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NS MAYPORT
5090.3a

MONITORING ONLY PLAN REPORT FOR ECHO PIER NS MAYPORT FL
7/1/1999
U S ARMY CORPS OF ENGINEERS

MONITORING ONLY PLAN (MOP) REPORT

**MAYPORT NAVAL STATION
ECHO PIER**

MAYPORT, FLORIDA

PREPARED FOR

**UNITED STATES NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SOUTH CAROLINA**

PREPARED BY

**U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT
SAVANNAH, GEORGIA**

JULY 1999

INTRODUCTION

This Monitoring Only Plan (MOP) report for Echo Pier at Mayport Naval Station, Mayport, Florida is a result of a request by the Florida Department of Environmental Protection (FDEP) that the Southern Division, Naval Facilities Engineering Command (NAVFACENGCOM) Charleston, South Carolina perform supplemental sampling at the site.

BACKGROUND

In July of 1996 a leaking diesel fuel pipeline was discovered in the Echo3 area of Echo Pier. Bechtel Environmental, Inc. was contracted by Southern Division to repair the pipeline, complete the Initial Remedial Action (IRA) and prepare a Contamination Assessment Report (CAR). The IRA involved recovery of free product, composed of diesel fuel released from the pipeline, plus removal of ground water and excavation of contaminated soil. The pipeline was repaired and placed back in service on July 19, 1996. The source of the contamination was believed to have been removed. The CAR dated February 1997, recommended a No further Action (NFA) status for the site.

Upon review of the CAR, FDEP recommended a supplemental sampling event at the site. Based upon the results of the supplemental sampling event, Bechtel Inc. proposed a Monitoring Only Plan (MOP) in a Contamination Assessment Report Addendum (CARA), dated May 13, 1997. FDEP final approval of a MOP for the DFM site was granted in a letter to Southern Division dated 16 June 1997. A copy of the letter is contained in attachment 1.

On September 25, 1997 eight-tenths of a foot of free product was discovered in monitoring well MP-EP-02. Subsequent discussion between Southern Division and FDEP resulted in a decision to proceed with the MOP monitoring of wells MP-EP-02 and MP-EP-03, and to perform free product monitoring and removal at all four wells at the site (MP-EP-01 through MP-EP-04) on an as-needed basis. Southern Division plans to initiate further assessment at the site in Fiscal Year 1999.

SUMMARY OF GROUND WATER MONITORING AND ANALYSIS

This report covers the two latest MOP sampling events at Echo Pier, which occurred on 21 February and 15 May 1999.

21 February 1999 Sampling Event

Due to the presence of 0.97 feet of product in monitoring well MP-EP-02 during this sampling event, only well MP-EP-03 was sampled. Well MP-EP-03 was purged of a minimum of three volumes using a Teflon bailer. Well purging continued until field parameters (pH, specific conductance, and temperature) stabilized. Water level elevation data is contained in table 4 (attachment 5) and field water quality parameters for all wells sampled are contained in table 5 (attachment 6). Ground-water samples were collected using a Teflon bailer and placed in appropriate containers. The samples were properly preserved, stored on ice, and delivered to the laboratory for analysis.

The monitoring well sample was analyzed for EPA Methods 602 (including MTBE). Chain of custody was maintained on the samples throughout the sampling period. Sampling procedures were conducted according to U.S. Army Corps of Engineers, Savannah District's FDEP-approved Comprehensive Quality Assurance Plan No. 910026G. Laboratory analyses were performed according to the laboratories' FDEP-approved Generic Quality Assurance Plan.

Although laboratory analytical results of the sample from well MP-EP-03, as shown in table 3, indicated all parameters were below laboratory detection limits, the detection limit for benzene (2.0 ug/L) was above the required detection limit of 1.0 ug/L. Laboratory analytical data is contained in attachment 7

All wells were checked for free product petroleum using an oil/water interface probe and disposable teflon bailers. One well, MP-EP-02, contained 0.97 feet of free product. No other wells indicated product.

15 May 1999 Sampling Event

Due to the presence of 0.02 feet of product in monitoring well MP-EP-02 during this sampling event, only well MP-EP-03 was sampled. Well MP-EP-03 was purged of a minimum of three volumes using a Teflon bailer. Well purging continued until field parameters (pH, specific conductance, and temperature) stabilized. Water level elevation data is contained in table 4A (attachment 5) and field water quality parameters for all wells sampled are contained in table 5A (attachment 6). Ground-water samples were collected using a Teflon bailer and placed in appropriate containers. The samples were properly preserved, stored on ice, and delivered to the laboratory for analysis.

The monitoring well sample was analyzed for EPA Methods 602 (including MTBE). Chain of custody was maintained on the samples throughout the sampling period. Sampling procedures were conducted according to U.S. Army Corps of Engineers, Savannah District's FDEP-approved Comprehensive Quality Assurance Plan No. 910026G. Laboratory analyses were performed according to the laboratories' FDEP-approved Generic Quality Assurance Plan.

Laboratory analytical results of the sample from well MP-EP-03, as shown in table 3A, indicated all parameters were below detection limits. Laboratory analytical data is contained in attachment 7.

All wells were checked for free product petroleum using an oil/water interface probe and disposable teflon bailers. One well, MP-EP-02, contained 0.02 feet of free product. No other wells indicated product.

Table 1 is a summary comparison of sampling events for total volatile organic aromatics (VOAs) in all wells sampled on the indicated sampling events.

