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NAS PENSACOLA
5090.3a

CONTAMINATION ASSESSMENT REPORT ADDENDUM SITE 1140NW OUTLYING LANDING FIELD BRONSON NAS PENSACOLA FL
12/3/1998
NAVY PUBLIC WORKS CENTER

CONTAMINATION ASSESSMENT REPORT ADDENDUM

U.S. NAVY OUTLYING LANDING FIELD (OLF) BRONSON
SITE 1140-NW
PENSACOLA, FLORIDA

PREPARED BY:

NAVY PUBLIC WORKS CENTER
NAS ENVIRONMENTAL DEPARTMENT, BLDG 1754
PENSACOLA, FLORIDA 32508-6500

AUTHOR:
GREGORY ALLEN CAMPBELL, P. E.

NOVEMBER 1998

PREPARED FOR:

SOUTHERN DIVISION NAVAL FACILITIES
ENGINEERING COMMAND
2155 EAGLE DR. P.O. BOX 190010
NORTH CHARLESTON, SOUTH CAROLINA 29418

BYAS GLOVER, CODE 18410, ENGINEER-IN-CHARGE

CONTAMINATION ASSESSMENT REPORT ADDENDUM

U.S. NAVY OUTLYING LANDING FIELD (OLF) BRONSON
SITE 1140-NW
PENSACOLA, FLORIDA

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PROFESSIONAL REVIEW CERTIFICATION

The Contamination Assessment Report Addendum contained in this report was prepared using sound, hydrogeologic principles and judgement. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are determined to exist that differ from those described, the undersigned engineer should be notified to evaluate the effects of any additional information on the assessment described in this report. This Contamination Assessment Report Addendum was developed for the U.S. Navy Outlying Landing Field (OLF) Bronson, Site 1140-NW, Pensacola, Flordia, and should not be construed to apply to any other site.

Gregory Allen Campbell
Professional Engineer
P.E. No. 38572

12/3/98
Date

DEPARTMENT OF THE NAVY
NAVY PUBLIC WORKS CENTER
310 JOHN TOWER ROAD
PENSACOLA, FLORIDA 32508-5303

IN REPLY REFER TO
5090
Ser 00500/0076
2 DEC 98

Mr. John Mitchell, Remedial Project Manager
Florida Department of Environmental Protection
Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: CONTAMINATION ASSESSMENT REPORT ADDENDUM (CARA), U.S. NAVY OUTLYING FIELD (OLF) BRONSON, SITE 1140-NW, PENSACOLA, FLORIDA

Dear Mr. Mitchell:

This letter is in reference to your July 7, 1997, letter addressing comments to the Contamination Assessment Report (CAR) and Monitoring Only Plan (MOP) dated June 1997, for the U.S. Navy Outlying Field (OLF), Bronson, Site 1140-NW, Pensacola, Florida. Per your request, this CAR Addendum is in response to your comments as summarized below:

COMMENT 1: In order to have more current information with which to determine appropriate remedial actions and to determine if concentrations have decreased since the previous sampling event, monitoring wells MW-1, MW-2, MW-3, MW-4 and MW-9 should be resampled and analyzed for EDB, TPH and polynuclear aromatic hydrocarbons.

RESPONSE: Groundwater samples were collected from monitoring wells MW-1, MW-2, MW-4 and MW-9 on July 30, 1998, and analyzed for EDB, TPH and polynuclear aromatic hydrocarbons. A copy of the groundwater analytical results for monitoring wells MW-1, MW-2, MW-4 and MW-9 is shown in Appendix A. No groundwater samples were collected from MW-3 because the well was destroyed during a beautification project at the site. The project removed cement pavement at the site using a front end loader and inadvertently damaged monitoring well MW-3. In addition, monitoring well MW-7 was destroyed during the beautification project.

Summary tables of the PAH (Table I), TRPH and EDB (Table II) analytical results for monitoring wells MW-1, MW-2, MW-4 and MW-9 are included in Appendix B. The summary tables include analytical results from groundwater samples collected during the initial CAR to assist in determining if concentrations have increased or decreased in monitoring wells since the previous sampling events. No groundwater from monitoring well MW-1 was collected or analyzed during previous sampling events, therefore, no comparison is made in this report of past and present analytical data for monitoring well MW-1.

Groundwater collected and analyzed from monitoring wells MW-1, MW-2, MW-4 and MW-9 on July 30, 1998, indicated contamination levels of fluorene in monitoring well MW-1 of 2 ppb which is well below the groundwater cleanup target level of 280 ppb for fluorene. Contamination levels of fluorene in monitoring wells MW-2, MW-4 and MW-9 were below detection limits. Contamination levels of fluorene in prior groundwater samplings of monitoring wells MW-2, MW-3, MW-4 and MW-9 were below detection limits. 1-Methylnaphthalene was detected in groundwater samples collected from monitoring wells MW-1 and MW-9 on July 30, 1998, at concentration levels of 6 ppb and 7 ppm, respectively. Contamination levels of 1-methylnaphthalene in monitoring wells MW-2 and MW-4 were below detection limits. Contamination levels of 1-methylnaphthalene in prior groundwater samplings of monitoring wells MW-2, MW-4 and MW-9 were below detection limits and 350 ppb in MW-3. 2-Methylnaphthalene was detected in groundwater samples collected from monitoring wells MW-1 and MW-9 on July 30, 1998, at concentration levels of 10 and 18 ppb, respectively. Contamination levels of 2-methylnaphthalene in monitoring wells MW-2 and MW-4 were below detection limits. Contamination levels of 2-methylnaphthalene in prior groundwater samplings of monitoring wells MW-2, MW-3, MW-4 and MW-9 were BDL, 520 ppb, BDL and BDL, respectively. The Florida Department of Environmental Protection (FDEP) groundwater cleanup target levels for 1-methylnaphthalene and 2-methylnaphthalene are not specified in Table V of FDEP 62-770. Naphthalene was detected in the groundwater sample collected from monitoring well MW-9 on July 30, 1998, at a concentration of 10 ppb which is below the FDEP groundwater cleanup target level of 20 ppb for naphthalene. Naphthalene levels in monitoring wells MW-1, MW-2 and MW-4 were below detection limits. Contamination levels of naphthalene in prior groundwater samplings of monitoring wells MW-2, MW-3, MW-4 and MW-9 were BDL, 190 ppb, BDL and BDL, respectively. Phenanthrene was not detected in monitoring wells MW-1, MW-2, MW-4 or MW-9 during the July 30, 1998, sampling event. Phenanthrene was only detected in monitoring well MW-3 (33 ppb) during the CAR sampling event. In summary, PAHs detected in monitoring wells MW-1, MW-2, MW-4 and MW-9 during the July 30, 1998, sampling event were all below the FDEP groundwater cleanup target levels. Monitoring well MW-9 was the only well with an increased concentration of PAHs (7 ppb, 18 ppb, 10 ppb, for 1-methylnaphthalene, 2-methylnaphthalene and naphthalene, respectively) since the previous sampling events.

Groundwater samples collected and analyzed from monitoring wells MW-1, MW-2, MW-4 and MW-9 on July 30, 1998, indicated contamination levels of EDBs were below detection limits. Previous sampling events for EDBs in monitoring wells MW-2, MW-3, MW-4 and MW-9 detected contamination levels of 0.12 ppb, 0.03 ppb, 0.11 ppb and BDL, respectively. Groundwater samples collected and analyzed for TRPHs from monitoring wells MW-1, MW-2, MW-4 and MW-9 on July 30, 1998, indicated contamination levels of 280 ppb, BDL, BDL and BDL, respectively. The TRPH

contamination level of 280 ppb is well below the FDEP groundwater cleanup target level of 5000 ppb for TRPH. Previous sampling events for TRPH in monitoring wells MW-1, MW-2, MW-3, MW-4 and MW-9 detected contamination levels of BDL, 1900 ppb, 11000 ppb, BDL and BDL, respectively. In summary, EDBs and TRPHs detected in monitoring wells MW-1, MW-2, MW-4 and MW-9 during the July 30, 1998, sampling event were all below the FDEP groundwater cleanup target levels. Monitoring well MW-1 was the only well with an increased TRPH concentration (7/30/88, 280 ppb) since the previous sampling events (5/23/96, BDL). Monitoring well MW-2 had a decreased concentration of TRPH (7/30/98, BDL), (4/11/96, 1900 ppb) and EDB (7/30/98, BDL), (4/11/98, 0.12 ppb) since the previous sampling events and MW-4 had decreased concentration of EDB (7/30/98, BDL) (4/11/96, 0.11 ppb) since the previous sampling events.

COMMENT 2: If the above sampling and analyses confirm EDB concentrations in monitoring wells in excess of the Department's primary groundwater stand (.02 ug/L), water table monitoring wells should be placed 20' west (downgradient) of MW-4 and 30' east (upgradient) of MW-2. These wells should be sampled and analyzed for EDB.

RESPONSE: Monitoring wells MW-15 and MW-16 were installed at Site 1140-NW on April 28, 1998. Monitoring well MW-15 was placed 20' west (downgradient) of MW-4 and MW-16 was placed 30' east (upgradient) of MW-2. A Monitoring Well Location Map for Site 1140-NW showing the location of all monitoring wells currently at the site is included in Appendix C (Figure 1). The lithological logs and construction diagrams of monitoring wells MW-15 and MW-16 are included in Appendix D. Groundwater sampling and analyses performed on MW-1, MW-2, MW-4, MW-9, MW-15 and MW-16 indicated EDB concentrations were below detection limits.

COMMENT 3: A monitoring well should be place approximately 40 feet southwest of MW-2. This well should be sampled and analyzed for EDB, TPH and polynuclear aromatic hydrocarbons.

RESPONSE: Monitoring well MW-14 was installed at Site 1140-NW on April 28, 1998. Monitoring well MW-14 was placed approximately 40 feet southwest of MW-2. A Monitoring Well Location Map for Site 1140-NW showing the location of all monitoring wells currently at the site is included in Appendix C (Figure 1). The lithological log and construction diagram of monitoring well MW-14 are included in Appendix D. Groundwater sampling and analyses performed on MW-14 indicated EDBs, TPHs and PAHs concentrations were below detection limits.

COMMENT 4: A complete set of water level measurements should be taken prior to sampling. The results should be submitted in a tabular format with top of casing elevation, depth to water and water table elevation recorded. A sketch of the site with water table

elevations, groundwater elevation contours and calculated flow direction should be provided.

RESPONSE: A complete set of water level measurements was taken from the monitoring wells on November 5, 1998, by Navy Public Works Center personnel. Depth to Water and Water Table Elevations recorded on November 5, 1998, are shown in Appendix E, Table III. A groundwater direction flow map (Figure 2) using the monitoring well groundwater elevations recorded on November 5, 1998, is shown in Appendix F. The groundwater flow direction is toward the west-southwest as shown in Figure 2 of Appendix F.

COMMENT 5: A sketch of subsurface utilities at the site that may act as conduits for contaminant migration or that may hinder monitoring well emplacement or future remedial actions should be provided.

RESPONSE: A new site location map is included in Appendix G as Figure 3 which shows subsurface utilities at the site which may act as conduits for contaminant migration or that may hinder monitoring well emplacement or future remedial actions. Site 1140-NW has recently been part of a beautification program at Bronson Field and the current site map reflects these changes. Part of the former concrete airfield has been removed and replaced by grass, palm trees and irrigation sprinkler system.

Based upon the findings of the CAR addendum, PWC recommends that a Monitoring Only Plan for Natural Attenuation be implemented for the U.S. Navy Outlying Field (OLF), Bronson, Site 1140-NW, located at Pensacola, Florida as follows:

(1) Install a new monitoring well in the location of damaged monitoring well MW-3.

(2) Monitoring wells MW-1, MW-3, MW-6, MW-8, MW-9 and MW-11 be sampled and analyzed for EDB, TPH and PAH by EPA Method 504, FLPRO and EPA Method 8270, respectively, semi-annually for two years.

(3) Monitoring wells MW-1, MW-3 and MW-6 are considered the source monitoring wells. Monitoring wells MW-9 and MW-11 are considered the downgradient and upgradient monitoring wells, respectively.

(4) Water level measurements shall be made immediately prior to each sampling event and a groundwater flow direction map, summary table of analytical results and a discussion of the analytical results shall be prepared for each semi-annual report.

If you have any questions concerning this CAR addendum please contact Mr. Greg Campbell at (850) 452-4611 Ext. 113.

Sincerely,

DAVID COLON
ENS, CEC, USNR
By direction of
the Commanding Officer

Enclosure: (2 copies)
Contamination Assessment Report Addendum (CARA)
U.S. Navy Outlying Field (OLF) Bronson
Site 1140-NW, Pensacola, Florida

Copy to:
CO, SOUTHDIV
(Code 18410, Byas Glover)
NAS Envir. Dept. (Dean Spencer,
Code 00500)

APPENDIX

APPENDIX A
Groundwater Analytical Results

Navy Public Works Center
Environmental Laboratory

Analytical Report
Ethylene Dibromide by Method 508

Bldg. 3887, Code 440
`S Pensacola, FL 32508
ı ıone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg.458, Code 400
NAS Pensacola, Fl 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82932
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	82932			
Sample Name / Location	Bronson 1140 NW MW #1			
Collector's Name	BH/PK			
Date & Time Collected	30 Jul 98 @ 1305			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	10 Aug 98 JM			
Date of Analysis	10 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	82932	units	Det. Limit	Flags
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERY

	Acceptance Limits	Percent Recovery
⊤ ra-chloro-m-xylene	54 - 140	97

Explanation of Flags :

Comments :

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
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End of Report

Navy Public Works Center
Environmental Laboratory

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S Pensacola, FL 32508
Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Environmental
Address: Bldg. 3887, Code 910
NAS Pensacola,FL 32508
Phone #: 452-3180
Contact: Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 82932
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82932			
Sample Name / Location	Bronson 1140 NW MW #1			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1305			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	3 Aug 98 JJ			
Date of Analysis	7 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	**1- 82932**	**units**	**MDL**	**Flags**
Acenaphthene	BDL	ug/L	2	
Acenaphthylene	BDL	ug/L	2	
Anthracene	BDL	ug/L	2	
Benzo(a)anthracene	BDL	ug/L	2	
Benzo(a)pyrene	BDL	ug/L	2	
Benzo(b)flouranthene	BDL	ug/L	2	
Benzo(g,h,i)perylene	BDL	ug/L	2	
[illegible]o(k)flouranthene	BDL	ug/L	3	
Cnrysene	BDL	ug/L	2	
Dibenz(a,h)anthracene	BDL	ug/L	2	
Flouranthene	BDL	ug/L	2	
Flourene	2	ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL	ug/L	2	
1-Methylnaphthalene *	6	ug/L	2	
2-Methylnaphthalene	10	ug/L	3	
Naphthalene	BDL	ug/L	2	
Phenanthrene	BDL	ug/L	2	
Pyrene	BDL	ug/L	2	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Nitrobenzene- d5	35-114	84
2-Flourobiphenyl	43-116	89
Terphenyl -d14	33-141	95

Explanation of Flags:

COMMENTS : Surrogate recovery limits derived from EPA OLM01.0 SOW 3/90.

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. * = FL HRS certification pending.
MDL = Method detection limit. Practical quantitation limits (PQL) may be derived by multiplying the MDL by 4.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
Report Generated

End of Report

Navy Public Works Center
Environmental Laboratory

Analytical Report
Petroleum Range Organics by FLPRO

Bldg. 3887, Code 440
NAS Pensacola, FL 32508
Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg. 458, Code 400
NAS Pensacola, FL 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82932
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82932			
Sample Name / Location	Bronson 1140 NW MW #1			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1305			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of extraction / Initials	3 Aug 98 JJ			
Date of Analysis	20 Aug 98			
Sample Matrix	Groundwater			
Dilution	x 1			
Parameter	**1- 82932**	**units**	**Det. Limit**	**Flags**
Petroleum Range Organics by FLPRO	**0.28**	mg/L	0.25	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
ortho-Terphenyl	82-142	118
n-Dotriacontane (C-39)	42-193	57

COMMENTS :

BDL = Below Detection Limit. mg/L = milligram per Liter. mg/Kg = milligram per Kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98

End of Report

Navy Public Works Center

Environmental Laboratory

Analytical Report

Ethylene Dibromide by Method 508

Bldg. 3887, Code 440
NAS Pensacola, FL 32508
Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg.458, Code 400
NAS Pensacola, Fl 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82933
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	82933			
Sample Name / Location	Bronson 1140 NW MW #2			
Collector's Name	BH/PK			
Date & Time Collected	30 Jul 98 @ 1320			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	10 Aug 98 JM			
Date of Analysis	10 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	82933	units	Det. Limit	Flags
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERY

	Acceptance Limits	Percent Recovery
Tetra-chloro-m-xylene	54 - 140	104

Explanation of Flags :

Comments :

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
Report Generated

End of Report

Navy Public Works Center
Environmental Laboratory

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Address: Bldg. 3887, Code 910
NAS Pensacola,FL 32508
Phone #: 452-3180
Contact: Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 82933
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82933			
Sample Name / Location	Bronson 1140 NW MW #2			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1320			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	3 Aug 98 JJ			
Date of Analysis	7 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	**1- 82933**	**units**	**MDL**	**Flags**
Acenaphthene	BDL	ug/L	2	
Acenaphthylene	BDL	ug/L	2	
Anthracene	BDL	ug/L	2	
Benzo(a)anthracene	BDL	ug/L	2	
Benzo(a)pyrene	BDL	ug/L	2	
Benzo(b)flouranthene	BDL	ug/L	2	
Benzo(g,h,i)perylene	BDL	ug/L	2	
:o(k)flouranthene	BDL	ug/L	3	
Cnrysene	BDL	ug/L	2	
Dibenz(a,h)anthracene	BDL	ug/L	2	
Flouranthene	BDL	ug/L	2	
Flourene	BDL	ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL	ug/L	2	
1-Methylnaphthalene *	BDL	ug/L	2	
2-Methylnaphthalene	BDL	ug/L	3	
Naphthalene	BDL	ug/L	2	
Phenanthrene	BDL	ug/L	2	
Pyrene	BDL	ug/L	2	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Nitrobenzene- d5	35-114	81
2-Flourobiphenyl	43-116	84
Terphenyl -d14	33-141	114

Explanation of Flags:

COMMENTS : Surrogate recovery limits derived from EPA OLM01.0 SOW 3/90.

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. * = FL HRS certification pending.
MDL = Method detection limit. Practical quantitation limits (PQL) may be derived by multiplying the MDL by 4.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
Report Generated

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Navy Public Works Center
Environmental Laboratory

Analytical Report
Petroleum Range Organics by FLPRO

Bldg. 3887, Code 440
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Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82933
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82933			
Sample Name / Location	Bronson 1140 NW MW #2			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1320			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of extraction / Initials	3 Aug 98 JJ			
Date of Analysis	20 Aug 98			
Sample Matrix	Groundwater			
Dilution	x 1			
Parameter	**1- 82933**	**units**	**Det. Limit**	**Flags**
Petroleum Range Organics by FLPRO	BDL	mg/L	0.25	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
ortho-Terphenyl	82-142	120
atriacontane (C-39)	42-193	57

COMMENTS :

BDL = Below Detection Limit. mg/L = milligram per Liter. mg/Kg = milligram per Kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98

End of Report

Navy Public Works Center

Environmental Laboratory

Analytical Report

Ethylene Dibromide by Method 508

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DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg.458, Code 400
NAS Pensacola, Fl 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82934
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	82934			
Sample Name / Location	Bronson 1140 NW MW #16			
Collector's Name	BH/PK			
Date & Time Collected	30 Jul 98 @ 1330			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	10 Aug 98 JM			
Date of Analysis	10 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	82934	units	Det. Limit	Flags
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERY

	Acceptance Limits	Percent Recovery
T ra-chloro-m-xylene	54 - 140	104

Explanation of Flags :

Comments :

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
Report Generated
End of Report

Navy Public Works Center

Environmental Laboratory

Analytical Report

Ethylene Dibromide by Method 508

Bldg. 3887, Code 440
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Client: NPWC Engineering
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NAS Pensacola, Fl 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82935
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	82935			
Sample Name / Location	Bronson 1140 NW MW #14			
Collector's Name	BH/PK			
Date & Time Collected	30 Jul 98 @ 1345			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	10 Aug 98 JM			
Date of Analysis	10 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	82935	units	Det. Limit	Flags
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERY

	Acceptance Limits	Percent Recovery
Tetra-chloro-m-xylene	54 - 140	104

Explanation of Flags :

Comments :

BDL = Below Detection Limit. **ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.**

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
Report Generated

End of Report

Navy Public Works Center
Environmental Laboratory

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Client: NPWC Environmental
Address: Bldg. 3887, Code 910
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Phone #: 452-3180
Contact: Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 82935
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- **82935**
Sample Name / Location	Bronson 1140 NW MW #14
Collector's Name	P. Keane
Date & Time Collected	30 Jul 98 @ 1345
Sample Type (composite or grab)	Grab
Analyst	J. Moore
Date of Extraction / Initials	3 Aug 98 JJ
Date of Analysis	7 Aug 98
Sample Matrix	Groundwater
Dilution	X 1

Compound Name	1- 82935	units	MDL	Flags
Acenaphthene	BDL	ug/L	2	
Acenaphthylene	BDL	ug/L	2	
Anthracene	BDL	ug/L	2	
Benzo(a)anthracene	BDL	ug/L	2	
Benzo(a)pyrene	BDL	ug/L	2	
Benzo(b)flouranthene	BDL	ug/L	2	
Benzo(g,h,i)perylene	BDL	ug/L	2	
Benzo(k)flouranthene	BDL	ug/L	3	
Chrysene	BDL	ug/L	2	
Dibenz(a,h)anthracene	BDL	ug/L	2	
Flouranthene	BDL	ug/L	2	
Flourene	BDL	ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL	ug/L	2	
1-Methylnaphthalene *	BDL	ug/L	2	
2-Methylnaphthalene	BDL	ug/L	3	
Naphthalene	BDL	ug/L	2	
Phenanthrene	BDL	ug/L	2	
Pyrene	BDL	ug/L	2	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Nitrobenzene- d5	35-114	83
2-Flourobiphenyl	43-116	86
Terphenyl -d14	33-141	89

Explanation of Flags:

COMMENTS : Surrogate recovery limits derived from EPA OLM01.0 SOW 3/90.

