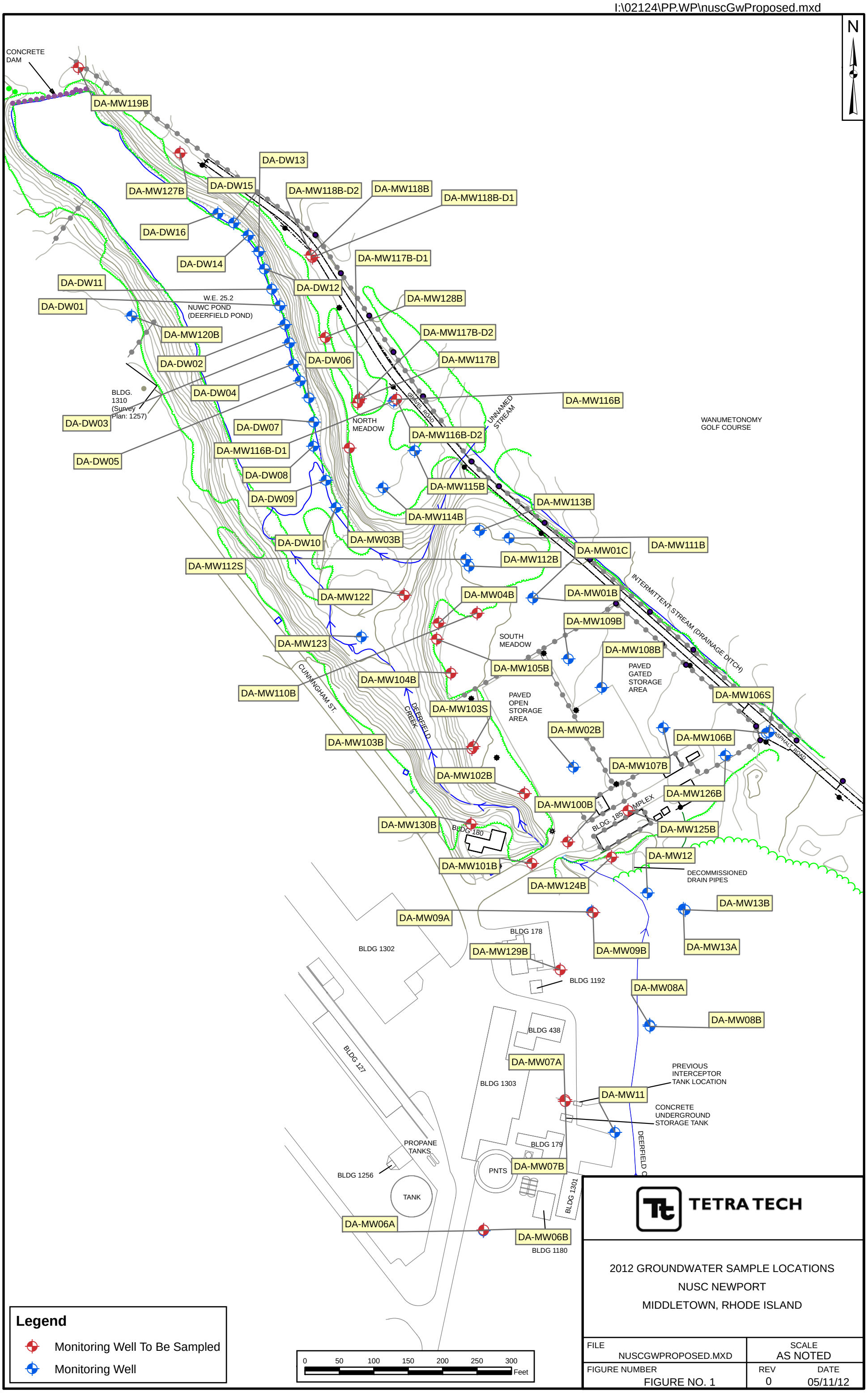

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2012 GROUNDWATER SAMPLE LOCATIONS
NUSC NEWPORT
MIDDLETOWN, RHODE ISLAND

FILE	SCALE
NUSCGWPROPOSED.MXD	AS NOTED
FIGURE NUMBER	REV / DATE
FIGURE NO. 1	0 / 05/11/12