TABLE 1
TOTAL VOAs (EPA 602) ug/L

Well No.	December 1996 (CAR)	April 1997 (CARA)	November 1998 (MOP)	February 1999 (MOP)	May 1999 (MOP)
MP-EP-01	2	BDL	NS	NS	NS
MP-EP-02	27	33	21	NS*	NS**
MP-EP-03	BDL	BDL	BDL	BDL***	BDL
MP-EP-04	2	BDL	NS	NS	NS

NS -- Not Sampled.

* -- 0.97' of Free Product.

** -- 0.02' of Free Product

*** -- Laboratory detection limit for benzene was 2.0 ug/L..

FREE PRODUCT MONITORING AND REMOVAL

Free product monitoring and removal is being performed on all wells at the site. Four weekly product-monitoring events were performed on 13, 21 and 28 November and 5 December 1998. Beginning in January 1999, product-monitoring events have been performed on a monthly basis. The results of this monitoring are displayed in table 2. Well MP-EP-02 is the only well that has contained free product, with a total of about 39 gallons of product/water removed to date. Product removed from wells is drummed for disposal.

FUTURE MONITORING AND ANALYSIS

Free product monitoring and removal will continue at the site on a monthly basis. The next sampling event for laboratory analysis is scheduled for August 1999. By request of FDEP, EPA method 610 analysis will be added for the August event. The results of that event will determine the analytical methods to be used in future events.

LIST OF ATTACHMENTS

- ATTACHMENT 1 - FDEP LETTER OF MOP APPROVAL
- ATTACHMENT 2 - TABLE 2 - SUMMARY OF FREE PRODUCT MONITORING
- ATTACHMENT 3 - TABLE 3 - SUMMARY OF FEBRUARY 1999 MOP GROUND-WATER ANALYTICAL RESULTS FOR EPA 602
 - TABLE 3A - SUMMARY OF MAY 1999 MOP GROUND-WATER ANALYTICAL RESULTS FOR EPA 602
- ATTACHMENT 4 - DATA SUMMARY MAP OF FEBRUARY 1999 MONITORING WELL ANALYTICAL RESULTS
 - DATA SUMMARY MAP OF MAY 1999 MONITORING WELL ANALYTICAL RESULTS
- ATTACHMENT 5 - TABLE 4 - WATER LEVEL ELEVATION DATA FOR FEBRUARY 1999
 - TABLE 4A - WATER LEVEL ELEVATION DATA FOR MAY 1999
- ATTACHMENT 6 - TABLE 5 - FIELD WATER QUALITY PARAMETERS FOR FEBRUARY 1999
 - TABLE 5A - FIELD WATER QUALITY PARAMETERS FOR MAY 1999
- ATTACHMENT 7 - LABORATORY ANALYTICAL RESULTS (EPA 602 + MTBE) FOR FEBRUARY 1999
 - LABORATORY ANALYTICAL RESULTS (EPA 602 + MTBE) FOR MAY 1999

ATTACHMENT 1
FDEP LETTER OF MOP APPROVAL

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Building
2900 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

June 16, 1997

Mr. H.J. Fraser-Rahim, P.E.
Southern Division
Naval Facilities Engineering Command
PO Box 190010
2155 Eagle Drive
North Charleston, South Carolina 29419

RE: Echo Pier Site, US Naval Station, Mayport, Florida

Dear Mr. Fraser-Rahim:

The Bureau of Waste Cleanup has reviewed the Contamination Assessment Report Addendum (CARA) and Monitoring Only Plan (MOP) proposal dated May 13, 1997 (received May 27, 1997), submitted for this site. The Department designates "source well" as the well located within or adjacent to the identified source of potential groundwater contamination. Likewise, the Department designates "perimeter well" as the well located near the limits of the groundwater contamination or downgradient from the source area. This order is based on monitoring well locations shown in Figure 1 of the Contamination Assessment Report Addendum dated May 13, 1997. The designated wells are:

Source Well: MP-EP-02.

Perimeter Well: MP-EP-03.

Pursuant to Rule 62-770.600(14), Florida Administrative Code (F.A.C.), the Department approves the "monitoring only" proposal. Pursuant to Rules 62-770.660 and 62-770.700(3), F.A.C., you are required to complete the monitoring program outlined below, and to submit the analytical results to the Department within sixty (60) days of sample collection. Each designated well shall be sampled quarterly for one year for EPA Method 602 constituents plus Methyl-tert-butylether (MTBE).

If contaminant concentrations in the designated wells increase above the concentrations listed below, then the resampling/supplemental assessment described in Rule 62-770.660(6) should be performed. If the contaminant concentrations in all wells do not decrease below Rule 62-770.730(5) target cleanup levels after the duration of the monitoring period, then additional monitoring, supplemental contamination assessment and/or remediation may be required.

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

Printed on recycled paper.

Mr. H.J. Fraser-Rahim, P.E.
Page Two
June 16, 1997

Source Wells: 50 ug/l Benzene; 500 ug/l Total VOAs.

Perimeter Wells: 1 ug/l Benzene; 50 ug/l Total VOAs.

Persons whose substantial interests are affected by this Approval Order have the right to challenge the Department's decision. Such a challenge may include filing a petition for an administrative determination (hearing) as described in the following paragraphs. However, pursuant to Chapter 62-103, F.A.C., you may request an extension of time to file the Petition. All requests for extensions of time or petitions for administrative determinations must be filed directly with the Department's Office of General Counsel at the address given below within twenty-one (21) days of receipt of this notice (do not send them to the Bureau of Waste Cleanup).

Notwithstanding the above, a person whose substantial interests are affected by this Approval Order may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within twenty-one (21) days of receipt of this notice. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

- (a) The name, address, and telephone number of each petitioner, the Department file number (FDEP facility number), and the name and address of the facility;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by each petitioner, if any;
- (e) A statement of facts which each petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes each petitioner contends require reversal or modification of the Department's action or proposed action; and
- (g) A statement of the relief sought by each petitioner, stating precisely the action each petitioner wants the Department to take with respect to the Department's action or proposed action.

Mr. H.J. Fraser-Rahim, P.E.
Page Three
June 16, 1997

This Approval Order is final and effective on the date of receipt of this Order unless a petition (or time extension) is filed in accordance with the preceding paragraphs. Upon the timely filing of a petition, this Order will not be effective until further order of the Department.

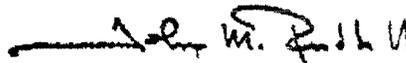
When the Order is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section 120.68, F.S., by filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy the Notice of Appeal, accompanied by the applicable filing fees, with the appropriate District Court of Appeal. The Notice of Appeal must be filed within thirty (30) days from the date the Final Order is filed with the Clerk of the Department.

Please be advised that mediation of this decision, pursuant to Section 120.573, F.S., is available.

Note, any changes to the ownership status of this site and/or property must be reported to the Department.

Any questions you may have on the technical aspects of this Approval Order should be directed to James H. Cason, P.G. at (904) 488-3935. Contact with the above named person does not constitute a petition for administrative determination.

Sincerely,



John M. Ruddell, Director
Division of Waste Management

JMR/jhc

cc: Cheryl Mitchell, NAVSTA Mayport
Brian Cheary, FDEP Northeast District
Jerry Young, City of Jacksonville

ATTACHMENT 2

TABLE 2 - SUMMARY OF FREE PRODUCT MONITORING

**TABLE 2
SUMMARY OF FREE PRODUCT MONITORING**

**ECHO PIER
MAYPORT NAVAL STATION
MAYPORT, FLORIDA**

THICKNESS OF PRODUCT LAYER IN WELL (FEET)/PRODUCT REMOVED (GALLONS)

MONITOR WELL	11/13/98	11/21/98	11/28/98	12/05/98	01/25/99	02/20/99	03/21/99	04/25/99	05/15/99				
MP-EP-01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
MP-EP-02	0.72/15.0	0.54/6.0	0.03/1.5	0.26/2.5	0.26/1.3	0.97/0.9	0.27/5.0	0.26/6.0	0.02/0.4				
MP-EP-03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
MP-EP-04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				

ATTACHMENT 3

TABLES 3 AND 3A - SUMMARY OF MOP GROUND-WATER ANALYTICAL RESULTS FOR EPA 602

**TABLE 3
SUMMARY OF MOP GROUND-WATER ANALYTICAL RESULTS (EPA 602)**

**ECHO PIER
MAYPORT NAVAL STATION
MAYPORT, FLORIDA**

20 February 1999

MONITOR WELL NO.

PARAMETER	MP-EP-03 2-99	MP-EP-03 * 2-99 (Duplicate)	MP-EP-BLK 2-99 BLANK	Regulatory Standard
Purgeable Aromatics (5030/602/)				
Benzene, ug/L	< 2.0	< 2.0	< 2.0	1 ug/L
Ethylbenzene, ug/L	< 2.0	< 2.0	< 2.0	30 ug/L
Toluene, ug/L	< 2.0	< 2.0	< 2.0	40 ug/L
Xylenes, ug/L	< 6.0	< 6.0	< 6.0	20 ug/L
Methyl-Tert-Butyl-Ether (MTBE), ug/L	< 2.0	< 2.0	< 2.0	35 ug/L

Note: Duplicate for MP-EP-03 was labeled "MP-EP-05" on chain of custody.

**TABLE 3A
SUMMARY OF MOP GROUND-WATER ANALYTICAL RESULTS (EPA 602)**

**ECHO PIER
MAYPORT NAVAL STATION
MAYPORT, FLORIDA**

15 May 1999

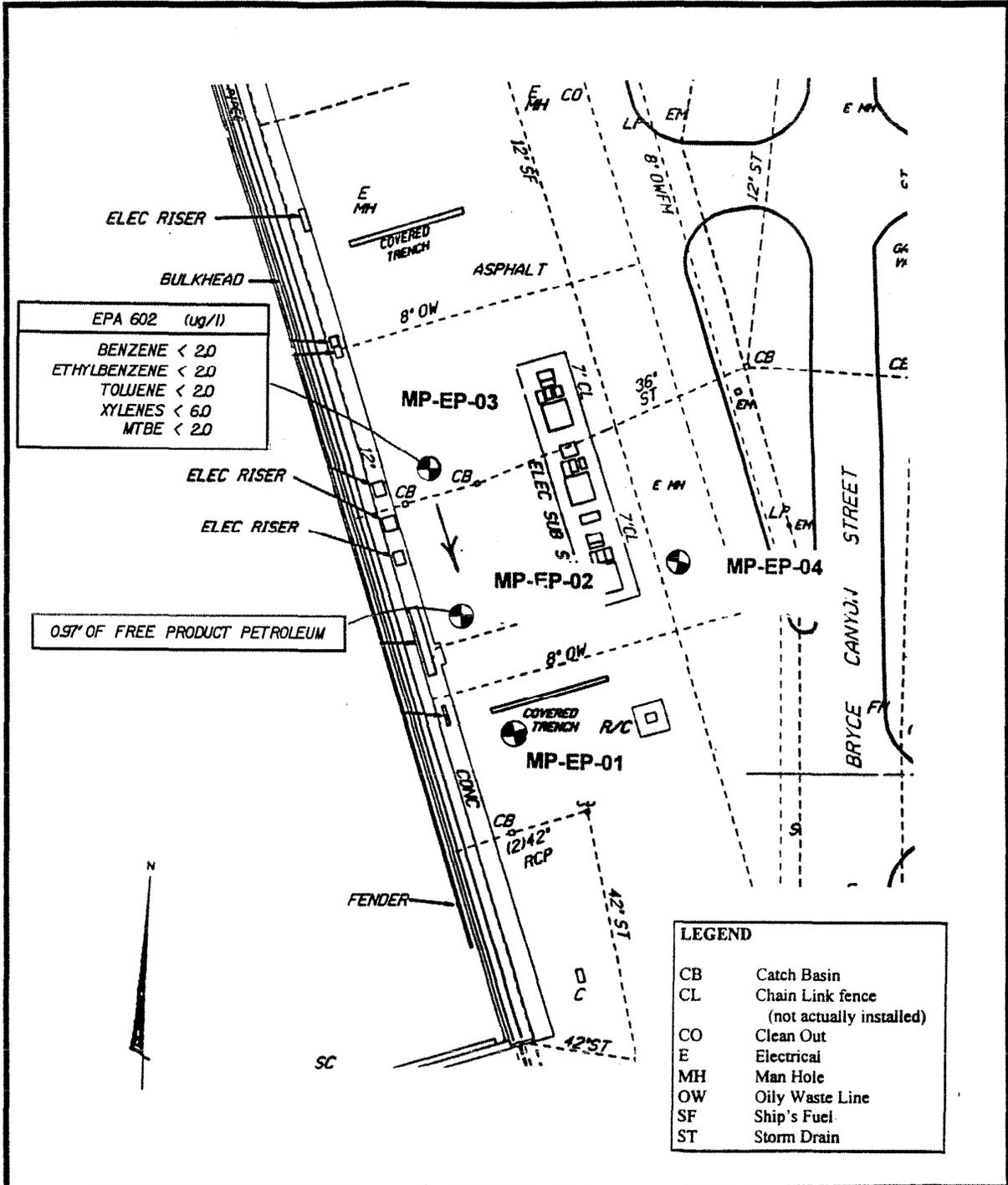
MONITOR WELL NO.

PARAMETER	MP-EP-03 5-99	MP-EP-03 * 5-99 (Duplicate)	MP-EP-BLK 5-99 Blank	Trip Blank	Regulatory Standard
Purgeable Aromatics (602)					
Benzene, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	1 ug/L
Chlorobenzene, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-dichlorobenzene, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-dichlorobenzene, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-dichlorobenzene, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	30 ug/L
Toluene, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	40 ug/L
M,p-Xylenes, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	
Total Xylenes, ug/L	< 1.0	< 1.0	< 1.0	< 1.0	20 ug/L
Methyl-Tert-Butyl-Ether (MTBE), ug/L	< 1.0	< 1.0	< 1.0	< 1.0	35 ug/L

Note: Duplicate for MP-EP-03 was labeled "MP-EP-05" on chain of custody.

ATTACHMENT 4

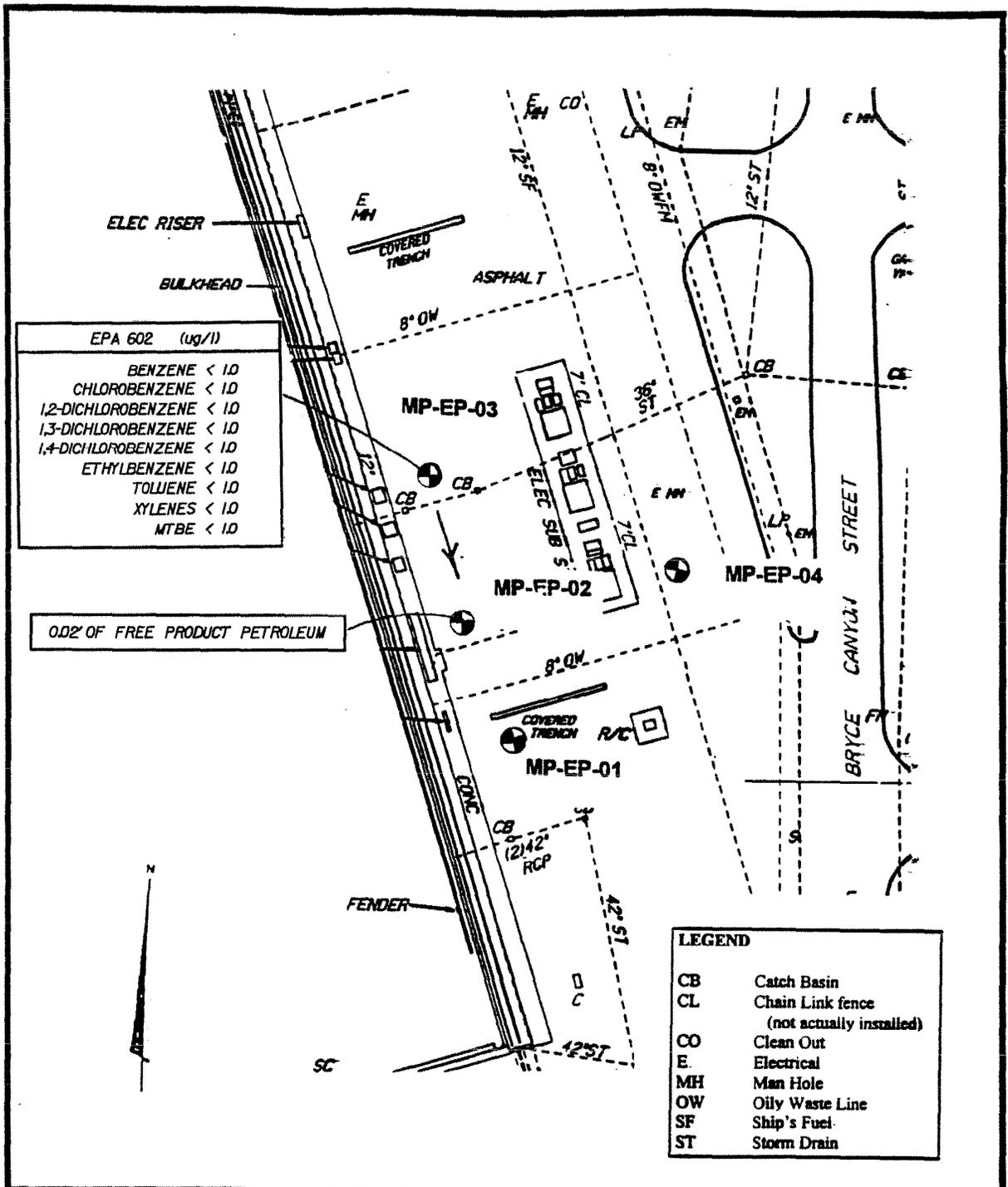
DATA SUMMARY MAPS OF MONITORING WELL ANALYTICAL RESULTS



**PIER ECHO MOP SAMPLING
MAYPORT NS, MAYPORT, FLORIDA**

**DATA SUMMARY MAP
MONITORING WELL ANALYTICAL RESULTS
20 FEBRUARY 1999**

MAP SOURCE: Contamination Assessment Report, Bechtel Inc. dated February 1997.



**PIER ECHO MOP SAMPLING
MAYPORT NS, MAYPORT, FLORIDA**

**DATA SUMMARY MAP
MONITORING WELL ANALYTICAL RESULTS
15 MAY 1999**

MAP SOURCE: Contamination Assessment Report, Bechtel Inc. dated February 1997.

ATTACHMENT 5

TABLES 4 AND 4A - WATER LEVEL ELEVATION DATA

TABLE 4
MONITOR WELL
WATER LEVEL DATA

ECHO PIER

MAYPORT NAVAL STATION
MAYPORT, FLORIDA

20 FEBRUARY 1999

Well No.	Total Depth of Well BLS (ft.)	Top of Casing to Ground Surface (ft.)	Surveyed Top of Casing Elevation (MSL) *	Depth to Water from Top of Casing (ft.)	Elevation of Water Table (MSL) *
MP-EP-01	17.8	Flush	8.96	5.93	3.03
MP-EP-02	17.8	"	9.09	5.97 **	3.12
MP-EP-03	17.8	"	9.09	5.90	3.19
MP-EP-04	17.8	"	8.61	5.54	3.07

- Notes:
- BLS = Below Land Surface
 - flush = Level with ground surface
 - * - Elevations referenced to MSL (Mean Sea Level).
 - ** - 0.97' of Free Product petroleum found in MP-EP-02.

TABLE 4A
MONITOR WELL
WATER LEVEL DATA

ECHO PIER

MAYPORT NAVAL STATION
MAYPORT, FLORIDA

15 MAY 1999

Well No.	Total Depth of Well BLS (ft.)	Top of Casing to Ground Surface (ft.)	Surveyed Top of Casing Elevation (MSL) *	Depth to Water from Top of Casing (ft.)	Elevation of Water Table (MSL) *
MP-EP-01	17.8	Flush	8.96	5.67	3.29
MP-EP-02	17.8	"	9.09	5.81 **	3.28
MP-EP-03	17.8	"	9.09	5.79	3.30
MP-EP-04	17.8	"	8.61	5.25	3.36

- Notes:
- BLS = Below Land Surface
 - flush = Level with ground surface
 - * - Elevations referenced to MSL (Mean Sea Level).
 - ** - 0.02' of Free Product petroleum found in MP-EP-02.

ATTACHMENT 6

TABLE 5 AND 5A - FIELD WATER QUALITY PARAMETERS

TABLE 5
FIELD WATER QUALITY PARAMETERS
PIER ECHO
MAYPORT NAVAL STATION
MAYPORT, FLORIDA
20 FEBRUARY 1999

Well No.	pH	Specific Conductance (umhos/cm)	Temperature (Degrees Celsius)
MP-EP-01	NS	NS	NS
MP-EP-02	NS	NS	NS
MP-EP-03	6.82	1233	20.8
MP-EP-04	NS	NS	NS

TABLE 5A
FIELD WATER QUALITY PARAMETERS
PIER ECHO
MAYPORT NAVAL STATION
MAYPORT, FLORIDA
15 MAY 1999

Well No.	pH	Specific Conductance (umhos/cm)	Temperature (Degrees Celsius)
MP-EP-01	NS	NS	NS
MP-EP-02	NS	NS	NS
MP-EP-03	7.14	1344	25.8
MP-EP-04	NS	NS	NS

ATTACHMENT 7
LABORATORY ANALYTICAL RESULTS (EPA 602)

ECOSYS

A TESTAMERICA OF GEORGIA, INC. LABORATORY



1412 Oakbrook Drive
Suite 105
Norcross, Georgia 30093
Phone (770) 368-0636
Fax (770) 368-0806

ANALYTICAL REPORT

CLIENT:

USACE-SAVANNAH DISTRICT
Mark Harvison
100 West Oglethorpe Ave.
Savannah, GA 31402
P:912-652-5151 F:912-652-5311

Ledger Number N904649
P.O. Number DO 149
Date Received 02/23/1999
Time Received 11:44
Reporting Date 05/18/1999

Project Name ECHO PIER

Client Sample # MP-EP-03

Sampling Date/Time 02/20/1999 11:00

Lab Sample ID N90464901

Prep/Method Analyte	Result	RL	Units	Dilution Factor	Analyst Init.	Date of Prep	Analysis
5030/602 602							Batch 0303990008
Benzene	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Toluene	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Ethylbenzene	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Xylenes (Total)	<i>Below RL</i>	6.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Methyl Tert-Butyl Ether	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999

Project Name ECHO PIER

Client Sample # MP-EP-05

Sampling Date/Time 02/20/1999 15:10

Lab Sample ID N90464902

Prep/Method Analyte	Result	RL	Units	Dilution Factor	Analyst Init.	Date of Prep	Analysis
5030/602 602							Batch 0303990008
Benzene	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Toluene	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Ethylbenzene	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Xylenes (Total)	<i>Below RL</i>	6.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Methyl Tert-Butyl Ether	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999

Project Name ECHO PIER

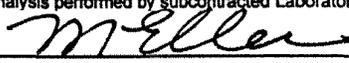
Client Sample # MP-EP-BLK-2-99

Sampling Date/Time 02/20/1999 17:20

Lab Sample ID N90464903

Prep/Method Analyte	Result	RL	Units	Dilution Factor	Analyst Init.	Date of Prep	Date of Analysis
5030/602	602						
						Batch 0303990008	
Benzene	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Toluene	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Ethylbenzene	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Xylenes (Total)	<i>Below RL</i>	6.0	ug/L	1.0	KD	02/27/1999	02/27/1999
Methyl Tert-Butyl Ether	<i>Below RL</i>	2.0	ug/L	1.0	KD	02/27/1999	02/27/1999

RL = Reporting Limit INIT. = (*) Analysis performed by another TestAmerica Laboratory, (#) Analysis performed by subcontracted Laboratory.



Certifying Scientist

Organics and Inorganics in Wastewater, Solids, and Wastes

NC-DEHNR 441, SC-DHEC 98013, GA -DNR-806 UT-DOH E-228 (UST), FL-DEP 940134 HRS E87194 (Water) HRS 87368 (Drinking Water),

EPA ID EPA Reg Waste US Army Corps of
GA-00033 GA-0001011006 Engineers Validation

These result(s) relate only to the item(s) tested.

This report shall not be reproduced, except in full, without the written approval of TestAmerica Inc.





SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

USACE-SAVANNAH DISTRICT 8995
MARK HARVISON
100 WEST OGLETHORPE AVE
SAVANNAH, GA 31402

Lab Number: 99-A72991
Sample ID: MP-EP-03-5-99
Sample Type: Water
Site ID:

Project: 0147
Project Name: USACE
Sampler: H COOPER

Date Collected: 5/15/99
Time Collected: 15:48
Date Received: 5/20/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
VOLATILE ORGANICS by GC*										
Benzene	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602	971
Chlorobenzene	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602/601	971
1,2-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602/601	971
1,3-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602/601	971
1,4-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602/601	971
Ethylbenzene	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602	971
Toluene	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602	971
m,p-Xylenes	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602	971
o-Xylene	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602	971
1,1,1-TCE	ND	ug/l	1.0	1.0	1	5/27/99	7:21	M. Hinelick	602	971

ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
Mid Surr., a,a,a-trifluorotoluene	95.	50. - 150.
High Surr., 2-chloropropane	119.	49. - 123.
High Surr., chloroprene	101.	63. - 122.
High Surr., 1-chloro-3-fluorobenzene	81.	59. - 117.

Report Approved By:

Michael A. Dunn

Report Date: 5/28/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director
Russell Morgan, Technical Services

Laboratory Certification Number: HRS-E87358



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

USACE-SAVANNAH DISTRICT 8995
MARK HARVISON
100 WEST OGLETHORPE AVE
SAVANNAH, GA 31402

Lab Number: 99-A72992
Sample ID: MP-EP-BLK-3-99
Sample Type: Water
Site ID:

Project: 0147
Project Name: USACE
Sampler: H COOPER

Date Collected: 5/15/99
Time Collected: 17:00
Date Received: 5/20/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
VOLATILE ORGANICS by GC										
Benzene	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602	971
Chlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602/601	971
1,2-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602/601	971
1,3-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602/601	971
1,4-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602/601	971
Ethylbenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602	971
Toluene	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602	971
m,p-Xylenes	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602	971
o-Xylene	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602	971
MTBE	ND	ug/l	1.0	1.0	1	5/25/99	5:12	M. Hinelick	602	971

ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
STD Surr., a,a,a-trifluorotoluene	100.	50. - 150.
Hal Surr., 2-chloropropane	91.	49. - 123.
Hal Surr., chloroprene	102.	63. - 122.
Hal Surr., 1-chloro-3-fluorobenzene	107.	59. - 117.

Report Approved By:

Theodore J. Duello

Report Date: 5/28/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director
Russell Morgan, Technical Services

Laboratory Certification Number: HRS-E87358



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ANALYTICAL REPORT

USACE-SAVANNAH DISTRICT 8995
MARK HARVISON
100 WEST OGLETHORPE AVE
SAVANNAH, GA 31402

Lab Number: 99-A72993
Sample ID: MP-EP-05-5-99
Sample Type: Water
Site ID:

Project: O147
Project Name: USACE
Sampler: H COOPER

Date Collected: 5/15/99
Time Collected: 16:00
Date Received: 5/20/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
VOLATILE ORGANICS by GC										
Benzene	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602	971
Chlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602/601	971
1,2-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602/601	971
1,3-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602/601	971
1,4-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602/601	971
Ethylbenzene	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602	971
Toluene	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602	971
m,p-Xylenes	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602	971
o-Xylene	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602	971
MTBE	ND	ug/l	1.0	1.0	1	5/25/99	5:48	M. Himelick	602	971

ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
PID Surr., a,a,a-trifluorotoluene	97.	50. - 150.
Hall Surr., 2-chloropropane	99.	49. - 123.
Hall Surr., chloroprene	107.	63. - 122.
Hall Surr., 1-chloro-3-fluorobenzene	113.	59. - 117.

Report Approved By:

Michael H. Dunn

Report Date: 5/28/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
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Russell Morgan, Technical Services

Laboratory Certification Number: HRS-E87358



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ANALYTICAL REPORT

USACE-SAVANNAH DISTRICT 8995
MARK HARVISON
100 WEST OGLETHORPE AVE
SAVANNAH, GA 31402

Lab Number: 99-A72994
Sample ID: TRIP BLANK
Sample Type: Water
Site ID:

Project: 0147
Project Name: USACE
Sampler: H COOPER

Date Collected:
Time Collected:
Date Received: 5/20/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
VOLATILE ORGANICS by GC										
Benzene	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602	971
Chlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602/601	971
1,2-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602/601	971
1,3-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602/601	971
1,4-Dichlorobenzene	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602/601	971
Ethylbenzene	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602	971
Toluene	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602	971
m,p-Xylenes	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602	971
o-Xylene	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602	971
MTBE	ND	ug/l	1.0	1.0	1	5/25/99	8:15	M. Hinelick	602	971

ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
PID Surr., a,a,a-trifluorotoluene	97.	50. - 150.
Hall Surr., 2-chloropropane	90.	49. - 123.
Hall Surr., chloroprene	95.	63. - 122.
Hall Surr., 1-chloro-3-fluorobenzene	114.	59. - 117.

Report Approved By:

Michael H. Dunn

Report Date: 5/28/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director
Russell Morgan, Technical Services

Laboratory Certification Number: HRS-E87358



SPECIALIZED ASSAYS, INC.

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PROJECT QUALITY CONTROL DATA

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	R.C. Batch
Benzene	ng/l	< 0.0010	0.0216	0.0200	108	76. - 122.	971
Benzene	ng/l	< 0.0010	0.0203	0.0200	102	76. - 122.	971
Ethylbenzene	ng/l	< 0.0010	0.0194	0.0200	97	76. - 125.	971
Ethylbenzene	ng/l	< 0.0010	0.0187	0.0200	94	76. - 125.	971
Toluene	ng/l	< 0.0010	0.0212	0.0200	106	74. - 127.	971
Toluene	ng/l	< 0.0010	0.0205	0.0200	102	74. - 127.	971
m,p-Xylenes	ng/l	< 0.0010	0.0412	0.0400	103	75. - 133.	971
m,p-Xylenes	ng/l	< 0.0010	0.0383	0.0400	96	75. - 133.	971
o-Xylene	ng/l	< 0.0010	0.0196	0.0200	98	74. - 126.	971
o-Xylene	ng/l	< 0.0010	0.0178	0.0200	89	74. - 126.	971
MTBE	ng/l	< 0.0010	0.0208	0.0200	104	67. - 130.	971
MTBE	ng/l	< 0.0010	0.0203	0.0200	102	67. - 130.	971

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	R.C. Batch
Benzene	ng/l	0.0200	0.0216	108	70 - 130	971
Benzene	ng/l	0.0200	0.0210	105	70 - 130	971
Chlorobenzene	ng/l	0.0200	0.0200	100	70 - 130	971
Chlorobenzene	ng/l	0.0200	0.0194	97	70 - 130	971
1,2-Dichlorobenzene	ng/l	0.0200	0.0230	115	70 - 130	971
1,2-Dichlorobenzene	ng/l	0.0200	0.0233	116	70 - 130	971
1,3-Dichlorobenzene	ng/l	0.0200	0.0230	115	70 - 130	971
1,3-Dichlorobenzene	ng/l	0.0200	0.0230	115	70 - 130	971
1,4-Dichlorobenzene	ng/l	0.0200	0.0234	117	70 - 130	971
1,4-Dichlorobenzene	ng/l	0.0200	0.0223	112	70 - 130	971
Ethylbenzene	ng/l	0.0200	0.0195	98	70 - 130	971
Ethylbenzene	ng/l	0.0200	0.0190	95	70 - 130	971
Toluene	ng/l	0.0200	0.0213	106	70 - 130	971
Toluene	ng/l	0.0200	0.0205	102	70 - 130	971
m,p-Xylenes	ng/l	0.0400	0.0411	103	70 - 130	971
m,p-Xylenes	ng/l	0.0400	0.0400	100	70 - 130	971
o-Xylene	ng/l	0.0200	0.0192	96	70 - 130	971
o-Xylene	ng/l	0.0200	0.0187	94	70 - 130	971
MTBE	ng/l	0.0200	0.0214	107	70 - 130	971
MTBE	ng/l	0.0200	0.0199	100	70 - 130	971

Blank Data

Analyte	Blank Value	Units	R.C. Batch
Benzene	< 0.0010	ng/l	971
Benzene	< 0.0010	ng/l	971
Chlorobenzene	< 0.0010	ng/l	971
Chlorobenzene	< 0.0010	ng/l	971



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PROJECT QUALITY CONTROL DATA

Blank Data

Analyte	Blank Value	Units	R.C. Batch
1,2-Dichlorobenzene	< 0.0010	ng/l	971
1,2-Dichlorobenzene	< 0.0010	ng/l	971
1,3-Dichlorobenzene	< 0.0010	ng/l	971
1,3-Dichlorobenzene	< 0.0010	ng/l	971
1,4-Dichlorobenzene	< 0.0010	ng/l	971
1,4-Dichlorobenzene	< 0.0010	ng/l	971
Ethylbenzene	< 0.0010	ng/l	971
Ethylbenzene	< 0.0010	ng/l	971
Toluene	< 0.0010	ng/l	971
Toluene	< 0.0010	ng/l	971
m,p-Xylenes	< 0.0010	ng/l	971
m,p-Xylenes	< 0.0010	ng/l	971
o-Xylene	< 0.0010	ng/l	971
o-Xylene	< 0.0010	ng/l	971
MTBE	< 0.0010	ng/l	971
MTBE	< 0.0010	ng/l	971



**SPECIALIZED
ASSAYS, INC.**

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

5/28/99

USACE-SAVANNAH DISTRICT
MARK HARVISON
SAVANNAH, GA 31402

The following samples were received on 5/20/99. These samples relate to your project: 0147 USACE. The laboratory project number is 144119.

Sample Identification	Lab Number	Collection Date
MP-EP-03-5-99	99-A72991	5/15/99
MP-EP-BLK-5-99	99-A72992	5/15/99
MP-EP-05-5-99	99-A72993	5/15/99
TRIP BLANK	99-A72994	

Quality Control Summary:

All samples were received in good condition, properly preserved, and properly labeled.

All analyses were completed within holding times, and all project and sample QC parameters were within acceptable limits.

I certify that the data presented in this report are, to the best of my knowledge, accurate and complete.

Michael A. Dunn

Michael H. Dunn, M.S., Technical Director
Ted J. Duello, Ph.D., Lab Director
Eric Smith, Assistant Technical Director
Johnny A. Mitchell, B.S., Dir. Technical Services

Chain of Custody Record

ECHO Pier HYDROLOGIC, INC. 143873 144119

Asheville, NC (828) 254-5169
 Norcross, GA (770) 368-0636
 Charlotte, NC (704) 392-1164
 Frankfort KY (502) 223-0251
 Morrisville, NC (919) 380-9699
 Lumberton, NC (910) 738-6190
 Lexington, SC (803) 796-8989
 Brighton, CO (303) 659-0497
 Macon, GA (912) 757-0811
 Orlando, FL (407) 851-2560

Client: **USACE** Project No.: **0147**
 Report Address: **P.O. Box 888** Invoice Address:
Charleston, S.C.
 Attn: **M. HARRINGTON** Attn:
 Phone No.: **912-612-5151** Sampled By: **H. COOPER**
 Fax No.: P.O. No.:
 State Samples Collected: **FL**
 TURNAROUND TIME
 24 Hours 48 Hours
 5 Days 10 Days Date Needed: **3-7 DAYS**

REQUESTED PARAMETERS

602+MTBE

- LAB CODE I.D.**
- A = Asheville, NC
 - C = Charlotte, NC
 - D = Denver, CO
 - E = Lexington, SC
 - G = Macon, GA
 - K = Frankfort, KY
 - L = Lumberton, NC
 - M = Morrisville, NC
 - N = Norcross, GA
 - O = Orlando, FL
 - S = Subcontracted

Sample ID	Date	Time	Comp/Grab	Matrix	Containers	NCI	← Preserv.	REMARKS
MP-EP-03-5-95	5-15-95	1548	G	Ag	2	2		< 1 ppb 72991
MP-EP-B/k-5-95	5-15-95	17:00	G	Ag	2	2		< 1 ppb 72992
MP-EP-05-5-95	5-15-95	16:00	G	Ag	2	2		< 1 ppb 72993
TRIP B/kut					2	2		72994



COMMENTS:

Relinquished By: AC Cooper	Date: 5-19-95 Time: 17:00	Received By: Shippard	Date:	Time:
Relinquished By:	Date:	Received By:	Date:	Time:
Relinquished By:	Date:	Received By:	Date:	Time: