

**Environmental
Construction
Operations &
Remediation**

ECOR Solutions, Inc.
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12 June 2009

Mr. Brian Helland
BRAC PMO Northeast
4911 South Broad Street
PNBC Bldg. 679
Philadelphia, Pennsylvania 19112

**RE: Contract No. N62472-03-D-0802 Task Order 0157
Final Summary Report for the 2009 Quarterly (Winter) Sampling Event
Former Naval Air Warfare Center, West Trenton, New Jersey**



Dear Mr. Helland:

The purpose of this letter report is to provide the Naval Facilities Mid-Atlantic (Navy) with the laboratory analytical results of groundwater, surface water, and sediment samples collected during the 2009 Quarterly (Winter) Sampling Event at the former Naval Air Warfare Center located in West Trenton, New Jersey (NAWC-West Trenton).

This work is being done by ECOR Solutions, Inc. (ECOR) under Contract No. N62472-03-D-0802, Task Order 0157 in accordance with the New Jersey Department of Environmental Protection (NJDEP) 2005 Field Sampling Procedure Manual (FSM) and the ECOR 2005 Long-Term Monitoring Plan (LTMP).

Background

Samples were collected during this event by ECOR following the FSM and LTMP. The data collected during this event is being used in a monitoring program to evaluate the effectiveness of the existing groundwater treatment plant (GWTP) at NAWC-West Trenton. The objectives of the monitoring program are to assess hydraulic containment of groundwater by the existing GWTP and to assess changes in groundwater quality. Groundwater samples were collected and analyzed to assess changes in the concentration and distribution of Constituents of Concern (COCs) including specific volatile organic compounds (VOCs) and metals at the site, and to monitor natural attenuation parameters. Trichloroethene (TCE) and its degradation products cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC), are the primary VOC COCs in groundwater. Since these COC exist mainly in the bedrock aquifer, the groundwater sampling concentrates on wells located in this unit. Surface water samples were collected and analyzed to assess the infiltration of VOC-impacted groundwater into the storm sewers. Sediment samples were collected and analyzed to evaluate whether there is a continuing source of mercury to the storm water outfalls at NAWC-West Trenton.

The 2009 Winter Sampling Event was performed on 25 February 2009. The following sections describe the sampled media including sampling locations, methods and results, and the quality assurance/quality control (QA/QC) samples and results.

Groundwater Sampling

Groundwater samples were collected from a total of eight active recovery wells (15 BR, 20 BR, 22 BR, 45 BR, 48 BR, 56 BR, BRP 2, and West Ditch Well (WDW)). All groundwater samples were collected by the NJDEP-approved non-purging method. This sample method is discussed in detail in the LTMP and FSM. Recovery well locations are shown on **Figure 1**.

Active recovery wells do not need to be purged if they have been running for the last 24 hours. Initially, the sample port was opened and the tap was allowed to run until at least 3 gallons were removed before attaching the flow-through cell and collecting water quality measurements including pH, dissolved oxygen (DO), specific conductance, oxidation-reduction potential (ORP), turbidity, and temperature. Following stabilization of water quality parameters, the sample was collected and a post-sampling water quality parameter measurement was recorded.

All groundwater samples were analyzed by a Navy-approved, New Jersey-certified laboratory, Analytical Lab Services, Inc. (ALS), located in Middletown, Pennsylvania. All samples were analyzed as required by the LTMP protocol for quarterly sampling events. VOC analyses were conducted on all samples by United States Environmental Protection Agency (EPA) method 8260B. A summary of laboratory analytical results are presented in **Table 1**. NJDEP Groundwater Quality Criteria (GWQC) for Class II-A Groundwater (N.J.A.C. 7:9-6) are included for comparison with the groundwater analytical results. The criteria used (unless otherwise noted) are the higher of the Practical Quantitation Limits (PQLs) or the GWQC. Water quality measurements are presented in **Table 2**. Chain of Custody sheets are in **Appendix A** and field data sheets are in **Appendix B**.

Surface Water Sampling

Surface water samples were collected from four manholes located at the intersection of the Navy outfall discharge pipes and the West Trenton Township (Township) offsite storm water sewer that is on the north side of Parkway Avenue. The manholes sampled included MH-117, MH-118.5, MH-121.5, and MH-125.9. Two samples were collected from each of four manholes. One sample was collected from the Navy outfall discharge point (designated with an "N", i.e. MH-117N) and one sample was collected from the upstream discharge point in the Township offsite storm water sewer (designated with "T", i.e. MH-117T). In addition a surface water sample was collected from the outfall on Township property at Gold Run (GR-OF). The surface water samples were collected to assess VOC concentrations existing in the storm water sewer versus those entering from the Navy outfalls. Surface water sample locations are shown on **Figures 1 and 2**. A sample from MH-125.9 T was not collected. The sample location was dry.

All surface water samples were analyzed at ALS. All samples were analyzed as required by the LTMP protocol for quarterly sampling events. Analyses included VOCs by EPA method 8260B. A summary of the laboratory analytical results for surface water samples is presented in **Table 3** and in a visual schematic on **Figure 3**. NJDEP Surface Water Quality Criteria (SWQC) (N.J.A.C. 7:9B) are included for comparison with the surface water analytical results. The criteria used (unless otherwise noted) are the higher of the PQLs or the SWQC. Chain of Custody sheets are in **Appendix A** and field data sheets are in **Appendix B**.

Sediment Sampling

Sediment samples were collected from four outfalls located on Navy property (OF-1, OF-2, OF-3 and OF-4). All sediment samples were analyzed for mercury by EPA method 245.1. Sediment sample locations are shown on **Figures 1 and 2**. A sample was not collected at OF-2 due to insufficient sediment. A summary of the laboratory analytical results for sediment samples is presented in **Table 4**. NJDEP Non-Residential, Direct Contact, Soil Standards (DC_{NR}) (N.J.A.C. 7:26D) are included for comparison with the sediment analytical results. Chain of Custody sheets are in **Appendix A** and field data sheets are in **Appendix B**.

Quality Assurance/Quality Control (QA/QC) Sampling

As per the ECOR 2005 Quality Assurance Project Plan (QAPP), field and laboratory QA/QC samples were collected during the 2009 Winter Sampling Event. Two types of field QA/QC samples were collected during this event including field blanks (FB) and trip blanks (TB). Since all sampling equipment was disposable, no equipment blanks were necessary. TBs were sent with every shipment of samples to ensure that no cross-contamination occurred during transportation. FBs were collected to determine the ambient background VOC concentration in air during the sample collection process. FB samples were collected at a rate of one per day. TBs were prepared by ALS and submitted at a rate of one per sample cooler. Two types of laboratory QA/QC samples were utilized during this event including matrix spike/matrix spike duplicate (MS/MSD) samples, and blind field duplicate samples (DUP). MS/MSD and DUP samples were collected at a rate of five percent (5%) of the total samples collected per medium.

All QA/QC samples were analyzed for the parameters that correspond to the type of media being sampled. Chain of Custody sheets are in **Appendix A**.

No analytes were detected above the stated detection limit in either the FB or the TB samples during this sampling event.

For DUP samples, the precision between the original sample and its duplicate is evaluated by calculating the relative percent difference (RPD). ECOR has evaluated DUP samples using an acceptance criterion of 20 percent (20%) for detected primary COC. **Table 5** presents the RPDs for groundwater and sediment samples.

All calculated RPDs for 118.5 T and 22 BR are below the 20% criterion. This shows very good correlation between the sample and its duplicate. Though mercury was detected in the duplicate sediment sample at a concentration of 0.20 mg/kg, the RPD for OF-3 cannot be calculated as the original sample was non-detect. This discrepancy is most likely due to the heterogeneous nature of sediment in the catch basin, or to the fact that the value is so close to the laboratory method detection limit and not due to sampling or laboratory error.

Additional Site Activity

Cap repairs were completed as scheduled. Cap repair documentation is included in **Appendix C**. The next sampling event is scheduled for May 2009. The next cap inspection is scheduled for Spring 2009. No additional site activity to report at this time.

Please contact me at 484-887-7510 x 206, or by email at streetsmith@ecor-solutions.com if you have any questions or comments regarding the 2009 Winter Sampling Report.

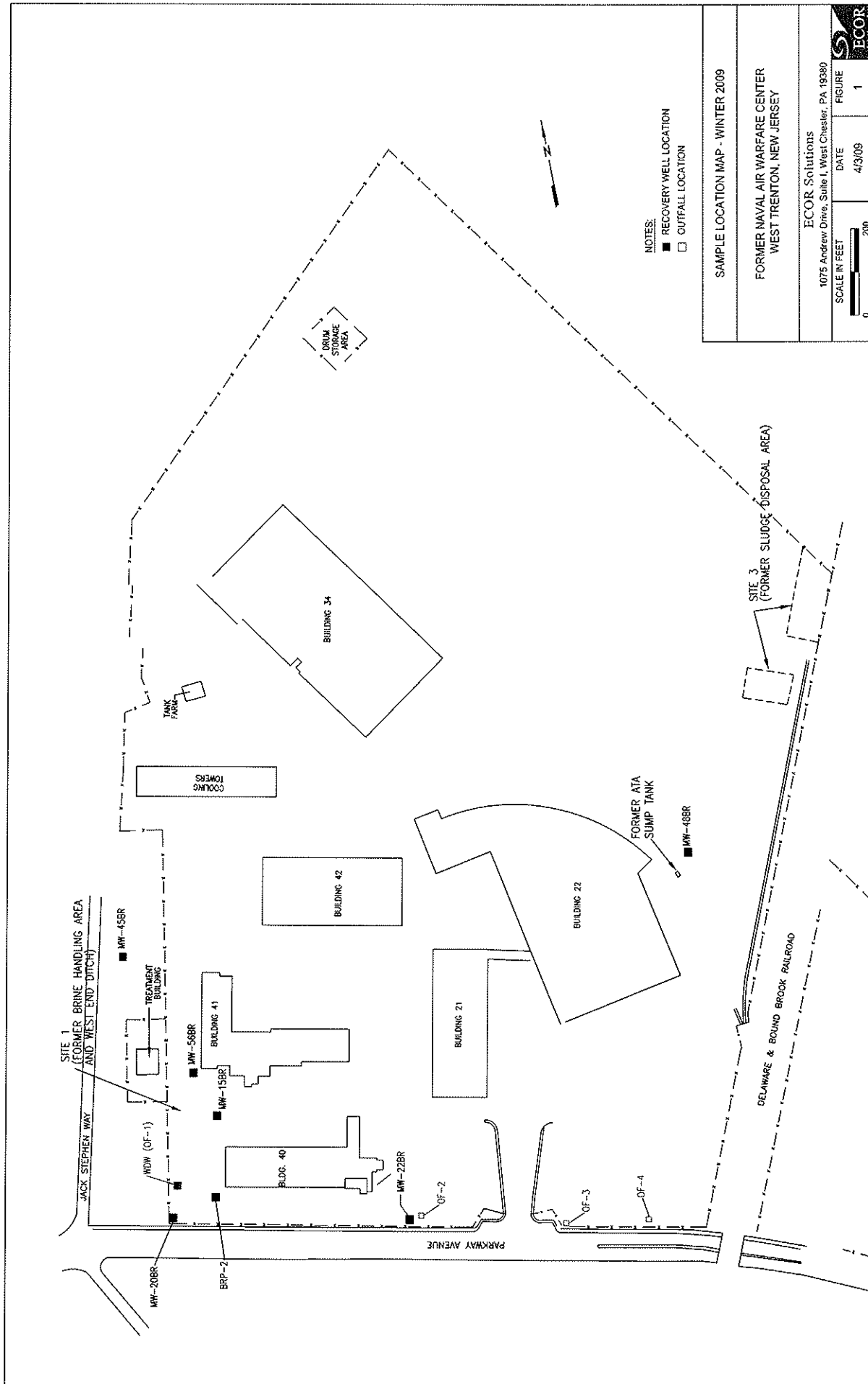
Respectfully Submitted,
ECOR Solutions, Inc.

A handwritten signature in black ink, appearing to read 'D. Streetsmith', with a long horizontal flourish extending to the right.

David M. Streetsmith, P.G.
Project Manager

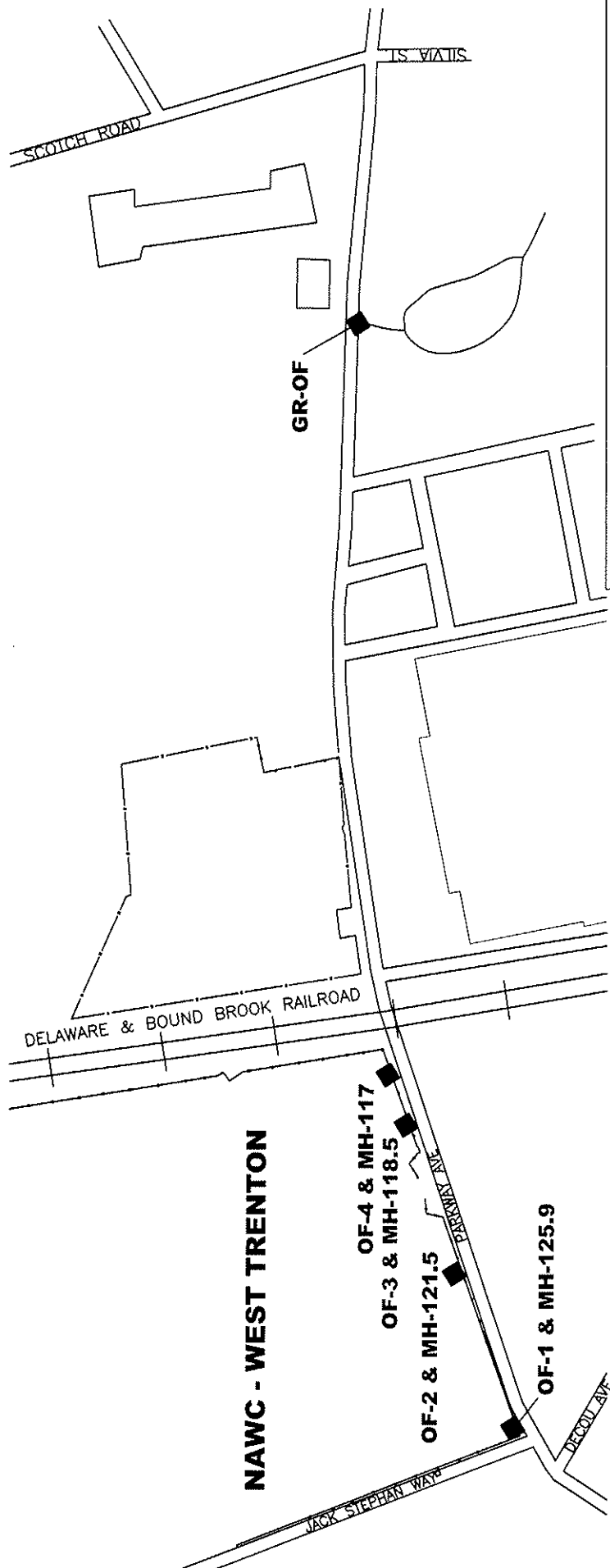
cc: Mr. Pierre Lacombe (USGS) – 2 copies
Ms. Donna L. Gaffigan (NJDEP)
Ms. Marilyn J. Dedyne (GMC)

FIGURES



NOTES

■ SAMPLING LOCATION



SEDIMENT AND SURFACE WATER SAMPLE
LOCATION MAP - WINTER 2009

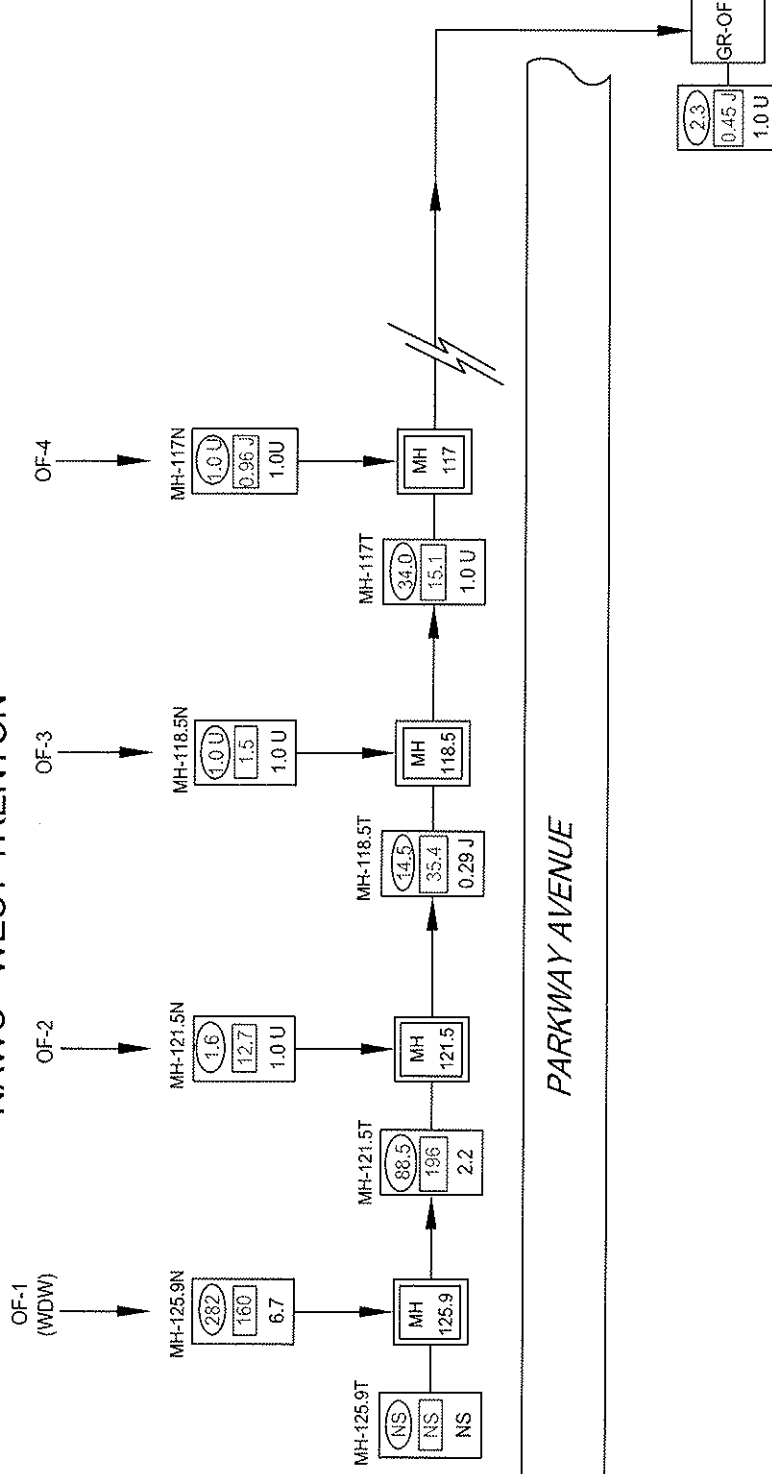
FORMER NAVAL AIR WARFARE CENTER
WEST TRENTON, NEW JERSEY

ECOR Solutions
1075 Andrew Dr. Suite 1, West Chester, PA 19380

1 inch = 365. 5 feet
DATE 4-3-09
FIGURE 2



NAWC - WEST TRENTON



NOTES:

SURFACE WATER SAMPLE

TRICHLOROETHENE
cis-1,2-DICHLOROETHENE
VINYL CHLORIDE

DIRECTION OF WATER FLOW

TOWN STORM SEWER MANHOLE

RESULTS ARE REPORTED IN MICROGRAMS PER LITER

U - INDICATES THE PARAMETER WAS NOT
DETECTED ABOVE THE REPORTED LIMIT
NS - NOT SAMPLED
OF - OUTFALL
WDW - WEST DITCH WELL

SURFACE WATER SAMPLE LOCATION & RESULT
SCHEMATIC - WINTER 2009

FORMER NAVAL AIR WARFARE CENTER
WEST TRENTON, NEW JERSEY

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NOT TO SCALE

DATE
4/3/09

FIGURE
3



TABLES

TABLE 1
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
WINTER 2009
NAWC WEST TRENTON, NEW JERSEY

Sample ID	Date Collected	Chloroform	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
15BR	25-Feb-09	10.0 U	34.8	5,890	50.7	10.0 U	10.0 U	6,030	332
20BR	25-Feb-09	5.0 U	20.7	6,900	31.5	5.0 U	5.0 U	1,220	867
22BR	25-Feb-09	0.55 J	0.81 J	60.8	0.31 J	1.0 U	1.0 U	25.0	1.0 U
DUP-1 (22 BR)	25-Feb-09	0.58 J	0.94 J	63.7	0.31 J	1.0 U	1.0 U	25.0	1.0 U
45BR	25-Feb-09	5.0 U	2.6 J	434	2.1 J	5.0 U	5.0 U	4,090	2.0 J
48BR	25-Feb-09	10.0 U	5.0 J	29.1	10.0 U	10.0 U	5.2 J	726	10.0 U
56BR	25-Feb-09	10.0 U	11.0	1,450	7.5 J	4.1 J	10.0 U	18,600	44.4
BRP2	25-Feb-09	10.0 U	41.3	1,260	73.3	10.0 U	10.0 U	1,430	233
WDW	25-Feb-09	1.0 U	2.7	181	2.7	1.0 U	1.0 U	5,100	1.1
<i>Criteria</i>		70	1	70	100	1	600	1	1

Notes:

All results given in micrograms per liter (µg/L).

Bold = exceeds criteria

J = estimated value

U = compound analyzed for but not detected at the stated detection limit

DUP = duplicate field sample (location of duplicate in parentheses)

Criteria = The New Jersey Department of Environmental Protection (NJDEP) Ground Water Quality Criteria for Class II-A Ground Water (N.J.A.C. 7:9C) updated on 7 November 2005. The criteria used are the Higher of Practical Quantitation Limits (PQLs) or Ground Water Quality Criteria (GWQC).

TABLE 2
WATER QUALITY MEASUREMENTS
WINTER 2009
NAWC WEST TRENTON, NEW JERSEY

WATER QUALITY MEASUREMENTS PRE-SAMPLING								
Sample ID	Date Collected	Time Collected	pH (SU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Temperature (°C)
15BR	25-Feb-09	1012	7.12	0.530	3.04	15.4	-21.3	13.29
20BR	25-Feb-09	848	6.69	0.801	5.30	16.5	-2.7	14.64
22BR	25-Feb-09	908	6.84	0.500	5.29	14.5	13.6	13.03
45BR	25-Feb-09	958	7.43	0.435	1.67	15.8	7.9	12.15
48BR	25-Feb-09	922	7.32	0.341	4.32	14.6	17.6	13.89
56BR	25-Feb-09	1028	7.47	0.522	1.14	-19.2	-38.3	15.10
BRP2	25-Feb-09	835	6.46	0.689	0.74	12.1	44.5	14.87
WDW	25-Feb-09	858	6.79	0.352	13.23	7.8	30.2	5.02
WATER QUALITY MEASUREMENTS POST-SAMPLING								
Sample ID	Date Collected	Time Collected	pH (SU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mV)	Temperature (°C)
15BR	25-Feb-09	1018	7.13	0.530	2.94	14.20	-23.2	13.30
20BR	25-Feb-09	853	6.66	0.808	4.87	15.8	-5.3	13.99
22BR	25-Feb-09	913	6.80	0.500	5.12	13.2	15.4	13.08
45BR	25-Feb-09	1003	7.40	0.433	1.65	14.3	7.4	12.00
48BR	25-Feb-09	928	7.25	0.341	3.80	15.2	16.7	13.90
56BR	25-Feb-09	1033	7.48	0.521	1.09	18.6	-39.9	15.01
BRP2	25-Feb-09	840	6.52	0.690	0.70	11.5	39.5	14.93
WDW	25-Feb-09	903	6.61	0.352	13.12	6.9	31.1	5.03

Notes:

mS/cm = milliSiemens per centimeter

mg/L = milligrams per liter

NTU = nephelometric turbidity units

ORP = oxidation reduction potential

mV = millivolt

°C = degrees Celsius

SU = standard units

TABLE 3
SUMMARY OF SURFACE WATER ANALYTICAL RESULTS
WINTER 2009
NAWC WEST TRENTON, NEW JERSEY

Sample ID	Date Collected	Acetone	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Vinyl Chloride
GR-OF	25-Feb-09	9.5 J	1.0 U	0.45 J	1.0 U	1.0 U	2.3	1.0 U
MH-117N	25-Feb-09	10.0 U	1.0 U	0.96 J	1.0 U	1.0 U	1.0 U	1.0 U
MH-117T	25-Feb-09	10.0 U	1.0 U	15.1	1.0 U	1.0 U	34.0	1.0 U
MH-118.5N	25-Feb-09	10.0 U	1.0 U	1.5	1.0 U	1.0 U	1.0 U	1.0 U
MH-118.5T	25-Feb-09	10.0 U	1.0 U	35.4	1.0 U	1.0 U	14.5	0.29 J
DUP-2 (118.5 T)	25-Feb-09	10.0 U	1.0 U	36.4	1.0 U	1.0 U	15.1	0.25 J
MH-121.5N	25-Feb-09	10.0 U	1.0 U	12.7	1.0 U	1.0 U	1.6	1.0 U
MH-121.5T	25-Feb-09	10.0 U	1.1	196	1.1	0.38 J	88.5	2.2
MH-125.9N	25-Feb-09	10.0 U	1.4	160	1.6	1.0 U	282	6.7
<i>Criteria</i>		<i>NSE</i>	<i>4.7</i>	<i>NSE</i>	<i>590</i>	<i>120</i>	<i>1.0</i>	<i>0.082</i>

Notes:

Criteria = The New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Criteria for Class FW2 Surface Water (N.J.A.C. 7:9B-1.14(c)) updated in June 2005. The criteria used are the Higher of Practical Quantitation Limits (PQLs) or Surface Water Quality Criteria (SWQC).

All results given in micrograms per liter (µg/L).

Bohd = exceeds criteria

J = estimated value

U = compound analyzed for but not detected at the stated detection limit

DUP = duplicate field sample (location of duplicate in parentheses)

NSE = no standard established

TABLE 4
SUMMARY OF SEDIMENT ANALYTICAL RESULTS
WINTER 2009
NAWC WEST TRENTON, NEW JERSEY

Sample ID	Date Collected	Total Mercury	Moisture (%)	Total Solids (%)
OF-1	25-Feb-09	1.6	85.3	14.7
OF-2	NA	NC	NC	NC
OF-3	25-Feb-09	0.12 U	23.1	76.9
DUP-3 (OF-3)	25-Feb-09	0.20	43.3	56.7
OF-4	25-Feb-09	0.11 U	25.4	74.6
<i>Criteria</i>		<i>0.20</i>	<i>NSE</i>	<i>NSE</i>

Notes:

Criteria = NJDEP non-residential direct contact remediation soil standards

All results given in mg/Kg = milligrams per kilogram

Bold = exceeds criteria

% = percent

NSE = no standard established

DUP = duplicate field sample (location of duplicate in parentheses)

NA = not available

NC = not collected, insufficient sediment

U = compound analyzed for but not detected at the stated detection limit

TABLE 5
QA/QC SUMMARY RESULTS
WINTER 2009
NAWC WEST TRENTON, NEW JERSEY

RPD CALCULATIONS

Sample ID	Duplicate Sample ID	cis-1,2-DCE			TCE			Vinyl Chloride			Mercury	
		Sample	Duplicate	RPD	Sample	Duplicate	RPD	Sample	Duplicate	RPD	Sample	Duplicate
22 BR	DUP-1	60.8	63.7	5	25	25	0	1.0 U	1.0 U	NA	NA	NA
118.5 T	DUP-2	35.4	36.4	3	14.5	15.1	4	0.29	0.25	15	NA	NA
OF-3	DUP-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.12 U	0.20

Notes:

All results given in micrograms per liter (µg/L).

J = estimated value

NA = Not Applicable

cis-1,2-DCE = cis-1,2-Dichloroethene

TCE = Trichloroethene

APPENDIX A
CHAIN OF CUSTODY DOCUMENTATION
FEBRUARY 2009
WINTER SAMPLING EVENT



ANALYTICAL LABORATORY SERVICES, INC.

www.analyticallab.com

NELAP Accredited
PA 22-293 NJ PA010



34 Dogwood Lane - Middletown, PA 17057 Phone: 717-944-5541 Fax: 717-944-1430



Page 1 of 3

Customer:

Tracking #

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SAMPLES MUST BE SECURED BY THE
CLIENT AND KEPT INSTRUCTIONS ON THE BAG

Analytical
Laboratory Services, Inc.
Environmental • Industrial Hygiene • Field Services

34 Dogwood Lane • Middletown, PA 17057 • Tel: 717-944-5541 • Fax: 717-944-1430

Co. Name: ECR Solutions, Inc.

Contact Person: D. Street Smith

Address: 21 S. High St., 2nd Floor
West Chester, PA 19382

Phone: 484-887-7570

Bill To (if different than Project To):

PO#: NO150.123

Project Name: MWDAL TMDL JULY LTM ALSI Quote #:

TAT: ☒ Normal Standard TAT is 10-12 business days.

Test: ☐ Test Subject to ALSI approval and surcharges.

Event: ☐ ☐ ☐

Fact: ☐ ☐ ☐

Sample Description/Location

CC Comments

Sample Date

Sample Time

Enter Number of Containers Per Analysis

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Analytical
Laboratory Services, Inc.
Environmental • Industrial Hygiene • Field Services

24 DuPont Lane • Middletown, PA 17057 • Tel: 717.564.5511 • Fax: 717.564.1403

Co. Name: Ecol Solutions, Inc.

Contact Person: D. Sweet-smith

Address: 21 S. High St., 2nd Floor
West Chester, PA 19382

Phone: 484-883-7572

Bill to different than Report to:

PO#: 10150.103

Project Name: NRIAC Trench Daily LTM ALSI Quota #:

Formal Standard TAT: 14-12 business days

Rush Subject to ALSI approval and surcharges.

Date Requested:

Approved By:

Emitted: ☐ Y ☐ N
Factor: ☐ Y ☐ N

Sample Description: Location
(as it will appear on the lab report)

COC Consents

Sample Date

Maternity Time

1 DWP-1

2 DWP-2

3 FB-1

4 TB-1

5 OF-4

6 OF-3

7 OF-1 (WDW)

8 DWP-3

SAMPLED BY (Please Print):

J. Broad G. G. G. G.

Received By / Company Name

2/16/04 10:10

2/16/04 12:15

2/16/04 19:12

2/16/04 19:12

2/16/04 19:12

2/16/04 19:12

CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS

ALL SAMPLE AREAS MUST BE COMPLETED BY THE
CLIENT SAMPLED PERSON'S OFFICE BACK

Page 3 of 3

Order:

Tracking #:

0086666666

Customer Name: CG AG
Customer Address: 4444 St.
Customer City: WIL
Customer State: PA
Customer Zip: 19101

ANALYSIS METHOD REQUESTED

Enter Number of Containers Per Analysis

Matrix

Mercury

VOCS (82605)

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APPENDIX B
FIELD DATA SHEETS
FEBRUARY 2009
WINTER SAMPLING EVENT

STORMWATER AND SEDIMENT SAMPLING FIELD LOG

Site: NAWC Trenton NJ

Date: 2/25/2009

Weather: clear, breezy, ~35°F
Personnel: JG, GF

STORMWATER SAMPLING

Sample Location	Date	Time	Duplicate (Y/N)	MS/MSD (Y/N)	Est. Flow (gpm)
GR-OF	2/25/09	1050	N	N	30
MH-117N		1110	N	N	15
MH-117T		1115	N	N	15
MH-118.5N		1125	N	N	5
MH-118.5T		1130	N	N	10
MH121.5N		1140	N	N	7
MH121.5T		1145	N	N	3
MH125.9N		1150	N	N	0
MH125.9T		DRY			0

Comments

DUP-2, MS/MSD collected @ MH-118.5T

SEDIMENT SAMPLING

Sample Location	Date	Time	Duplicate (Y/N)	MS/MSD (Y/N)	Est. Flow (gpm)
OF-4	2/25/09	1155	Y	Y	-
OF-3		1200	N	N	-
OF-2	No SED-VACED	1205	N	N	-
OF-1 (West Ditch)	CLEAN	1205	N	N	-

Comments

DUP-3, MS/MSD collected @ OF-4

Notes: Samples should be collected from downstream to upstream in the order above.
GR-OF should be collected from the west outfall which is fed from the upstream locations.

NO SED
VACED
CLEAN

ACTIVE RECOVERY (EXTRACTION) WELL SAMPLING FIELD LOG

Site: NAWC Trenton NJ Well ID MW-15BR

Conditions sunny, 30°F Date 2/25/2009

Parameter	1	2	3	4	5
Time	1012	1018			
Depth to Water (ft)					
pH	7.12	7.13			
Cond. (µS/cm)	0.530	0.530			
Dis. Oxygen (mg/L)	3.04	2.94			
Turbidity (NTU)	15.4	14.2			
ORP (mV)	-21.3	-23.2			
Temperature (°C)	13.29	13.30			

Sample Collection

Sampling Date 2/25/2009 Sample ID MW-15BR
 Sampling Time 1015 Duplicate Collected (Y/N) N
 Samplers JG, GF MS/MSD (Y/N) N

Sample Analysis	Preservative	Container Requirements	Collected
VOCs (8260B)	HCl	40 mL CG	2

Comments

Totalizer = 235870.15
 Flow Rate = 5.6

ACTIVE RECOVERY (EXTRACTION) WELL SAMPLING FIELD LOG

Site: NAWC Trenton NJ Well ID MW-20BR
 Conditions clear, breezy, ~30°F Date 2/25/2009

Parameter	1	2	3	4	5
Time	0848	0853			
Depth to Water (ft)	9.62				
pH	6.69	6.60			
Cond. (µS/cm)	0.801	0.808			
Dis. Oxygen (mg/L)	5.30	4.87			
Turbidity (NTU)	16.5	15.8			
ORP (mV)	-2.7	-5.3			
Temperature (°C)	14.64	13.99			

Sample Collection

Sampling Date 2/25/2009 Sample ID MW-20BR
 Sampling Time 0850 Duplicate Collected (Y/N) N
 Samplers JG, GF MS/MSD (Y/N) N

Sample Analysis	Preservative	Container Requirements	Collected
VOCs (8260B)	HCl	40 mL CG	2

Comments

Totalizer = 16395605
 Flow Rate = 10 Plus notes not working

ACTIVE RECOVERY (EXTRACTION) WELL SAMPLING FIELD LOG

Site: **NAWC Trenton NJ** Well ID: MW-22 BK
 Conditions: clear, ~70°F Date: 2/25/2009

Parameter	1	2	3	4	5
Time	0908	0913			
Depth to Water (ft)	25.15				
pH	6.84	6.80			
Cond. (µS/cm)	0.500	0.500			
Dis. Oxygen (mg/L)	5.29	5.12			
Turbidity (NTU)	14.5	13.2			
ORP (mV)	13.6	15.4			
Temperature (°C)	13.03	13.08			

Sample Collection

Sampling Date: 2/25/2009
 Sampling Time: 0910
 Samplers: JG, GF

Sample ID: MW-22 BK
 Duplicate Collected (Y/N): N (CDUP-1)
 MS/MSD (Y/N): N

Sample Analysis	Preservative	Container Requirements	Collected
VOCs (8260B)	HCl	40 mL CG	2 x 4 = 8

Comments

Totalizer = 434 23010
 Flow Rate = 10.0

ACTIVE RECOVERY (EXTRACTION) WELL SAMPLING FIELD LOG

Site: NAWC Trenton NJ

Well ID

MW-45BR

Conditions

Clear, no rain

Date

2/25/2009

Parameter	1	2	3	4	5
Time	0958	1003			
Depth to Water (ft)	2.20				
pH	7.43	7.40			
Cond. (µS/cm)	0.435	0.433			
Dis. Oxygen (mg/L)	1.67	1.65			
Turbidity (NTU)	15.8	14.3			
ORP (mV)	7.9	7.4			
Temperature (°C)	18.15	12.00			

Sample Collection

Sampling Date 2/25/2009

Sample ID

MW-45BR

Sampling Time

1000

Duplicate Collected (Y/N)

N

Samplers

JG, GF

MS/MSD (Y/N)

N

Sample Analysis	Preservative	Container Requirements	Collected
VOCs (8260B)	HCl	40 mL CG	2

Comments

Totalizer = 34329110

Flow Rate = 7.0

MW 30BR

13.55

ACTIVE RECOVERY (EXTRACTION) WELL SAMPLING FIELD LOG

Site: NAWC Trenton NJ

Well ID MW-48BR

Conditions clear, ~30°F

Date 2/25/2009

Parameter	1	2	3	4	5
Time	0922	0928			
Depth to Water (ft)	1.85				
pH	7.32	7.25			
Cond. (µS/cm)	0.311	0.341			
Dis. Oxygen (mg/L)	4.32	3.80			
Turbidity (NTU)	14.6	15.2			
ORP (mV)	17.6	16.7			
Temperature (°C)	13.84	13.90			

Sample Collection

Sampling Date 2/25/2009

Sample ID MW-48BR

Sampling Time 0925

Duplicate Collected (Y/N) N

Samplers JG, GF

MS/MSD (Y/N) N

Sample Analysis	Preservative	Container Requirements	Collected
VOCs (8260B)	HCl	40 mL CG	2

Comments

Totalizer = 406339.0

Flow Rate = 13.0

ACTIVE RECOVERY (EXTRACTION) WELL SAMPLING FIELD LOG

Site: NAWC Trenton NJ Well ID MW-56BR
 Conditions Sunny, ~30°F Date 2/25/2009

Parameter	1	2	3	4	5
Time	1028	1033			
Depth to Water (ft)					
pH	7.47	7.48			
Cond. (μS/cm)	0.522	0.521			
Dis. Oxygen (mg/L)	1.14	1.09			
Turbidity (NTU)	19.2	18.6			
ORP (mV)	-38.3	-39.9			
Temperature (°C)	15.10	15.10			

Sample Collection

Sampling Date 2/25/2009 Sample ID MW-56BR
 Sampling Time 1030 Duplicate Collected (Y/N) N
 Samplers JG, GF MS/MSD (Y/N) N

Sample Analysis	Preservative	Container Requirements	Collected
VOCs (8260B)	HCl	40 mL CG	2

Comments

Totalizer = 206307.5
 Flow Rate = 0.2

ACTIVE RECOVERY (EXTRACTION) WELL SAMPLING FIELD LOG

Site: NAWC Trenton NJ

Well ID BRP-2

Conditions clear, bright, ~30°F

Date 2/25/2009

Parameter	1	2	3	4	5
Time	0835	0840			
Depth to Water (ft)	9.10				
pH	6.46	6.52			
Cond. (μS/cm)	0.689	0.690			
Dis. Oxygen (mg/L)	0.74	0.70			
Turbidity (NTU)	12.1	11.5			
ORP (mV)	44.5	39.5			
Temperature (°C)	14.82	14.93			

Sample Collection

Sampling Date 2/25/2009

Sample ID BRP-2

Sampling Time 0838

Duplicate Collected (Y/N) N

Samplers JG, GF

MS/MSD (Y/N) N

Sample Analysis	Preservative	Container Requirements	Collected
VOCs (8260B)	HCl	40 mL CG	2

Comments

Totalizer = 0423460

Flow Rate = 2 Plus meter not working

ACTIVE RECOVERY (EXTRACTION) WELL SAMPLING FIELD LOG

Site: NAWC Trenton NJ Well ID WDW

Conditions clear, ~30°F Date 2/25/2009

Parameter	1	2	3	4	5
Time	0858	0903			
Depth to Water (ft)					
pH	6.79	6.61			
Cond. (µS/cm)	0.352	0.352			
Dis. Oxygen (mg/L)	13.23	13.12			
Turbidity (NTU)	7.8	6.9			
ORP (mV)	32.2	31.1			
Temperature (°C)	50.2	50.3			

Sample Collection

Sampling Date 2/25/2009 Sample ID WDW
 Sampling Time 0900 Duplicate Collected (Y/N) N
 Samplers JG, GF MS/MSD (Y/N) N

Sample Analysis	Preservative	Container Requirements	Collected
VOCs (8260B)	HCl	40 mL CG	2

Comments

Totalizer = 112346.0
 Flow Rate = 6.0

APPENDIX C
CAP REPAIR DOCUMENTATION

Monitoring Well Inspection Checklist
Naval Air Warfare Center
West Trenton, New Jersey
June 2009

Monitoring Well	Type of Protective Casing Cap and Lock and Condition "good or poor"	Surface Seal and Condition	Condition of Well Alignment	Inspection Comments	Acceptable Condition "Yes or No"
01S	Stickup / Good	concrete / Good	Good		Yes
02S	NA	NA	NA		NA
04S	Stickup / Good	concrete / Good	Good		Yes
06S	NA	NA	NA		NA
11S	Stickup / Good	concrete / Good	Good	Replaced Lock	Yes
12S	Stickup / Good	concrete / Poor	Good	Replaced concrete pad and lock	Yes
13S	Flush Mount / Good	concrete / Good	Good		Yes
14S	Stickup / Good	concrete / Good	Good		Yes
16S	Stickup / Poor	concrete / Good	Good	Gripper cap replaced	Yes
17S	Flush Mount / Good	concrete / Good	Good		Yes
18S	Flush Mount / Good	concrete / Good	Good		Yes
19S	Flush Mount / Good	concrete / Good	Good		Yes
20S	Flush Mount / Good	concrete / Good	Good		Yes
23S	Flush Mount / Good	concrete / Good	Good		Yes
24S	Stickup / Good	concrete / Good	Good		Yes
25S	Flush Mount / Good	concrete / Good	Good		Yes
26S	Flush Mount / Good	concrete / Good	Good		Yes
27S	Flush Mount / Good	concrete / Good	Good		Yes
28S	Stickup / Good	concrete / Good	Good		Yes
29S	Flush Mount / Good	concrete / Good	Good		Yes
30S	Flush Mount / Good	concrete / Good	Good		Yes
31S	Vault / Good	concrete / Good	Good		Yes
32S	Flush Mount / Good	concrete / Good	Good		Yes
33S	Flush Mount / Good	concrete / Good	Good		Yes
34S	Stickup / Poor	concrete / Good	Good	Replaced lock	Yes
35S	Stickup / Good	concrete / Good	Good		Yes
36S	Flush Mount /	concrete /	NA	Buried under pile of dirt and debris	NA
37S	Flush Mount / Good	concrete / Good	Good		Yes
39S	NA	NA	NA		NA

Monitoring Well Inspection Checklist
Naval Air Warfare Center
West Trenton, New Jersey
June 2009

Monitoring Well	Type of Protective Casing Cap and Lock and Condition "good or poor"	Surface Seal and Condition	Condition of Well Alignment	Inspection Comments	Acceptable Condition "Yes or No"
40S	Flush Mount / Good	concrete / Good	Good		Yes
41S	Flush Mount / Good	concrete / Good	Good		Yes
42S	Flush Mount / Good	concrete / Good	Good		Yes
43S	NA	NA	NA		NA
44S	NA	NA	NA		NA
45S	NA	NA	NA		NA
46S	NA	NA	NA		NA
47S	NA	NA	NA		NA
11MW-1	Stickup / Good	concrete / Good	slight bend		Yes
35MW-1	Stickup / Good	concrete / Good	Good		Yes
35MW-2	Stickup / Good	concrete / Good	Good		Yes
BRP01	Vault / Good	concrete / Good	Good		Yes
BRP02	Vault / Good	concrete / Good	Good		Yes
BRP03	Stickup / Good	concrete / Good	Good	Open for USGS equipment	Yes
02BR	Flush Mount / Poor	concrete / Good	Good	New gripper and lock	Yes
03BR	Stickup / Good	concrete / Good	Good		Yes
04BR	Stickup / Good	concrete / Good	Good		Yes
05BR	Vault / Good	concrete / Good	Good		Yes
06BR	Stickup / Good	concrete / Good	Good		Yes
07BR	Flush Mount / Good	concrete / Good	Good		Yes
08BR	Vault / Good	concrete / Good	Good		Yes
09BR	Stickup / Good	concrete / Good	Good		Yes
10BR	Stickup / Good	Grass / Good	Good		Yes
11BR	Stickup / Good	concrete / Good	Good		Yes
12BR	Flush Mount / Good	concrete / Good	Good		Yes
13BR	Flush Mount /	concrete /	Good		Yes
14BR	Stickup / Good	concrete / Good	Good		Yes
15BR	Vault / Good	concrete / Good	Good		Yes
16BR	Vault / Good	asphalt / Good	Good		Yes

Monitoring Well Inspection Checklist
Naval Air Warfare Center
West Trenton, New Jersey
June 2009

Monitoring Well	Type of Protective Casing Cap and Lock and Condition "good or poor"	Surface Seal and Condition	Condition of Well Alignment	Inspection Comments	Acceptable Condition "Yes or No"
17BR	Stickup / Good	concrete / Good	Good		Yes
18BR	Stickup / Good	asphalt / Good	Good		Yes
19BR	Stickup / Good	asphalt / Good	Good		Yes
20BR	Vault / Good	concrete / Good	Good		Yes
21BR	Stickup / Good	concrete / Good	Good		Yes
22BR	Vault / Good	concrete / Good	Good	Open for USGS equipment	Yes
23BR	Stickup / Good	concrete / Good	Good	Open for USGS equipment	Yes
24BR	Flush Mount / Good	concrete / Good	Good		Yes
25BR	Flush Mount / Good	concrete / Good	Good		Yes
26BR	Stickup / Good	concrete / Good	Good		Yes
27BR	Stickup / Good	concrete / Good	Good		Yes
28BR	Stickup / Good	concrete / Good	Good		Yes
29BR	Vault / Good	concrete / Good	Good		Yes
30BR	Stickup / Good	concrete / Good	Good		Yes
31BR	Stickup / Good	concrete / Good	Good		Yes
32BR	Stickup / Good	concrete / Good	Good		Yes
33BR	Stickup / Good	Grass / Good	Good		Yes
34BR	Flush Mount / Good	concrete / Good	Good		Yes
35BR	Flush Mount / Good	concrete / Good	Good		Yes
36BR	Stickup / Good	concrete / Good	Good	Open for USGS equipment	Yes
37BR	Stickup / Good	concrete / Good	Good		Yes
38BR	Stickup / Good	concrete / Good	Good	Open for USGS equipment	Yes
39BR	Flush Mount / Poor	concrete / Good	Good	New gripper and lock	Yes
40BR	Flush Mount / Good	concrete / Good	Good		Yes
41BR	Vault / Good	concrete / Good	Good		Yes
42BR	Flush Mount / Poor	concrete / Good	Good	New lock	Yes
43BR	Stickup / Good	concrete / Good	Good		Yes
44BR	Stickup / Good	concrete / Good	Good		Yes
45BR	Vault / Good	concrete / Good	Good		Yes

Monitoring Well Inspection Checklist
Naval Air Warfare Center
West Trenton, New Jersey
June 2009

Monitoring Well	Type of Protective Casing Cap and Lock and Condition "good or poor"	Surface Seal and Condition	Condition of Well Alignment	Inspection Comments	Acceptable Condition "Yes or No"
46BR	Stickup / Good	concrete / Good	Good		Yes
47BR	Stickup / Poor	concrete / Good	Good	Open for USGS equipment	Yes
48BR	Vault / Good	concrete / Good	Good		Yes
49BR	Flush Mount / Good	concrete / Good	Good		Yes
50BR	Stickup / Good	concrete / Good	Good		Yes
51BR	Stickup / Poor	concrete / Good	Good	New lock	Yes
52BR	Flush Mount / Poor	concrete / Good	Good	New gripper and lock	Yes
53BR	Flush Mount / Poor	concrete / Good	Good	New gripper and lock	Yes
54BR	Flush Mount / Good	concrete / Good	Good		Yes
55BR	Stickup / Good	concrete / Good	Good		Yes
56BR	Vault / Good	concrete / Good	Good		Yes
57BR	Stickup / Good	concrete / Good	Good		Yes
58BR	Stickup / Good	concrete / Good	Good		Yes
59BR	Stickup / Good	concrete / Good	Good		Yes
60BR	Flush Mount / Good	concrete / Good	Good		Yes
61BR	Flush Mount / Poor	concrete / Good	Good	New gripper and lock	Yes
62BR	Flush Mount / Good	concrete / Good	Good		Yes
63BR	Flush Mount / Poor	concrete / Good	Good	New gripper and lock	Yes
64BR	Flush Mount / Good	concrete / Good	Good		Yes
65BR	Flush Mount / Good	concrete / Good	Good		Yes
66BR	Flush Mount / Good	concrete / Good	Good		Yes
68BR	Stickup / Good	concrete / Good	Good		Yes
12MW1	Flush Mount / Good	concrete / Good	Good		Yes

Note:
NA = Not Applicable
Bold indicates action required