EAC

Engineering and Analytical Contract

EMERGENCY AND REMEDIAL RESPONSE

BUREAU WATER MANAGEMENT
SITE NAME Marine Property
ADDRESS 50 Walnut St.
TOWN ~~Wallingford~~ Middletown
FILE TYPE PERD/SF-PR

TRIP REPORT
MARINO PROPERTY SITE

Work Assignment No. 0-128

May 10, 2000

Contract No. 68-C-99-223

BACKGROUND

Site History

Personnel of the United States Environmental Protection Agency (U.S. EPA) Region 1 recently requested assistance from the U.S. EPA/Environmental Response Team Center (U.S. EPA/ERTC) in assessing possible groundwater contamination at the Marino Property Site in Middletown, Connecticut. The site was originally owned by a rubber and artificial leather manufacturer that operated from the late 1800s until approximately 1968. An area to the west of the site was used as a municipal landfill from approximately the 1930s until 1955 and received both municipal wastes and residues from the Middletown incinerator. During construction of nearby Route 9 in the 1950s, some of the landfill wastes were moved onto the Marino Site, apparently partially filling an existing wetland. The current owner purchased the property in 1973 and covered the municipal waste with some additional fill.

The Connecticut Department of Environmental Protection conducted an initial investigation of the site in 1983 in response to an alleged citizen complaint. In 1990, the U.S. EPA Region 1 Superfund Technical Assessment and Response Team (START) carried out a Removal Program Preliminary Assessment and Site Investigation. A Final Site Inspection Report was completed in 1995 by the U.S. EPA Region 1 Alternative Remedial Contracting Strategy (ARCS) team.

Test pits were dug under the START investigation and both the START and ARCS investigations involved soil sampling. Two groundwater samples were also collected during the ARCS study. In addition, a potential buyer of the property retained the consulting engineering firm of Heynen Engineers in 1985 to install and sample groundwater monitor wells on the property. Eight wells to depths of approximately 20 feet were installed and elevated levels of mainly gasoline compounds were found. None of the monitor wells could be located during the current site visit.

Geologic Background

The site is located along the Connecticut River in the southeastern portion of Middletown, Connecticut and is underlain by the Portland arkose of Triassic age (Lehmann, 1959). The formation is part of the Newark Group, a thick sequence of distinctive red and gray sandstones, siltstones, and shales that underlie the lowlands of the Connecticut Valley. The sediments are interlayered with basalts that crop out west of Middletown and underlie the higher ridges. Scattered deposits of glacial material consisting of sands and gravels, fine-grained lake sediments and unstratified till overlies the bedrock throughout the Connecticut River Basin, particularly in the valleys (Weiss et al, 1982). Mapping by Bingham (1976) suggests that the glacial deposits have a maximum thickness of approximately 50 feet in the vicinity of the site. A municipal well field for the City of Middletown is located in glacial sands and gravels, approximately one mile east of the site, immediately along the Connecticut River.

OBSERVATIONS AND ACTIVITIES

Monitor Well Installation

During March 6 through 10, 2000 personnel of the Response Engineering and Analytical Contract (REAC), under the direction of the U.S. EPA/ERTC, also installed eight groundwater monitor wells at the locations indicated on Figure 1. Wells were installed by a licensed water well contractor using hollow-stem auger drilling techniques. All wells are constructed of 2-inch nominal diameter, schedule 40, polyvinyl chloride (PVC) and were initially set inside 6-inch nominal diameter augers. A sand pack of No. 0 silica sand was then placed from the bottom of the screen to approximately 2 feet above the top of the screen. The remaining annular space from the top of the sand pack to approximately 3 feet below land surface was filled with bentonite chips. The

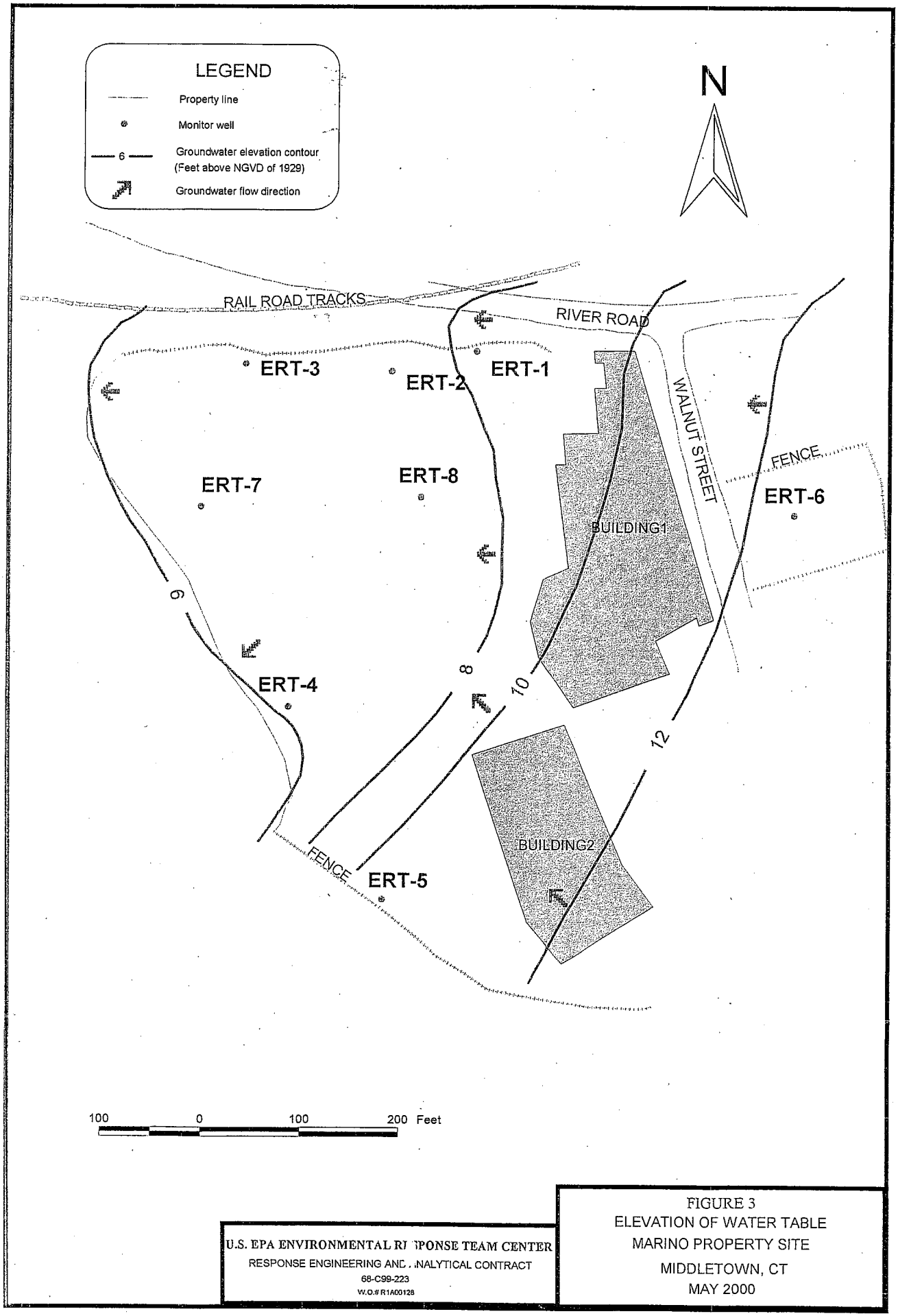

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FIGURE 3
ELEVATION OF WATER TABLE
MARINO PROPERTY SITE
MIDDLETOWN, CT
MAY 2000

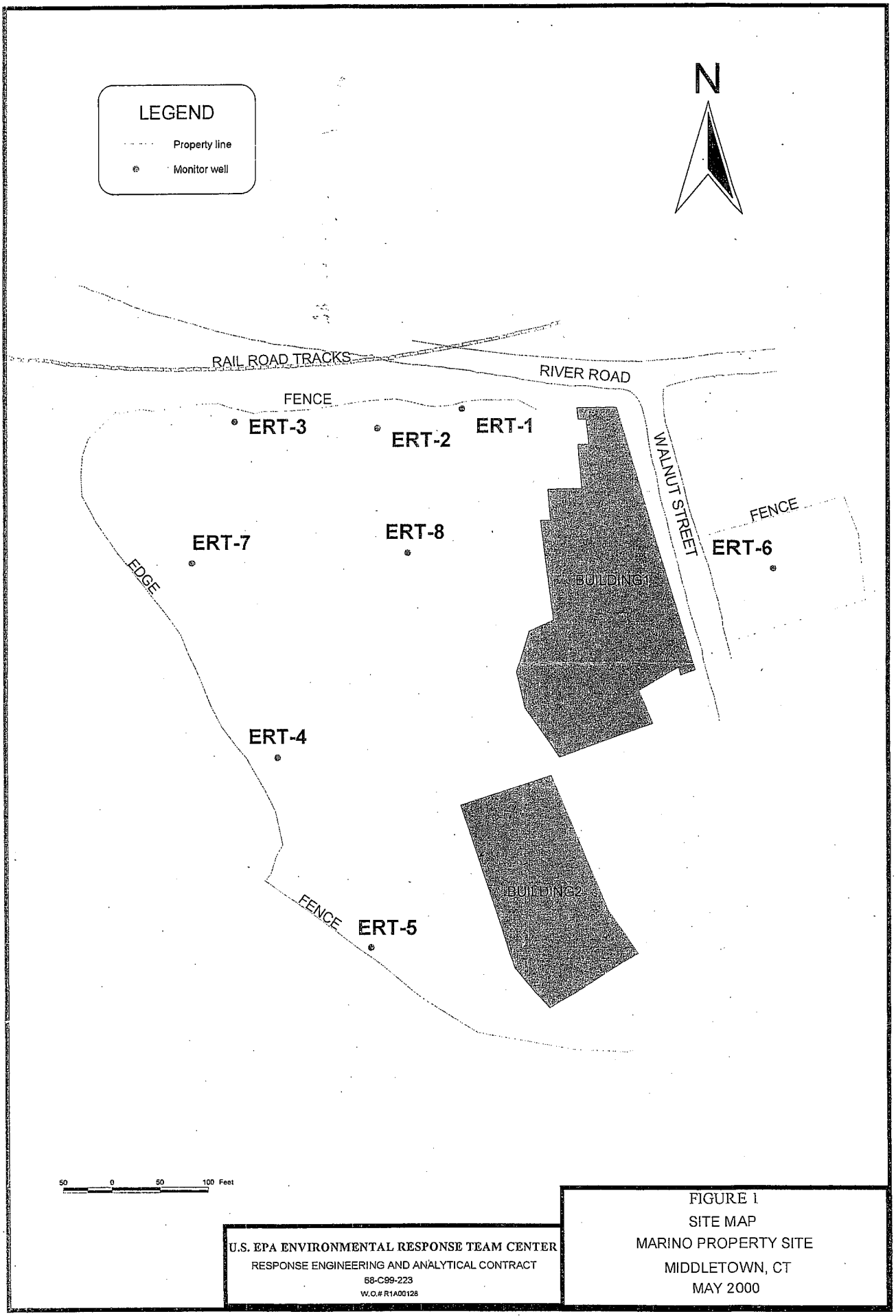

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FIGURE 1
SITE MAP
MARINO PROPERTY SITE
MIDDLETOWN, CT
MAY 2000

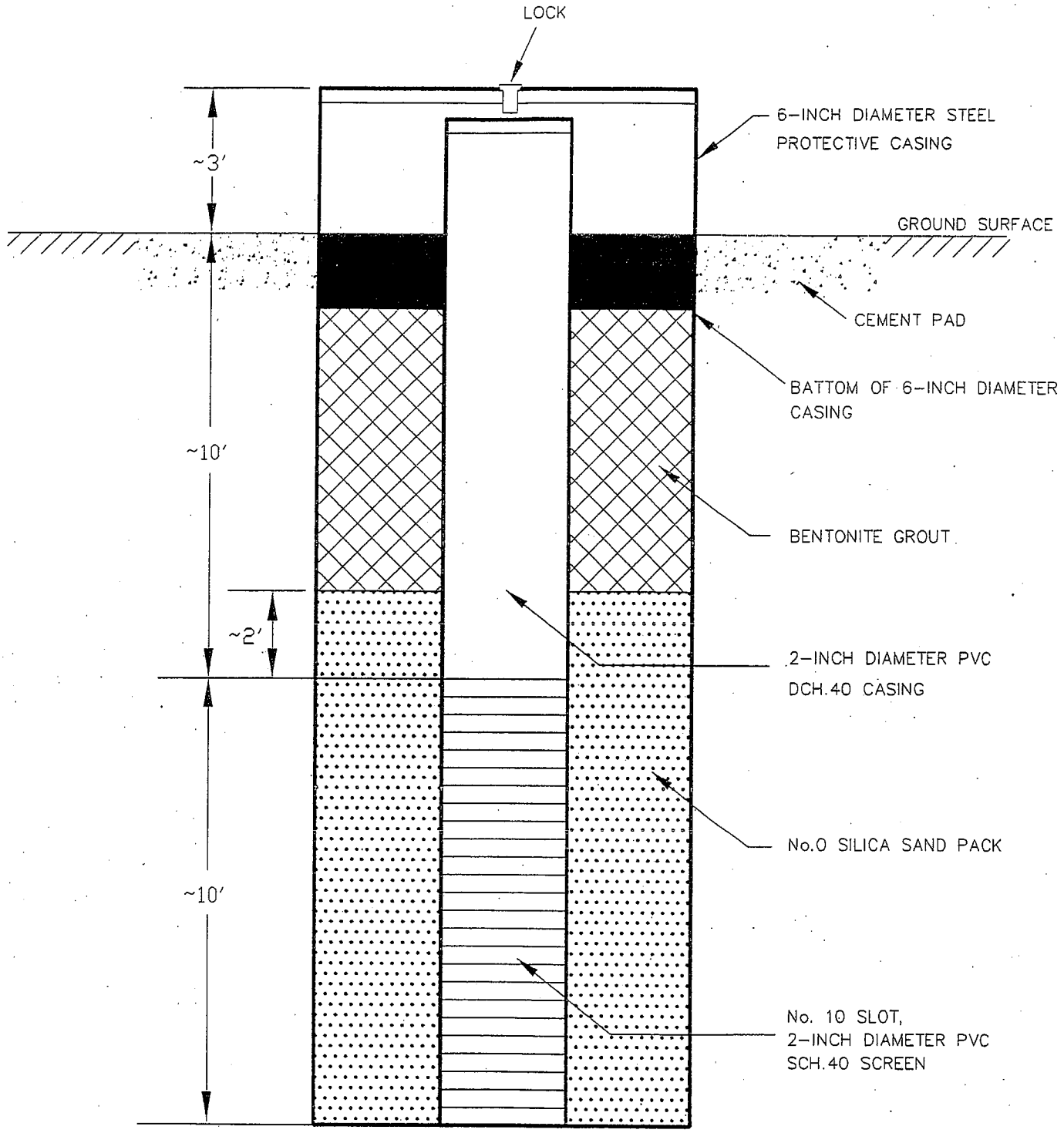

FIGURE 2
TYPICAL MONITOR WELL CONSTRUCTION
MARINO PROPERTY SITE
MIDDLETOWN, CONNECTICUT
MAY 2000

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128/M-WELL.DWG 5/5/00

TABLE 1
WELL CONSTRUCTION AND WATER LEVEL DATA
MARINO PROPERTY
MAY 2000

Well No.	Screen Interval[1]	Elevation Top PVC	Elevation GS[2]	DTW Top PVC	Water-Level Elevation[3]	Northing[4]	Easting[4]
ERT-1	10-20	16.88	14.10	8.00	8.88	263749.9	629910
ERT-2	10-20	19.46	16.83	12.22	7.24	263729.7	629823
ERT-3	10-20	20.79	17.97	13.65	7.14	263739.3	626974.9
ERT-4	10-25	23.26	20.37	17.20	6.06	263394.2	629718.6
ERT-5	15-25	27.01	24.05	16.58	10.43	263199.6	629814.8
ERT-6	10-20	21.72	19.72	9.46	12.26	263586.7	630226.7
ERT-7	11-21	21.38	19.57	15.08	6.3	263594.2	629632.1
ERT-8	10-25	19.48	19.48	12.32	7.16	263598.9	630226.7

All measurements in feet
(1) Depth below ground surface
(2) Concrete pad
(3) National Geodetic Vertical Datum of 1929
(4) Connecticut State Coordinate System
DTW = Depth to water (March 14,2000)
GS = Ground surface

augers were then pulled as the sand pack and grout were gradually emplaced. Well stick-ups are approximately 3 feet to avoid impact from possible flooding. All wells have a six-inch diameter outer protective steel casing that is seated on top of the bentonite fill and grouted in place with neat cement. Cement pads and locking caps complete the well installation. Well construction details are provided in Table 1 and a typical well installation is shown in Figure 2. The coordinates and elevation (top of PVC casing and ground surface) of each well were determined by a local surveying contractor.

In order to provide information on the thickness of the various lithologies, the pilot holes for wells ERT-1 and ERT-2 were drilled considerably deeper than the final well depth. The wells were then constructed in a second offset hole that was drilled only to the approximate well depth. This avoided unnecessary smearing of the screened zone and excessive backfilling.

During drilling and well construction, the borehole and breathing zone were monitored with both a flame-ionization detector (FID) and a photo-ionization detector (PID). Beginning at 10 feet below ground surface (bgs) the borehole was generally cored every five feet using a conventional 2-foot long split-spoon. Cuttings were continuously logged but were not always reliable indicators of lithology once the water table was penetrated. Borehole descriptive logs are given in Appendix A.

Well Development

Following construction, all wells were developed using either a bailer or miniature submersible pump (Whale™) depending on the sustained yield. The yield of most wells was sufficient to allow development by continuous pumping with the Whale pump. The pump was set at various depths along the well screen in an attempt to develop the entire screened portion of the well. It was necessary to use a bailer in developing wells ERT-1 and ERT-3 because of insufficient yield to sustain continuous pumping. In all cases, at least 10 well volumes of groundwater were removed which was generally sufficient to reduce turbidity to acceptable levels. Well ERT-6, however, required the removal of over 16 well volumes (approximately 100 gallons) before development was considered sufficient.

Well Sampling

Water levels were measured in all monitor wells during a second site visit from March 14 to 15, 2000. The wells were then purged of at least three well volumes using either bailers or peristalic pumps and then immediately sampled. Samples were sent to the REAC Laboratories in Edison, New Jersey for analysis of volatile organic compounds (VOCs), polychlorinated biphenyls, (PCBs), target analyte list (TAL) metals, and base, neutral, and acid extractables (BNAs).

RESULTS

Drilling and Stratigraphy

The drilling results indicate that most of the area investigated is underlain by a mixed fill containing landfill debris or incinerator waste that rests upon a marsh deposit of probable Recent age (see Appendix A). The U.S. Geological Survey 7.5 minute topographic map of the Middletown Quadrangle for 1965 also indicates that much of the site was formerly a wetland. The fill appears to be between 10 and 12 feet thick in the center portions of the site but the greatest thickness of the marsh deposits is unknown. At the location of Well ERT-7, near the western site boundary (see Figure 1), the marsh deposits extend from the base of the fill (approximately 5 feet bgs) to approximately 20 feet bgs. However, the pilot holes for Wells ERT-2 and ERT-3, on the north side of the site, were still in marsh sediments when the holes were abandoned at 40 feet and 27 feet bgs respectively. The eastern portion of the site appears to be underlain by glacial till and both the fill and marsh deposits are thin or absent. The till, where encountered in the boreholes, is generally fine-grained and

dense with little or no interstitial water. The boring for Well ERT-5, near the southern perimeter of the site, encountered clean fill to 15 feet bgs underlain by approximately 2 feet of landfill debris.

FID readings in the boreholes for wells ERT-3, ERT-5, ERT-7, and ERT-8 exceeded 1,000 units over background. FID readings in the remaining holes varied from background to several hundred units above background, depending on location. Based on the results of the groundwater analyses, and that PID readings remained at or near background in all cases, the high FID readings are attributed to methane that originates mainly in the marsh sediments. Some methane may be contributed by buried landfill debris, but the landfill material appears to be mainly inorganic and is only a small percentage of the volume of the marsh sediments.

Groundwater Chemical Analysis

The only VOC detected above method detection limits in the groundwater samples was 2.6 micrograms/liter (µg/L) of p-isopropyltoluene in the sample from Well ERT-5. Acetone was present in most samples below method detection limits, probably as a laboratory contaminant. Target compound BNAs were likewise absent although unidentified glycols (a non-target compound) were present in wells ERT-5 and ERT-8 at concentrations of 30 µg/L and 13 µg/L respectively. No PCBs were detected. Except for iron, no unusual TAL metal concentrations were found in any of the groundwater samples. Iron concentrations ranged between 12,000 and 25,000 µg/L in wells ERT-4, ERT-5, ERT-7, and ERT-8. Final laboratory analytical data are given in Appendix B.

Groundwater Flow

Based on groundwater levels measured during the site visit of March 10, 2000 (see Table 1), local groundwater flow appears to be northwest, towards Sumner Brook as indicated on Figure 3. Because of the lack of well control outside of the site, this should be considered only an approximate direction. However, it agrees with what would be expected from an analysis of the local topography. Groundwater levels generally range from approximately 8 feet to 17 feet bgs (approximately 6 feet to 12 feet above sea level) and probably are indicative of a shallow water-table aquifer. The presence of a deeper water-bearing unit within the bedrock was not investigated in this study.

The Connecticut River, which is located immediately north of the site, is tidally influenced at Middletown. The effect of tides on groundwater levels at the site is not known, however, because continuous groundwater level measurements with time were not made during this study.

CONCLUSIONS

Groundwater samples from monitor wells installed during this study suggest little or no contamination of the shallow water-table aquifer by organic compounds or heavy metals. The primary groundwater discharge from the site appears to be into Sumner Brook. Thick marsh deposits underlying the site probably act to confine or at least retard vertical groundwater flow to the deeper bedrock. The relatively impermeable glacial till encountered in boreholes for wells ERT-1 and ERT-2 also suggest that lateral flow to the north of the site may be limited as well.

Any future land use plans will have to take into account the probable presence of methane within the area of the site underlain by the marsh sediments and landfill debris. Either removal of the marsh sediments and landfill debris, or compaction and venting may be necessary depending on the proposed use.

FUTURE ACTIVITIES

At least one additional set of groundwater level measurements and well sampling events is recommended in order to confirm previous results. These measurements and the groundwater samples should be taken during late summer or fall when groundwater levels are normally at or near their seasonal low.

REFERENCES

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APPENDIX A

BOREHOLE DESCRIPTIVE LOGS

MARINO PROPERTY SITE

MIDDLETOWN, CONNECTICUT

MAY 2000

ERT-1

DEPTH (FEET) Cuttings	Split Spoon	LITHOLOGY
0-5		Clay, dark brown, silty, cohesive, slightly moist, slightly micaceous OVA = 0 units, HNU = 0 units.
	5-7	Silt, clayey, dark brown, some disseminated organic material, cohesive, moist
5-10		Same as 5-7 feet, moist to wet OVA = 0 unit, HNU = 0 units.
	10-12	Same as 5-7 feet but no organic material.
10-15		Same as 5-7 feet.
15-20		Mixed cuttings, fine-grained silt, with water OVA = 0 units, HNU = 0 units.
	20-22	Silt, clayey, gray to dark brown, cohesive, wet, uniform.
20-25		Poor returns, drills like gravel.
	25-27	Hard driving, badly weathered siltstone, reddish brown, gravelly, micaceous, with large pieces of semi-rounded gravel, dry. Glacial till (?).
25-28		Hard drilling
28-30		Easier drilling HNU = 0 units
	30-32	Silt, reddish-brown, micaceous, with occasional gravel, dry, fairly uniform, very slightly cohesive.
30-35		Poor returns, easy drilling
35-40		Hard drilling
	40-42 TD	Silt, reddish-brown, hard, dry, compact, occasional quartz pebble, friable. 77 blows/foot.

ERT-2

DEPTH (FEET) Cuttings	Split Spoon	LITHOLOGY
0-5		Silt, reddish-brown, non-cohesive, some gravel and misc. small debris (wire, plastic, glass), wet to moist at 5 feet. HNU = 2 units above background
5-10		Same as 0-5 feet, moist, water at 10 feet bgs OVA = 30-50 units above background
	10-12	Only 2-4 inches recovery, large gravel in core barrel tip. Silt, black, clayey, wet.
10-15		Silt, dark brown, moist, with wire, plastic, scrap meta. OVA = 10 units above background
	15-17	Silt, black, clayey to silty clay, cohesive, micaceous, uniform, wet, 100 % recovery.
15-20		Poor recovery, mixed.
	20-22	Same as 15-17 feet. 100% recovery
20-25		No recovery but hole is making water. OVA = background
	25-27	Same as 15-17 feet. 100% recovery.
25-30		No recovery. Hole still making water.
	30-32	Silt to clay, black, micaceous, with plant fragments and wood. 100% recovery.
30-35		No recovery. OVA= 4-8 units above background
	35-37	Same as 30-32 feet but stiffer, more clay, with white disseminated particles (shell material ?).
35-40 TD		No recovery. No change in drilling rate.

ERT-3

DEPTH (FEET)		LITHOLOGY
Cuttings	Split Spoon	
0-5		Silt, black, slightly clayey, micaceous, with assorted debris. OVA = +1,000 units.
5-10		Clay, silt, and gravel, brown, slightly cohesive, with some landfill debris, wet at 9-10 feet. OVA = +1,000 units.
	10-12	Silt, black, clayey, with landfill debris, wood fragments, wet. Recovery approx. 6 inches.
10-15		Recovery poor. OVA = +1,000 units
	15-17	Clay, silty, gray to gray-brown, cohesive, massive, wet. Recovery approx. 85%.
15-20		Clay, silty, dark gray to black. OVA = 3-5 units above background.
	20-22	Silt, mottled, reddish-brown with gray clay clasts, wet, cohesive. Recovery approx. 90%.
20-25		Little to no recovery
	25-27	Silt, clayey, dark gray, massive, micaceous, wet, cohesive. OVA = 10-12 units above background in core.
25-30 TD		Not representative, mixed. No change in drilling rate. Hole making water.

ERT-4

DEPTH (FEET)		LITHOLOGY
Cuttings	Split Spoon	
0-5		Silt, black, clayey with landfill debris, moist.
5-10		Same as 0-5 feet but poor returns. OVA = +1,000 units.
	10-12	Fill, silty black matrix with glass, brick, concrete, a little ash.
10-15		Silt, clayey, black, with landfill debris at top of interval. OVA = +1,000 units.
	15-17	No core recovery.
15-20		Silt, clayey, black, moist. OVA = 10-15 units above background; HNU = 0 units above background.
	20-22	Silt, gray-brown, clayey, moderately cohesive, organic matter, core barrel wet. Recovery 2-3 inches.
20-25		Returns poor.
	25-27 TD	Clay, to silty clay,black, soft, cohesive, micaceous, wet. Recovery approx. 80%.

DEPTH (FEET)		LITHOLOGY
Cuttings	Split Spoon	
0-2		Fill.
2-5		Sand, fine, silty, to silt, brown, with large gravel, poorly sorted.
7-8		Large gravel and cobbles in clayey sily matrix, dark brown.
8-10		Clay, silty, sandy, dark brown, cohesive.
	10-12	Clay, silty, reddish brown, with occasional large angular gravel, moist. Approx. 6 inches recovery. OVA = 40-50 units above background.
10-15		Clay, silty, reddish-brown, cohesive, moist. OVA = 10-20 units above background; HNU = background.
	15-17	Clay, silty, reddish-brown, some mottling, contains leaf fragments and broken glass, odor, moist.
15-20		Poor returns.
	20-22	Silt, reddish-brown, friable, dense, micaceous, dry (core barrel is wet).
20-25 TD		Poor returns. Drills like dense silt.

ERT-6

DEPTH (FEET)		LITHOLOGY
Cuttings	Split Spoon	
0-5		Silt, brown, clayey, with gravel, non-cohesive, grades downward to brown silty clay. OVA = 1-2 units above background.
5-10		Clay, silty, cohesive, brown, moist.
	10-12	Silt to very fine sand, reddish-brown, micaceous, with large gravel,dry.
10-15		Mixed cuttings. Water at approx. 13.5 feet bgs.
	15-17	Weathered micaceous schist, gray. Hard driving bottom 6 inches. Recovery approx. 7 inches. (Boulder ?).
15-20		Slow drilling - no cuttings.

DEPTH (FEET)		LITHOLOGY
Cuttings	Split Spoon	
0-5		Silt, to clay, black, organic, soft, cohesive, with glass and plastic debris, moist. OVA = 500-1,000 units above background; HNU = background.
5-10		Returns poor. Water at 10 feet.
	10-12	Clay, silty, black, organic, soft, odor, wet. Recovery 0nly 1-2 inches.
10-15		Clay, silty, black, organic, soft, oder, wet with plastic, glass, and wire debris.
	15-17	No returns
15-20		Same as 10-15 feet but may not be representative.
	20-22 TD	Silt, mottled, gray to red-brown, micaceous.

DEPTH (FEET)		LITHOLOGY
Cuttings	Split Spoon	
0-5		Silt, black, clayey, organic with glass, metal scraps, and plastic. OVA = +1,000 units; HNU = background.
5-10		Same as 0-5 feet with decreasing amounts of debris at depth. OVA = approx. 10 units above background.
	10-12	No returns. Core barrel plugged with wire debris.
10-15		Poor returns but same as 0-5 feet but decreasing amounts of debris. Water about 10 feet bgs. OVA = +1,000 units; HNU = background.
	15-17	Silt, gray, black, organic, clayey, soft, somewhat cohesive, micaceous. Recovery approx. 7 inches. OVA reading on core in open air is 100 units above background.
15-20		Poor returns.
	20-22	Same as 15-17 feet. Recovery -100%. OVA reading on core in open air is 200 units above background.
20-25 TD		Poor returns

APPENDIX B

FINAL LABORATORY REPORTS

MARINO PROPERTY SITE

MIDDLETOWN, CONNECTICUT

MAY 2000

ANALYTICAL REPORT

Prepared by
Lockheed Martin

Marino Property Site
Middletown, CT

April 2000

EPA Work Assignment No. 0-128
LOCKHEED MARTIN Work Order No. R1A00128
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0128\DEL\AR\0004\REPORT

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Section III

Chains of Custody

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Appendices will be furnished on request.

REAC in response to WA 0-128, provided analytical support for environmental samples collected from Marino Property Site, located in Middletown, CT as described in the following table. The support also included QA/QC, data review, and preparation of an analytical report containing a summary of the analytical methods, the results, and the QA/QC results.

The samples were treated with procedures consistent with those specified in SOP #1008.

COC #	Number of Samples	Sampling Date	Date Received	Matrix	Analysis	Laboratory
01737	1	3/15/00	3/15/00	Water	VOC	REAC
01737	4	3/14/00	3/15/00	Water	VOC, BNA PCB, TAL METALS	REAC
01737	1	3/14/00	3/15/00	Water	VOC	REAC
02559	5	3/14/00	3/15/00	Water	VOC, BNA PCB, TAL Metals	REAC

Case Narrative

The data in this report have been validated to two significant figures. Any other representation of the data is the responsibility of the user.

BNA in Water Package J 129

The acceptable QC limits were exceeded for hexachlorocyclopentadiene (32%) in the continuing calibration check standard of 3/21/00. The data are not affected.

The acceptable QC limits for the percent recoveries of two or more acid surrogates were exceeded, and were less than 10% for samples A 24561, A 24561 MS, A 24561 MSD, A 24556 and A 24563. The concentrations for the acid fraction of the BNA compound list for samples A 24561, A 24556 and A 24563 should be regarded as unusable.

The acceptable QC limits for the percent recoveries of phenol, 2-chlorophenol, 4-chloro-3-methyl phenol and pentachlorophenol were exceeded, and were less than 10% in the MS, MSD, or both. The results for these compounds in sample A 24561 should be regarded as unusable.

VOC in Water Package J 116

The water blank of 3/16/00 contained 4.6 µg/L dichlorodifluoromethane and 2.6 µg/L acetone. The data are affected as follows:

> The acetone concentrations in samples 24564 (the trip blank), 24567, 24556, 24557, 24558, 24560, 24561, 24563, 24565 and 24566 should be regarded as not detected.
>
> The acetone and dichlorodifluoromethane concentrations in sample 24559 should be regarded as not detected.

The acceptable QC limits were exceeded for dichlorodifluoromethane (48%) in the initial calibration of 3/7/00. The concentration of dichlorodifluoromethane in the blank of 3/16/00 should be regarded as estimated.

The acceptable QC limits were exceeded for vinyl chloride (31%), trichlorofluoromethane (47%) and naphthalene (29%) in the continuing calibration check standard of 3/17/00. The data are not affected.

The 5 ppb standard for acetone has been deleted. The method detection limits have been raised.

PCBs in Water Package J 119

The acceptable QC limits were exceeded for decachlorobiphenyl (37%) in the end of sequence continuing calibration check standard of 3/17/00. The data are not affected because no samples were quantified by this calibration check.

The acceptable QC limits for the percent recoveries of one surrogate was exceeded for samples B 24556, B 24557, B 24558, B 24559, B 24560, B 24561, C 24561 MS, D 24561 MSD, B 24563, B 24565 and B 24566. The data are not affected.

Metals in Water Package J 136

The acceptable QC limits for the percent recoveries of selenium were exceeded for C 24556 MS (70%) and C 24556 MSD (72%). The concentration of selenium in samples C 24556 through C 24561, C 24563, C 24565 and C 24566 should be regarded as estimated.

The sodium concentrations exceeded the linear calibration range of the instrument for samples C 24559, C 24560, C 24561, C 24563, C 24565 and C 24566. The sodium results for these samples should be regarded as estimated.

Summary of Abbreviations

AA	Atomic Absorption
B	The analyte was found in the blank
BFB	Bromofluorobenzene
C	Centigrade
cont.	Continued
D	(Surrogate Table) this value is from a diluted sample and was not calculated (Result Table) this result was obtained from a diluted sample
Dioxin	denotes Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans and/or PCDD and PCDF
CLP	Contract Laboratory Protocol
COC	Chain of Custody
CONC	Concentration
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DFTPP	Decafluorotriphenylphosphine
DL	Detection Limit
E	The value is greater than the highest linear standard and is estimated
EMPC	Estimated maximum possible concentration
ICAP	Inductively Coupled Argon Plasma
ISTD	Internal Standard
J	The value is below the method detection limit and is estimated
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDL	Method Detection Limit
MI	Matrix Interference
MS (BS)	Matrix Spike (Blank Spike)
MSD (BSD	Matrix Spike Duplicate (Blank Spike Duplicate)
MW	Molecular Weight
NA	either Not Applicable or Not Available
NC	Not Calculated
NR	Not Requested
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
PPB	Parts per billion
PPBV	Parts per billion by volume
PPMV	Parts per million by volume
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
QL	Quantitation Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SIM	Selected Ion Monitoring
TCLP	Toxic Characteristics Leaching Procedure
U	Denotes not detected
W	Weathered analyte; the results should be regarded as estimated

m^3	cubic meter	kg	kilogram	μg	microgram
L	liter	g	gram	pg	picogram
mL	milliliter	mg	milligram	ng	nanogram
μL	microliter				

*	denotes a value that exceeds the acceptable QC limit
	Abbreviations that are specific to a particular table are explained in footnotes on that table

Revision 2/15/00

Analytical Procedure for BNA in Water

Extraction Procedure

Prior to extraction, each sample was spiked with a six component surrogate mixture consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. One liter of sample was extracted according to Method 625, Section 10, as outlined in the Federal Register Vol. 49, #209, Friday, Oct. 26, 1984. The extracts were combined, concentrated to 1.0 mL, an internal standards mixture consisting of 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12} was added, and analyzed.

Analytical Procedure

An HP6890/5972 Gas Chromatograph/Mass Spectrometer (GC/MS), equipped with a 6890 autosampler and controlled by a PC Computer equipped with HP Enviroquant Software computer was used to analyze the samples.

The instrument conditions were:

Column	Restek Rtx-5 (crossbonded SE-54) 30 meter x 0.25mm ID, 0.50 µm film thickness
Injection Temperature	280° C
Transfer Temperature	280° C
Source Temperature & Analyzer Temperature	Controlled by thermal transfer of heat from Transfer Line
Temperature Program	50°C for 0.5 min 20° C/min to 295° C hold 8.5 min 25° C/min to 310° C hold 15 min
Pulsed Splitl Injection	Split time = 2.00 min @ 8:1 split ratio Pressure Pulse = 16psi for 0.5 min, then normal.
Injection Volume	1µL Must use 4 mm ID single gooseneck liners packed with 10 mm plug of silanized & conditioned glass wool.

The GC/MS system was calibrated using 5 BNA standards at 20, 50, 80, 120, and 160 µg/mL. Before analysis each day, the system was tuned with 50 ng decafluorotriphenylphosphine (DFTPP) and passed a continuing calibration check when analyzing a 50 µg/mL standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The BNA results are listed in Table 1.1; the tentatively identified compounds are listed in Table 1.2. The concentration of the detected compounds was calculated using the following equation:

$$C_u = \frac{DF x A_u x I_{is} x V_t}{A_{is} x RF (or RF_{ave}) x V_i x V_o}$$

where

C_u = Concentration of target analyte (µg/L)
DF = Dilution Factor
A_u = Area of target analyte
I_{is} = Mass of specific internal standard (ng)
V_t = Volume of extract (µl)
A_{is} = Area of specific internal standard
RF = Response Factor (unitless)
RF_{ave} = average Response Factor
V_i = Volume of extract injected (µl)
V_o = Volume of sample (mL)

The RF_{ave} is used when a sample is associated with an initial calibration curve. The RF is used when a sample is associated with a continuing calibration curve.

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \; x \; I_{is}}{A_{is} \; x \; I_c}$$

where

RF = Response factor for a specific analyte
A_c = Area of the analyte in the standard
I_{is} = Mass of the specific internal standard
A_{is} = Area of the specific internal standard
I_c = Mass of the analyte in the standard

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

and
n = number of Samples

Rev. 4/5/99

Analytical Procedure for VOC in Water

A modified 524.2 method for the analysis of Volatile Organic Compounds in water was used. Samples were purged, trapped, and desorbed to a GC/MS system. Prior to purging, the samples were spiked with a three component surrogate mixture consisting of toluene-d_8, 4-bromofluorobenzene and 1,2-dichloroethane-d_4 and a three component internal standard mixture consisting of bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5.

The purge and trap unit consisted of: A Tekmar concentrator (3000 series) equipped with an Archon autosampler (Dynateck Corp.) and a VOCARB 3000 trap (Supelco).

The purge and trap instrument conditions were:

Purge	10 min at 25° C
Dry Purge	2 min at 25° C
Desorb Preheat	230° C
Desorb	4 min at 230° C
Purge Flow Rate	40 mL/min
Bake	10 min at 260° C

A Hewlett Packard 5973 GC/MSD equipped with an HP Chem Station data system was used to analyze the data.

The instrument conditions were:

Column:	30 meter x 0.25 mm ID, RTx-Volatiles (Restek Corp.) column with 3.0 µm film thickness.
Temperature:	4 min at 40° C 9° C/min to 165° C, hold for 2 min. 12° C/min to 220° C, hold for 7 min.
Flow Rate	Helium at 1.0 mL/min.
Mass Spectrometer:	Electron Impact Ionization at a nominal electron energy of 70 electron volts, scanning from 35-350 amu at one scan/sec.

Computer: Preprogrammed to plot Extracted Ion Current Profile (EICP); capable of integrating ions and plotting abundances vs time or scan number. A library search (NBS-Wiley) for tentatively identified compounds was performed on samples.

The GC/MS system was calibrated using 6 VOC standards at 5, 20, 50, 100, 150, and 200 µg/L. Before analysis each day, the system was tuned with 50-ng BFB and passed a continuing calibration check when analyzing a 50 µg/L standard mixture in which the responses were evaluated by comparison to the average response of the calibration curve.

The results are in Table 1.3; the tentatively identified compounds are listed in Table 1.4. The concentrations of the analytes were calculated using the following equation:

$$C_u = \frac{A_x \times I_{is} \times D}{A_{is} \times RF \text{ (or } RF_{ave})}$$

where

C_u	= Concentration of target analyte (µg/L)
A_x	= Area of the target analyte
I_{is}	= Concentration of specific internal standard (µg/L)
A_{is}	= Area of the specific internal standard
RF	= Response Factor
RF_{ave}	= Average Response Factor
D	= Dilution factor

The average Response Factor is used when a sample is associated with an initial calibration curve. The Response Factor is used when a sample is associated with a continuing calibration curve.

Response Factor calculation:

The response factor (RF) for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_c \times I_{is}}{A_{is} \times I_c}$$

where,

RF	= Response factor for a specific analyte
A_c	= Area of the analyte in the standard
I_{is}	= Concentration of the specific internal standard
A_{is}	= Area of the specific internal standard
I_c	= Concentration of the analyte in the standard

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

and

n = number of Samples

Revision of 2/3/00

Analytical Procedure for PCBs in Water

Extraction Procedure

One liter of sample was spiked with a surrogate solution consisting of tetrachloro-m-xylene and decachlorobiphenyl, and was extracted three times with 60 mL portions of methylene chloride. The combined extracts were filtered, concentrated to 10 mL, exchanged the solvent with 60 mL hexane, and concentrated to 1.0 mL.

Gas Chromatographic Analysis

The extract was analyzed for PCBs using simultaneous dual column injections. The analysis was done on an HP 6890 GC/ECD system equipped with an HP 6890 automatic sampler. The system was controlled with an HP-ChemStation. The following conditions were employed:

First Column	DB-608, 30 meter, 0.32 mm fused silica capillary, 0.50 µm film thickness
Second Column	Rtx-CLPesticides, 30 meter, 0.32 mm fused silica capillary, 0.50 µm film thickness
Injector Temperature	200°C
Detector Temperature	300°C
Temperature Program	120°C for 1 minute 9°C/min to 285°C, hold for 10 minutes
Injection Volume	1 µL

The gas chromatographs were calibrated using 5 PCB standards at 250, 500, 1000, 2000, and 5000 µg/L. Five representative peaks were chosen and the responses from each mixture were used to calculate the response factors (RFs) of the analyte. The average RF was used to calculate the concentrations of the PCBs in the samples. Quantification was based on the DB-608 column (signal 1), and identity of the analyte was confirmed using the Rtx-CLPesticides column (signal 2). A fingerprint gas chromatogram was run using each of the eight Aroclor mixtures. The calibration curves were run only if a particular Aroclor was found in the sample.

The PCB results, listed in Table 1.5, were calculated from the following formula:

$$C_u = \frac{(DF)(A_u)(V_t)}{(RF_{ave})(V_i)(V_s)}$$

where:

C_u	=	Concentration of analyte (µg/L)
DF	=	Dilution Factor
A_u	=	Area or peak height
V_t	=	Final Volume of sample extract (mL)
RF_{ave}	=	Average response factor
V_i	=	Volume of extract injected (µL)
V_s	=	Sample volume extracted (mL)

Response Factor Calculation:

The response factor for each specific analyte is calculated using the peak area (peak height) from the continuing calibration check as follows:

$$RF = \frac{A_u}{total\ pg\ injected}$$

where:

A_u = Peak area or peak height

and

$$RF_{ave} = \frac{RF_1 + \ldots + RF_n}{n}$$

where:

n = number of samples

Revision 3/9/00

Analytical Procedure for Metals in Water

Sample Preparation

A representative 45 mL aliquot of each sample was mixed with 5.0-mL concentrated nitric acid, placed in an acid rinsed Teflon container, capped with a Teflon lined cap, and digested according to SW-846, method 3015 in a CEM MDS-2100 microwave oven, which was programmed to bring the samples to 160 +/- 4°C in 10 minutes (first stage) and slowly to 165-170°C in the second 10 minutes (second stage). After digestion, samples were allowed to cool to room temperature and were transferred to acid cleaned bottles. Samples were analyzed for all metals, except mercury, by US EPA SW-846, method 7000 Atomic Absorption (AA) or method 6010 Inductively Coupled Argon Plasma (ICAP) procedures.

A 100 mL aliquot of each sample was transferred to a 300-mL BOD bottle and prepared according to SW-846, method 7470. The samples were heated for 2 hours on a hot plate at 95° C, cooled to room temperature, and reduced with hydroxylamine hydrochloride (NH_2OH:HCl). Mercury was then analyzed separately on a Leeman Labs PS200II AA Spectrometer.

A reagent blank and a blank spike sample were carried through the sample preparation procedure for each analytical batch of samples processed. One matrix spike (MS) and one matrix spike duplicate (MSD) sample were also processed for each analytical batch or every 10 samples.

Analysis and Calculations

The AA, ICAP and Leeman Labs PS200II instruments were calibrated and operated according to SW-846, method 7000/7470/6010 and the manufacturer's operating instructions. After calibration, initial calibration verification (ICV), initial calibration blank (ICB), and QC check standards were run to verify proper calibration. The continuing calibration verification (CCV) and continuing calibration blank (CCB) standards were run after every 10 samples to verify proper operation during sample analysis.

The metal concentrations in solution, in micrograms per liter (µg/L) were read directly from the read-out systems of the instruments. ICAP and mercury results were taken directly from instrument read-outs. The ICAP results were corrected for digestion volume (45-mL sample + 5-mL nitric acid) prior to instrument read-out; AA read-outs (excluding mercury) were externally corrected for digestion volume (1.1111 * AA read-out).

For samples that required dilution to fall within the instrument calibration range:

µg/L metal in sample = A [(C+B) / C]

where:

A = direct read-out (ICAP and mercury)
A = corrected read-out (AA)
B = acid blank matrix used for dilution, mL
C = sample aliquot, mL

Results of the analyses are listed in Table 1.6.

Table 1.1 Results of the Analysis for BNA in Water
WA # 0-128 Marino Property Site

Sample No.	WBLK031000	A24561	A24556	A24557	A24558
Sample Location	0	ERT-5	ERT-1	ERT-2	ERT-3
GC/MS File Name	MP0002	MP0003	MP0006	MP0007	MP0008
Dilution Factor	1	1	1	1	1

Compound Name	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Phenol	U	10	U	10	U	10	U	10	U	10
bis(-2-Chloroethyl)Ether	U	10	U	10	U	10	U	10	U	10
2-Chlorophenol	U	10	U	10	U	10	U	10	U	10
1,3-Dichlorobenzene	U	10	U	10	U	10	U	10	U	10
1,4-Dichlorobenzene	U	10	U	10	U	10	U	10	U	10
Benzyl alcohol	U	10	U	10	U	10	U	10	U	10
1,2-Dichlorobenzene	U	10	U	10	U	10	U	10	U	10
2-Methylphenol	U	10	U	10	U	10	U	10	U	10
bis(2-Chloroisopropyl)ether	U	10	U	10	U	10	U	10	U	10
4-Methylphenol	U	10	U	10	U	10	U	10	U	10
N-Nitroso-Di-n-propylamine	U	10	U	10	U	10	U	10	U	10
Hexachloroethane	U	10	U	10	U	10	U	10	U	10
Nitrobenzene	U	10	U	10	U	10	U	10	U	10
Isophorone	U	10	U	10	U	10	U	10	U	10
2-Nitrophenol	U	10	U	10	U	10	U	10	U	10
2,4-Dimethylphenol	U	10	U	10	U	10	U	10	U	10
bis(2-Chloroethoxy)methane	U	10	U	10	U	10	U	10	U	10
2,4-Dichlorophenol	U	10	U	10	U	10	U	10	U	10
1,2,4-Trichlorobenzene	U	10	U	10	U	10	U	10	U	10
Naphthalene	U	10	U	10	U	10	U	10	U	10
4-Chloroaniline	U	10	U	10	U	10	U	10	U	10
Hexachlorobutadiene	U	10	U	10	U	10	U	10	U	10
4-Chloro-3-methylphenol	U	10	U	10	U	10	U	10	U	10
2-Methylnaphthalene	U	10	U	10	U	10	U	10	U	10
Hexachlorocyclopentadiene	U	10	U	10	U	10	U	10	U	10
2,4,6-Trichlorophenol	U	10	U	10	U	10	U	10	U	10
2,4,5-Trichlorophenol	U	10	U	10	U	10	U	10	U	10
2-Chloronaphthalene	U	10	U	10	U	10	U	10	U	10
2-Nitroaniline	U	10	U	10	U	10	U	10	U	10
Dimethylphthalate	U	10	U	10	U	10	U	10	U	10
Acenaphthylene	U	10	U	10	U	10	U	10	U	10
2,6-Dinitrotoluene	U	10	U	10	U	10	U	10	U	10
3-Nitroaniline	U	10	U	10	U	10	U	10	U	10

Table 1.1 (cont.) Results of the Analysis for BNA in Water
WA # 0-128 Marino Property Site

Sample No.	WBLK031000	A24561	A24556	A24557	A24558
Sample Location	0	ERT-5	ERT-1	ERT-2	ERT-3
GC/MS File Name	MP0002	MP0003	MP0006	MP0007	MP0008
Dilution Factor	1	1	1	1	1

Compound Name	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Acenaphthene	U	10	U	10	U	10	U	10	U	10
2,4-Dinitrophenol	U	10	U	10	U	10	U	10	U	10
4-Nitrophenol	U	10	U	10	U	10	U	10	U	10
Dibenzofuran	U	10	U	10	U	10	U	10	U	10
2,4-Dinitrotoluene	U	10	U	10	U	10	U	10	U	10
Diethylphthalate	U	10	U	10	U	10	U	10	U	10
4-Chlorophenyl-phenylether	U	10	U	10	U	10	U	10	U	10
Fluorene	U	10	U	10	U	10	U	10	U	10
4-Nitroaniline	U	10	U	10	U	10	U	10	U	10
4,6-Dinitro-2-methylphenol	U	10	U	10	U	10	U	10	U	10
N-Nitrosodiphenylamine	U	10	U	10	U	10	U	10	U	10
4-Bromophenyl-phenylether	U	10	U	10	U	10	U	10	U	10
Hexachlorobenzene	U	10	U	10	U	10	U	10	U	10
Pentachlorophenol	U	10	U	10	U	10	U	10	U	10
Phenanthrene	U	10	U	10	U	10	U	10	U	10
Anthracene	U	10	U	10	U	10	U	10	U	10
Carbazole	U	10	U	10	U	10	U	10	U	10
Di-n-butylphthalate	U	10	U	10	U	10	U	10	U	10
Fluoranthene	U	10	U	10	U	10	U	10	U	10
Pyrene	U	10	U	10	U	10	U	10	U	10
Butylbenzylphthalate	U	10	U	10	U	10	U	10	U	10
Benzo(a)anthracene	U	10	U	10	U	10	U	10	U	10
3,3'-Dichlorobenzidine	U	10	U	10	U	10	U	10	U	10
Chrysene	U	10	U	10	U	10	U	10	U	10
Bis(2-Ethylhexyl)phthalate	U	10	4.4 J	10	2.9 J	10	2.1 J	10	7.7 J	10
Di-n-octylphthalate	U	10	U	10	U	10	U	10	U	10
Benzo(b)fluoranthene	U	10	U	10	U	10	U	10	U	10
Benzo(k)fluoranthene	U	10	U	10	U	10	U	10	U	10
Benzo(a)pyrene	U	10	U	10	U	10	U	10	U	10
Indeno(1,2,3-cd)pyrene	U	10	U	10	U	10	U	10	U	10
Dibenzo(a,h)anthracene	U	10	U	10	U	10	U	10	U	10
Benzo(g,h,i)perylene	U	10	U	10	U	10	U	10	U	10

Table 1.1 (cont.) Results of the Analysis for BNA in Water
WA # 0-128 Marino Property Site

Sample No.	A24559		A24560		A24563		A24565		A24566	
Sample Location	ERT-4		ERT-7		ERT-6		ERT-8		ERT-8 Dup	
GC/MS File Name	MP0009		MP0010		MP0011		MP0012		MP0013	
Dilution Factor	1		1		1		1		1	
Compound Name	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Phenol	U	10	U	10	U	10	U	10	U	10
bis(-2-Chloroethyl)Ether	U	10	U	10	U	10	U	10	U	10
2-Chlorophenol	U	10	U	10	U	10	U	10	U	10
1,3-Dichlorobenzene	U	10	U	10	U	10	U	10	U	10
1,4-Dichlorobenzene	U	10	U	10	U	10	U	10	U	10
Benzyl alcohol	U	10	U	10	U	10	U	10	U	10
1,2-Dichlorobenzene	U	10	U	10	U	10	U	10	U	10
2-Methylphenol	U	10	U	10	U	10	U	10	U	10
bis(2-Chloroisopropyl)ether	U	10	U	10	U	10	U	10	U	10
4-Methylphenol	U	10	U	10	U	10	U	10	U	10
N-Nitroso-Di-n-propylamine	U	10	U	10	U	10	U	10	U	10
Hexachloroethane	U	10	U	10	U	10	U	10	U	10
Nitrobenzene	U	10	U	10	U	10	U	10	U	10
Isophorone	U	10	U	10	U	10	U	10	U	10
2-Nitrophenol	U	10	U	10	U	10	U	10	U	10
2,4-Dimethylphenol	U	10	U	10	U	10	U	10	U	10
bis(2-Chloroethoxy)methane	U	10	U	10	U	10	U	10	U	10
2,4-Dichlorophenol	U	10	U	10	U	10	U	10	U	10
1,2,4-Trichlorobenzene	U	10	U	10	U	10	U	10	U	10
Naphthalene	U	10	U	10	U	10	U	10	U	10
4-Chloroaniline	U	10	U	10	U	10	U	10	U	10
Hexachlorobutadiene	U	10	U	10	U	10	U	10	U	10
4-Chloro-3-methylphenol	U	10	U	10	U	10	U	10	U	10
2-Methylnaphthalene	U	10	U	10	U	10	U	10	U	10
Hexachlorocyclopentadiene	U	10	U	10	U	10	U	10	U	10
2,4,6-Trichlorophenol	U	10	U	10	U	10	U	10	U	10
2,4,5-Trichlorophenol	U	10	U	10	U	10	U	10	U	10
2-Chloronaphthalene	U	10	U	10	U	10	U	10	U	10
2-Nitroaniline	U	10	U	10	U	10	U	10	U	10
Dimethylphthalate	U	10	U	10	U	10	U	10	U	10
Acenaphthylene	U	10	U	10	U	10	U	10	U	10
2,6-Dinitrotoluene	U	10	U	10	U	10	U	10	U	10
3-Nitroaniline	U	10	U	10	U	10	U	10	U	10

Table 1.1 (cont.) Results of the Analysis for BNA in Water
WA # 0-128 Marino Property Site

Sample No.	A24559		A24560		A24563		A24565		A24566	
Sample Location	ERT-4		ERT-7		ERT-6		ERT-8		ERT-8 Dup	
GC/MS File Name	MP0009		MP0010		MP0011		MP0012		MP0013	
Dilution Factor	1		1		1		1		1	
Compound Name	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Acenaphthene	U	10	U	10	U	10	U	10	U	10
2,4-Dinitrophenol	U	10	U	10	U	10	U	10	U	10
4-Nitrophenol	U	10	U	10	U	10	U	10	U	10
Dibenzofuran	U	10	U	10	U	10	U	10	U	10
2,4-Dinitrotoluene	U	10	U	10	U	10	U	10	U	10
Diethylphthalate	U	10	U	10	U	10	U	10	U	10
4-Chlorophenyl-phenylether	U	10	U	10	U	10	U	10	U	10
Fluorene	U	10	U	10	U	10	U	10	U	10
4-Nitroaniline	U	10	U	10	U	10	U	10	U	10
4,6-Dinitro-2-methylphenol	U	10	U	10	U	10	U	10	U	10
N-Nitrosodiphenylamine	U	10	U	10	U	10	U	10	U	10
4-Bromophenyl-phenylether	U	10	U	10	U	10	U	10	U	10
Hexachlorobenzene	U	10	U	10	U	10	U	10	U	10
Pentachlorophenol	U	10	U	10	U	10	U	10	U	10
Phenanthrene	U	10	U	10	U	10	U	10	U	10
Anthracene	U	10	U	10	U	10	U	10	U	10
Carbazole	U	10	U	10	U	10	U	10	U	10
Di-n-butylphthalate	U	10	U	10	U	10	U	10	U	10
Fluoranthene	U	10	U	10	U	10	U	10	U	10
Pyrene	U	10	U	10	U	10	U	10	U	10
Butylbenzylphthalate	U	10	U	10	U	10	U	10	U	10
Benzo(a)anthracene	U	10	U	10	U	10	U	10	U	10
3,3'-Dichlorobenzidine	U	10	U	10	U	10	U	10	U	10
Chrysene	U	10	U	10	U	10	U	10	U	10
Bis(2-Ethylhexyl)phthalate	U	10	U	10	U	10	U	10	U	10
Di-n-octylphthalate	U	10	U	10	U	10	U	10	U	10
Benzo(b)fluoranthene	U	10	U	10	U	10	U	10	U	10
Benzo(k)fluoranthene	U	10	U	10	U	10	U	10	U	10
Benzo(a)pyrene	U	10	U	10	U	10	U	10	U	10
Indeno(1,2,3-cd)pyrene	U	10	U	10	U	10	U	10	U	10
Dibenzo(a,h)anthracene	U	10	U	10	U	10	U	10	U	10
Benzo(g,h,i)perylene	U	10	U	10	U	10	U	10	U	10

Table 1.2 Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # WBLK032000
LabFile# MP0002 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown acid		12.59	6.4
2		Unknown acid		13.53	13
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.2 (cont.) Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # A24561
LabFile# MP0003 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown		5.25	37
2		Unknown glycol		5.28	13
3		Unknown alcohol		5.38	30
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.2 (cont.) Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # A24556
LabFile# MP0006 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown		4.63	4.3
2		Unknown		5.24	11
3		Unknown alcohol		5.38	8.2
4		Unknown		10.74	4.7
5		Unknown acid		12.59	11
6		Unknown acid		13.53	21
7		Unknown		28.38	23
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.2 (cont.) Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # A24557
LabFile# MP0007 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown acid		13.52	9.3
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.2 (cont.) Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # A24558
LabFile# MP0008 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1	105-60-2	Caprolactam		7.45	17
2		Unknown acid		13.52	10
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.2 (cont.) Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # A24559
LabFile# MP0009 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown		12.90	4.0
2		Unknown acid		13.52	8.3
3		Unknown		28.48	170
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.2 (cont.) Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # A24560
LabFile# MP0010 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown		6.75	8.6
2		Unknown		12.59	7.0
3		Unknown acid		13.52	12
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.2 (cont.) Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # A24563
LabFile# MP0011 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown acid		13.52	6.2
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.2 (cont.) Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # A24565
LabFile# MP0012 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown glycol		5.26	12
2		Unknown glycol		5.28	13
3		Unknown alcohol		5.37	27
4		Unknown		7.86	4.4
5		Unknown		11.65	5.0
6		Unknown		12.61	4.4
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.2 (cont.) Results of TIC for BNA in Water
WA # 0-128 Marino Property Site

Sample # A24566
LabFile# MP0013 Con. Factor 1.0

	CAS#	Compound	Q	RT	Conc.* µg/L
1		Unknown glycol		5.26	10
2		Unknown glycol		5.28	10
3		Unknown alcohol		5.37	22
4		Unknown		7.86	5.8
5		Unknown		11.64	5.0
6		Unknown acid		13.52	8.3
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

* Estimated Concentration (Response Factor = 1)

Table 1.3 Results of the Analysis for VOC in Water
WA # 0-128 Marino Property Site

Sample # :	Water blank 031600	ABC 24564	ABC 24567	DEF 24556	DEF 24557
Location :		Trip blank	Rinsate blank	ERT-1	ERT-2
Collected :		03/14	03/15	03/14	03/14
Analyzed :	03/16	03/16	03/16	03/16	03/16
Injected :	10:01 AM	10:39 AM	11:17 AM	11:56 AM	12:35 PM
File :	BV1230.D	BV1231.D	BV1232.D	BV1233.D	BV1234.D
Dil. Fact. :	1	1	1	1	1

Analyte	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L
Dichlorodifluoromethane	4.6		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Chloromethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Vinyl Chloride	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Bromomethane	U		2.0	U		2.0	U		2.0	U		2.0	U		2.0
Chloroethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Trichlorofluoromethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Acetone	2.6	J	8.0	2.3	JB	8.0	4.4	JB	8.0	5.4	JB	8.0	3.8	JB	8.0
1,1-Dichloroethene	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Methylene Chloride	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Carbon Disulfide	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Methyl-t-butyl Ether	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
trans-1,2-Dichloroethene	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
1,1-Dichloroethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
2-Butanone	U		4.0	U		4.0	U		4.0	U		4.0	U		4.0
2,2-Dichloropropane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
cis-1,2-Dichloroethene	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Chloroform	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
1,1-Dichloropropene	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
1,2-Dichloroethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
1,1,1-Trichloroethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Carbon Tetrachloride	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Benzene	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Trichloroethene	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
1,2-Dichloropropane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Bromodichloromethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Dibromomethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
cis-1,3-Dichloropropene	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
trans-1,3-Dichloropropene	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
1,1,2-Trichloroethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
1,3-Dichloropropane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Dibromochloromethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
1,2-Dibromoethane	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0
Bromoform	U		1.0	U		1.0	U		1.0	U		1.0	U		1.0

Table 1.3 (cont.) Results of the Analysis for VOC in Water
WA # 0-128 Marino Property Site

Sample # :	Water blank 031600		ABC 24564		ABC 24567		DEF 24556		DEF 24557	
Location :			Trip blank		Rinsate blank		ERT-1		ERT-2	
Collected :			03/14		03/15		03/14		03/14	
Analyzed :	03/16		03/16		03/16		03/16		03/16	
Injected :	10:01 AM		10:39 AM		11:17 AM		11:56 AM		12:35 PM	
File :	BV1230.D		BV1231.D		BV1232.D		BV1233.D		BV1234.D	
Dil. Fact. :	1		1		1		1		1	

Analyte	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Hexanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Tetrachloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p&m-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	1.9	1.0
o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
4-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromo-3-chloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0

Table 1.3 (cont.) Results of the Analysis for VOC in Water
WA # 0-128 Marino Property Site

Sample # :	Water blank 031600	DEF 24558	DEF 24559	DEF 24560	DEF 24561
Location :		ERT-3	ERT-4	ERT-7	ERT-5
Collected :		03/14	03/14	03/14	03/14
Analyzed :	03/16	03/16	03/16	03/16	03/16
Injected :	10:01 AM	1:13 pm	1:52 pm	2:30 pm	3:07 pm
File :	BV1230.D	BV1235.D	BV1236.D	BV1237.D	BV1238.D
Dil. Fact. :	1	1	1	1	1

Analyte	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Dichlorodifluoromethane	4.6	1.0	U	1.0	3.0 B	1.0	U	1.0	U	1.0
Chloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Vinyl Chloride	U	1.0	U	1.0	U	1.0	U	1.0	1.4	1.0
Bromomethane	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Chloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Trichlorofluoromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Acetone	2.6 J	8.0	3.3 JB	8.0	5.1 JB	8.0	5.0 JB	8.0	13 B	8.0
1,1-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Methylene Chloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Methyl-t-butyl Ether	U	1.0	U	1.0	U	1.0	U	1.0	1.9	1.0
trans-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Butanone	U	4.0	U	4.0	U	4.0	U	4.0	3.2 J	4.0
2,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
cis-1,2-Dichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chloroform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,1-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Carbon Tetrachloride	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Trichloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromodichloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Dibromomethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
cis-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
trans-1,3-Dichloropropene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2-Trichloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3-Dichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Dibromochloromethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromoethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0

Table 1.3 (cont.) Results of the Analysis for VOC in Water
WA # 0-128 Marino Property Site

Sample # :	Water blank 031600	DEF 24558	DEF 24559	DEF 24560	DEF 24561
Location :		ERT-3	ERT-4	ERT-7	ERT-5
Collected :		03/14	03/14	03/14	03/14
Analyzed :	03/16	03/16	03/16	03/16	03/16
Injected :	10:01 AM	1:13 pm	1:52 pm	2:30 pm	3:07 pm
File :	BV1230.D	BV1235.D	BV1236.D	BV1237.D	BV1238.D
Dil. Fact. :	1	1	1	1	1

Analyte	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Hexanone	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Tetrachloroethene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Chlorobenzene	U	1.0	U	1.0	7.1	1.0	1.5	1.0	U	1.0
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p&m-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Bromobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
2-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
4-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0	1.5	1.0	2.6	1.0
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromo-3-chloropropane	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0

Table 1.3 (cont.) Results of the Analysis for VOC in Water
WA # 0-128 Marino Property Site

Sample # :	Water blank 031600			DEF 24563			DEF 24565			DEF 24566		
Location :				ERT-6			ERT-8			ERT-8 Dup		
Collected :				03/14			03/14			03/14		
Analyzed :	03/16			03/16			03/16			03/16		
Injected :	10:01 AM			3:45 pm			4:23 pm			5:01 pm		
File :	BV1230.D			BV1239.D			BV1240.D			BV1241.D		
Dil. Fact. :	1			1			1			1		

Analyte	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L	Conc. µg/L		MDL µg/L
Dichlorodifluoromethane	4.6		1.0	U		1.0	U		1.0	U		1.0
Chloromethane	U		1.0	U		1.0	U		1.0	U		1.0
Vinyl Chloride	U		1.0	U		1.0	U		1.0	U		1.0
Bromomethane	U		2.0	U		2.0	U		2.0	U		2.0
Chloroethane	U		1.0	U		1.0	U		1.0	U		1.0
Trichlorofluoromethane	U		1.0	U		1.0	U		1.0	U		1.0
Acetone	2.6	J	8.0	2.8	JB	8.0	8.0	B	8.0	6.4	JB	8.0
1,1-Dichloroethene	U		1.0	U		1.0	U		1.0	U		1.0
Methylene Chloride	U		1.0	U		1.0	U		1.0	U		1.0
Carbon Disulfide	U		1.0	U		1.0	U		1.0	U		1.0
Methyl-t-butyl Ether	U		1.0	U		1.0	1.7		1.0	1.8		1.0
trans-1,2-Dichloroethene	U		1.0	U		1.0	U		1.0	U		1.0
1,1-Dichloroethane	U		1.0	U		1.0	U		1.0	U		1.0
2-Butanone	U		4.0	U		4.0	U		4.0	U		4.0
2,2-Dichloropropane	U		1.0	U		1.0	U		1.0	U		1.0
cis-1,2-Dichloroethene	U		1.0	U		1.0	U		1.0	U		1.0
Chloroform	U		1.0	U		1.0	U		1.0	U		1.0
1,1-Dichloropropene	U		1.0	U		1.0	U		1.0	U		1.0
1,2-Dichloroethane	U		1.0	U		1.0	U		1.0	U		1.0
1,1,1-Trichloroethane	U		1.0	U		1.0	U		1.0	U		1.0
Carbon Tetrachloride	U		1.0	U		1.0	U		1.0	U		1.0
Benzene	U		1.0	U		1.0	U		1.0	U		1.0
Trichloroethene	U		1.0	U		1.0	U		1.0	U		1.0
1,2-Dichloropropane	U		1.0	U		1.0	U		1.0	U		1.0
Bromodichloromethane	U		1.0	U		1.0	U		1.0	U		1.0
Dibromomethane	U		1.0	U		1.0	U		1.0	U		1.0
cis-1,3-Dichloropropene	U		1.0	U		1.0	U		1.0	U		1.0
trans-1,3-Dichloropropene	U		1.0	U		1.0	U		1.0	U		1.0
1,1,2-Trichloroethane	U		1.0	U		1.0	U		1.0	U		1.0
1,3-Dichloropropane	U		1.0	U		1.0	U		1.0	U		1.0
Dibromochloromethane	U		1.0	U		1.0	U		1.0	U		1.0
1,2-Dibromoethane	U		1.0	U		1.0	U		1.0	U		1.0
Bromoform	U		1.0	U		1.0	U		1.0	U		1.0

Table 1.3 (cont.) Results of the Analysis for VOC in Water
WA # 0-128 Marino Property Site

Sample # :	Water blank 031600		DEF 24563		DEF 24565		DEF 24566	
Location :			ERT-6		ERT-8		ERT-8 Dup	
Collected :			03/14		03/14		03/14	
Analyzed :	03/16		03/16		03/16		03/16	
Injected :	10:01 AM		3:45 pm		4:23 pm		5:01 pm	
File :	BV1230.D		BV1239.D		BV1240.D		BV1241.D	
Dil. Fact. :	1		1		1		1	

Analyte	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
4-Methyl-2-Pentanone	U	2.0	U	2.0	U	2.0	U	2.0
Toluene	U	1.0	U	1.0	U	1.0	U	1.0
2-Hexanone	U	2.0	U	2.0	U	2.0	U	2.0
Tetrachloroethene	U	1.0	U	1.0	U	1.0	U	1.0
Chlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0
1,1,1,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0
Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0
p&m-Xylene	U	1.0	U	1.0	1.5	1.0	1.6	1.0
o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0
Styrene	U	1.0	U	1.0	U	1.0	U	1.0
Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0
1,1,2,2-Tetrachloroethane	U	1.0	U	1.0	U	1.0	U	1.0
1,2,3-Trichloropropane	U	1.0	U	1.0	U	1.0	U	1.0
n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0
Bromobenzene	U	1.0	U	1.0	U	1.0	U	1.0
1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0
2-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0
4-Chlorotoluene	U	1.0	U	1.0	U	1.0	U	1.0
tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0
sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0
p-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0
1,3-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0
1,4-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0
n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0
1,2-Dibromo-3-chloropropane	U	1.0	U	1.0	U	1.0	U	1.0
1,2,4-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0
Hexachlorobutadiene	U	1.0	U	1.0	U	1.0	U	1.0
Naphthalene	U	1.0	U	1.0	1.2	1.0	1.6	1.0
1,2,3-Trichlorobenzene	U	1.0	U	1.0	U	1.0	U	1.0

Table 1. 4 Results of TIC for VOC in Water
WA # 0-128 Marino Property Site

Sample #	Compound
Water Blank 031600	No Peaks Found
ABC 24564	No Peaks Found
ABC 24567	No Peaks Found
DEF 24556	No Peaks Found
EFG 24557	No Peaks Found
DEF 24558	No Peaks Found
DEF 24559	No Peaks Found
DEF 24560	No Peaks Found
DEF 24561	No Peaks Found
DEF 24563	No Peaks Found
DEF 24565	No Peaks Found

Table 1.4 (cont.) Results of TIC for VOC in Water
WA # 0-128 Marino Property Site

Sample #	DEF 24566	Unit	µg/L
LabFile#	BV1241	Con. Factor	1

	CAS#	Compound	Q	RT	Conc
1	109-99-9	Tetrahydrofuran		9.98	21
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

*Estimated Concentration (Response Factor = 1.0)

Table 1.5 Results of the Analysis for PCBs in Water
WA # 0-128 Marino Property Site

Client ID	WBLK031600		B24556		B24557		B24558		B24559	
Location	-		ERT-1		ERT-2		ERT-3		ERT-4	
Analyte	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Aroclor 1016	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1221	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50
Aroclor 1232	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1242	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1248	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1254	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1260	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1268	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25

Client ID	B24560		B24561		B24563		B24565		B24566	
Location	ERT-7		ERT-5		ERT-6		ERT-8		ERT-8 DUP	
Analyte	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L	Conc. µg/L	MDL µg/L
Aroclor 1016	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1221	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50
Aroclor 1232	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1242	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1248	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1254	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1260	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
Aroclor 1268	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25

Table 1.6 Results of the Analysis for Metals in Water
WA # 0-128 Marino Property Site

Client ID		Method Blank		C24556		C24557		C24558		C24559		C24560	
Location		Lab		ERT-1		ERT-2		ERT-3		ERT-4		ERT-7	
Parameter	Analysis Method	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L
Aluminum	ICAP	U	50	650	50	600	50	13000	50	52	50	180	50
Antimony	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2
Arsenic	AA-Fur	U	2.2	U	2.2	U	2.2	3.4	2.2	4.5	2.2	U	2.2
Barium	ICAP	U	5.0	59	5.0	85	5.0	180	5.0	730	5.0	1300	5.0
Beryllium	ICAP	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
Cadmium	ICAP	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
Calcium	ICAP	U	100	87000	100	110000	100	150000	100	52000	100	100000	100
Chromium	ICAP	U	5.0	U	5.0	U	5.0	20	5.0	U	5.0	U	5.0
Cobalt	ICAP	U	10	U	10	U	10	U	10	U	10	U	10
Copper	ICAP	U	10	U	10	U	10	29	10	U	10	U	10
Iron	ICAP	U	25	560	25	4200	25	18000	25	17000	25	25000	25
Lead	AA-Fur	U	2.2	U	2.2	6.1	2.2	29	2.2	3.2	2.2	4.4	2.2
Magnesium	ICAP	U	500	12000	500	8600	500	17000	500	35000	500	25000	500
Manganese	ICAP	U	5.0	6800	5.0	310	5.0	1400	5.0	160	5.0	190	5.0
Mercury	Cold Vapor	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20
Nickel	ICAP	U	10	U	10	U	10	31	10	U	10	U	10
Potassium	ICAP	U	2000	U	2000	6900	2000	12000	2000	60000	2000	24000	2000
Selenium	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2
Silver	ICAP	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
Sodium	ICAP	U	500	17000	500	15000	500	19000	500	140000	500	48000	500
Thallium	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U	2.2
Vanadium	ICAP	U	10	U	10	U	10	22	10	U	10	U	10
Zinc	ICAP	U	10	U	10	19	10	460	10	U	10	10	10

Table 1.6 (cont.) Results of the Analysis for Metals in Water
WA # 0-128 Marino Property Site

Client ID		C24561		C24563		C24565		C24566	
Location		ERT-5		ERT-6		ERT-8		ERT8 DUP	
Parameter	Analysis Method	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L	Conc µg/L	MDL µg/L
Aluminum	ICAP	3500	50	140	50	68	50	66	50
Antimony	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2
Arsenic	AA-Fur	U	2.2	U	2.2	3.0	2.2	3.0	2.2
Barium	ICAP	180	5.0	130	5.0	430	5.0	440	5.0
Beryllium	ICAP	U	2.0	U	2.0	U	2.0	U	2.0
Cadmium	ICAP	U	5.0	U	5.0	U	5.0	U	5.0
Calcium	ICAP	89000	100	52000	100	58000	100	59000	100
Chromium	ICAP	7.3	5.0	U	5.0	U	5.0	U	5.0
Cobalt	ICAP	U	10	U	10	U	10	U	10
Copper	ICAP	U	10	U	10	U	10	U	10
Iron	ICAP	24000	25	99	25	12000	25	12000	25
Lead	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2
Magnesium	ICAP	21000	500	10000	500	14000	500	14000	500
Manganese	ICAP	24000	5.0	3200	5.0	200	5.0	200	5.0
Mercury	Cold Vapor	0.62	0.20	U	0.20	U	0.20	U	0.20
Nickel	ICAP	U	10	U	10	U	10	U	10
Potassium	ICAP	8700	2000	U	2000	10000	2000	11000	2000
Selenium	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2
Silver	ICAP	U	5.0	U	5.0	U	5.0	U	5.0
Sodium	ICAP	42000	500	44000	500	41000	500	41000	500
Thallium	AA-Fur	U	2.2	U	2.2	U	2.2	U	2.2
Vanadium	ICAP	U	10	U	10	U	10	U	10
Zinc	ICAP	14	10	U	10	U	10	U	10

Results of the Surrogate Percent Recoveries for BNA in Water

Before extraction, each sample was spiked with a six component mixture of CLP surrogate standards consisting of nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl-d_{14}, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol. The surrogate percent recoveries for the water samples, listed in Table 2.1, ranged from 0 (zero) to 93. Fifty-eight out of seventy-two values were within the acceptable QC limits.

Results of the Internal Standard Areas for BNA in Water

The internal standard areas (for 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, perylene-d_{12}) for the water samples are listed in Table 2.2. All seventy-two values were within the acceptable QC limits.

Results of the MS/MSD Analysis for BNA in Water

Sample A 24561 was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses for the water samples. The percent recoveries, ranging from 1 to 72, are listed in Table 2.3. Fifteen out of twenty-two values were within the acceptable QC limits. The relative percent differences are also listed in Table 2.3. Eight out of eleven values were within the acceptable QC limits.

Table 2.1 Results of the Surrogate Percent Recoveries for BNA in Water
WA # 0-128 Marino Property Site

Analysis Date 03/21/00
Matrix Water

Sample No.	File ID	Surr. 1	Surr. 2	Surr. 3	Surr. 4	Surr. 5	Surr. 6
WBLK0320	MP0002.D	43	31	66	64	64	93
A24561	MP0003.D	2 *	7 *	47	48	3 *	78
A24561 MS	MP0004.D	1 *	6 *	79	76	3 *	92
A24561 MSD	MP0005.D	1 *	1 *	66	65	3 *	80
A24556	MP0006.D	0 *	0 *	69	70	1 *	92
A24557	MP0007.D	31	21	58	56	49	86
A24558	MP0008.D	28	20	58	58	40	81
A24559	MP0009.D	40	30	52	50	85	80
A24560	MP0010.D	35	26	50	48	71	89
A24563	MP0011.D	8 *	4 *	48	47	11	59
A24565	MP0012.D	45	35	61	57	81	84
A24566	MP0013.D	38	27	52	51	83	87

Surrogate Limits

		Water
Surr 1 =	2-Fluorophenol	(21-110)
Surr 2 =	Phenol-d5	(10-110)
Surr 3 =	Nitrobenzene-d5	(35-114)
Surr 4 =	2-Fluorobiphenyl	(43-116)
Surr 5 =	2,4,6-Tribromophenol	(10-123)
Surr 6 =	Terphenyl-d14	(33-141)

Table 2.2 Results of the Internal Standard Areas for BNA in Water
WA # 0-128 Marino Property Site

Sample No.	File ID	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Cal Check Area	MP0001.D	68212	247802	127243	203962	198005	189570
WBLK0320	MP0002.D	64310	241863	127008	221296	220301	205544
A24561	MP0003.D	61327	231564	121658	214449	214733	202753
A24561 MS	MP0004.D	58841	223976	117729	208767	208353	196864
A24561 MSD	MP0005.D	58221	223431	117117	206537	206753	196107
A24556	MP0006.D	64375	237861	126471	225011	221227	206858
A24557	MP0007.D	66237	246657	127158	225732	226595	210363
A24558	MP0008.D	63347	240568	124447	221617	219916	206784
A24559	MP0009.D	63045	237537	126038	223849	220205	202957
A24560	MP0010.D	62216	228944	121532	213055	212538	198129
A24563	MP0011.D	62969	240420	124886	217934	220568	203875
A24565	MP0012.D	60496	227157	124762	213383	214434	199106
A24566	MP0013.D	65869	244883	130559	229150	227548	208794

IS 1 = d4-Dichlorobenzene
IS 2 = d8-Naphthalene
IS 3 = d10-Acenaphthene
IS 4 = d10-Phenanthrene
IS 5 = d12-Chrysene
IS 6 = d12-Perylene

Table 2.3 Results of MS/MSD Analysis for BNA in Water
WA # 0-128 Marino Property Site

Sample ID: A24561

Compound Name	Sample Conc. µg/L	MS Spike Added µg/L	MS Conc. µg/L	MS % Rec.	MSD Spike Added µg/L	MSD Conc. µg/L	MSD % Rec.	RPD	QC Limits % Rec.	QC Limits RPD
Phenol	U	100	5.0	5 *	100	1.23	1 *	120 *	12 - 110	42
2-Chlorophenol	U	100	3.0	3 *	100	1.63	2 *	60 *	27 - 123	40
1,4-Dichlorobenzene	U	50	30.6	61	50	25.9	52	17	36 - 97	28
N-Nitroso-Di-N-Propylamine	U	50	36.1	72	50	32.2	64	11	41 - 116	38
1,2,4-Trichlorobenzene	U	50	31.4	63	50	26.6	53	17	39 - 98	28
4-Chloro-3-Methylphenol	U	100	23.9	24	100	5.0	5 *	130 *	23 - 97	42
Acenaphthene	U	50	37.7	75	50	32.1	64	16	46 - 118	31
4-Nitrophenol	U	100	33.2	33	100	36.6	37	10	10 - 80	50
2,4-Dinitrotoluene	U	50	38.9	78	50	33.1	66	16	24 - 96	38
Pentachlorophenol	U	100	4.47	4 *	100	5.3	5 *	16	9 - 103	50
Pyrene	U	50	39.6	79	50	35.2	70	12	26 - 127	31

Results of the Internal Standard Areas and Surrogate Percent Recoveries and for VOC in Water

Each sample was spiked with a three component mixture of CLP surrogate standards consisting of toluene-d_8, 4-bromofluorobenzene and 1,2-dichloroethane-d_4. The surrogate percent recoveries, listed in Table 2.4, ranged from 95 to 110. All fifty-one values were within the acceptable QC limits. The internal standard areas (for bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5) are also listed in Table 2.4. All fifty-one areas are within the acceptable QC limits.

Results of the Matrix Spike/Matrix spike Duplicate Analysis for VOC in Water

Samples DEF 24556 and DEF 24561 were was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses for the water samples. The percent recoveries, ranging from 90 to 108, are listed in Table 2.5. All twenty values were within the acceptable QC limits. The relative percent differences, also listed in Table 2.5, ranged from 0 (zero) to one, and all twelve were within the acceptable QC limits.

Table 2.4 Results of the Internal Standard Areas and Percent Surrogate Recoveries for VOC in Water
WA # 0-128 Marino Property Site

File ID	Sample No.	IS 1	IS 2	IS 3	Surr. 1	Surr. 2	Surr. 3
Cal Check Area	BV1229.D	142330	1523730	1129740			
BV1230.D	Water blank	119971	1382134	1046794	100	99	100
BV1231.D	ABC 24564	121782	1439656	1068053	102	99	98
BV1232.D	ABC 24567	123512	1360390	1039540	104	98	99
BV1233.D	DEF 24556	117485	1348603	1031017	103	97	100
BV1234.D	EFG 24557	116105	1329937	1027990	105	97	100
BV1235.D	DEF 24558	112783	1304823	1026949	105	96	99
BV1236.D	DEF 24559	117067	1406899	1060411	107	98	98
BV1237.D	DEF 24560	118569	1367612	1081060	106	97	98
BV1238.D	DEF 24561	112637	1340753	1044733	109	97	98
BV1239.D	DEF 24563	110249	1354293	1040025	106	98	95
BV1240.D	DEF 24565	111304	1342961	1036717	106	97	97
BV1241.D	DEF 24566	116552	1366762	1053331	108	97	98
BV1244.D	DEF 24561 MS	113549	1365259	1047558	110	97	99
BV1245.D	DEF 24561 MSD	114934	1355871	1042255	108	97	99
Cal Check Area	BV1251.D	125002	1430830	1119250			
BV1252.D	Water blank	118560	1457866	1107258	95	101	98
BV1257.D	DEF 24556 MS	112319	1382094	1051246	96	101	99
BV1258.D	DEF 24556 MSD	112440	1387132	1055404	97	101	99

IS 1	Bromochloromethane
IS 2	1,4-Difluorobenzene
IS 3	Chlorobenzene-d5

Surrogate Limits

Surr. 1	1,2-Dichloroethane-d4	76 - 114
Surr. 2	Toluene-d8	88 - 110
Surr. 3	p-Bromofluorobenzene	86 - 115

00042

Table 2.5 Results of MS/MSD Analysis for VOC in Water
WA # 0-128 Marino Property Site

Sample ID: DEF 24556

Compound Name	Sample Conc. µg/L	MS Spike Added µg/L	MSD Spike Added µg/L	MS Conc. µg/L	MSD Conc. µg/L	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
1,1-Dichloroethene	U	50.0	50.0	51.2	51.4	102	103	0	14	61 - 145
Benzene	U	50.0	50.0	46.4	46.4	93	93	0	11	76 - 127
Trichloroethene	U	50.0	50.0	45.5	45.1	91	90	1	14	71 - 120
Toluene	U	50.0	50.0	46.9	46.7	94	93	0	13	76 - 125
Chlorobenzene	U	50.0	50.0	47.0	46.7	94	93	1	13	75 - 130

Sample ID: DEF 24561

Compound Name	Sample Conc. µg/L	MS Spike Added µg/L	MSD Spike Added µg/L	MS Conc. µg/L	MSD Conc. µg/L	MS % Rec.	MSD % Rec.	RPD	QC Limits RPD	QC Limits % Rec.
1,1-Dichloroethene	U	50.0	50.0	54.2	53.7	108	107	1	14	61 - 145
Benzene	U	50.0	50.0	50.8	51.2	102	102	1	11	76 - 127
Trichloroethene	U	50.0	50.0	49.0	49.2	98	98	0	14	71 - 120
Toluene	U	50.0	50.0	47.9	48.1	96	96	0	13	76 - 125
Chlorobenzene	U	50.0	50.0	47.6	48.0	95	96	1	13	75 - 130

Results of the Surrogate Analysis for PCBs in Water

Each sample was spiked with a solution of tetrachloro-m-xylene and decachlorobiphenyl as surrogates. Percent recoveries for the water samples ranged from 38 to 92 and are listed in Table 2.6. Thirteen out of twenty-four values were within the acceptable QC limits.

Results of the MS/MSD Analysis for PCBs in Water

Sample B 24561 was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses for the water samples. The percent recoveries were 75 and 82 and are listed in Table 2.7. The relative percent difference (RPD), also listed in Table 2.7, was 9. QC limits are not available for this analysis.

Table 2.6 Results of the Surrogate Percent Recoveries for PCBs in Water
WA # 0-128 Marino Property Site

Sample ID	Percent Recovery TCMX	DCBP
WBLK031600	72	77
B24556	40 *	86
B24557	48 *	92
B24558	57 *	74
B24559	41 *	76
B24560	49 *	83
B24561	50 *	73
C24561 MS	38 *	79
D24561 MSD	56 *	75
B24563	39 *	88
B24565	52 *	90
B24566	50 *	86

TCMX denotes Tetrachloro-m-xylene
DCB denotes Decachlorobiphenyl

	Advisory QC Limits
TCMX	60-150
DCBP	60-150

Table 2.7 Results of the MS/MSD Analysis for PCB in Water
WA # 0-128 Marino Property Site

Sample ID: B24561

Compound	Sample Conc µg/L	MS Spike Added µg/L	MS Conc µg/L	MS % Rec	MSD Spike Added µg/L	MSD Conc µg/L	MSD % Rec	RPD
AR 1260	U	1.000	0.819	82	1.000	0.748	75	9

Results of the QC Standard Analysis for Metals in Water

QC standards QC-7x100, QC-21x100, ERA-434, TMAA #1, TMAA #2 and ERA 3428 were used to check the accuracy of the calibration curve. The percent recoveries, listed in Table 2.8, ranged from 90 to 114 and all twenty recovered concentrations for which 95% confidence are available were within these limits. 95% Confidence limits are not available for seventeen values.

Results of the MS/MSD Analysis for Metals in Water

Sample C 24556 was chosen for the matrix spike/matrix spike duplicate analysis (MS/MSD). The percent recoveries, listed in Table 2.9, ranged from 70 to 109. Thirty-four out of thirty-six values were within the acceptable QC limits. Two other values were not calculated because the concentration of analyte in the sample was much greater than the concentration spiked. The relative percent differences, also listed in Table 2.9, ranged from 1 to 19. All eighteen values were within the acceptable QC limits. One other value was not calculated because the concentration of analyte in the sample was much greater than the concentration spiked.

Results of the Blank Spike Analysis for Metals in Water

The results of the blank spike analysis are reported in Table 2.10. The percent recoveries ranged from 84 to 103 and all twenty-three values were within the acceptable QC limits.

Table 2.8 Results of the QC Standard Analysis for Metals in Water
WA # 0-128 Marino Property Site

Metal	Date Analyzed	Quality Control Standard	Conc. Rec µg/L	Certified Value µg/L	95% Confidence Interval µg/L	% Rec
Aluminum	03/31/00	QC-7 x100	970	1000	NA	97
	03/31/00	ERA-434	697	647	531 - 763	108
Antimony	03/27/00	TMAA#2	106.5	100	81.7 - 125	107
Arsenic	03/27/00	TMAA #1	51.99	50	41.9-55.9	104
Barium	03/31/00	QC-7 x100	971	1000	NA	97
	03/31/00	ERA-434	756	735	603 - 867	103
Beryllium	03/31/00	QC-21 x100	1014	1000	NA	101
	03/31/00	ERA-434	85	82	68 - 97	104
Cadmium	03/31/00	QC-21 x100	1017	1000	NA	102
	03/31/00	ERA-434	80	77	63 - 90	104
Calcium	03/31/00	QC-21 x100	1019	1000	NA	102
Chromium	03/31/00	QC-21 x100	1038	1000	NA	104
	03/31/00	ERA-434	112	106	87 - 125	106
Cobalt	03/31/00	QC-21 x100	1053	1000	NA	105
	03/31/00	ERA-434	95	88	72 - 104	108
Copper	03/31/00	QC-21 x100	1039	1000	NA	104
	03/31/00	ERA-434	155	147	121 - 173	105
Iron	03/31/00	QC-21 x100	1051	1000	NA	105
	03/31/00	ERA-434	220	206	169 - 243	107
Lead	03/28/00	TMAA#1	45.13	50	43.4 - 56.3	90
Magnesium	03/31/00	QC-21 x100	1006	1000	NA	101
Manganese	03/31/00	QC-21 x100	1036	1000	NA	104
	03/31/00	ERA-434	247	235	193 - 277	105
Mercury	03/21/00	ERA 3428	7.48	7.5	5.25 - 9.75	100
Nickel	03/31/00	QC-21 x100	1039	1000	NA	104
	03/31/00	ERA-434	125	112	92 - 132	112
Potassium	03/31/00	QC-7 x100	9300	10000	NA	93
Selenium	03/27/00	TMAA #1	51.81	50	39.4-57.4	104
Silver	03/31/00	QC-7 x100	1005	1000	NA	100
	03/31/00	ERA-434	91.7	88	72 - 104	104
Sodium	03/31/00	QC-7 x100	1049	1000	NA	105
Thallium	03/27/00	TMAA #2	50.8	50	39.9-57.97	102
	03/27/00	TMAA #2	56.8	50	39.9-57.97	114
Vanadium	03/31/00	QC-21 x100	1001	1000	NA	100
	03/31/00	ERA-434	117	118	97 - 139	99
Zinc	03/31/00	QC-21 x100	1023	1000	NA	102
	03/31/00	ERA-434	275	265	217 - 313	104

Table 2.9 Results of the MS/MSD Analysis for Metals in Water
WA # 0-128 Marino Property Site

Sample ID: C24556

Metal	Sample Conc µg/L	MS Spike Added µg/L	MS Conc µg/L	MS % Rec	MSD Spike Added µg/L	MSD Conc µg/L	MSD % Rec	RPD	Recommended QC Limits % Rec	Recommended QC Limits RPD
Aluminum	649	2222	2779	96	2222	2413	79	19	75-125	20
Antimony	U	55.6	55.7	100	55.6	55	99	1	75-125	20
Arsenic	U	55.6	49	88	55.6	50.2	90	2	75-125	20
Barium	58.6	222	287	103	222	261	91	12	75-125	20
Beryllium	U	222	232	104	222	206	93	12	75-125	20
Cadmium	U	222	233	105	222	208	94	11	75-125	20
Chromium	U	222	237	107	222	213	96	11	75-125	20
Cobalt	U	222	237	107	222	212	95	11	75-125	20
Copper	U	222	235	106	222	208	94	12	75-125	20
Iron	556	2222	2801	101	2222	2488	87	15	75-125	20
Lead	U	55.6	52.5	95	55.6	54.7	98	4	75-125	20
Manganese	6840	222	6948	NC	222	6972	NC	NC	75-125	20
Mercury	U	2.00	1.92	96	2.00	1.9	95	1	75-125	20
Nickel	U	222	243	109	222	217	98	11	75-125	20
Selenium	U	55.6	38.7	70 *	55.6	39.8	72 *	3	75-125	20
Silver	U	222	228	103	222	205	92	11	75-125	20
Thallium	U	55.6	54.1	97	55.6	55.1	99	2	75-125	20
Vanadium	U	222	234	105	222	207	93	12	75-125	20
Zinc	U	222	237	107	222	211	95	12	75-125	20

Table 2.10 Results of the Blank Spike Analysis for Metals in Water
WA # 0-128 Marino Property Site

Metal	Spiked Conc. µg/L	Rec Conc. µg/L	% Rec	Recommended QC Limits %Rec
Aluminum	2222	2014	91	75-125
Antimony	55.6	52.8	95	75-125
Arsenic	55.6	56.7	102	75-125
Barium	222	205	92	75-125
Beryllium	222	208	94	75-125
Cadmium	222	209	94	75-125
Calcium	2222	2122	95	75-125
Chromium	222	215	97	75-125
Cobalt	222	215	97	75-125
Copper	222	208	94	75-125
Iron	2222	2143	96	75-125
Lead	55.6	55.2	99	75-125
Magnesium	2222	2048	92	75-125
Manganese	222	214	96	75-125
Mercury	2.00	2.06	103	75-125
Nickel	222	217	98	75-125
Potassium	8889	7438	84	75-125
Selenium	55.6	55.2	99	75-125
Silver	222	205	92	75-125
Sodium	2222	2094	94	75-125
Thallium	55.6	57.1	103	75-125
Vanadium	222	208	94	75-125
Zinc	222	210	95	75-125

REAC, Edison, NJ
(908) 321-4200
EPA Contract 68-C4-0022

CHAIN OF CUSTODY RECORD

Project Name: Magna Fixpaty
Project Number: [illegible]
RFW Contact: [illegible] Phone: 732-321-4200

No: 01737

SHEET NO 2 OF 2

03/500

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA	PCB	TAL Metals	VOA
290	A 24561 *	ERT-5	W	3/14/00	1	1L Amber / 4°C	X			
291	B 24561	↓	↓	↓	1	↓		X		
292	C 24561				1	1L Poly / HNO3			X	
293	DEF 24561				3	40ml / 4°C				X
294	ABCD 24562 *	ERT-5 MS/MSD			4	1L Amber / 4°C	X	X		
295	A 24563	ERT-6			1	↓	X	X KW		
296	B 24563	↓			1			X		
297	C 24563				1	1L Poly / HNO3			X	
298	DEF 24563				3	40ml / 4°C				X
299	ABC 24564	Trip Blank			3	↓				X
300	A 24565	ERT-8			1	1L Amber / 4°C	X			
301	B 24565	↓			1	↓		X		
302	C 24565				1	1L Poly / HNO3			X	
303	DEF 24565				3	40ml / 4°C				X
304	A 24566	ERT 8 Dup			1	1L Amber / 4°C	X			
305	B 24566	↓			1	↓		X		
306	C 24566				1	1L Poly / HNO3			X	
307	DEF 24566		↓	↓	3	40ml / 4°C				X
308	ABC 24567	Rinsate Blank	W	3/15/00	3	40ml / 4°C				X

Matrix:
SD - Sediment
DS - Drum Solids
DL - Drum Liquids
X - Other
PW - Potable Water
GW - Groundwater
SW - Surface Water
SL - Sludge
S - Soil
W - Water
O - Oil
A - Air

Special Instructions:

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

* Sample Nos. A24561 and ABCD 24562 are from the same location.

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analysis	[illegible]	3/15/00	David Angwang	3/15/00	1430	6/Analysis	David Angwang	3/15/00	[illegible]	3/15/00	15:20
						4/Analysis	David Angwang	3/15/00	C. Gassen	3/15/00	15:30
						[illegible]/Analysis	David Angwang	3/15/00	M. Yawn	3/15/00	15:30

FORM #4 8/94

00051

REAC, son, NJ
(908) 321-4200
EPA Contract 68-C4-0022
68-C4-0032

CHA OF CUSTODY RECORD

Project Name: Monroe Property
Project Number: R1A00128
REW Contact: Ken Wedrick Phone: 732-321-4200

No: 02559

SHEET NO. 1 OF 2

031500

Sample Identification

Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	BNA	PCB	Tal Metals	VOA
268	A24556	ERT-1	W	3/14/00	1	1L Amber/4°C	X			
269	B24556				1	1L Amber/4°C		X		
270	C24556				1	1L Poly/HNO3			X	
271	DEF24556				3	40ml/4°C				X
272	A24557	ERT-2			1	1L Amber/4°C	X			
273	B24557				1	↓		X		
274	C24557				1	1L Poly/HNO3			X	
275	DEF24557				3	40ml/4°C				X
276	A24558	ERT-3			1	1L Amber/4°C	X			
277	B24558				1	↓		X		
278	C24558				1	1L Poly/HNO3			X	
279	DEF24558				3	40ml/4°C				X
280	A24559	ERT-4			1	1L Amber/4°C	X			
281	B24559				1	↓		X		
282	C24559				1	1L Poly/HNO3			X	
283	DEF24559				3	40ml/4°C				X
284	A24560	ERT-17			1	1L Amber/4°C	X			
285	B24560				1	↓		X		
286	C24560				1	1L Poly/HNO3			X	
287	DEF24560	↓	↓	↓	3	40ml/4°C				X

025520

Special Instructions:

Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analysis		3/15/00	David Arguenzi	3/15/00	1430

Items/Reason	Relinquished By	Date	Received By	Date	Time
Analysis/5	David Arguenzi	3/15/00		3/16/00	
5/Analysis	David Arguenzi	3/15/00	M. Yourin	3/16	
10/Analysis	David Arguenzi	3/15/-	M. Yourin	3/16	

FORM #1