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FINAL BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORTS STUDY AREA 38 NTC ORLANDO FL

12/1/1997

ABB ENVIRONMENTAL

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BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT

STUDY AREA 38

NAVAL TRAINING CENTER ORLANDO, FLORIDA

UNIT IDENTIFICATION CODE: N65928
CONTRACT NO.: N62467-89-D-0317/107

DECEMBER 1997

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA
29419-9010

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BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT

STUDY AREA 38

NAVAL TRAINING CENTER ORLANDO, FLORIDA

Unit Identification Code: N65928

Contract No.: N62467-89-D-0317/107

Prepared by:

ABB Environmental Services, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Barbara Nwokike, Code 1873, Engineer-in-Charge

December 1997

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/107 are complete and accurate and comply with all requirements of this contract.

DATE: December 10, 1997

NAME AND TITLE OF CERTIFYING OFFICIAL: John Kaiser
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Richard Allen
Project Technical Lead

(DFAR 252.227-7036)

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Study Area 38
Naval Training Center
Orlando, Florida

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Orlando, Florida

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
CLP	Contract Laboratory program
DQO	data quality objective
FGGC	Florida Groundwater Guidance Concentration
MCL	maximum contaminant level
$\mu g/\ell$	micrograms per liter
NTC	Naval Training Center
PCB	polychlorinated biphenyl
RBC	risk-based concentration
SCG	soil cleanup goal
TAL	target analyte list
TCL	target compound list
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1.0 STUDY AREA 38, GROUNDS MAINTENANCE BUILDING 127

This report contains information gathered as a result of site screening activities conducted at Study Area 38. Site screening investigations took place between June 25 and July 2, 1997. Proposed field activities were presented in the Site Screening Plan (ABB Environmental Services, Inc. [ABB-ES], 1995).

1.1 STUDY AREA 38, BACKGROUND AND CONDITIONS. Study Area 38 is located on the Main Base, Naval Training Center (NTC), Orlando (Figure 1). This section includes a brief background summary for the site. Additional details can be found in the Site Screening Plan (ABB-ES, 1995).

Building 4001 is a concrete-floored storage building constructed in 1965. The building entrance is on the south side, with a concrete ramp that abuts the door. The Morale, Welfare, and Recreation Operation Command stores grounds maintenance equipment and chemicals (including lawnmower oil, fertilizers, and pesticides) in the building. Fuel and oil stains were noted on the floor of the building, as well as chemical odors. No visual evidence of material releases or stressed vegetation was observed around the perimeter of the building.

1.2 STUDY AREA 38, INVESTIGATION SUMMARY. The site screening investigation was intended to assess the potential impact from incidental releases of lawn maintenance chemicals in and around Building 4001. Past site practices and current site conditions were used to determine sampling locations. The base of the ramp was selected as the most likely location for accidental release of materials handled at the site. No indication of release or stressed vegetation was noted around the perimeter of the building (Figure 2).

1.2.1 Soil Boring Sampling One soil boring for soil sampling and well installation was advanced with a hand auger. The total depth of the boring was approximately 9 feet below land surface (bls). Two soil samples were collected from the boring, 38S00101 from zero to one foot bls and 38B00101, from four to five feet bls. Soil samples were submitted to an approved laboratory for full suite Contract Laboratory Program (CLP), target analyte list (TAL), and target compound list (TCL) laboratory analysis plus pesticides and polychlorinated biphenyls (PCBs), herbicides, and total petroleum hydrocarbons, in accordance with U.S. Environmental Protection Agency (USEPA) level IV data quality objectives (DQOs).

1.2.2 Groundwater Monitoring Well Installation and Sampling The soil boring was completed as a temporary monitoring well, OLD-38-01 (Figure 2). The screened interval for the monitoring well bracketed the water table. A groundwater sample was collected from the well using low-flow sampling techniques. The groundwater sample was submitted to an approved laboratory for full suite CLP, TAL, and TCL laboratory analysis plus pesticides, PCBs, herbicides, and total suspended solids analysis, in accordance with USEPA Level IV DQOs. The monitoring well installation diagram and Groundwater Sample Field Data are included in Appendix A.

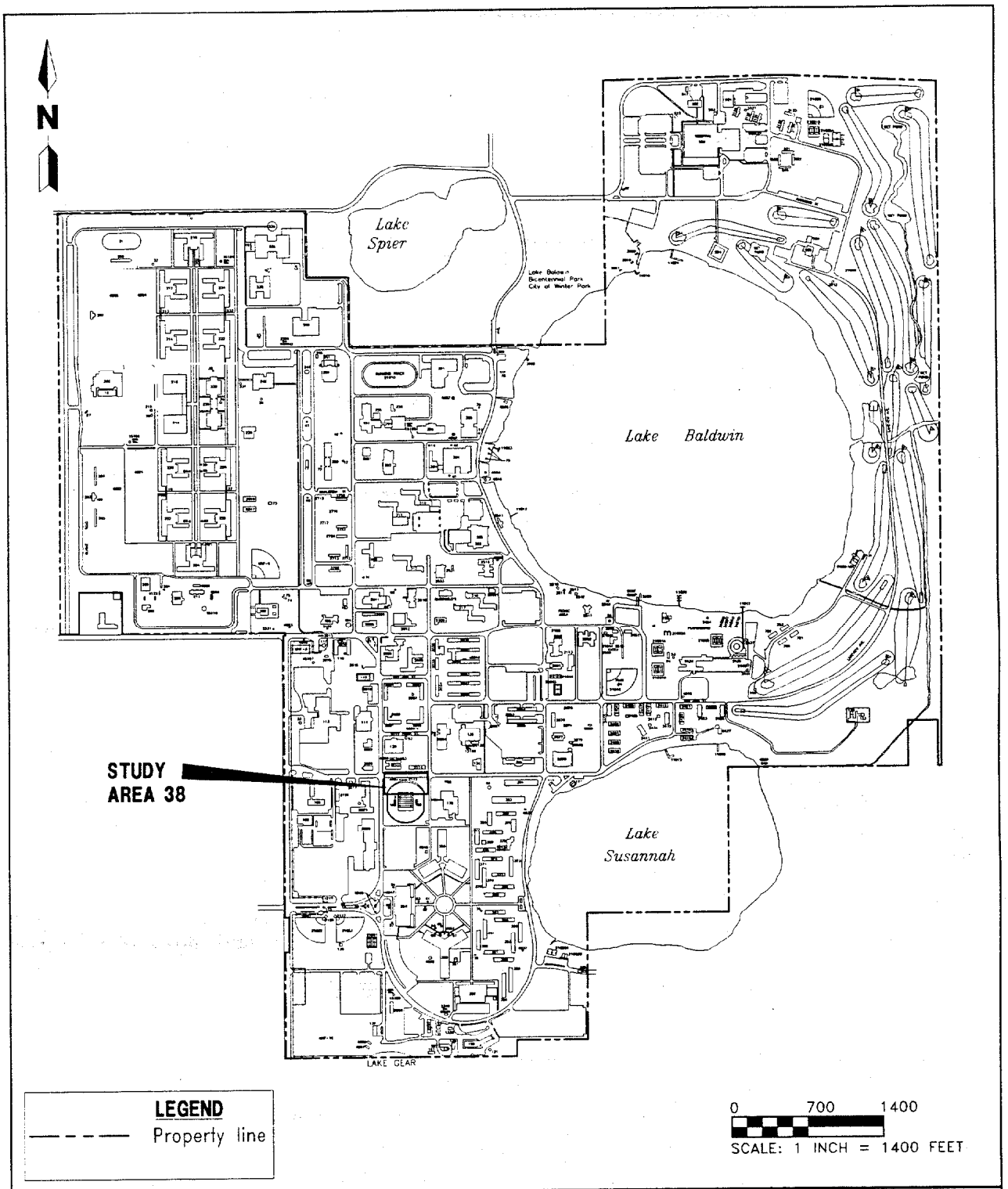

FIGURE 1
STUDY AREA LOCATION

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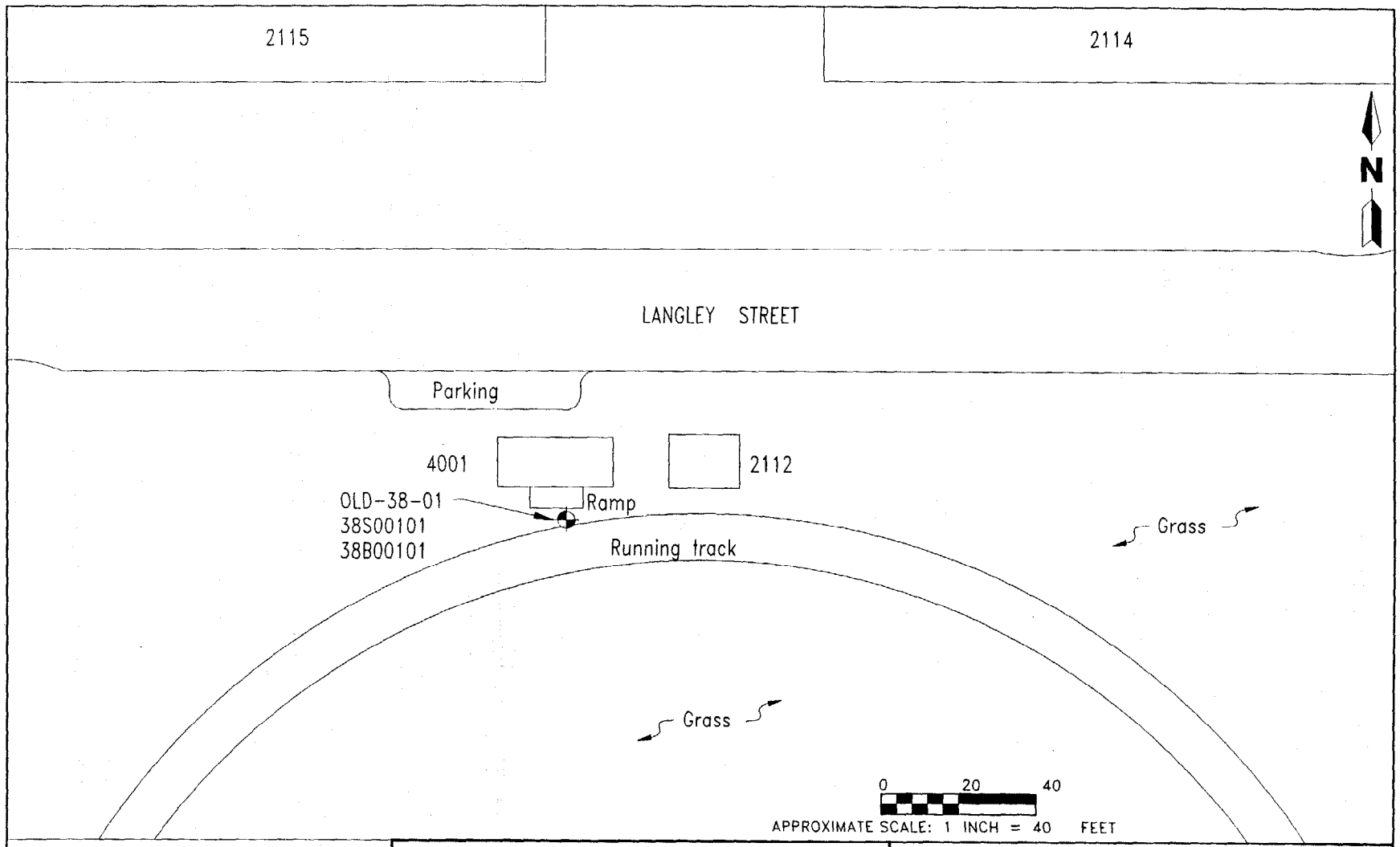
BASE REALIGNMENT AND CLOSURE
ENVIRONMENTAL SITE
SCREENING REPORT
STUDY AREA 38
NAVAL TRAINING CENTER
ORLANDO, FLORIDA



LEGEND

OLD-38-01
38S00101
38B00101
Soil boring/temporary monitoring well location and designation

:\02530\02530-09\SSP\02530524.DWG, FDF-NAB 11/17/97 11:51:29, AutoCAD R12

FIGURE 2
STUDY AREA 38, SOIL BORING AND MONITORING WELL LOCATIONS, BUILDING 4001, MAINTENANCE EQUIPMENT STORAGE, MAIN BASE

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT
STUDY AREA 38
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

1.3 STUDY AREA 38, RESULTS. Analytes detected in media from Study Area 38 are presented as Positive Detections Tables in Appendix B. A complete set of analytical results is presented in Appendix C. Exceedances of background or regulatory guidance concentrations (shaded on the positive hits tables) are displayed in chem-boxes near their respective explorations on Figure 2.

1.3.1 Surface Soil Analytical Results Analysis of the surface soil collected at Study Area 38 detected volatile organics, semivolatile organics, pesticides, and inorganics (Appendix B). None of the compounds detected were at concentrations exceeding their respective residential risk-based concentrations (RBCs) or soil cleanup goals (SCGs). The only organic compound detected in groundwater was chloroform. Because and chloroform was not detected in soil the comparison to leachability-based SCG values is unnecessary.

1.3.2 Subsurface Soil Analytical Results Analysis of the subsurface soil collected at Study Area 38 detected volatile organics, and inorganics (Appendix B). None of the compounds detected were at concentrations exceeding their respective residential RBCs or SCGs. The only organic compound detected in groundwater was chloroform. Because chloroform was not detected in soil the comparison to leachability-based SCG values is unnecessary.

1.3.3 Groundwater Analytical Results Analysis of the groundwater collected at Study Area 38 detected volatile organics, semivolatile organics, and inorganics (Appendix B). The volatile organic compound chloroform was detected at an estimated concentration of 0.17 micrograms per liter ($\mu g/\ell$), which slightly exceeds the Federal maximum contaminant level (MCL) of 0.15 $\mu g/\ell$ for tapwater. Other volatile organic compounds were below regulatory guidance concentrations. No semivolatile organic compounds were detected at concentrations exceeding MCLs or FGGCs.

1.4 STUDY AREA 38, CONCLUSIONS AND RECOMMENDATIONS. The analytical results from media sampled at Study Area 38 do not indicate that the site has been affected by past use. The chloroform detected in the groundwater (0.17 $\mu g/\ell$) only slightly exceeds the RBC for tapwater (0.15 $\mu g/\ell$) and is likely a laboratory artifact.

ABB-ES recommends that Study Area 38 be made eligible for transfer with no further requirement for evaluation and a reclassification of the site from 7/Grey to 1/White.

The undersigned members of the Orlando Partnering Team concur with the findings and recommendations of the preceding investigation.

STUDY AREA 38

U.S. Environmental Protection Agency, Region IV	Date 12/10/97
Florida Department of Environmental Protection	Date 12/16/97
U.S. Department of the Navy	Date 12/16/97

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1995. *Site Screening Plan, Groups I through IV Study Areas and Miscellaneous Additional Sites, Naval Training Center (NTC), Orlando, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina.

APPENDIX A

MONITORING WELL INSTALLATION DIAGRAMS, AND GROUNDWATER SAMPLE FIELD DATA

Appendix A-1 Monitoring Well Installation Diagrams
Appendix A-2 Groundwater Sample Field Data

APPENDIX A-1

MONITORING WELL INSTALLATION DIAGRAMS

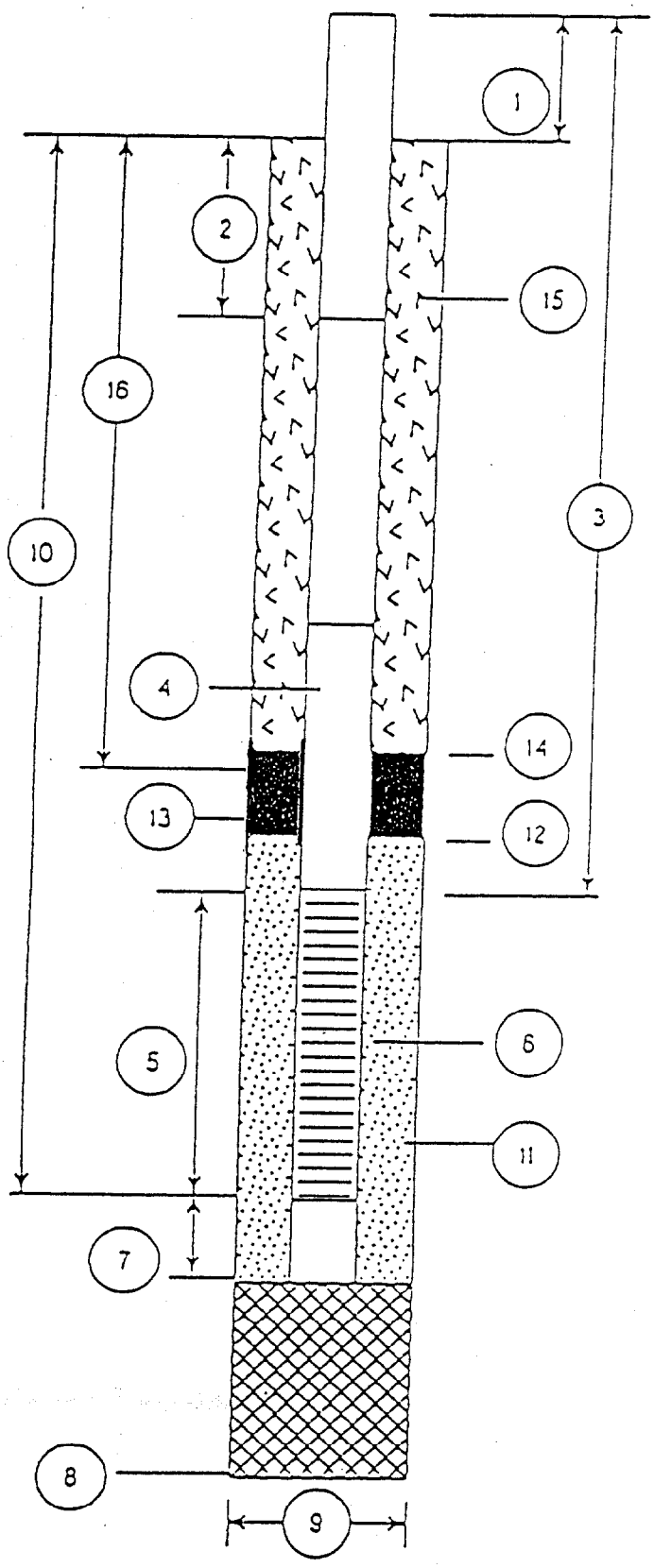
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-38-01

DATE OF INSTALLATION: 6-24/97



1. Height of Casing above ground: 3.79
2. Depth to first Coupling: 1.21
   Coupling Interval Depths: 5'
3. Total Length of Riser Pipe: 5'
4. Type of Riser Pipe: 2" sched 40 PVC
5. Length of Screen: 5'
6. Type of Screen: 2" sched 40 PVC 0.010 slot
7. Length of Sump: 6"
8. Total Depth of Boring: 9'
9. Diameter of Boring: 4"
10. Depth to Bottom of Screen: 6.21
11. Type of Screen Filter: Silica sand
    Quantity Used: 30 lb Size: —
12. Depth to Top of Filter: 1'
13. Type of Seal: Benseal
    Quantity Used: 1 lb
14. Depth to Top of Seal: 0'
15. Type of Grout: NA
    Grout Mixture:
    Method of Placement: NA
16. Tot. Depth of 6 in. Steel Casing: NA

APPENDIX A-2

GROUNDWATER SAMPLE FIELD DATA

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 08545.10
Sample Location ID: OLD-38-01
Time: Start: 1008 End: 1210

Point of Interest: SA 38
Date: 6-25/97
Signature of Sampler: [signature]

Water Level/Well Data

Well Depth 10.12 Ft. — X Measured ___ Historical

X Top of Well ___ Top of Protective Casing ___

Well Riser Stick-up (from ground) 3.79 Ft.

Protective Casing/Well Difference NA Ft.

Protective Casing NA Ft.

Depth to Water 8.68 Ft.

Well Material: X PVC ___ SS ___

Well Locked?: X Yes ___ No

Well Dia. X 2 inch ___ 4 inch ___ 6 inch ___

Water Level Equip. Used: X Elect. Cond. Probe ___ Float Activated ___ Press. Transducer ___

Height of Water Column 1.44 Ft. X X .16 Gal/Ft. (2 in.) ___ .65 Gal/Ft. (4 in.) ___ 1.5 Gal/Ft. (6 in.) ___ Gal/Ft. (__ in.) = 0.23 Gal/Vol; 4.5 Total Gal Purged

Well Integrity: Yes / No
Prot. Casing Secure: NA
Concrete Collar Intact
Other

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For) Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
		Submersible Pump	
		Bailer	
		PVC/Silicon Tubing	
X	X	Teflon/~~Silicon~~ Tubing	
		Airlift	
		Hand Pump	
	X	In-line Filter	0.45u
		Press/Vac Filter	

Decontamination Fluids Used: (✓ All That Apply at Location)

- ___ Methanol (100%)
- ___ 25% Methanol/75% ASTM Type II water
- X Deionized Water
- ___ Liquinox Solution
- ___ Hexane
- ___ HNO_3/D.I. Water Solution
- ___ Potable Water
- ___ None

Field Analysis Data

Ambient Air VOC NR ppm Well Mouth NR ppm

Field Data Collected: ___ In-line X In Container

Sample Observations: ___ Turbid X Clear ___ Cloudy ___ Colored ___ Odor

Purge Data	@ ___ Gal.	@ 2.5 Gal.	@ ___ Gal.	@ ___ Gal.	@ 4.5 Gal.
Temperature, Deg. C	27.9	27.8	27.8	27.7	27.8
pH, units	6.70	6.69	6.58	6.58	6.59
Specific Conductivity	515 ~~14.22~~	515	482	480	480
N.T.U. ~~(umhos/cm. @ 25 Deg. C)~~	14.22	19.50	37.40	21.50	23.80
~~Oxidation - Reduction, mv~~					
~~Dissolved Oxygen, ppm~~					

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA		HCL	3x40ml	✓	
SVOA		4OC	2x1l	✓	
Pest/PCB		4OC	2x1l	✓	
Inorganics	✓	HNO_3	2x1l	✓	
~~Explosives~~ HERB		4°C	2x1l	✓	
TPH		H_2SO_4	2x1l	✓	
~~TOC~~ TSS		~~H_2SO_4~~	500ml	✓	
Nitrate		H_2SO_4			

Notes: Collected 1l metals filtered
1l not filtered

APPENDIX B

SUMMARY OF POSITIVE DETECTIONS TABLES

Table B-1 Summary of Positive Detections in Surface Soil
Table B-2 Summary of Positive Detections in Subsurface Soil
Table B-3 Summary of Positive Detections in Groundwater

TABLE B-1

SUMMARY OF POSITIVE DETECTIONS IN SURFACE SOIL

Appendix B

Table B-1. Summary of Positive Detections in Surface Soil Analytical Results

Study Area 38

Naval Training Center, Orlando

Orlando, FL

Sample ID	Background Screening [1]		SCG for Residential Soil		RBC [3] for Residential Soil		RBC [3] for Industrial Soil		38S00101	
Sampling Date									2-Jul-97	
Semivolatile organics, ug/kg										
Chrysene			140,000		88,000	c	780,000	c	42	J
Pyrene			2,200,000		2,300,000	n	61,000,000	n	46	J
Pesticides, ug/kg										
4,4'-DDE			3000		1,900	c	17,000	c	15	
4,4'-DDT			3100		1,900	c	17,000	c	13	
alpha-Chlordane			800		490	c	4,400	c	3.3	
Inorganics, mg/kg										
Aluminum	2088		75000		78,000	n	1,000,000	n	1170	J
Arsenic	1.0		0.8		0.43 /23	c/n	3.8 c/610	c/n	0.57	J
Barium	8.7		5,200.0		5,500	n	140,000	n	4.7	J
Calcium	25295		ND		1000000		1000000		4490	
Chromium	5		290		390	n	10,000	n	3.1	
Copper	4.1		ND		3,100	n	82,000	n	2.5	J
Iron	712		ND		23,000	n	610,000	n	257	
Lead	14.5		500		400		400		13.5	
Magnesium	328		ND		460,468		460,468		260	J
Manganese	8.1		370		1,800	n	47,000	n	8	
Vanadium	3.1		490		550	n	14,000	n	1.1	J
Zinc	17.2		23000		23,000	n	610,000	n	19.6	
General Chemistry, mg/kg										
TRPH	ND		ND		ND		ND		130	

Appendix B

Table B-1. Summary of Positive Detections in Surface Soil Analytical Results

Study Area 38

Naval Training Center, Orlando

Orlando, FL

NOTES:

[1] The background screening value is twice the average of detected concentrations for inorganic analytes.

[2] SCG = Soil Cleanup Goals for Florida (Florida Department of Environmental Protection memorandum, September 29, 1995). Arsenic value is as revised in Applicability of Soil Cleanup Goals for Florida (FDEP memorandum, January 19, 1996). Values indicated are from a residential scenario.

Chromium values are for Chromium VI.

[3] RBC = Risk-Based Concentration Table, USEPA Region III, March 1997, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER directive 9355-4-12). For essential nutrients (calcium, magnesium) screening values were derived based on recommended daily allowances (RDAs).

n = noncarcinogenic pathway

c = carcinogenic pathway

ND = Not determined.

mg/kg = milligrams per kilogram.

ug/kg = micrograms per kilogram.

OSWER = Office of Solid Waste and Emergency Response.

USEPA = U.S. Environmental Protection Agency.

DDE = Dichlorodiphenyldichloroethene

DDT = Dichlorodiphenyltrichloroethane

J = Reported concentration is an estimated quantity.

All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (ug/kg) soil dry weight.

Bold/shaded values indicate exceedance of SCG or background (if background is higher than SCG).

Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-2

SUMMARY OF POSITIVE DETECTIONS IN SUBSURFACE SOIL

Appendix B

Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results

Study Area 38

Naval Training Center, Orlando

Orlando, FL

Sample ID	Background Screening [1]		SCG [2] Leaching		RBC [3] for Residential Soil		RBC [3] for Industrial Soil		38B00101	
Sampling Date									2-Jul-97	
Volatile organics, ug/kg										
Ethylbenzene			NA		7,800,000	n	200,000,000	n	2	J
Inorganics, mg/kg										
Aluminum	2,119		NA		78,000	n	1,000,000	n	93	J
Calcium	115		NA		1,000,000		1,000,000		835	J
Chromium	3.7		NA		390	n	10,000	n	0.66	J
Copper	ND		NA		3,100	n	82,000	n	0.44	J
Iron	264		NA		23,000	n	610,000	n	61.3	
Lead	3.9		NA		400		400		1.1	
Manganese	2.1		NA		1800	n	47,000	n	1.1	J

Appendix B

Table B-2. Summary of Positive Detections in Subsurface Soil Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

NOTES:

[1] The background screening value is twice the average of detected concentrations for inorganic analytes.

[2] SCG = Soil Cleanup Goals for Florida (Florida Department of Environmental Protection memorandum, September 29, 1995).
For detected analytes and compounds in subsurface soils, SCGs are not applicable (NAs) because there are no associated exceedances of Florida groundwater guidance concentrations in site groundwater.

[3] RBC = Risk-Based Concentration Table, USEPA Region III, March 1997, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER directive 9355-4-12). For essential nutrients (calcium) screening values were derived based on recommended daily allowances (RDAs).

n = noncarcinogenic pathway
c = carcinogenic pathway
NA = Not applicable.
ND = Not determined.
mg/kg = milligrams per kilogram.
ug/kg = micrograms per kilogram.
OSWER = Office of Solid Waste and Emergency Response.
USEPA = U.S. Environmental Protection Agency.
J = Reported concentration is an estimated quantity.
All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (ug/kg) soil dry weight.
Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-3

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER

Appendix B

Table B-3. Summary of Positive Detections in Groundwater Analytical Results

Study Area 38

Naval Training Center, Orlando

Orlando, FL

Identifier	Background [1] Screening		FDEPG		Primary FEDMCL		RBC[2] for Tap Water		38G00101		38H00101	
Sampling Date									6/25/97		6/25/97	
Volatile organics, ug/L												
Chloroform			6	c	ND		0.15	c	0.17	J		
Inorganics, ug/L												
Aluminum	4,067		200	s	ND		37,000	n	166	J	70.4	J
Barium	31.4		2,000	p	2,000		2,600	n			2	J
Calcium	36,830		ND		ND		1,000,000		76300	J	74100	J
Copper	5.4		1,000	s	1,300		1,500	n	7.2	J	1.7	J
Iron	1,227		300	s	ND		11,000	n			13	J
Magnesium	4,560		ND		ND		118,807		8420		8270	
Manganese	17		50	s	ND		840	n	5.4	J	1.8	J
Potassium	5,400		ND		ND		297,016		3900	J	3900	J
Sodium	18,222		160,000	p	ND		396,022		18700		18700	
Vanadium	20.6		49	st	ND		260	n	6.7	J	5.8	J

Appendix B

Table B-3. Summary of Positive Detections in Groundwater Analytical Results

Study Area 28

Naval Training Center, Orlando

Orlando, FL

NOTES:

[1] Groundwater background screening value is twice the average of detected concentrations for inorganic analytes.

[2] RBC = Risk-Based Concentration Table, USEPA Region III, March 1997, R.L. Smith. RBC for chromium is based on chromium VI.

For essential nutrients (calcium, magnesium, sodium and potassium) screening values were derived based on recommended daily allowances (RDAs).

s = Secondary Standard.

st = Systemic Toxicant

p = Primary Standard

c = Carcinogen or carcinogenic effects.

n = noncarcinogenic effects.

ND = Not determined.

USEPA = U.S. Environmental Protection Agency.

FDEPG = Florida Department of Environmental Protection, Groundwater Guidance Concentrations, June 1994.

FEDMCL= Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, October 1996.

J = Reported concentration is an estimated quantity.

G = unfiltered water sample.

H = filtered water sample.

ug/l = micrograms per liter.

Bold/shaded numbers indicate exceedance of groundwater guidance or background (if background is higher than groundwater guidance)

Blank space indicates analyte/compound was not detected at the reporting limit.

APPENDIX C

SUMMARY OF ANALYTICAL RESULTS

Table C-1 Summary of Surface Soil Analytical Results
Table C-2 Summary of Subsurface Soil Analytical Results
Table C-3 Summary of Groundwater Analytical Results

TABLE C-1

SUMMARY OF ANALYTICAL RESULTS IN SURFACE SOIL

Appendix C
Table C-1. Summary of Surface Soil Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

Sample ID	38S00101	
Lab ID	C7G030123001	
Sampling Date	2-Jul-97	
Volatile organics, ug/kg		
1,1,1-Trichloroethane	11	U
1,1,2,2-Tetrachloroethane	11	U
1,1,2-Trichloroethane	11	U
1,1-Dichloroethane	11	U
1,1-Dichloroethene	11	U
1,2-Dichloroethane	11	U
1,2-Dichloroethene (total)	11	U
1,2-Dichloropropane	11	U
2-Butanone	11	U
2-Hexanone	11	U
4-Methyl-2-pentanone	11	U
Acetone	11	U
Benzene	11	U
Bromodichloromethane	11	U
Bromoform	11	U
Bromomethane	11	U
Carbon disulfide	11	UJ
Carbon tetrachloride	11	U
Chlorobenzene	11	U
Chloroethane	11	UJ
Chloroform	11	U
Chloromethane	11	U
cis-1,3-Dichloropropene	11	U
Dibromochloromethane	11	U
Ethylbenzene	11	U
Methylene chloride	11	U
Styrene	11	U
Tetrachloroethene	11	U
Toluene	11	U
trans-1,3-Dichloropropene	11	U
Trichloroethene	11	U
Vinyl chloride	11	U
Xylene (total)	11	U
Semivolatile organics, ug/kg		
1,2,4-Trichlorobenzene	350	U
1,2-Dichlorobenzene	350	U
1,3-Dichlorobenzene	350	U
1,4-Dichlorobenzene	350	U
2,2'-oxybis(1-Chloropropane)	350	U
2,4,5-Trichlorophenol	840	U
2,4,6-Trichlorophenol	350	U
2,4-Dichlorophenol	350	U
2,4-Dimethylphenol	350	U
2,4-Dinitrophenol	840	U
2,4-Dinitrotoluene	350	U
2,6-Dinitrotoluene	350	U
2-Chloronaphthalene	350	U
2-Chlorophenol	350	U
2-Methylnaphthalene	350	U

Appendix C
Table C-1. Summary of Surface Soil Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

2-Methylphenol	350	U
2-Nitroaniline	840	U
2-Nitrophenol	350	U
3,3'-Dichlorobenzidine	350	U
3-Nitroaniline	840	U
4,6-Dinitro-2-methylphenol	840	U
4-Bromophenyl-phenylether	350	U
4-Chloro-3-methylphenol	350	U
4-Chloroaniline	350	U
4-Chlorophenyl-phenylether	350	U
4-Methylphenol	350	U
4-Nitroaniline	840	U
4-Nitrophenol	840	U
Acenaphthene	350	U
Acenaphthylene	350	U
Anthracene	350	U
Benzo(a)anthracene	350	U
Benzo(a)pyrene	350	U
Benzo(b)fluoranthene	350	U
Benzo(g,h,i)perylene	350	U
Benzo(k)fluoranthene	350	U
bis(2-Chloroethoxy)methane	350	U
bis(2-Chloroethyl)ether	350	U
bis(2-Ethylhexyl)phthalate	350	U
Butylbenzylphthalate	350	U
Carbazole	350	U
Chrysene	42	J
Di-n-butylphthalate	350	U
Di-n-octylphthalate	350	U
Dibenz(a,h)anthracene	350	U
Dibenzofuran	350	U
Diethylphthalate	350	U
Dimethylphthalate	350	U
Fluoranthene	350	U
Fluorene	350	U
Hexachlorobenzene	350	U
Hexachlorobutadiene	350	U
Hexachlorocyclopentadiene	350	U
Hexachloroethane	350	U
Indeno(1,2,3-cd)pyrene	350	U
Isophorone	350	U
N-Nitroso-di-n-propylamine	350	U
N-Nitrosodiphenylamine (1)	350	U
Naphthalene	350	U
Nitrobenzene	350	U
Pentachlorophenol	840	U
Phenanthrene	350	U
Phenol	350	U
Pyrene	46	J
Pesticides/PCBs, ug/kg		
4,4'-DDD	3.5	U
4,4'-DDE	15	
4,4'-DDT	13	

Appendix C
Table C-1. Summary of Surface Soil Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

Aldrin	1.8	U
alpha-BHC	1.8	UJ
alpha-Chlordane	3.3	
Aroclor-1016	35	U
Aroclor-1221	71	U
Aroclor-1232	35	U
Aroclor-1242	35	U
Aroclor-1248	35	U
Aroclor-1254	35	U
Aroclor-1260	35	U
beta-BHC	1.8	U
delta-BHC	1.8	UJ
Dieldrin	3.5	U
Endosulfan I	1.8	U
Endosulfan II	3.5	U
Endosulfan sulfate	3.5	U
Endrin	3.5	U
Endrin aldehyde	3.5	U
Endrin ketone	3.5	U
gamma-BHC (Lindane)	1.8	U
gamma-Chlordane	1.8	U
Heptachlor	1.8	U
Heptachlor epoxide	1.8	U
Methoxychlor	18	U
Toxaphene	180	U
Inorganics, mg/kg		
Aluminum	1170	J
Antimony	3	U
Arsenic	0.57	J
Barium	4.7	J
Beryllium	0.05	U
Cadmium	0.54	U
Calcium	4490	
Chromium	3.1	
Cobalt	0.66	U
Copper	2.5	J
Iron	257	
Lead	13.5	
Magnesium	260	J
Manganese	8	
Mercury	0.11	U
Nickel	1.8	U
Potassium	68	U
Selenium	0.63	U
Silver	0.5	U
Sodium	48.2	U
Thallium	0.57	U
Vanadium	1.1	J
Zinc	19.6	
General Chemistry, mg/kg		
TRPH	130	

TABLE C-2

SUMMARY OF ANALYTICAL RESULTS IN SUBSURFACE SOIL

Appendix C
Table C-2. Summary of Subsurface Soil Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

Sample ID	38B00101	
Lab ID	C7G030123002	
Sampling Date	2-Jul-97	
Volatile organics, ug/kg		
1,1,1-Trichloroethane	12	U
1,1,2,2-Tetrachloroethane	12	U
1,1,2-Trichloroethane	12	U
1,1-Dichloroethane	12	U
1,1-Dichloroethene	12	U
1,2-Dichloroethane	12	U
1,2-Dichloroethene (total)	12	U
1,2-Dichloropropane	12	U
2-Butanone	12	U
2-Hexanone	12	U
4-Methyl-2-pentanone	12	U
Acetone	12	U
Benzene	12	U
Bromodichloromethane	12	U
Bromoform	12	U
Bromomethane	12	U
Carbon disulfide	12	UJ
Carbon tetrachloride	12	U
Chlorobenzene	12	U
Chloroethane	12	UJ
Chloroform	12	U
Chloromethane	12	U
cis-1,3-Dichloropropene	12	U
Dibromochloromethane	12	U
Ethylbenzene	2	J
Methylene chloride	12	U
Styrene	12	U
Tetrachloroethene	12	U
Toluene	12	U
trans-1,3-Dichloropropene	12	U
Trichloroethene	12	U
Vinyl chloride	12	U
Xylene (total)	12	U
Semivolatile organics, ug/kg		
1,2,4-Trichlorobenzene	390	U
1,2-Dichlorobenzene	390	U
1,3-Dichlorobenzene	390	U
1,4-Dichlorobenzene	390	U
2,2'-oxybis(1-Chloropropane)	390	U
2,4,5-Trichlorophenol	940	U
2,4,6-Trichlorophenol	390	U
2,4-Dichlorophenol	390	U
2,4-Dimethylphenol	390	U
2,4-Dinitrophenol	940	U
2,4-Dinitrotoluene	390	U
2,6-Dinitrotoluene	390	U
2-Chloronaphthalene	390	U
2-Chlorophenol	390	U
2-Methylnaphthalene	390	U

Appendix C
Table C-2. Summary of Subsurface Soil Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

2-Methylphenol	390	U
2-Nitroaniline	940	U
2-Nitrophenol	390	U
3,3'-Dichlorobenzidine	390	U
3-Nitroaniline	940	U
4,6-Dinitro-2-methylphenol	940	U
4-Bromophenyl-phenylether	390	U
4-Chloro-3-methylphenol	390	U
4-Chloroaniline	390	U
4-Chlorophenyl-phenylether	390	U
4-Methylphenol	390	U
4-Nitroaniline	940	U
4-Nitrophenol	940	U
Acenaphthene	390	U
Acenaphthylene	390	U
Anthracene	390	U
Benzo(a)anthracene	390	U
Benzo(a)pyrene	390	U
Benzo(b)fluoranthene	390	U
Benzo(g,h,i)perylene	390	U
Benzo(k)fluoranthene	390	U
bis(2-Chloroethoxy)methane	390	U
bis(2-Chloroethyl)ether	390	U
bis(2-Ethylhexyl)phthalate	390	U
Butylbenzylphthalate	390	U
Carbazole	390	U
Chrysene	390	U
Di-n-butylphthalate	390	U
Di-n-octylphthalate	390	U
Dibenz(a,h)anthracene	390	U
Dibenzofuran	390	U
Diethylphthalate	390	U
Dimethylphthalate	390	U
Fluoranthene	390	U
Fluorene	390	U
Hexachlorobenzene	390	U
Hexachlorobutadiene	390	U
Hexachlorocyclopentadiene	390	U
Hexachloroethane	390	U
Indeno(1,2,3-cd)pyrene	390	U
Isophorone	390	U
N-Nitroso-di-n-propylamine	390	U
N-Nitrosodiphenylamine (1)	390	U
Naphthalene	390	U
Nitrobenzene	390	U
Pentachlorophenol	940	U
Phenanthrene	390	U
Phenol	390	U
Pyrene	390	U
Pesticides/PCBs, ug/kg		
4,4'-DDD	3.9	U
4,4'-DDE	3.9	U
4,4'-DDT	3.9	U
Aldrin	2	U

Appendix C
Table C-2. Summary of Subsurface Soil Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

alpha-BHC	2	UJ
alpha-Chlordane	2	U
Aroclor-1016	39	U
Aroclor-1221	80	U
Aroclor-1232	39	U
Aroclor-1242	39	U
Aroclor-1248	39	U
Aroclor-1254	39	U
Aroclor-1260	39	U
beta-BHC	2	U
delta-BHC	2	UJ
Dieldrin	3.9	U
Endosulfan I	2	U
Endosulfan II	3.9	U
Endosulfan sulfate	3.9	U
Endrin	3.9	U
Endrin aldehyde	3.9	U
Endrin ketone	3.9	U
gamma-BHC (Lindane)	2	U
gamma-Chlordane	2	U
Heptachlor	2	U
Heptachlor epoxide	2	U
Methoxychlor	20	U
Toxaphene	200	U
Inorganics, mg/kg		
Aluminum	92.5	J
Antimony	3.3	U
Arsenic	0.55	U
Barium	0.35	U
Beryllium	0.03	U
Cadmium	0.61	U
Calcium	835	J
Chromium	0.66	J
Cobalt	0.74	U
Copper	0.44	J
Iron	61.3	
Lead	1.1	
Magnesium	37.5	U
Manganese	1.1	J
Mercury	0.12	U
Nickel	2	U
Potassium	76.3	U
Selenium	0.71	U
Silver	0.57	U
Sodium	36.4	U
Thallium	0.64	U
Vanadium	0.38	U
Zinc	3	U
General Chemistry, mg/kg		
TRPH	120	U

TABLE C-3

SUMMARY OF ANALYTICAL RESULTS IN GROUNDWATER

Appendix C
Table C-3. Summary of Groundwater Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

Sample ID	38G00101		38H00101				
Lab ID	C7F270127003		C7F270127004				
Sampling Date	6/25/97		6/25/97				
Volatile organics, ug/L							
1,1,1,2-Tetrachloroethane	0.5	U	NA				
1,1,1-Trichloroethane	0.5	U	NA				
1,1,2,2-Tetrachloroethane	0.5	UJ	NA				
1,1,2-Trichloroethane	0.5	U	NA				
1,1-Dichloroethane	0.5	U	NA				
1,1-Dichloroethene	0.5	U	NA				
1,1-Dichloropropene	0.5	U	NA				
1,2,3-Trichlorobenzene	0.5	UJ	NA				
1,2,3-Trichloropropane	0.5	UJ	NA				
1,2,4-Trimethylbenzene	0.5	U	NA				
1,2-Dibromo-3-chloropropane	0.5	R	NA				
1,2-Dibromoethane	0.5	U	NA				
1,2-Dichloroethane	0.5	U	NA				
H	Denotes a filtered groundwater sample (0.45 micron in-line filter)						
1,2-Dichloropropane	0.5	U	NA				
1,3,5-Trimethylbenzene	0.5	U	NA				
1,3-Dichloropropane	0.5	U	NA				
2,2-Dichloropropane	0.5	U	NA				
	0.5	UJ	NA				
4-Chlorotoluene	0.5	U	NA				
4-Isopropyltoluene	0.5	UJ	NA				
Benzene	0.5	U	NA				
Bromobenzene	0.5	U	NA				
Bromochloromethane	0.5	U	NA				
Bromodichloromethane	0.5	U	NA				
Bromoform	0.5	U	NA				
Bromomethane	0.5	U	NA				
Carbon tetrachloride	0.5	U	NA				
Chlorobenzene	0.5	U	NA				
Chloroethane	0.5	U	NA				
Chloroform	0.17	J	NA				
Chloromethane	0.5	U	NA				
cis-1,2-Dichloroethene	0.5	U	NA				
cis-1,3-Dichloropropene	0.5	U	NA				
Dibromochloromethane	0.5	U	NA				
Dibromomethane	0.5	U	NA				
Dichlorodifluoromethane (CFC 12)	0.5	U	NA				
Ethylbenzene	0.5	U	NA				
Isopropylbenzene	0.5	U	NA				
Methylene chloride	0.5	U	NA				
n-Butylbenzene	0.5	U	NA				
n-Propylbenzene	0.5	UJ	NA				
sec-Butylbenzene	0.5	UJ	NA				
Styrene	0.5	U	NA				
tert-Butylbenzene	0.5	UJ	NA				
Tetrachloroethene	0.5	U	NA				
Toluene	0.5	U	NA				
trans-1,2-Dichloroethene	0.5	U	NA				
trans-1,3-Dichloropropene	0.5	U	NA				
Trichloroethene	0.5	UJ	NA				
Trichlorofluoromethane (CFC 11)	0.5	U	NA				

Appendix C
Table C-3. Summary of Groundwater Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

Sample ID	38G00101		38H00101				
Lab ID	C7F270127003		C7F270127004				
Vinyl chloride	0.5	U	NA				
Xylene (total)	0.5	U	NA				
Semivolatile organics, ug/L							
1,2,4-Trichlorobenzene	10	U	NA				
1,2-Dichlorobenzene	10	U	NA				
1,3-Dichlorobenzene	10	U	NA				
1,4-Dichlorobenzene	10	U	NA				
2,2'-oxybis(1-Chloropropane)	10	U	NA				
2,4,5-Trichlorophenol	25	U	NA				
2,4,6-Trichlorophenol	10	U	NA				
2,4-Dichlorophenol	10	U	NA				
2,4-Dimethylphenol	10	U	NA				
2,4-Dinitrophenol	25	U	NA				
2,4-Dinitrotoluene	10	U	NA				
2,6-Dinitrotoluene	10	U	NA				
2-Chloronaphthalene	10	U	NA				
2-Chlorophenol	10	U	NA				
2-Methylnaphthalene	10	U	NA				
2-Methylphenol	10	U	NA				
2-Nitroaniline	25	U	NA				
2-Nitrophenol	10	U	NA				
3,3'-Dichlorobenzidine	10	U	NA				
3-Nitroaniline	25	U	NA				
4,6-Dinitro-2-methylphenol	25	U	NA				
4-Bromophenyl-phenylether	10	U	NA				
4-Chloro-3-methylphenol	10	U	NA				
4-Chloroaniline	10	U	NA				
4-Chlorophenyl-phenylether	10	U	NA				
4-Methylphenol	10	U	NA				
4-Nitroaniline	25	U	NA				
4-Nitrophenol	25	U	NA				
Acenaphthene	10	U	NA				
Acenaphthylene	10	U	NA				
Anthracene	10	U	NA				
Benzo(a)anthracene	10	U	NA				
Benzo(a)pyrene	10	U	NA				
Benzo(b)fluoranthene	10	U	NA				
Benzo(g,h,i)perylene	10	U	NA				
Benzo(k)fluoranthene	10	U	NA				
bis(2-Chloroethoxy)methane	10	U	NA				
bis(2-Chloroethyl)ether	10	U	NA				
bis(2-Ethylhexyl)phthalate	10	U	NA				
Butylbenzylphthalate	10	U	NA				
Carbazole	10	U	NA				
Chrysene	10	U	NA				
Di-n-butylphthalate	10	U	NA				
Di-n-octylphthalate	10	U	NA				
Dibenz(a,h)anthracene	10	U	NA				
Dibenzofuran	10	U	NA				
Diethylphthalate	10	U	NA				
Dimethylphthalate	10	U	NA				
Fluoranthene	10	U	NA				
Fluorene	10	U	NA				

Appendix C
Table C-3. Summary of Groundwater Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

Sample ID	38G00101		38H00101				
Lab ID	C7F270127003		C7F270127004				
Hexachlorobenzene	10	U	NA				
Hexachlorobutadiene	10	U	NA				
Hexachlorocyclopentadiene	10	U	NA				
Hexachloroethane	10	U	NA				
Indeno(1,2,3-cd)pyrene	10	U	NA				
Isophorone	10	U	NA				
N-Nitroso-di-n-propylamine	10	U	NA				
N-Nitrosodiphenylamine (1)	10	U	NA				
Naphthalene	10	U	NA				
Nitrobenzene	10	U	NA				
Pentachlorophenol	25	U	NA				
Phenanthrene	10	U	NA				
Phenol	10	U	NA				
Pyrene	10	U	NA				
Pesticides/PCBs, ug/kg							
4,4'-DDD	0.1	U	NA				
4,4'-DDE	0.1	U	NA				
4,4'-DDT	0.1	U	NA				
Aldrin	0.05	U	NA				
alpha-BHC	0.05	UJ	NA				
alpha-Chlordane	0.05	U	NA				
Aroclor-1016	1	U	NA				
Aroclor-1221	2	U	NA				
Aroclor-1232	1	U	NA				
Aroclor-1242	1	U	NA				
Aroclor-1248	1	U	NA				
Aroclor-1254	1	U	NA				
Aroclor-1260	1	U	NA				
beta-BHC	0.05	U	NA				
delta-BHC	0.05	UJ	NA				
Dieldrin	0.1	U	NA				
Endosulfan I	0.05	U	NA				
Endosulfan II	0.1	U	NA				
Endosulfan sulfate	0.1	U	NA				
Endrin	0.1	U	NA				
Endrin aldehyde	0.1	U	NA				
Endrin ketone	0.1	U	NA				
gamma-BHC (Lindane)	0.05	U	NA				
gamma-Chlordane	0.05	U	NA				
Heptachlor	0.05	U	NA				
Heptachlor epoxide	0.05	U	NA				
Methoxychlor	0.5	U	NA				
Toxaphene	5	U	NA				
Inorganics, ug/L							
Aluminum	166	J	70.4	J			
Antimony	14	U	14	U			
Arsenic	2.3	U	2.3	U			
Barium	2.5	U	2	J			
Beryllium	0.12	U	0.12	U			
Cadmium	2.6	U	2.6	U			
Calcium	76300	J	74100	J			
Chromium	2.3	U	2.3	U			
Cobalt	3.1	U	3.1	U			

Appendix C
Table C-3. Summary of Groundwater Analytical Results
Study Area 38

Naval Training Center, Orlando
Orlando, FL

Sample ID	38G00101		38H00101				
Lab ID	C7F270127003		C7F270127004				
Copper	7.2	J	1.7	J			
Iron	34.6	U	13	J			
Lead	1	U	1	U			
Magnesium	8420		8270				
Manganese	5.4	J	1.8	J			
Mercury	0.2	U	0.2	U			
Nickel	8.4	U	8.4	U			
Potassium	3900	J	3900	J			
Selenium	3	U	3	U			
Silver	2.4	U	2.4	U			
Sodium	18700		18700				
Thallium	4.2	U	5.3	U			
Vanadium	6.7	J	5.8	J			
Zinc	20.2	U	7.5	U			
General Chemistry, mg/L							
Total Suspended Solids	4	U	NA				
TRPH	1	U	NA				

Notes for Summary of Analytical Results Tables
Study Area 38

Naval Training Center, Orlando
Orlando Florida

NA = Identified parameter not analyzed.
Sample ID = Sample Identifier
Lab ID = Laboratory identifier

Units:

mg/kg	milligram per kilogram
ug/kg	microgram per kilogram
mg/L	milligram per liter
ug/L	microgram per liter

The following standard analytical data qualifiers have the following definitions:

U	The analyte/compound was analyzed for but was not detected above the reported sample quantitation limit The number preceding the U qualifier is the reported sample quantitation limit.
H	Denotes a filtered groundwater sample (0.45 micron in-line filter)
J	The analyte/compound was positively identified and the associated numerical value is an estimated concentration of the analyte/compound in the sample.
UJ	The analyte/compound was not detected above the reported sample quantitation limit. The reported quantitation limit, however, is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte/compound in the sample.
R	The sample results are rejected during data validation because of serious deficiencies in meeting quality control criteria.