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. * = FL HRS certification pending.
MDL = Method detection limit. Practical quantitation limits (PQL) may be derived by multiplying the MDL by 4.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98
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Navy Public Works Center
Environmental Laboratory

Analytical Report
Petroleum Range Organics by FLPRO

Bldg. 3887, Code 440
`S Pensacola, FL 32508
..one (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg. 458, Code 400
NAS Pensacola, FL 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82935
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82935			
Sample Name / Location	Bronson 1140 NW MW #14			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1345			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of extraction / Initials	3 Aug 98 JJ			
Date of Analysis	20 Aug 98			
Sample Matrix	Groundwater			
Dilution	x 1			
Parameter	**1- 82935**	**units**	**Det. Limit**	**Flags**
Petroleum Range Organics by FLPRO	BDL	mg/L	0.25	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
ortho-Terphenyl	82-142	123
ıatriacontane (C-39)	42-193	71

COMMENTS :

BDL = Below Detection Limit. mg/L = millgram per Liter. mg/Kg = milligram per Kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98

End of Report

Navy Public Works Center
Environmental Laboratory

Analytical Report
Ethylene Dibromide by Method 508

Bldg. 3887, Code 440
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DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg.458, Code 400
NAS Pensacola, Fl 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82936
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	82936			
Sample Name / Location	Bronson 1140 NW Duplicate			
Collector's Name	BH/PK			
Date & Time Collected	30 Jul 98 @ NS			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	11 Aug 98 JM			
Date of Analysis	11 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	82936	units	Det. Limit	Flags
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERY

	Acceptance Limits	Percent Recovery
Tetra-chloro-m-xylene	54 - 140	104

Explanation of Flags :

Comments :

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
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Navy Public Works Center
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Bldg. 3887, Code 440
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Phone (850) 452-3180/3642
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FAX (850) 452-2799/2387

Client: NPWC Environmental
Address: Bldg. 3887, Code 910
NAS Pensacola,FL 32508
Phone #: 452-3180
Contact: Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 82936
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82936			
Sample Name / Location	Bronson 1140 NW Duplicate			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ NS			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	3 Aug 98 JJ			
Date of Analysis	8 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	**1- 82936**	**units**	**MDL**	**Flags**
Acenaphthene	BDL	ug/L	2	
Acenaphthylene	BDL	ug/L	2	
Anthracene	BDL	ug/L	2	
Benzo(a)anthracene	BDL	ug/L	2	
Benzo(a)pyrene	BDL	ug/L	2	
Benzo(b)flouranthene	BDL	ug/L	2	
Benzo(g,h,i)perylene	BDL	ug/L	2	
Benzo(k)flouranthene	BDL	ug/L	3	
Chrysene	BDL	ug/L	2	
Dibenz(a,h)anthracene	BDL	ug/L	2	
Flouranthene	BDL	ug/L	2	
Flourene	BDL	ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL	ug/L	2	
1-Methylnaphthalene *	BDL	ug/L	2	
2-Methylnaphthalene	BDL	ug/L	3	
Naphthalene	BDL	ug/L	2	
Phenanthrene	BDL	ug/L	2	
Pyrene	BDL	ug/L	2	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Nitrobenzene- d5	35-114	78
2-Flourobiphenyl	43-116	80
Terphenyl -d14	33-141	80

Explanation of Flags:

COMMENTS : Surrogate recovery limits derived from EPA OLM01.0 SOW 3/90.

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. * = FL HRS certification pending.
MDL = Method detection limit. Practical quantitation limits (PQL) may be derived by multiplying the MDL by 4.

Approved by : _____ **Date:** 8/26/98

End of Report

Navy Public Works Center
Environmental Laboratory

Bldg. 3887, Code 440
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Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Analytical Report
Petroleum Range Organics by FLPRO

Client:	NPWC Engineering	Lab Report Number:	82936
Address:	Bldg. 458, Code 400	Sample Date:	30 Jul 98
	NAS Pensacola, FL 32508	Received Date:	30 Jul 98
Phone #:	(850) 452-4315	Sample Site:	Bronson Field
Contact:	Greg Campbell	Job Order No.:	130 5001

LAB Sample ID#	1- 82936			
Sample Name / Location	Bronson 1140 NW Duplicate			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1345			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of extraction / Initials	3 Aug 98 JJ			
Date of Analysis	20 Aug 98			
Sample Matrix	Groundwater			
Dilution	x 1			
Parameter	**1- 82936**	**units**	**Det. Limit**	**Flags**
Petroleum Range Organics by FLPRO	BDL	mg/L	0.25	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
ıo-Terphenyl	82-142	113
Nonatriacontane (C-39)	42-193	63

COMMENTS :

BDL = Below Detection Limit. mg/L = millgram per Liter. mg/Kg = milligram per Kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98

End of Report

Navy Public Works Center
Environmental Laboratory

Analytical Report
Ethylene Dibromide by Method 508

Bldg. 3887, Code 440
NAS Pensacola, FL 32508
Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg.458, Code 400
NAS Pensacola, Fl 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82937
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	82937			
Sample Name / Location	Bronson 1140 NW MW #9			
Collector's Name	BH/PK			
Date & Time Collected	30 Jul 98 @ 1410			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	11 Aug 98 JM			
Date of Analysis	11 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	82937	units	Det. Limit	Flags
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERY

	Acceptance Limits	Percent Recovery
Tetra-chloro-m-xylene	54 - 140	104

Explanation of Flags :

Comments :

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
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Navy Public Works Center
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Phone (850) 452-3180/3642
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FAX (850) 452-2799/2387

Client: NPWC Environmental
Address: Bldg. 3887, Code 910
NAS Pensacola,FL 32508
Phone #: 452-3180
Contact: Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 82937
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82937			
Sample Name / Location	Bronson 1140 NW MW #9			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1410			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	3 Aug 98 JJ			
Date of Analysis	8 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	**1- 82937**	**units**	**MDL**	**Flags**
Acenaphthene	BDL	ug/L	2	
Acenaphthylene	BDL	ug/L	2	
Anthracene	BDL	ug/L	2	
Benzo(a)anthracene	BDL	ug/L	2	
Benzo(a)pyrene	BDL	ug/L	2	
Benzo(b)flouranthene	BDL	ug/L	2	
Benzo(g,h,i)perylene	BDL	ug/L	2	
Benzo(k)flouranthene	BDL	ug/L	3	
Chrysene	BDL	ug/L	2	
Dibenz(a,h)anthracene	BDL	ug/L	2	
Flouranthene	BDL	ug/L	2	
Flourene	BDL	ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL	ug/L	2	
1-Methylnaphthalene *	7	ug/L	2	
2-Methylnaphthalene	18	ug/L	3	
Naphthalene	10	ug/L	2	
Phenanthrene	BDL	ug/L	2	
Pyrene	BDL	ug/L	2	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Nitrobenzene- d5	35-114	83
2-Flourobiphenyl	43-116	88
Terphenyl -d14	33-141	96

Explanation of Flags:

COMMENTS : Surrogate recovery limits derived from EPA OLM01.0 SOW 3/90.

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. * = FL HRS certification pending.
MDL = Method detection limit. Practical quantitation limits (PQL) may be derived by multiplying the MDL by 4.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98
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Navy Public Works Center
Environmental Laboratory

Analytical Report
Petroleum Range Organics by FLPRO

Bldg. 3887, Code 440
`S Pensacola, FL 32508
Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg. 458, Code 400
NAS Pensacola, FL 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82937
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82937			
Sample Name / Location	Bronson 1140 NW MW #9			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1410			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of extraction / Initials	3 Aug 98 JJ			
Date of Analysis	20 Aug 98			
Sample Matrix	Groundwater			
Dilution	x 1			
Parameter	**1- 82937**	**units**	**Det. Limit**	**Flags**
Petroleum Range Organics by FLPRO	BDL	mg/L	0.25	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
ortho-Terphenyl	82-142	94
natriacontane (C-39)	42-193	56

COMMENTS :

BDL = Below Detection Limit. mg/L = milligram per Liter. mg/Kg = milligram per Kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98

End of Report

Navy Public Works Center
Environmental Laboratory

Analytical Report
Ethylene Dibromide by Method 508

Bldg. 3887, Code 440
NAS Pensacola, FL 32508
Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg.458, Code 400
NAS Pensacola, Fl 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82938
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	82938			
Sample Name / Location	Bronson 1140 NW MW #15			
Collector's Name	BH/PK			
Date & Time Collected	30 Jul 98 @ 1430			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	11 Aug 98 JM			
Date of Analysis	11 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	82938	units	Det. Limit	Flags
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERY

	Acceptance Limits	Percent Recovery
Tetra-chloro-m-xylene	54 - 140	105

Explanation of Flags :

Comments :

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98
Report Generated
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Navy Public Works Center

Environmental Laboratory

Analytical Report

Ethylene Dibromide by Method 508

Bldg. 3887, Code 440
NAS Pensacola, FL 32508
Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg.458, Code 400
NAS Pensacola, Fl 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82939
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	82939			
Sample Name / Location	Bronson 1140 NW Equipment Blank			
Collector's Name	BH/PK			
Date & Time Collected	30 Jul 98 @ 1440			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	11 Aug 98 JM			
Date of Analysis	11 Aug 98			
Sample Matrix	DI Water			
Dilution	X 1			
Compound Name	82939	units	Det. Limit	Flags
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERY

	Acceptance Limits	Percent Recovery
Tetra-chloro-m-xylene	54 - 140	110

Explanation of Flags :

Comments :

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
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FAX (850) 452-2799/2387

Client: NPWC Environmental
Address: Bldg. 3887, Code 910
NAS Pensacola,FL 32508
Phone #: 452-3180
Contact: Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 82939
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82939			
Sample Name / Location	Bronson 1140 NW Equipment Blank			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1440			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	3 Aug 98 JJ			
Date of Analysis	8 Aug 98			
Sample Matrix	DI Water			
Dilution	X 1			
Compound Name	**1- 82939**	**units**	**MDL**	**Flags**
Acenaphthene	BDL	ug/L	2	
Acenaphthylene	BDL	ug/L	2	
Anthracene	BDL	ug/L	2	
Benzo(a)anthracene	BDL	ug/L	2	
Benzo(a)pyrene	BDL	ug/L	2	
Benzo(b)flouranthene	BDL	ug/L	2	
Benzo(g,h,i)perylene	BDL	ug/L	2	
Benzo(k)flouranthene	BDL	ug/L	3	
Chrysene	BDL	ug/L	2	
Dibenz(a,h)anthracene	BDL	ug/L	2	
Flouranthene	BDL	ug/L	2	
Flourene	BDL	ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL	ug/L	2	
1-Methylnaphthalene *	BDL	ug/L	2	
2-Methylnaphthalene	BDL	ug/L	3	
Naphthalene	BDL	ug/L	2	
Phenanthrene	BDL	ug/L	2	
Pyrene	BDL	ug/L	2	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Nitrobenzene- d5	35-114	83
2-Flourobiphenyl	43-116	86
Terphenyl -d14	33-141	108

Explanation of Flags:

COMMENTS : Surrogate recovery limits derived from EPA OLM01.0 SOW 3/90.

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. * = FL HRS certification pending.
MDL = Method detection limit. Practical quantitation limits (PQL) may be derived by multiplying the MDL by 4.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98
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End of Report

Navy Public Works Center
Environmental Laboratory

Analytical Report
Petroleum Range Organics by FLPRO

Bldg. 3887, Code 440
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Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg. 458, Code 400
NAS Pensacola, FL 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82939
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82939			
Sample Name / Location	Bronson 1140 NW Equipment Blank			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1410			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of extraction / Initials	3 Aug 98 JJ			
Date of Analysis	20 Aug 98			
Sample Matrix	DI Water			
Dilution	x 1			
Parameter	**1- 82939**	**units**	**Det. Limit**	**Flags**
Petroleum Range Organics by FLPRO	BDL	mg/L	0.25	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
ortho-Terphenyl	82-142	112
natriacontane (C-39)	42-193	67

COMMENTS :

BDL = Below Detection Limit. mg/L = milligram per Liter. mg/Kg = milligram per Kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98

End of Report

Navy Public Works Center
Environmental Laboratory

Analytical Report
Ethylene Dibromide by Method 508

Bldg. 3887, Code 440
NAS Pensacola, FL 32508
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DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg.458, Code 400
NAS Pensacola, Fl 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82940
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	82940			
Sample Name / Location	Bronson 1140 NW MW #4			
Collector's Name	BH/PK			
Date & Time Collected	30 Jul 98 @ 1500			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	11 Aug 98 JM			
Date of Analysis	11 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	82940	units	Det. Limit	Flags
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERY

	Acceptance Limits	Percent Recovery
Tetra-chloro-m-xylene	54 - 140	110

Explanation of Flags :

Comments :

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/25/98
Report Generated
End of Report

Navy Public Works Center
Environmental Laboratory

Bldg. 3887, Code 440
NAS Pensacola, FL 32508
Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Environmental
Address: Bldg. 3887, Code 910
NAS Pensacola,FL 32508
Phone #: 452-3180
Contact: Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 82940
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82940			
Sample Name / Location	Bronson 1140 NW MW #4			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1500			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	3 Aug 98 JJ			
Date of Analysis	8 Aug 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	**1- 82940**	**units**	**MDL**	**Flags**
Acenaphthene	BDL	ug/L	2	
Acenaphthylene	BDL	ug/L	2	
Anthracene	BDL	ug/L	2	
Benzo(a)anthracene	BDL	ug/L	2	
Benzo(a)pyrene	BDL	ug/L	2	
Benzo(b)flouranthene	BDL	ug/L	2	
Benzo(g,h,i)perylene	BDL	ug/L	2	
Benzo(k)flouranthene	BDL	ug/L	3	
Chrysene	BDL	ug/L	2	
Dibenz(a,h)anthracene	BDL	ug/L	2	
Flouranthene	BDL	ug/L	2	
Flourene	BDL	ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL	ug/L	2	
1-Methylnaphthalene *	BDL	ug/L	2	
2-Methylnaphthalene	BDL	ug/L	3	
Naphthalene	BDL	ug/L	2	
Phenanthrene	BDL	ug/L	2	
Pyrene	BDL	ug/L	2	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Nitrobenzene- d5	35-114	85
2-Flourobiphenyl	43-116	90
Terphenyl -d14	33-141	101

Explanation of Flags:

COMMENTS : Surrogate recovery limits derived from EPA OLM01.0 SOW 3/90.

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. * = FL HRS certification pending.
MDL = Method detection limit. Practical quantitation limits (PQL) may be derived by multiplying the MDL by 4.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98
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End of Report

Navy Public Works Center
Environmental Laboratory

Analytical Report
Petroleum Range Organics by FLPRO

Bldg. 3887, Code 440
NAS Pensacola, FL 32508
Phone (850) 452-3180/3642
DSN 922-3180/3642
FAX (850) 452-2799/2387

Client: NPWC Engineering
Address: Bldg. 458, Code 400
NAS Pensacola, FL 32508
Phone #: (850) 452-4315
Contact: Greg Campbell

Lab Report Number: 82940
Sample Date: 30 Jul 98
Received Date: 30 Jul 98
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 82940			
Sample Name / Location	Bronson 1140 NW MW #4			
Collector's Name	P. Keane			
Date & Time Collected	30 Jul 98 @ 1500			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of extraction / Initials	3 Aug 98 JJ			
Date of Analysis	20 Aug 98			
Sample Matrix	Groundwater			
Dilution	x 1			
Parameter	**1- 82940**	**units**	**Det. Limit**	**Flags**
Petroleum Range Organics by FLPRO	BDL	mg/L	0.25	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
ortho-Terphenyl	82-142	100
Hatriacontane (C-39)	42-193	56

COMMENTS :

BDL = Below Detection Limit. mg/L = milligram per Liter. mg/Kg = milligram per Kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 8/26/98

End of Report

CHAIN OF CUSTODY/REQUEST FOR ANALYSIS (UST Projects)

Report Required? (Yes) No QC Required? Yes No

NPWC Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, Fl. 32508
Phone – (904) 452–4728/3642
DSN 922–4728/3642
FAX (904) 452–2799/2387

Requester: NPWC ENGINEERING
Address: BLDG. 458 CODE 400
NAS PENSACOLA, FL 32508
Phone #: 452-4315
Contact: GREG CAMPBELL
Job Order #: 130 5001

Lab ID Number:
Sample Date: 7-30-98
Received Date: 7-30-98
Sample Site: BRONSON FLD 1140 N/W
Lab Due Date:

Sample ID #	Lab	#1- 8-2952	#2- 8-2953	#3- 8-2954	#4- 8-2955
Sample Name or Location	----------	Bronson 1140 NW mw #1	mw #2	mw 16	mw 14
Sampled by	----------	BH/PK			
Composite Date/Time Collected	Begin				
	Frequency				
	End				
Grab Time	----------	1305	1320	1330	1345
Sample Matrix	----------	GW			

Notes: Bronson Field Site 1140 NW

PARAMETER by Method Name	METHOD #	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required	Preservatives Used
Ethylene Dibromide (EDB)	EPA 504	X	2 Bttls	X	2 Bttls	X	2 Bttls	X	2 Bttls	3	120ml A VOA/4 oz	None/4° C
Purg. Halocarbons/GC	EPA 601									4	40 ml VOA Vial x 2	HCl/4° C
Purg. Aromatics/GC	EPA 602									3	40 ml VOA Vial x 2	HCl/4° C
Purg. Halo. & Aro./GC	EPA 601/602									6	40 ml VOA Vial x 2	HCl/4° C
Polynuclear Aromatics/HPLC	EPA 610									7	1L Amber x 2	4° C
Purgeables/GCMS	EPA 624									8	40 ml VOA Vial x 2	HCl/4° C
Base/Neutrals & Acids/GCMS	EPA 625									15	1L Amber x 2	4° C
Gas Chromatography	EPA SW 8000									5	40mlx2/1Lx2/4 oz	HCl/4° C/Non
Halo. Vol. Org./GC	EPA SW 8010									4	40ml VOAx2/4 oz	HCl/4° C/Non
Non–Halo. Vol. Org./GC	EPA SW 8015(MOD)									4	40mlx2/1Lx2/4 oz	HCl/4° C/Non
Arom. Vol. Org./GC	EPA SW 8020									3	40ml VOAx2/4 oz	HCl/4° C/Non
Halo./Arom. Vol. Org./GC	EPA SW 8010/8020									6	40ml VOAx2/4 oz	HCl/4° C/Non
Polynuclear Aromatics/GC	EPA SW 8100									6	1Lx2/4 oz	4° C/None
VOC/GCMS	EPA SW 8240A									8	40ml VOAx2/4 oz	HCl/4° C/Non
VOC/GCMS–Cap.	EPA SW 8260									5	40ml VOAx2/4 oz	HCl/4° C/Non
Semivol. Org./GCMS–Cap.	EPA SW 8270A									16	1Lx3/4 oz	4° C/None
Polynuclear Aromatics (PAH's)	EPA SW 8310	X	2 Bttls	X	2 Bttls			X	2 Bttls	9	1Lx3/4 oz	4° C/None

PARAMETER by Group Name	METHOD SOURCE	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required	Preservatives Used
Gasoline Analytical Group	EPA SW–846									47	Consult Lab	Consult Lab
Kerosene Analytical Group	EPA SW–846									39	Consult Lab	Consult Lab
Mixed Product Analytical Group	EPA SW–846									24	Consult Lab	Consult Lab
Total Petroleum Hydrocarbons	EPA 418.1									2	Consult Lab	Consult Lab
Total Petroleum Hydrocarbons	FL–PRO	X	2 Bttls	X	2 Bttls			X	2 Bttls	7	Consult Lab	Consult Lab
RCRA Metals (8)	EPA Various									6	Consult Lab	Consult Lab
TCLP Metals (8) w/extraction	EPA SW–846									10	Consult Lab	Consult Lab
Lead (Pb) only	EPA 239.2									1	250ml/4 oz	HNO_3/No
Other:												

Comments

Relinquished by: [signature]
Date/Time: 7/30/98 1515

Received by: [signature]
Date/Time: 7/30/98 1515

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CHAIN OF CUSTODY/REQUEST FOR ANALYSIS (UST Projects)

.C Environmental Laboratory
.dg. 3887, Code 920
NAS Pensacola, Fl. 32508
Phone – (904) 452–4728/3642
DSN 922–4728/3642
FAX (904) 452–2799/2387

Requester: NPWC ENGINEERING
Address: BLDG. 458 CODE 400
NAS PENSACOLA, FL 32508
Phone #: 452-4315
Contact: GREG CAMPBELL
Job Order #: 130 5001

Report Required? Yes No QC Required? Yes No
Lab ID Number:
Sample Date: 7 30 98
Received Date: 7 30 98
Sample Site: BRONSON FLD 1140 N/W
Lab Due Date:

Sample ID #	Lab	#1- 8-2936	#2- 8-2937	#3- 8-2938	#4- 8-2939	Notes
Sample Name	----------	Bronson Field				Bronson Field
or Location	----------	Site 1140 (Dup)	MW 4	MW 15	Equipment Blank	Site 1140 NW
Sampled by	----------	GH/PK	GH/PK			MW #9 - GCWK
Composite	Begin					
Date/Time	Frequency	7-30-98	7-30-98	7-30-98		
Collected	End					
Grab Time	----------	—	1410	1430	1440	
Sample Matrix	----------	GW	GW	GW	NI	

PARAMETER by Method Name	METHOD #	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required	Preservative(s) Used
Ethylene Dibromide (EDB)	EPA 504	X	2 BTLS	X	2 BTLS	X	2 BTLS	X	2 BTLS	3	120ml A VOA/4 oz.	None/4° C
Purg. Halocarbons/GC	EPA 601									4	40 ml VOA Vial x 2	HCl/4° C
Purg. Aromatics/GC	EPA 602									3	40 ml VOA Vial x 2	HCl/4° C
Purg. Halo. & Aro./GC	EPA 601/602									6	40 ml VOA Vial x 2	HCl/4° C
Polynuclear Aromatics/HPLC	EPA 610									7	1L Amber x 2	4° C
Purgeables/GCMS	EPA 624									8	40 ml VOA Vial x 2	HCl/4° C
Base/Neutrals & Acids/GCMS	EPA 625									15	1L Amber x 2	4° C
Gas Chromatography	EPA SW 8000									5	40mlx2/1Lx2/4 oz.	HCl/4° C/Non-
Halo. Vol. Org./GC	EPA SW 8010									4	40ml VOAx2/4 oz.	HCl/4° C/Non-
Non–Halo. Vol. Org./GC	EPA SW 8015(MOD)									4	40mlx2/1Lx2/4 oz.	HCl/4° C/Non-
Arom. Vol. Org./GC	EPA SW 8020									3	40ml VOAx2/4 oz.	HCl/4° C/Non-
Halo./Arom. Vol. Org./GC	EPA SW 8010/8020									6	40ml VOAx2/4 oz.	HCl/4° C/Non-
Polynuclear Aromatics/GC	EPA SW 8100									6	1Lx2/4 oz.	4° C/None
VOC/GCMS	EPA SW 8240A									8	40ml VOAx2/4 oz.	HCl/4° C/Non-
VOC/GCMS–Cap.	EPA SW 8260									8	40ml VOAx2/4 oz.	HCl/4° C/Non-
Semivol. Org./GCMS–Cap.	EPA SW 8270A									16	1Lx3/4 oz.	4° C/None
Polynuclear Aromatics (PAH's)	EPA SW 8310	X	2 BTLS	X	3 BTLS			X	2 BTLS	9	1Lx3/4 oz.	4° C/None

PARAMETER by Group Name	METHOD SOURCE	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required	Preservative(s) Used
Gasoline Analytical Group	EPA SW–846									47	Consult Lab	Consult La
Kerosene Analytical Group	EPA SW–846									39	Consult Lab	Consult La
Mixed Product Analytical Group	EPA SW–846									24	Consult Lab	Consult La
Total Petroleum Hydrocarbons	EPA 418.1									2	Consult Lab	Consult La
Total Petroleum Hydrocarbons	FL–PRO	X	2 BTLS	X	3 BTLS			X	2 BTLS	7	Consult Lab	Consult La
RCRA Metals (8)	EPA Various									6	Consult Lab	Consult La
TCLP Metals (8) w/extraction	EPA SW–846									10	Consult Lab	Consult La
Lead (Pb) only	EPA 239.2									1	250ml/4 oz.	HNO3/No
Other:												

Comments:

Relinquished by: [signature]
Date/Time: 7/31/98 1515

Received by: [signature]
Date/Time: 7/31/98 1545

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CHAIN OF CUSTODY/REQUEST FOR ANALYSIS (UST Projects)

NPWC Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, Fl. 32508
Phone – (904) 452–4728/3642
DSN 922–4728/3642
FAX (904) 452–2799/2387

Report Required? Yes No QC Required? Yes No

Requester: NPWC ENGINEERING
Address: BLDG. 458 CODE 400
NAS PENSACOLA, FL 32508
Phone #: 452-4315
Contact: GREG CAMPBELL
Job Order #: 130 5001

Lab ID Number:
Sample Date: 7 30 98
Received Date: 7 30 98
Sample Site: BRONSON FLD 1140 N/W
Lab Due Date:

Sample ID #	Lab	#1- 8-QG40	#2-	#3-	#4-
Sample Name	----------	Bronson Field			
or Location	----------	1140 NW			
Sampled by	----------	GW/RC			
Composite	Begin				
Date/Time	Frequency	7-30-98			
Collected	End				
Grab Time	----------	1300			
Sample Matrix	----------	GW			

Notes: Bronson Field 1140 NW

PARAMETER by Method Name	METHOD #	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required	Preservative(s) Used
Ethylene Dibromide (EDB)	EPA 504	X	2 ATLS							3	120ml A VOA/4 oz.	None/4° C
Purg. Halocarbons/GC	EPA 601									4	40 ml VOA Vial x 2	HCl/4° C
Purg. Aromatics/GC	EPA 602									3	40 ml VOA Vial x 2	HCl/4° C
Purg. Halo. & Aro./GC	EPA 601/602									6	40 ml VOA Vial x 2	HCl/4° C
Polynuclear Aromatics/HPLC	EPA 610									7	1L Amber x 2	4° C
Purgeables/GCMS	EPA 624									8	40 ml VOA Vial x 2	HCl/4° C
Base/Neutrals & Acids/GCMS	EPA 625									15	1L Amber x 2	4° C
Gas Chromatography	EPA SW 8000									5	40mlx2/1Lx2/4 oz.	HCl/4° C/None
Halo. Vol. Org./GC	EPA SW 8010									4	40ml VOAx2/4 oz.	HCl/4° C/None
Non–Halo. Vol. Org./GC	EPA SW 8015(MOD)									4	40mlx2/1Lx2/4 oz.	HCl/4° C/None
Arom. Vol. Org./GC	EPA SW 8020									3	40ml VOAx2/4 oz.	HCl/4° C/None
Halo./Arom. Vol. Org./GC	EPA SW 8010/8020									6	40ml VOAx2/4 oz.	HCl/4° C/None
Polynuclear Aromatics/GC	EPA SW 8100									6	1Lx2/4 oz.	4° C/None
VOC/GCMS	EPA SW 8240A									8	40ml VOAx2/4 oz.	HCl/4° C/None
VOC/GCMS–Cap.	EPA SW 8260									8	40ml VOAx2/4 oz.	HCl/4° C/None
Semivol. Org./GCMS–Cap.	EPA SW 8270A									16	1Lx3/4 oz.	4° C/None
Polynuclear Aromatics (PAH's)	EPA SW 8310	X	2 ATLS							9	1Lx3/4 oz.	4° C/None

PARAMETER by Group Name	METHOD SOURCE	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required	Preservatives Used
Gasoline Analytical Group	EPA SW–846									47	Consult Lab	Consult Lab
Kerosene Analytical Group	EPA SW–846									39	Consult Lab	Consult Lab
Mixed Product Analytical Group	EPA SW–846									24	Consult Lab	Consult Lab
Total Petroleum Hydrocarbons	EPA 418.1									2	Consult Lab	Consult Lab
Total Petroleum Hydrocarbons	FL–PRO	X	2 ATLS							7	Consult Lab	Consult Lab
RCRA Metals (8)	EPA Various									6	Consult Lab	Consult Lab
TCLP Metals (8) w/extraction	EPA SW–846									10	Consult Lab	Consult Lab
Lead (Pb) only	EPA 239.2									1	250ml/4 oz.	HNO_3/None
Other:												

Comments:

Relinquished by: [signature]
Date/Time: 7/30/98 1515

Received by: [signature]
Date/Time: 7/30/98 1515

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APPENDIX B

TABLE I: Summary of PAHs

TABLE II: Summary of TRPHs and EDBs

TABLE I
SUMMARY OF PAHs
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
COLLECTED FROM MONITORING WELLS MW-1, MW-2, MW-3, MW-4, MW-9, MW-14, MW-15, and MW-16
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1140-NW

		MONITORING WELL NUMBER							
PARAMETER		MW-1	MW-2	MW-3	MW-4	MW-9	MW-14	DMW-15	MW-16
Fluorene	7/30/98	2	BDL	*	BDL	BDL	BDL	NS	NS
Fluorene	6/5/96	NS	NS	NS	NS	BDL	NS	NS	NS
Fluorene	4/11/96	NS	BDL	BDL	BDL	NS	NS	NS	NS
1-Methylnaphthalene	7/30/98	6	BDL	*	BDL	7	BDL	NS	NS
1-Methylnaphthalene	6/5/96	NS	NS	NS	NS	BDL	NS	NS	NS
1-Methylnaphthalene	4/11/96	NS	BDL	350	BDL	NS	NS	NS	NS
2-Methylnaphthalene	7/30/98	10	BDL	*	BDL	18	BDL	NS	NS
2-Methylnaphthalene	6/5/96	NS	NS	NS	NS	BDL	NS	NS	NS
2-Methylnaphthalene	4/11/96	NS	BDL	520	BDL	NS	NS	NS	NS
Naphthalene	7/30/98	BDL	BDL	*	BDL	10	BDL	NS	NS
Naphthalene	6/5/96	NS	NS	NS	NS	BDL	NS	NS	NS
Naphthalene	4/11/96	NS	BDL	190	BDL	NS	NS	NS	NS
Phenanthrene	7/30/98	BDL	BDL	*	BDL	BDL	BDL	NS	NS
Phenanthrene	6/5/96	NS	NS	NS	NS	BDL	NS	NS	NS
Phenanthrene	4/11/96	NS	BDL	33	BDL	NS	NS	NS	NS

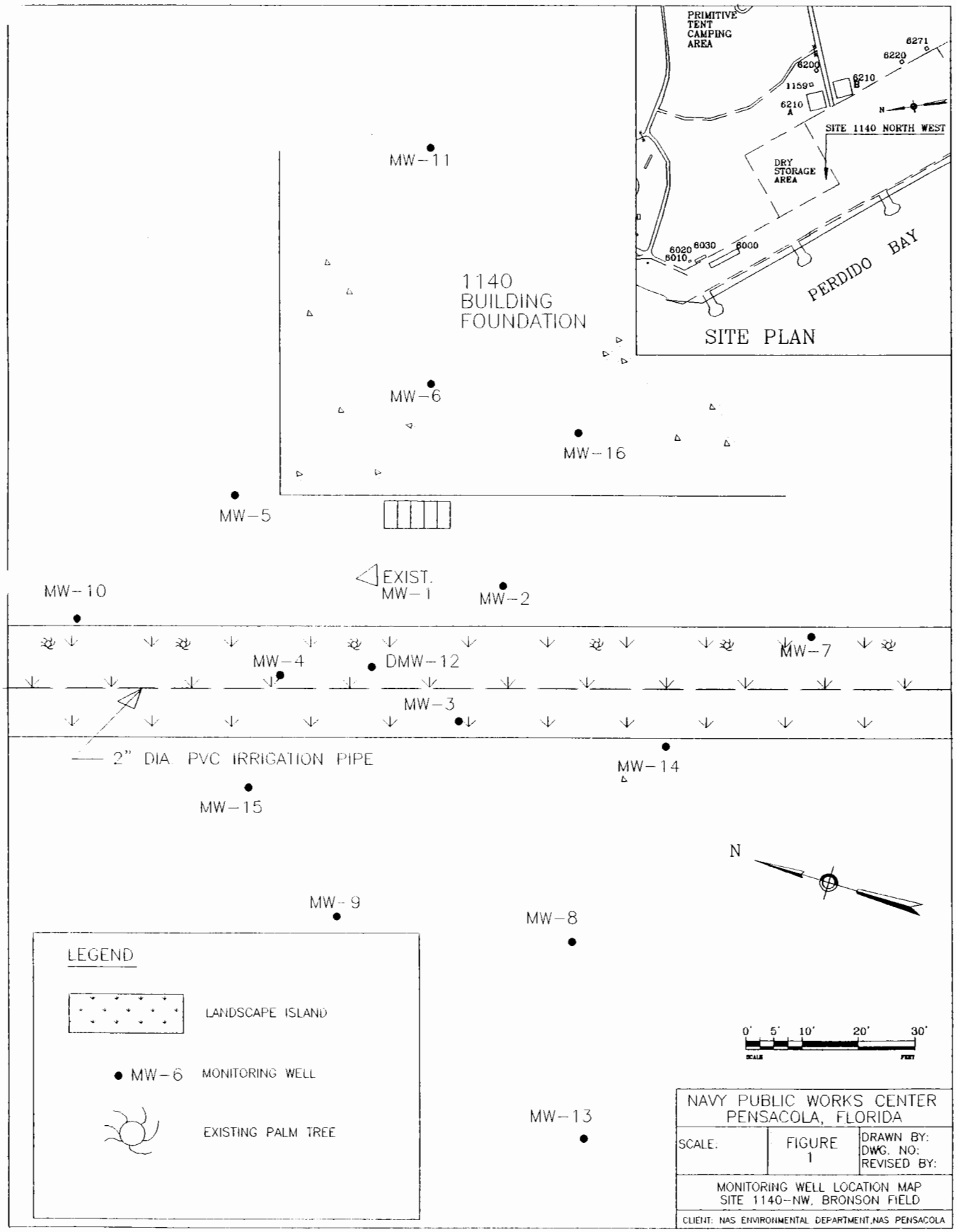
NOTES: BDL = Below detection limits
All results reported in parts per billion (ppb) unless otherwise noted.
Groundwater analyses performed for monitoring wells on date indicated above.
* Well destroyed by construction, well could not be located.

TABLE II
SUMMARY OF TRPH AND EDB
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
COLLECTED FROM MONITORING WELLS MW-1, MW-2, MW-3, MW-4, MW-9, MW-14, MW-15, and MW-16
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1140-NW

PARAMETER		MONITORING WELL NUMBER							
		MW-1	MW-2	MW-3	MW-4	MW-9	MW-14	MW-15	MW-16
TRPH	7/30/98	280	BDL	*	BDL	BDL	BDL	NS	NS
TRPH	6/5/96	NS	NS	NS	NS	BDL	NS	NS	NS
TRPH	5/23/96	BDL	NS	NS	NS	NS	NS	NS	NS
TRPH	4/11/96	NS	1900	110000	BDL	NS	NS	NS	NS
EDB	7/30/98	BDL	BDL	*	BDL	BDL	BDL	BDL	BDL
EDB	6/5/96	NS	NS	NS	NS	BDL	NS	NS	NS
EDB	4/11/96	NS	0.12	0.03	0.11	NS	NS	NS	NS

NOTES: All results reported in parts per billion (ppb) unless otherwise noted.
Groundwater monitoring analyses performed on monitoring wells on dates indicated above.
BDL = Below detection limits
NS = Not sampled
TRPH = Total Recoverable Petroleum Hydrocarbons
EDB = 1,2 Dibromoethane
* Well destroyed by construction, well could not be located.

APPENDIX C
FIGURE 1: Monitoring Well Location Map


PRIMITIVE TENT CAMPING AREA
6271
6220
6200
6210
1159
6210
N
SITE 1140 NORTH WEST
DRY STORAGE AREA
6020
6010
6030
6000
PERDIDO BAY
SITE PLAN
MW-11
1140 BUILDING FOUNDATION
MW-6
MW-16
MW-5
EXIST. MW-1
MW-2
MW-10
MW-4
DMW-12
MW-7
MW-3
2" DIA. PVC IRRIGATION PIPE
MW-14
MW-15
N
MW-9
MW-8
LEGEND
LANDSCAPE ISLAND
MW-6 MONITORING WELL
EXISTING PALM TREE
MW-13
0' 5' 10' 20' 30'
SCALE FEET
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE 1
DRAWN BY:
DWG. NO:
REVISED BY:
MONITORING WELL LOCATION MAP
SITE 1140--NW, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA

APPENDIX D
Lithological Logs
Monitoring Well Construction Diagrams

Site 1140NW	LOGGED BY: Greg Campbell	SHEET 1 OF 1	
Bronson Field	Contractor: MWM	Dr. Method: HSA	
'ensacola, Florida	Driller: Chuck Marbury	Dr. Rig: Mobile	
	Start Date: 4/28/98	Completed: 4/28/98	
MONITOR WELL NO.: MW-14	Start Time: 1150am	Finish Time: 1215pm	
Delivery Order 0014	Contract No	CONTAMINATION DATA	

TYPE	NUMB	BLOW	SAMP. INTV. (FT.)	SAMP. RECV. (IN)	DEPTH	DESCRIPTION OF MATERIALS AND CONDITIONS	OVA RESULTS (PPM) CARBON FILTER W/O	WITH	NET	NOTES
POST HOLE HSA				100%	1	0'-1'; Concrete & Sub-base.	0	NR	0	
				100%	3	1'-4'; Brown, Fine to Medium Silty Sand.	0	NR	0	
				100%	5	4'-6'; Lighter Brown, Fine to Medium, Silty Sand. Trace of Clay.				
			Water Table @ approx. 4-4.5 bls							
				100%	7	6'-13.5'; Darker Brown, Fine to Medium to Coarse, Silt Sand. Trace of Clay.				
HA				100%	9					
				100%	11					
				100%	13					
						End of Boring @ 13.5' bls				
					15					

I Certify that this lithological log, including geological and hydrogeological interpretations, has been prepared under my direct supervision and meets the minimal technical requirements as set forth in Chapter 492 of the Florida Statues.

Reviewed by:

Site 1140NW	LOGGED BY: Greg Campbell	SHEET 1 OF 1	
Bronson Field	Contractor: MWM.	Dr. Method:	HSA
'ensacola, Florida	Driller: Chuck Marbury	Dr. Rig:	Mobile
	Start Date: 4/28/98	Completed:	4/28/98
MONITOR WELL NO.: MW-15	Start Time: 1105 am	Finish Time:	1137am
Delivery Order 0014	Contract No	CONTAMINATION DATA	

TYPE	NUMB	BLOW	SAMP. INTV. (FT.)	SAMP. RECV. (IN)	DEPTH	DESCRIPTION OF MATERIALS AND CONDITIONS	OVA RESULTS (PPM) CARBON FILTER W/O	WITH	NET	NOTES
POST				100%	1	0'-1'; Concrete & Sub-base.	0	NR	0	
HOLE				100%	3	1'-4'; Brown, Fine to Medium Silty Sand.	0	NR	0	
				100%	5	4'-6'; Lighter Brown, Fine to Medium, Silty Sand. Trace of Clay.				
HSA			Water Table @ approx. 4-4.5 bls							
				100%	7	6'-13.5'; Darker Brown, Fine to Medium to Coarse, Silt Sand. Trace of Clay.				
HA				100%	9					
				100%	11					
				100%	13					
						End of Boring @ 13.5' bls				
					15					

I Certify that this lithological log, including geological and hydrogeological interpretations, has been prepared under my direct supervision and meets the minimal technical requirements as set forth in Chapter 492 of the Florida Statues.

Reviewed by:

Site 1140NW	LOGGED BY: Greg Campbell	SHEET 1 OF 1	
Bronson Field	Contractor: MWM.	Dr. Method:	HSA
'ensacola, Florida	Driller: Chuck Marbury	Dr. Rig:	Mobile
	Start Date: 4/28/98	Completed: 4/28/98	
MONITOR WELL NO.: MW-16	Start Time: 1030am	Finish Time: 1105am	
Delivery Order 0014	Contract No	CONTAMINATION DATA	

TYPE	NUMB	BLOW	SAMP. INTV. (FT.)	SAMP. RECV. (IN)	DEPTH	DESCRIPTION OF MATERIALS AND CONDITIONS	OVA RESULTS (PPM) CARBON FILTER W/O	WITH	NET	NOTES
POST				100%	1	0'-1'; Concrete & Sub-base.	0	NR	0	
HOLE				100%	3	1'-4'; Brown, Fine to Medium Silty Sand.	0	NR	0	
				100%	5	4'-6'; Lighter Brown, Fine to Medium, Silty Sand. Trace of Clay.				
HSA			Water Table @ approx 4-4.5' bls							
				100%	7	6'-13.5'; Darker Brown, Fine to Medium to Coarse, Silt Sand. Trace of Clay.				
HA				100%	9					
				100%	11					
				100%	13					
						End of Boring @ 13.5' bls				
					15					

I Certify that this lithological log, including geological and hydrogeological interpretations, has been prepared under my direct supervision and meets the minimal technical requirements as set forth in Chapter 492 of the Florida Statues.

Reviewed by:

NPWC

ENVIRONMENTAL

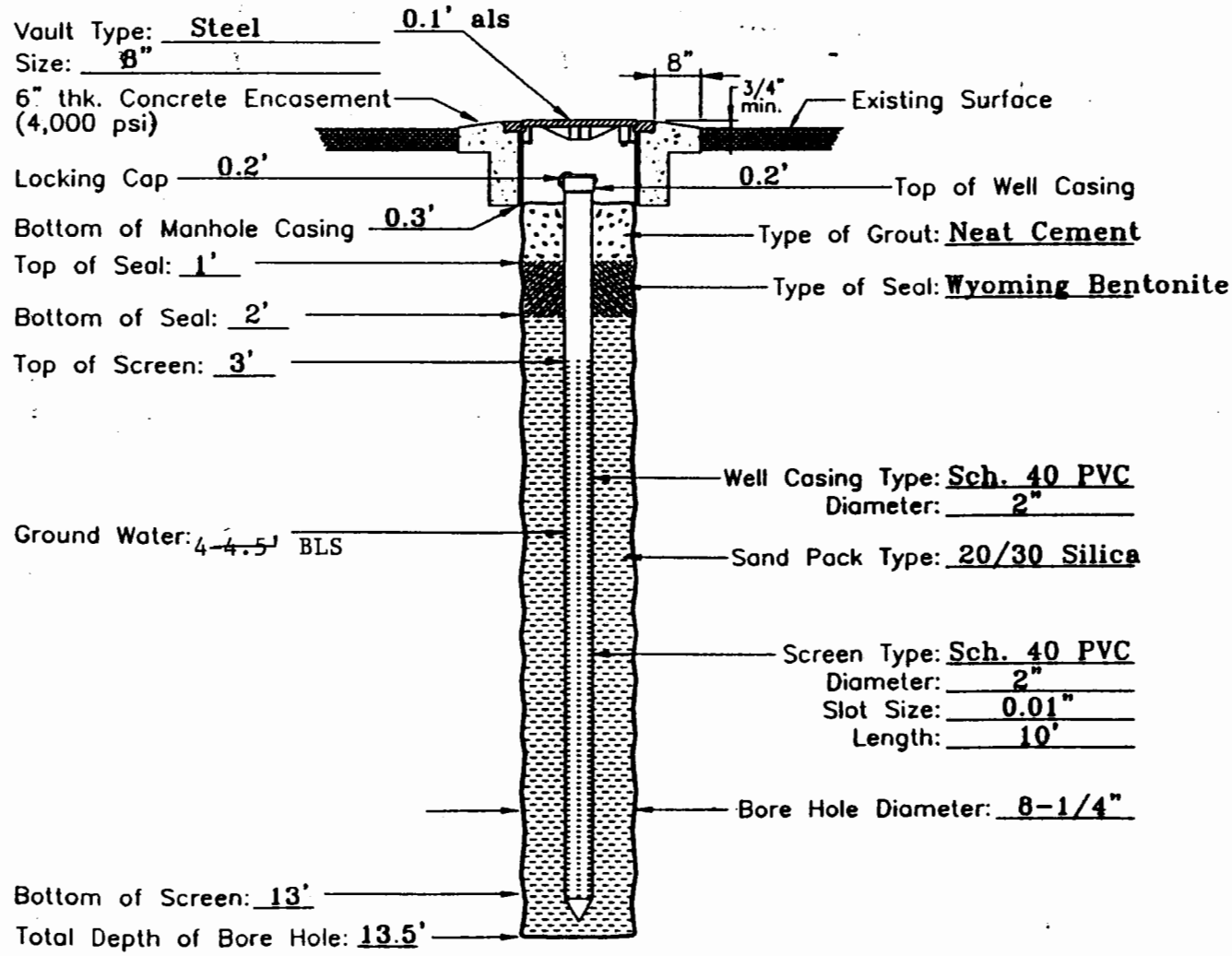
MONITOR WELL CONSTRUCTION DETAIL

310 John Tower Road
Pensacola, Florida 32508-5303
(850) 452-4315
(850) 452-2331 Fax

LOGGED BY: Greg Campbell
DRILLING CONTRACTOR: MWM
DRILLER'S NAME: Chuck Marbury
WELL NUMBER: MW-14

CLIENT: NAS Pensacola, FL
LOCATION: Site 1140 (NW), Bronson Field
JOB NUMBER:
DATE Start: 4/28/98 **Finish:** 4/28/98
TIME Start: 1150am **Finish:** 1215pm

COMMENTS: (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOTE: DEPTHS SHOWN ARE BELOW LAND SURFACE (B.L.S.)

DRAWING ABOVE IS NOT TO SCALE

CAD FILE @STA3> C:\ACADR13\MW-DETL1.DWG STA3-19951128.1143

NPWC

ENVIRONMENTAL

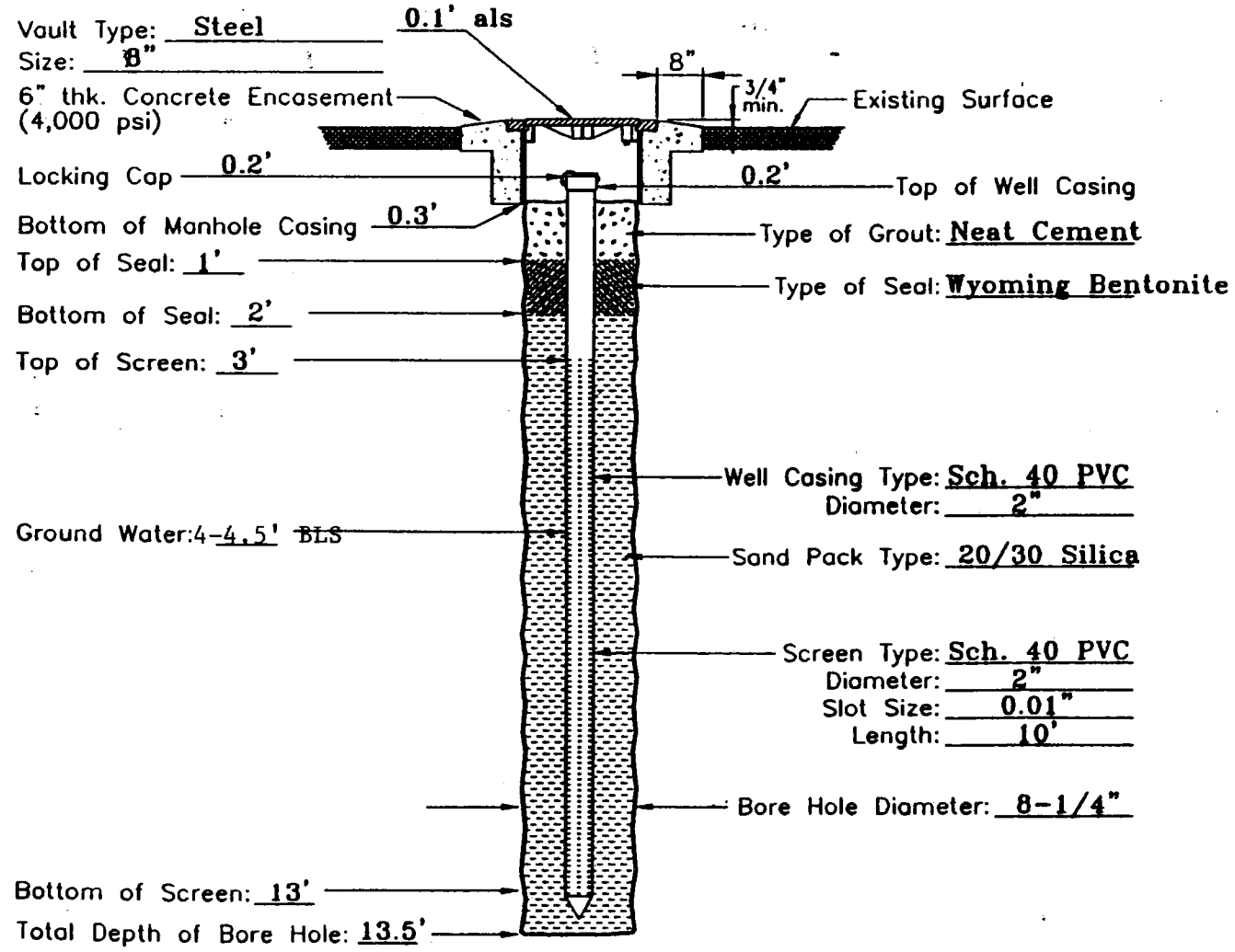
MONITOR WELL CONSTRUCTION DETAIL

310 John Tower Road
Pensacola, Florida 32508-5303
(850) 452-4315
(850) 452-2331 Fax

LOGGED BY: Greg Campbell
DRILLING CONTRACTOR: MWM
DRILLER'S NAME: Chuck Marbury
WELL NUMBER: MW-15

CLIENT: NAS Pensacola, FL
LOCATION: Site 1140 (NW), Bronson Field
JOB NUMBER:
DATE Start: 4/28/98 **Finish:** 4/28/98
TIME Start: 1105am **Finish:** 1137am

COMMENTS: (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOTE: DEPTHS SHOWN ARE BELOW LAND SURFACE (B.L.S.)

DRAWING ABOVE IS NOT TO SCALE

CAD FILE @STA3> C:\ACADR13\MW-DETL1.DWG STA3-19951128.1143

NPWC

ENVIRONMENTAL

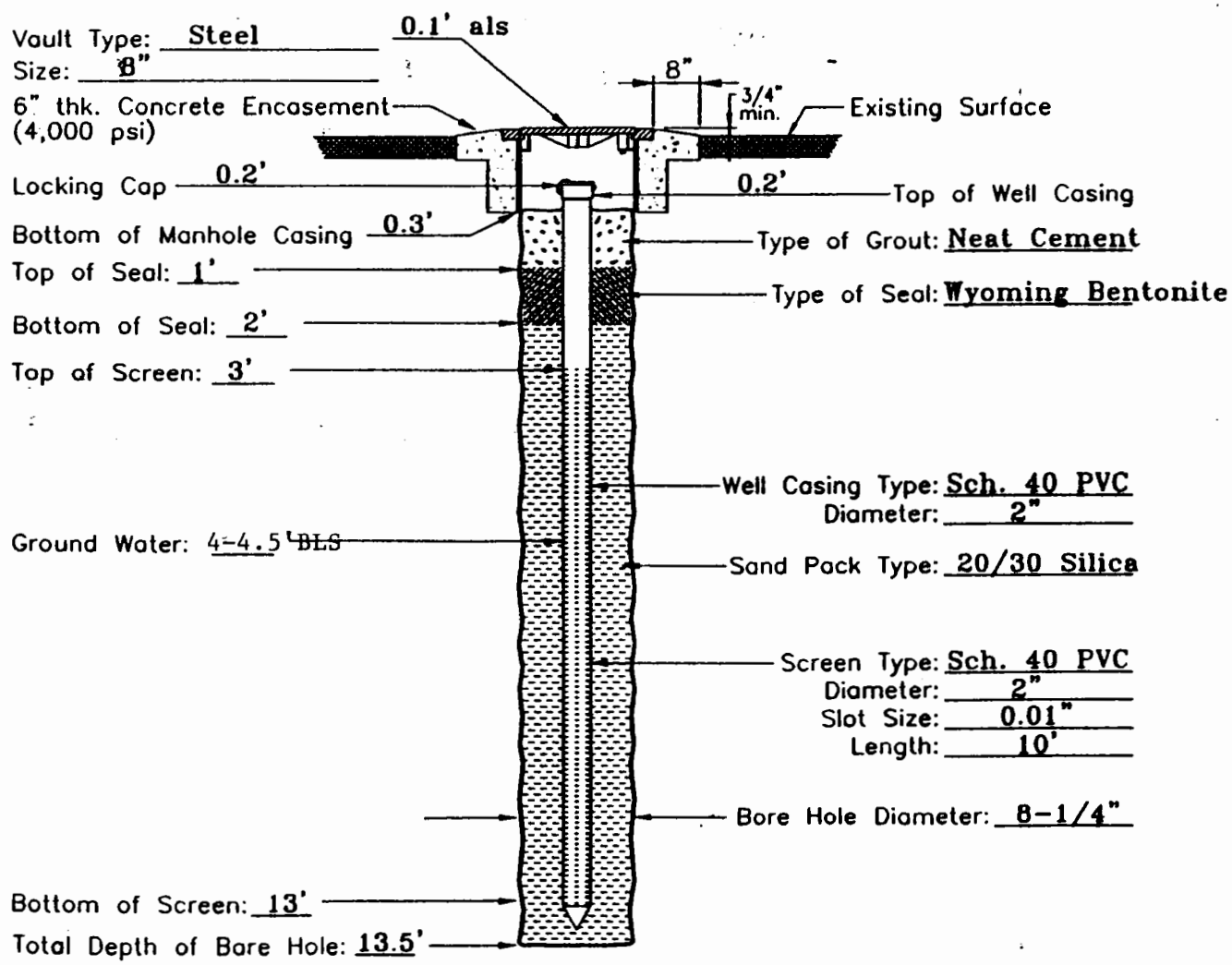
MONITOR WELL CONSTRUCTION DETAIL

310 John Tower Road
Pensacola, Florida 32508-5303
(850) 452-4315
(850) 452-2331 Fax

LOGGED BY: Greg Campbell
DRILLING CONTRACTOR: MWM
DRILLER'S NAME: Chuck Marbury
WELL NUMBER: MW-16

CLIENT: NAS Pensacola, FL
LOCATION: Site 1140 (NW), Bronson Field
JOB NUMBER:
DATE Start: 4/28/98 **Finish:** 4/28/98
TIME Start: 1030am **Finish:** 1050am

COMMENTS: **(Lost circulation interval, Water level changes, Hole collapse interval, etc.):**



NOTE: DEPTHS SHOWN ARE BELOW LAND SURFACE (B.L.S.)

DRAWING ABOVE IS NOT TO SCALE

CAD FILE @STA3> C:\ACADR13\MW-DETL1.DWG STA3-19951128.1143

APPENDIX E

TABLE III: Top of Casing and Groundwater Elevations

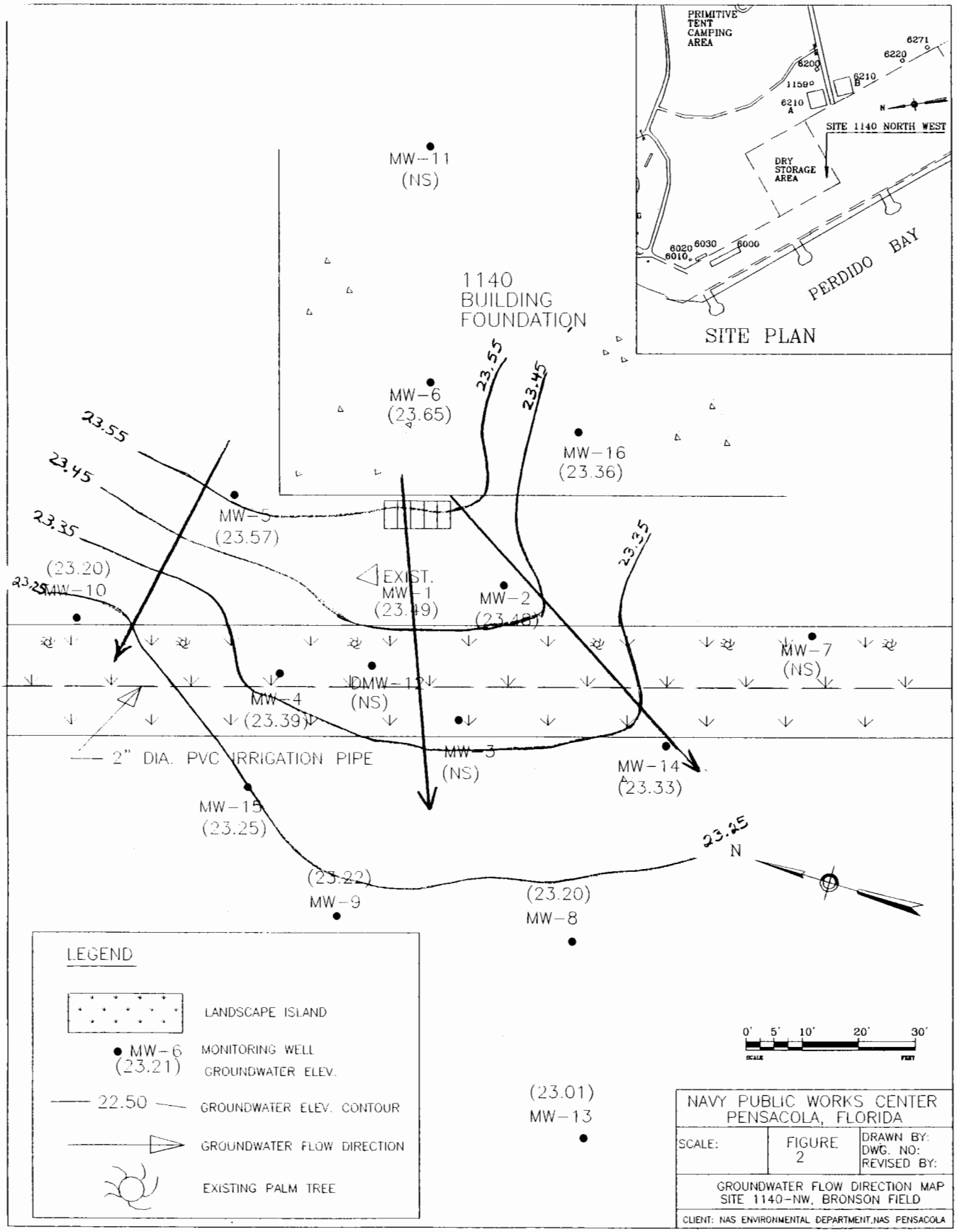
TABLE III
TOP OF CASING AND GROUNDWATER ELEVATIONS
U.S. NAVY OUTLYING LAND FIELD BRONSON, SITE 1140-NW

WELL NUMBER	TOC (FT. M.S.L.)	DTW (FT) 11/5/98	GROUNDWATER ELEVATION (FT. M.S.L.) 11/5/98
MW-1	30.00	6.51	23.49
MW-2	30.10	6.62	23.48
MW-3	29.96	NS	-
MW-4	30.03	6.64	23.39
MW-5	30.03	6.46	23.57
MW-6	30.26	6.61	23.65
MW-7	30.02	NS	-
MW-8	29.80	6.60	23.20
MW-9	29.80	6.58	23.22
MW-10	29.86	6.66	23.20
MW-11	30.24	NS	-
DMW-12	30.05	NS	-
MW-13	29.73	6.72	23.01
MW-14	30.12	6.79	23.33
MW-15	29.87	6.62	23.25
MW-16	30.23	6.87	23.36

NOTES: TOC = TOP OF CASING
DTW = DEPTH TO WATER

Assumed elevation of Southeast corner of concrete transformer slab to be 30.00 ft. M.S.C.

APPENDIX F
Groundwater Direction Flow Map



NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA

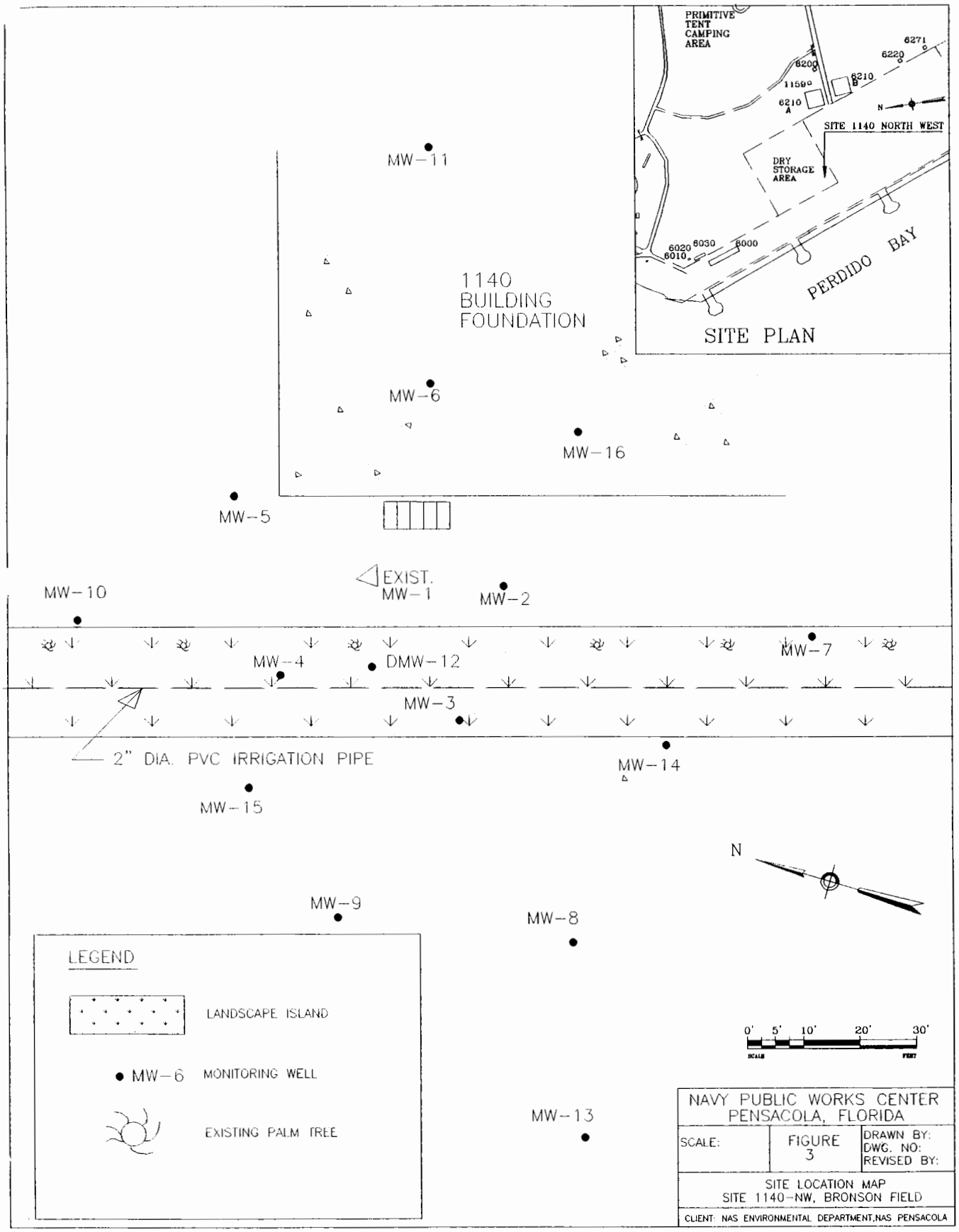
SCALE:	FIGURE 2	DRAWN BY: DWG. NO: REVISED BY:

GROUNDWATER FLOW DIRECTION MAP
SITE 1140-NW, BRONSON FIELD

CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA

APPENDIX G

FIGURE 3: Site Location Map


PRIMITIVE TENT CAMPING AREA
6271
6220
6200
6210 B
1159
6210 A
N
SITE 1140 NORTH WEST
DRY STORAGE AREA
6020
6030
6000
6010
PERDIDO BAY
SITE PLAN
MW-11
1140 BUILDING FOUNDATION
MW-6
MW-16
MW-5
EXIST. MW-1
MW-2
MW-10
MW-4
DMW-12
MW-7
MW-3
2" DIA. PVC IRRIGATION PIPE
MW-14
MW-15
N
MW-9
MW-8
LEGEND
LANDSCAPE ISLAND
MW-6 MONITORING WELL
EXISTING PALM TREE
0' 5' 10' 20' 30'
SCALE
FEET
MW-13
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE 3
DRAWN BY:
DWG. NO:
REVISED BY:
SITE LOCATION MAP
SITE 1140-NW, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA