Draft

OU1 Pre-Design Investigation for Principal Threat LNAPL Technical Memorandum

Volume 2
Appendices

for the
Diamond Head Oil Superfund Site
Kearny, New Jersey

Prepared for:
U.S. Environmental Protection Agency
Region II
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Appendix A
Regulatory Information and Standards and Criteria Used to Evaluate Sampling Results

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2. List of Standards and Criteria to Evaluate OU1 PDI Sampling Results

Appendix A
Regulatory Information and Standards and Criteria Used to Evaluate Sampling Results

Section 1
Threatened and Endangered Species Survey

APPENDIX

Threatened and Endangered Species Survey

A request was submitted to the New Jersey Department of Environmental Protection (NJDEP) for information on rare species and ecological communities at the Diamond Head Superfund Site. NJDEP provided a response and the received information was reviewed during the planning of the OU1 PDI to evaluate how to protect rare species and ecological communities during the PDI activities. The conclusions of this evaluation were approved by USEPA Region 2 before proceeding with the PDI activities.

Results of performed search

Table 1 presents information for the Diamond Head property and Table 2 presents information for the vicinity of the property. Glossy ibis, little blue heron, and snowy egret were identified by the Natural Heritage Database and Landscape Project search as avian species of special concern with either habitat or the species potentially occurring in the area of the Diamond Head site.

Site conditions as habitat for identified species

Although the occurrence of these species onsite cannot be completely ruled out, it is considered unlikely that that any of these species would spend significant time on the site or be present onsite at the time of the planned activities (scheduled for end October / beginning November and continuing into the winter months) even if the habitat existed at the site, which it may not.

All three species primarily occur in New Jersey during their breeding season, which falls between April and May, and ends in late August. Snowy egret has occasionally been noted to occur throughout the year in New Jersey, although their presence during the winter is not common. Further, all three species typically occur further south in New Jersey, along the Atlantic coast, where there is an abundance of food such as fish and aquatic invertebrates, which comprise a large proportion of their diets. Finally, little blue heron and snowy egret typically have nests in trees, and any remnants of nests would be visible. Glossy Ibis, in contrast, nest both in on the ground and in trees. As already noted, however, nesting would not occur during the period of site activity.

Summary

Based on the above information, it was concluded that these species are unlikely to occur onsite during the time of the planned PDI activities. Before vegetation clearance was initiated at the start of the OU1 PDI, the filed team observed the area to be cleared for these species and confirmed that they were not present. Nests were also not observed. These species were also not observed at any time during the implementation of the PDI activities.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Parks and Forestry
Mail Code 501-04
ONLM -Natural Heritage Program
P.O. Box 420
Trenton, NJ 08625-0420
Tel. #609-984-1339
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BOB MARTIN
Commissioner

December 11, 2012

Mike Elias
CH2M Hill
15010 Conference Center Drive, Suite 200
Chantilly, VA 20151

Re: Diamond Head Oil Refinery Div.

Dear Mr. Elias:

Thank you for your data request regarding rare species information for the above referenced project site in Kearny Town, Hudson County.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.1) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Request for Data into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Landscape Project habitat mapping and the Biotics Database for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

We have also checked the Landscape Project habitat mapping and Biotics Database for occurrences of rare wildlife species or wildlife habitat in the immediate vicinity (within ¼ mile) of the referenced site. Additionally, the Natural Heritage Database was checked for occurrences of rare plant species or ecological communities within ¼ mile of the site. Please refer to Table 2 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented within the immediate vicinity of the site. Detailed reports are provided for all categories coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1 and 2 (attached) to determine if any priority sites are located on or in the vicinity of the site.

A list of rare plant species and ecological communities that have been documented from Hudson County can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2010.pdf.

If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive NJ-GeoWeb website at the following URL, http://www.state.nj.us/dep/gis/geowebsplash.htm or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

Robert J. Cartica
Administrator

c: NHP File No. 12-4007462-2436

Table 1: On Site Data Request Search Results (7 Possible Reports)

Rare Plants/Ecological Communities Possibly On Site:	No
Rare Plants/Ecological Communities On Site/Immediate Vicinity:	No
Natural Heritage Priority Sites On Site:	No
Landscape 3.1 Species Based Patches On Site:	Yes
Landscape 3.1 Vernal Pool Habitat On Site:	No
Landscape 3.1 Stream/Mussel Habitat On Site:	No
Other Animals Tracked by ENSP On Site:	No

Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.1 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection	State Protection	Grank	Srank
Aves								
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N

Table 2: Vicinity Data Request Search Results (6 possible reports)

Rare Plants/Ecological Communities within the Vicinity:	No
Natural Heritage Priority Sites within the Vicinity:	No
Landscape 3.1 Species Based Patches within the Vicinity:	Yes
Landscape 3.1 Vernal Pool Habitat within the Vicinity:	No
Landscape 3.1 Stream/Mussel Habitat within the Vicnity:	No
Other Animals Tracked by ENSP within the Vicnity:	No

Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.1 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection	State Protection	Grank	Srank
Aves								
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Least Bittern	Ixobrychus exilis	Breeding Sighting-Confirmed	2	NA	Special Concern	G5	S3B,S3N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Pied-billed Grebe	Podilymbus podiceps	Breeding Sighting-Confirmed	4	NA	State Endangered	G5	S1B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N

Appendix A
Regulatory Information and Standards and Criteria Used to Evaluate Sampling Results

Section 2

List of Standards and Criteria to Evaluate OU1 PDI Sampling Results

Appendix 1
List of Standards and Criteria Used to Evaluate OU1 PDI Sampling Results
Diamond Head Superfund Site
Operable Unit 1

Soil, Sludge, and Unknown Materials

New Jersey Non-Residential Direct Contact Remediation Standard NJAC 7:26D Appendix 1 Soil Remediation Standards Table
Posted at http://www.nj.gov/dep/srp/regs/rs/

New Jersey Impact to Groundwater Soil Screening Levels
Guidance Document Development of Impact to Groundwater Soil Remediation Standards Using the Soil-Water Partition Equation Version 2.0, November 2013
Posted at http://www.nj.gov/dep/srp/guidance/rs/partition_equation.pdf

Code 40 CFR 261 (Identification and Listing of Hazardous Waste)

LNAPL and Concrete

Code 40 CFR 261 (Identification and Listing of Hazardous Waste)

Groundwater

New Jersey Groundwater Quality Standards NJAC 7:9C Appendix 1 Specific Ground Water Quality Criteria
Posted at http://www.nj.gov/dep/standards/

New Jersey Interim Groundwater Quality Criteria
Posted at http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm

USEPA Maximum Contaminant Levels
Posted at http://water.epa.gov/drink/contaminants/index.cfm

USEPA Secondary Drinking Water Standards
Posted at http http://water.epa.gov/drink/contaminants/index.cfm

NJ Maximum Contaminant Levels
Posted at http://www.nj.gov/dep/standards/

Dioxins and Furans Results

USEPA Regional Screening Level (RSL) for industrial use - Summary Table, June 2011; Human Health Risk - Screening value for industrial use based on the reference dose of .7 pg/kg/day, IRIS revised 2/17/2012

USEPA Regional Screening Level (RSL) for industrial use -USEPA Regional Screening Level Summary Table, November 2013; Human Health Risk – Reference Screening Level for industrial use based on cancer effects of is 1.8x10-5 mg/kg

Note: Reviewed that there were no notifications of updates posted since the complete list was developed.

Appendix B
Survey Information

Contents

1. Temporary Roadways – Survey Information
2. Test Pits – Survey Information
3. Temporary Piezometers – Survey Information
4. Existing Monitoring Well and Piezometer Survey and Construction Details

Appendix B
Survey Information

Section 1

Temporary Roadways – Survey Information

Temporary Roadways - Survey Information
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

Road Segment	Point	Width (ft)	Road Edge 1		Road Edge 2	
			NJSP Coordinate Northing	NJSP Coordinate Easting	NJSP Coordinate Northing	NJSP Coordinate Easting
6	1	10	697683.2160	594231.8460	697668.7870	594229.1240
6	2	16	697691.6560	594183.3860	697672.3260	594177.9410
6	3	12	697701.1840	594136.2880	697689.7500	594130.2990
7	1	15	697561.0370	594117.4590	697548.4810	594111.0110
7	2	11	697595.9930	594061.4620	697584.1150	594058.7470
7	3	12	697608.8890	594022.7730	697595.9930	594019.7190
7	4	12	697635.3610	593980.0120	697621.1070	593975.2600
8	1	8	697528.3000	594217.9490	697517.3070	594214.9510
8	2	13	697536.2950	594167.9790	697518.3060	594167.6460
8	3	16	697524.8980	594120.9300	697503.1710	594123.9380
8	4	12	697526.9040	594069.7880	697508.5190	594068.7850
8	5	8	697520.2180	594021.6550	696507.1820	594020.3180
9	1	16	697413.9540	594057.4570	697411.7480	594030.9870
10	1	16	697398.5130	594067.7510	697409.4190	594055.2510
10	2	12	697375.1300	594023.4110	697379.8260	594012.7850
10	3	12	697336.2960	593986.4360	697347.0560	593977.0060
10	4	12	697304.6860	593945.7760	697315.1340	593936.1690
10	5	12	697275.4930	593906.9670	697285.0280	593897.5990
10	6	12	697243.0410	593864.9800	697252.2410	593856.7830
10	7	12	697212.3860	593825.0560	697220.9970	593815.7830
10	8	12	697179.4330	593782.4980	697186.0570	593777.3650
10	9	12	697144.3810	593741.3400	697152.4400	593733.9380
10	10	12	697133.1300	593701.0430	697120.6960	593694.7930
10	11	12	697084.5860	593657.7260	697093.5860	593650.3620
10	12	12	697056.7650	593612.3960	697066.5840	593606.3410
10	13	12	697027.1800	593566.9890	697037.1290	593560.4650
11	1	10	697542.5200	594252.3460	697547.0120	594245.7580
11	2	10	697586.8410	594270.9130	697587.4400	594259.5330
11	3	12	697634.1440	594291.6060	697635.0460	594281.6900
11	4	12	697680.7190	594307.2310	697681.3200	594298.2160
11	5	12	697726.2630	594309.5080	697726.5640	594299.2740
11	6	10	697781.3450	594313.1200	697781.9470	594302.5850
11	7	12	697823.7840	594289.0410	697812.3480	594285.7300
12	1	15	697854.6540	594266.8130	697855.3590	594252.2660

Temporary Roadways - Survey Information
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

Road Segment	Point	Width (ft)	Road Edge 1		Road Edge 2	
			NJSP Coordinate Northing	NJSP Coordinate Easting	NJSP Coordinate Northing	NJSP Coordinate Easting
12	2	12	697902.1070	594274.8180	697901.8720	594260.4880
12	3	12	697953.2150	594264.7610	697951.3230	594251.9900
12	4	12	697997.6780	594240.6380	697998.6240	594252.4630
12	5	12	698051.2340	594238.1010	698049.3350	594229.2700
12	6	12	698104.2030	594226.9180	698103.7270	594215.7270
12	7	10	698153.5040	594216.4500	698152.7870	594208.3270
12	8	10	698207.8800	594214.1890	698206.9190	594204.1030
13	1	50	689231.7960	594250.3190	698228.7730	594202.4180
13	2	50	698262.1480	594253.0890	698261.6680	594201.4620

Notes:
ft - feet
Points were collected at 50-foot intervals along each road segment
Coordinate System: United States - New Jersey State Plane (NJSP), Zone 2900
Horizontal Datum: North American Datum of 1983 (NAD 83)

Appendix B
Survey Information

Section 2
Test Pits – Survey Information

Exploratory Test Pits - Survey Information
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

Test Pit Number	NE Corner		NW Corner		SE Corner		SW Corner		Comments
	NJSP Coordinate Northing	NJSP Coordinate Easting	NJSP Coordinate Northing	NJSP Coordinate Easting	NJSP Coordinate Northing	NJSP Coordinate Easting	NJSP Coordinate Northing	NJSP Coordinate Easting	
2014 Test Pit Investigation									
TP-1a	698248.7280	594151.2880	698248.5410	594147.6480	698236.9890	594151.9170	698238.4310	594149.5050	refusal encountered
TP-1b	698245.9380	594175.6400	698244.5130	594163.4910	698242.4640	594175.7000	698240.3030	594164.2660	refusal encountered
TP-1c	698232.8580	594163.8390	698231.2130	594159.8850	698225.5800	594171.4930	698222.5440	594169.7250	refusal encountered
TP-1d	698225.1360	594155.4760	698224.4300	594151.8120	698214.1750	594158.9230	698213.5500	594155.6050	refusal encountered
TP-1e	698224.0390	594147.1670	698225.1660	594143.7590	698212.8680	594144.1740	698214.3720	594141.5860	refusal encountered
TP-1f	698159.8450	594146.1900	698159.0600	594138.9640	698151.8330	594147.9180	698151.0820	594140.5880	
TP-2	698187.7280	594233.9510	698189.3350	594230.2840	698180.7920	594228.6030	698181.1570	594222.1700	
TP-3	698119.7470	594157.2260	698118.8920	594151.8440	698110.1080	594157.3010	698110.8250	594153.0840	
TP-4	698105.7040	593891.3320	698126.0910	593910.6680	698099.4890	593891.2150	698095.1180	593889.9980	
TP-5	698054.6600	594097.5810	698055.4150	594092.8660	698044.0150	594093.7830	698046.0420	594089.0020	
TP-6	698048.9860	594143.8470	698046.4520	594135.8430	698033.9050	594144.1030	698034.7020	594140.2830	
TP-7	697980.7550	594083.5320	697984.2720	594080.2330	697971.5670	594080.7180	697973.9690	594075.7080	
TP-8	697973.7130	594157.5220	697977.3920	594159.7690	697966.0950	594160.7700	697959.4810	594154.6900	
TP-9a	697983.6960	594250.0650	697982.8810	594249.8090	697970.8000	594246.2430	697969.9780	594247.5630	refusal encountered
TP-9b	698069.0530	594229.0710	698065.6590	594237.4900	698053.1090	594240.0390	698054.7060	594238.9370	refusal encountered
TP-9c	698142.2090	594231.6450	698143.5570	594224.5910	698132.2390	594232.0780	698128.2490	594225.6030	
TP-10	697919.5180	594106.3350	697913.4530	594098.3230	697918.5730	594108.5350	697912.3200	594099.6590	
TP-11	697873.4330	594093.1760	697869.2000	594093.3290	697867.0310	594090.1500	697859.7000	594091.0980	
TP-12	697908.6720	594038.0690	697906.6460	594032.6490	697897.4580	594043.1590	697894.7800	594037.2420	
TP-13	Not Installed								Not Installed
TP-14	697760.7670	594302.9240	697762.8330	594298.6280	697745.5430	594299.5150	697744.2450	594297.0350	
TP-15	697738.8390	594202.7210	697737.6250	594199.9880	697723.0490	594203.1200	697722.6350	594197.8200	
TP-16	697747.5100	594052.3690	697734.2900	594041.1850	697740.8430	594055.9330	697735.9340	594043.3100	
TP-17	697645.7120	594190.6170	697628.8040	594188.9430	697646.3990	594196.8200	697627.0690	594194.8770	
TP-18	697563.2160	594046.3580	697579.4330	594032.4410	697564.7100	594041.9640	697574.8510	594034.0270	
TP-19a	697530.6340	594180.6890	697525.2260	594147.7260	697524.5710	594181.0760	697521.7310	594147.9880	refusal encountered
TP-19b	697532.0800	594209.4100	697530.3480	594188.0710	697531.1360	594204.7640	697525.9950	594187.3610	refusal encountered
TP-20	697441.1160	594085.7870	697446.0420	594080.4000	697430.4960	594073.0870	697431.8730	594065.8590	

Exploratory Test Pits - Survey Information
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

Test Pit Number	NE Corner		NW Corner		SE Corner		SW Corner		Comments
	NJSP Coordinate Northing	NJSP Coordinate Easting	NJSP Coordinate Northing	NJSP Coordinate Easting	NJSP Coordinate Northing	NJSP Coordinate Easting	NJSP Coordinate Northing	NJSP Coordinate Easting	
2010 Test Pit Investigation									
SS-SA	697624.6110	594156.9880	697625.1350	594145.9610	697619.0830	594157.4270	697621.0830	594145.7720	
SS-NA-1	697876.4690	594233.6250	Not Measured						refusal encountered
SS-NA-2	697887.3200	594243.1050	697888.9890	594241.4950	697879.6640	594242.5430	697877.7850	594238.2030	
SS-NA-3	697886.9600	594243.2300	Not Measured						refusal encountered
SS-NA-4	697897.0440	594250.7370	Not Measured						refusal encountered
SS-WL-1	697636.1920	594123.1370	Not Measured						
H-1	697451.0050	594091.9460	697465.7790	594087.7660	697445.9060	594088.4740	697460.1750	594084.7760	
H-2	697580.9720	594181.3390	697585.5910	594179.1480	697575.0470	594171.9230	697579.4450	594168.2360	
H-3	697636.1800	594195.8600	Not Measured						
H-4	697750.3730	594201.9770	697753.3730	594192.7130	697594.8150	594189.7970	697747.1180	594192.6850	
H-5	697532.0750	594140.2690	697550.5670	594183.9370	697554.9710	594184.6520	697561.8160	594172.7580	
H-6	697532.0750	594140.2690	Not Measured						refusal encountered
H-7	697521.5920	594151.8830	Not Measured						refusal encountered
H-8-1	697543.7940	594154.5340	697554.7880	594142.4660	697542.1280	594151.7110	697550.5520	594141.4430	
M-1	698146.2210	594134.0030	698145.7150	594129.9520	698133.5720	594142.0650	698131.2140	594140.7240	
M-2-1	697865.0290	594096.4460	697863.4040	594092.7860	697853.4440	594103.2310	697853.4820	594101.0560	
M-3-1	697818.6850	594212.0340	697818.1820	594200.6190	697814.8840	594211.6440	697814.3480	594200.5920	
M-4	697595.6340	594205.7500	Not Measured						refusal encountered
M-5	697594.8150	594189.7970	Not Measured						refusal encountered
M-6	697612.7780	594191.5010	Not Measured						refusal encountered
M-7	697612.7490	594178.9950	Not Measured						refusal encountered
M-8	697590.3680	594187.8680	697604.2520	594176.5610	697589.0190	594184.1770	697600.1160	594174.8150	
M-10	698036.8650	594148.9270	698036.6240	594141.7710	698023.7590	594147.2710	698027.9170	594143.9130	
L-1	697965.4030	594161.1400	697961.2580	594149.3090	697960.5060	594162.5930	697958.2460	594149.4000	
L-2	698040.1960	594096.1630	698044.6810	594085.8120	698032.7630	594094.7530	698039.2760	594085.5460	
L-3A	697893.8300	594174.4400	Not Measured						refusal encountered
L-3B	697891.9700	594148.9700	Not Measured						refusal encountered
L-3C	697916.2670	594103.2000	697917.5630	594097.3140	697904.3410	594113.0050	697902.1900	594108.7660	
L-4	697640.3500	594136.2400	Not Measured						

Notes:

Coordinate System: United States - New Jersey State Plane (NJSP), Zone 2900

Section 3

Temporary Piezometers – Survey Information

Table #-#
Piezometer - Survey Information
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

Piezometer Number	NJSP Coordinate Northing	NJSP Coordinate Easting	Inner Casing Elevation (ft NAVD 88)	Outer Casing Elevation (ft NAVD 88)	Ground Elevation (ft NAVD 88)
PZ-23	698243.0312	593964.0037	10.48	NA	7.02
PZ-24	698273.8618	594055.6866	11.34	NA	7.88
PZ-25	698272.2983	594142.6220	11.27	NA	8.00
PZ-26	698272.2072	594224.6012	11.19	NA	7.70
PZ-27	698184.6866	593972.5994	10.82	NA	7.60
PZ-28	698190.2655	594057.9228	11.28	NA	8.00
PZ-29 - attempt 1	698185.2765	594141.3323	Not Installed		8.27
PZ-29 - attempt 2	698185.2765	594141.3323	Not Installed		8.27
PZ-29 - attempt 3(installed)	698185.5227	594176.4544	11.54	NA	8.28
PZ-30	698187.3831	594243.6872	11.62	NA	8.11
PZ-31	698136.3154	594272.4231	25.02	26.01	22.09
PZ-32	698094.8653	593974.8706	13.17	NA	9.77
PZ-33	698092.0545	594063.3313	11.59	NA	8.36
PZ-34	698099.1187	594139.2156	12.40	NA	9.16
PZ-35	698121.7975	594225.9667	12.06	NA	8.89
PZ-36	698091.8876	594293.9064	26.87	27.21	23.80
PZ-37	698015.1208	593974.0325	15.82	NA	12.17
PZ-38	698013.0700	594045.6732	12.17	NA	8.88
PZ-39	698018.3166	594128.2495	13.01	NA	9.36
PZ-40	698014.1847	594227.0181	12.65	NA	9.37
PZ-41	698016.0050	594251.0127	12.59	NA	9.08
PZ-42	698018.8206	594325.3499	26.54	27.22	23.65
PZ-43	697931.2877	593975.2346	16.05	NA	12.55
PZ-44	697927.9775	594056.7735	12.27	NA	9.00
PZ-45	697928.9413	594139.1284	12.96	NA	9.54
PZ-46 - attempt 1	697930.2480	594226.3525	Not Installed		9.72
PZ-46 - attempt 2 (installed)	697973.2624	594230.0892	12.80	NA	9.53
PZ-47	697928.7139	594273.6055	12.41	NA	9.13
PZ-48	697915.9205	594352.1698	24.23	28.50	24.67
PZ-49	697845.8780	593969.6549	19.37	NA	16.06
PZ-50	697848.1083	594057.9718	12.25	NA	8.96
PZ-51	697849.8759	594145.6536	13.16	NA	9.70
PZ-52	697854.6743	594232.8137	13.69	NA	10.53
PZ-53	697832.8057	594292.0110	13.07	NA	9.62
PZ-54	697875.8839	594372.8771	27.71	27.98	24.12
PZ-55	697758.8936	593971.9654	20.79	NA	17.13
PZ-56	697761.6400	594057.4063	13.80	NA	10.40
PZ-57	697758.4954	594140.5245	13.86	NA	10.80
PZ-58	697758.9304	594225.0697	14.76	NA	11.37
PZ-59	697761.8861	594314.6772	14.38	NA	10.87
PZ-60	697759.1453	594390.7449	28.07	28.32	24.93
PZ-61	697675.9358	593973.2786	19.38	NA	15.88
PZ-62	697685.1364	594056.0990	15.76	NA	12.45
PZ-63	697674.9058	594136.2921	15.21	NA	11.96
PZ-64	697679.8473	594223.6414	14.73	NA	11.00
PZ-65	697670.2425	594310.0627	15.81	NA	12.30
PZ-66	697680.4787	594392.9126	27.72	28.68	24.72
PZ-67	697592.3415	594059.9991	15.19	NA	11.72
PZ-68	697590.7609	594141.5687	15.04	NA	11.60
PZ-69 - attempt 1	697589.9945	594226.2638	Not Installed		11.40
PZ-69 - attempt 2	10' North of Attempt 1		Not Installed		NA
PZ-69 - attempt 3	15' North of Attempt 1		Not Installed		NA
PZ-69 - attempt 4 (installed)	697616.6666	594221.9030	14.33	NA	11.22
PZ-70 - attempt 1 (installed)	697590.3121	594276.3051	15.87	NA	12.40

Table #-#
Piezometer - Survey Information
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

Piezometer Number	NJSP Coordinate Northing	NJSP Coordinate Easting	Inner Casing Elevation (ft NAVD 88)	Outer Casing Elevation (ft NAVD 88)	Ground Elevation (ft NAVD 88)
PZ-70 - attempt 2	~20' N of Attempt 1		Not Installed		NA
PZ-70 - attempt 3	~40' N of Attempt 1		Not Installed		NA
PZ-70 - attempt 4	~40' NNW of Attempt 1		Not Installed		NA
PZ-70 - attempt 5	~20' W of Attempt 1		Not Installed		NA
PZ-71	697606.6181	594352.6521	26.90	27.50	23.78
PZ-72	697501.5528	594056.8248	13.97	NA	10.50
PZ-73 - attempt 1	697505.1250	594141.1924	Not Installed		12.39
PZ-73 - attempt 2	~40 WSW of Attempt 1		Not Installed		NA
PZ-73 - attempt 3 (installed)	697457.9744	594107.2834	13.75	NA	10.34
PZ-74 - attempt 1	697504.9614	594211.1950	Not Installed		13.39
PZ-74 - attempt 2	~40 N of Attempt 1		Not Installed		NA
PZ-74 - attempt 3	~30 S of Attempt 1		Not Installed		NA
PZ-74 - attempt 4	~40' SSW of Attempt 1		Not Installed		NA
PZ-74 - attempt 5	~45' SW of Attempt 1		Not Installed		NA
PZ-75 - attempt 1	697508.4242	594289.2743	Not Installed		23.60
PZ-75 -attempt 2 (installed)	697517.9058	594286.7590	26.82	26.92	23.70
PZ-76 - attempt 1	697420.1927	594056.3130	Not Installed		11.10
PZ-76 - attempt 2 (installed)	697436.5284	594041.8418	14.09	NA	10.60
PZ-77 - attempt 1	697399.9634	594141.2336	Not Installed		17.47
PZ-77 - attempt 2	~35' SW of Attempt 1		Not Installed		NA
PZ-77 - attempt 3 (installed)	697370.9082	594113.7203	25.11	25.69	21.73
PZ-78	697329.3840	594061.8713	26.14	26.60	22.70
PZ-79	697294.4448	593938.9585	17.44	NA	13.66
PZ-80	697247.2786	593872.9467	16.51	NA	13.00
PZ-81	697194.3282	593804.2943	16.01	NA	12.60
PZ-82	697137.4486	593735.7982	16.02	NA	12.60
PZ-83	697083.1195	593664.5511	13.53	NA	9.70
PZ-84	697033.0094	593599.6182	8.77	NA	5.40
PZ-85	697008.3189	593547.1627	7.49	NA	4.20
PZ-86	697255.9324	593981.7626	23.99	24.66	20.80
PZ-87	697206.7927	593911.4622	24.14	24.65	20.99
PZ-88	697155.0086	593833.9732	22.47	22.65	19.10
PZ-89	697104.9657	593774.8106	21.81	21.93	18.20
PZ-90	697047.7315	593683.1756	19.69	20.66	16.64
PZ-91	696980.3702	593617.3084	8.73	9.31	5.43
PZ-92	696931.2214	593557.2157	7.56	7.90	5.20

Notes:
ft - feet
NAVD 88 - North American Vertical Datum, 1988
NJSP - New Jersey State Plane

Inner casing - 1-inch PVC temporary well material used at all locations
Outer casing - 4-inch steel protective casing installed at 18 locations on the berm
Coordinate System: United States - New Jersey State Plane, Zone 2900
Horizontal Datum: North American Datum of 1983 (NAD 1983)
Vertical Datum: North American Vertical Datum of 1988 (NAVD 88)
Survey based on NGS OPUS solution: 8344153..09o, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348), NJMT (PID DH3768), and LAMT (PID AJ487). Piezometers were field surveyed January 16th and 20th, 2014.

Appendix B
Survey Information

Section 4

Existing Monitoring Well and Piezometer Survey and Construction Detail

Well Information
Diamond Head Oil Superfund Site
Kearny, NJ

Well Number	NJSP Northing	NJSP Easting	Ground Elevation (ft NAVD88)	Elevation of Outer Casing (ft NAVD88)	Elevation of Inner Casing (ft NAVD88)	Finished Well Depth (ft bgs)	Screen Length (ft)	Top of Screen Elevation (ft NAVD88)	Bottom of Screen Elevation (ft NAVD88)	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Screen Diameter (inches)	Screen Material	Screen Slot Size
MW-01S	698066.3413	593613.1321	8.71	11.09	10.81	*20.00*	*10*	*-1.29*	*-11.29*	*10*	*20*	*4*	*SCHED. 40 PVC*	*10 SLOT*
MW-02S	698143.4833	594195.8401	9.57	12.27	12.06	*13.80*	*10*	*5.77*	*-4.23*	*3.8*	*13.8*	*4*	*SCHED. 40 PVC*	*10 SLOT*
MW-03S	697604.7197	594174.7131	12.53	14.96	14.79	*13.98*	*10*	*8.55*	*-1.45*	*3.98*	*13.98*	*4*	*SCHED. 40 PVC*	*10 SLOT*
MW-04S	697395.7872	593686.3951	15.67	18.26	18.06	*19.70*	*10*	*5.97*	*-4.03*	*9.7*	*19.7*	*4*	*SCHED. 40 PVC*	*10 SLOT*
MW-05S	697751.9053	593795.6618	18.45	20.96	20.81	*22.45*	*10*	*6.00*	*-4.00*	*12.45*	*22.45*	*4*	*SCHED. 40 PVC*	*10 SLOT*
MW-06S	698192.5238	593597.9093	7.57	11.04	11.15	8	6	5.57	-0.43	2	8	4	SCHED. 40 PVC	20 SLOT
MW-07S	698299.2951	594162.4191	7.7	11.66	11.51	13	10	4.70	-5.30	3	13	4	SCHED. 40 PVC	20 SLOT
MW-09S	698061.1389	593980.9798	10.44	14	13.94	12	11	9.44	-1.56	1	12	4	SCHED. 40 PVC	20 SLOT
MW-10S	697983.5116	593572.4382	6.81	9.65	9.7	9	7	4.81	-2.19	2	9	4	SCHED. 40 PVC	20 SLOT
MW-10D	697953.4818	593571.7198	6.72	10.02	10.07	28	10	-11.28	-21.28	18	28	4	SCHED. 40 PVC	20 SLOT
MW-11S	697815.9211	594065.3157	9.54	12.7	12.72	12	10	7.54	-2.46	2	12	4	SCHED. 40 PVC	20 SLOT
MW-11D	697841.0883	594056.3677	9.05	12.46	12.4	30	10	-10.95	-20.95	20	30	4	SCHED. 40 PVC	20 SLOT
MW-12S	697861.349	594205.173	10.66	14.28	14.08	14	12	8.66	-3.34	2	14	4	SCHED. 40 PVC	20 SLOT
MW-13S	697870.3321	594246.3903	9.72	12.36	12.54	14	12	7.72	-4.28	2	14	4	SCHED. 40 PVC	20 SLOT
MW-13D	697853.3836	594249.1526	10.15	12.89	12.85	30	10	-9.85	-19.85	20	30	4	SCHED. 40 PVC	20 SLOT
MW-14S	697697.4635	594055.1455	12.29	15.2	15.17	16	14	10.29	-3.71	2	16	4	SCHED. 40 PVC	20 SLOT
MW-15S	697084.0427	593598.4443	7.66	10.77	10.76	12	10	5.66	-4.34	2	12	4	SCHED. 40 PVC	20 SLOT
MW-15D	697097.1677	593632.8154	7.56	10.77	10.77	30	10	-12.44	-22.44	20	30	4	SCHED. 40 PVC	20 SLOT
MW-17S	697913.2191	594635.9087	9.38	9.53	9.12	13	10	6.38	-3.62	3	13	4	SCHED. 40 PVC	20 SLOT
MW-18S	698332.3621	594381.4436	6.8	10.14	9.94	12	10	4.80	-5.20	2	12	2	SCHED. 40 PVC	10 SLOT
MW-19S	698354.0105	594937.9254	26.7	29.82	29.59	29	10	7.70	-2.30	19	29	2	SCHED. 40 PVC	10 SLOT
MW-20S	698117.4176	595048.1118	24.3	27.52	27.16	27	10	7.27	-2.73	17	27	2	SCHED. 40 PVC	10 SLOT
MW-21S	698519.3645	594116.8035	6.8	6.87	6.41	9	6	3.83	-2.17	3	9	2	SCHED. 40 PVC	10 SLOT
MW-23S	697471.1961	593385.3629	7.4	7.38	6.64	9	6	4.36	-1.64	3	9	2	SCHED. 40 PVC	10 SLOT
MW-24S	697011.7357	593393.0424	6.2	6.19	5.62	9	6	3.18	-2.82	3	9	2	SCHED. 40 PVC	10 SLOT
MW-25S	696730.5968	593584.6747	15.2	15.25	14.76	21	10	4.20	-5.80	11	21	2	SCHED. 40 PVC	10 SLOT
MW-26S	697380.5339	594649.8385	10.1	10.01	9.58	17	13	6.06	-6.94	4	17	2	SCHED. 40 PVC	10 SLOT
PZ-01	697627.0208	594178.96	11.81	15.29	15.25	15	14	10.81	-3.19	1	15	2	SCHED. 40 PVC	20 SLOT
PZ-02	697645.7707	594180.1174	11.88	15.66	15.66	15	14	10.88	-3.12	1	15	2	SCHED. 40 PVC	20 SLOT
PZ-03	697661.5366	594179.2194	12.09	15.77	15.69	15	14	11.09	-2.91	1	15	2	SCHED. 40 PVC	20 SLOT
PZ-04	697609.4962	594186.7318	11.92	15.52	15.47	16	15	10.92	-4.08	1	16	2	SCHED. 40 PVC	20 SLOT
PZ-05	697613.8557	594208.7966	11.61	15.47	15.01	16	15	10.61	-4.39	1	16	2	SCHED. 40 PVC	20 SLOT
PZ-06	697612.0678	594231.6012	11.28	15.22	15.26	15	14	10.28	-3.72	1	15	2	SCHED. 40 PVC	20 SLOT
PZ-07	697584.6657	594170.9525	12.48	16.53	16.51	16	15	11.48	-3.52	1	16	2	SCHED. 40 PVC	20 SLOT
PZ-08	697565.3107	594171.5218	11.92	15.86	15.86	15	14	10.92	-3.08	1	15	2	SCHED. 40 PVC	20 SLOT
PZ-09	697546.014	594171.4054	11.85	15.6	15.57	16	15	10.85	-4.15	1	16	2	SCHED. 40 PVC	20 SLOT
PZ-10	697608.9075	594152.5608	12.4	15.98	16.01	16	15	11.40	-3.60	1	16	2	SCHED. 40 PVC	20 SLOT
PZ-11	697608.0505	594135.3725	12.59	16.06	16.07	15	14	11.59	-2.41	1	15	2	SCHED. 40 PVC	20 SLOT
PZ-12	697623.3306	594119.8596	12.11	16.02	15.92	15	14	11.11	-2.89	1	15	2	SCHED. 40 PVC	20 SLOT
PZ-13*	697721.9003	594137.6117	11.04	14.74	13.74	13	11	9.04	-1.96	2	13	2	SCHED. 40 PVC	20 SLOT
PZ-14	697756.7848	594194.0596	11.51	15.35	15.22	13	11	9.51	-1.49	2	13	2	SCHED. 40 PVC	20 SLOT
PZ-15*	697730.2264	594311.724	11.05	14.51	14.02	13	11	9.05	-1.95	2	13	2	SCHED. 40 PVC	20 SLOT
PZ-16	697948.117	594158.558	9	11.73	11.5	11	9	7.00	-2.00	2	11	2	SCHED. 40 PVC	20 SLOT
PZ-17	697981.7223	594239.8796	9.09	12.95	12.75	12	10	7.09	-2.91	2	12	2	SCHED. 40 PVC	20 SLOT

Well Information
Diamond Head Oil Superfund Site
Kearny, NJ

Well Number	NJSP Northing	NJSP Easting	Ground Elevation (ft NAVD88)	Elevation of Outer Casing (ft NAVD88)	Elevation of Inner Casing (ft NAVD88)	Finished Well Depth (ft bgs)	Screen Length (ft)	Top of Screen Elevation (ft NAVD88)	Bottom of Screen Elevation (ft NAVD88)	Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Screen Diameter (inches)	Screen Material	Screen Slot Size

Notes:

Italics = Well construction details for wells MW-1S through MW-5S are assumed based on field observations.
ft bgs = feet below ground surface
Horizontal datum is the New Jersey State Plane (NJSP) coordinate system, North American Datum of 1983 (NAD83).
Vertical datum is North American Vertical Datum of 1988 (NAVD88)
Standard of accuracy: horizontal (.01'), vertical (.01').
All measurements are in US survey feet.
All on site measurements were done with traditional surveying techniques.
Static baseline GPS was used to establish horizontal and vertical controls from nearest NGS monumentation.
20 slot screen = 0.020 inch opening
10 slot screen = 0.010 inch opening
*Piezometers PZ-13 and PZ-15 have been abandoned.
Wells MW-8S, MW-16S, and MW-22S were never installed.

Appendix C
Road Construction Details

Contents

1. Clean Stone Certificate
2. Geotextile Fabric Information

Appendix B
Road Construction Details

Section 1
Clean Stone Certificate

S & S ENVIRONMENTAL SCIENCES, INC.

Environmental Engineering, Testing and Consultation

98 Sand Park Road, Cedar Grove, NJ 07009
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Kamil Sor, Ph.D.
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Kenneth J. Rowbotham, P.E.

This report is the confidential property of the Client, and information contained may not be published or reproduced without our written permission.

Client:	TILCON New York, Inc.				
Project:	Mount Hope, New Jersey				
Subject:	Laboratory Analysis of Stone Fines				
Job No.:	07-E-34	**Report Number:**	13-E-176R	**Date:**	07-03-2013

We present herewith the laboratory test results of one (1) stone fines sample received on June 18, 2013. The sample was collected at Mount Hope Quarry by a representative of TILCON on June 18, 2013.

As requested, the sample was analyzed for the U.S. EPA Target Compound List (TCL)+30/Target Analyte List (TAL) parameters, Extractable Petroleum Hydrocarbons (EPH), pH, and Hexavalent Chromium. The analyses were performed by Integrated Analytical Laboratories, LLC (IAL) (NJDEP Lab ID No. 14751).

The test results are summarized in Table Nos. 1 through 4. A copy of the IAL sample chain-of-custody form and a copy of the preliminary faxed IAL laboratory summary report are attached.

Based on the laboratory data, the sample meets all of the NJDEP Residential Direct Contact Soil Remediation Standards. Manganese concentration in the sample exceeded the NJDEP Default Impact to Ground Water (IGW) soil screening level. No further evaluation through SPLP leaching is needed for Manganese, since the Ground Water Quality Standard for this metal is secondary and non-health based, and because it is present naturally and not due to a discharge.

If there are any questions or if we can be of further assistance in this matter please call us.

Very truly yours,

S & S ENVIRONMENTAL SCIENCES, INC.

Yilmaz Arhan, Ph.D.
Vice President

YA/ya

Attachments: (1) IAL Laboratory Summary Report and Sample Chain-of-Custody Form
(2) NJDEP Residential Soil Remediation Standards List

cc: (1) Client (Attn: Mr. Steve O'Reilly and Mr. Gino Labbate)

TABLE 1 - SUMMARY OF LABORATORY TEST RESULTS

PARAMETERS	SAMPLE #13-105-32 RESULT	NJDEP SOIL REMEDIATION STANDARD(*)
Organic Compounds		
Volatile Organic Compounds	Methylene chloride=0.00279 B Others Not Detected (See Table 2)	Methylene chloride=34 Others See Attached List
Semi-Volatile Organics	Not Detected (See Table 3)	See Attached List
Pesticides	Not Detected (See Table 4)	See Attached List
PCBs	Not Detected (See Table 4)	Total 0.20
Metals:		
Aluminum	2,650	78,000
Antimony	ND (<0.261)	31
Arsenic	0.630	19
Barium	19.3	16,000
Beryllium	0.325 J	16
Cadmium	ND (<0.131)	78
Calcium	3,950	NA
Chromium	1.44 J	120,000
Cobalt	3.08	1,600
Copper	6.13	3,100
Iron	10,200	NA
Lead	ND (<0.131)	400
Magnesium	1,710	NA
Manganese	97.7	11,000
Mercury	ND (<0.00561)	23
Nickel	1.74	1,600
Potassium	787	NA
Selenium	ND (<1.05)	390
Silver	ND (<0.131)	390
Sodium	141	NA
Thallium	ND (<0.131)	5
Vanadium	4.21	78
Zinc	11.9	23,000
Others		
Extractable Petroleum Hydrocarbons (EPH) (C9-C40)	21.6 J	1,000
Cyanide	ND (<0.509)	1,600
Hexavalent Chromium	ND (<0.278)	20
pH, SU	8.10	NA

Results are in mg/kg (milligrams per kilogram) unless otherwise specified.

(*) NJDEP's "Residential Direct Contact Soil Remediation Standards"

ND – Not Detected (< - Indicates less than (the value reported is the Method Detection Limit))
NA – Not Applicable/Not Available
J – The concentration was detected at a value below the Reporting Limit and above the Method Detection Limit
B – Laboratory Blank Contamination

TABLE 2 - TEST RESULTS FOR VOLATILE ORGANIC COMPOUNDS

SAMPLING DATE:	06-18-2013 (Client)	SAMPLE MATRIX: Stone Fines
PARAMETER	**SAMPLE #13-105-32 RESULT**	**NJDEP SOIL REMEDIATION STANDARD(*)**
Dichlorodifluoromethane	ND	490
Chloromethane	ND	4
Vinyl Chloride	ND	0.7
Bromomethane	ND	25
Chloroethane	ND	220
Trichlorofluoromethane	ND	23000
Acrolein	ND	0.5
1,1-Dichloroethene	ND	11
Acetone	ND	70000
Carbon disulfide	ND	7800
Methylene Chloride	0.00279 B	34
trans-1,2-Dichloroethene	ND	300
Methyl tert-butyl ether (MTBE)	ND	110
1,1-Dichloroethane	ND	8
cis-1,2-Dichloroethene	ND	230
2-Butanone (MEK)	ND	3100
Bromochloromethane	ND	NA
Chloroform	ND	0.6
1,1,1-Trichloroethane	ND	290
Carbon tetrachloride	ND	0.6
1,2-Dichloroethane (EDC)	ND	0.9
Benzene	ND	2
Trichloroethene (TCE)	ND	7
1,2-Dichloropropane	ND	2
1,4-Dioxane	ND	NA
Bromodichloromethane	ND	1
cis-1,3-Dichloropropene	ND	NA
trans-1,3-Dichloropropene	ND	NA
4-Methyl-2-Pentanone (MIBK)	ND	NA
Toluene	ND	6300
1,1,2-Trichloroethane	ND	2
Tetrachloroethene (PCE)	ND	2
2-Hexanone	ND	NA
Dibromochloromethane	ND	3
1,2-Dibromoethane (EDB)	ND	0.008
Chlorobenzene	ND	510
Ethylbenzene	ND	7800
Xylenes (Total)	ND	12000
Styrene	ND	90
Bromoform	ND	81
Isopropylbenzene	ND	NA
1,1,2,2-Tetrachloroethane	ND	1
1,3-Dichlorobenzene	ND	5,300
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5,300
1,2-Dibromo-3-chloropropane	ND	0.08
1,2,4-Trichlorobenzene	ND	73
1,2,3-Trichlorobenzene	ND	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	NA
Methyl acetate	ND	78000
Cyclohexane	ND	NA
Methylcyclohexane	ND	NA
1,3-Dichloropropene (cis and trans)	ND	2
Tentatively Identified Compounds (TICs)	ND	NA

Results are in mg/kg (milligrams per kilogram) unless otherwise specified.
(*) NJDEP's "Residential Direct Contact Soil Remediation Standards"
ND: Not Detected (see laboratory report for detection limits) NA–Not Applicable/Not Available
J – The concentration was detected at a value below the Reporting Limit and above the Method Detection Limit
B – Laboratory Blank Contamination

TABLE 3 – TEST RESULTS FOR SEMI-VOLATILE ORGANIC COMPOUNDS

SAMPLING DATE:	06-18-2013 (Client)	SAMPLE MATRIX: Stone Fines

PARAMETER	SAMPLE #13-105-32 RESULT	NJDEP SOIL REMEDIATION STANDARD(*)
bis(2-chloroethyl) ether	ND	0.4
1,3–Dichlorobenzene	ND	5300
1,4–Dichlorobenzene	ND	5
1,2–Dichlorobenzene	ND	5300
Benzyl alcohol	ND	NA
bis(2-chloroisopropyl) ether	ND	23
bis(2-ethylhexyl) phthalate	ND	35
Hexachloroethane	ND	35
n-Nitroso-di-n-propylamine	ND	0.2
Nitrobenzene	ND	31
Isophorone	ND	510
1,2,4–Trichlorobenzene	ND	73
4–Chloroaniline	ND	NA
Hexachloro-1,3-butadiene	ND	6
Hexachlorocyclopentadiene	ND	45
Dimethylphthalate	ND	NA
Diethylphthalate	ND	49,000
2,4-Dinitrotoluene	ND	0.7
2,6- Dinitrotoluene	ND	0.7
n-Nitrosodiphenylamine	ND	99
Hexachlorobenzene	ND	0.3
Butylbenzylphthalate	ND	1200
4–Chloro-3-methylphenol	ND	NA
2–Chlorophenol	ND	310
Di-n-butyl phthalate	ND	6100
Di-n-octyl phthalate	ND	2400
3,3'-Dichlorobenzidine	ND	1
2,4-Dichlorophenol	ND	180

Results are in mg/kg (milligrams per kilogram) unless otherwise specified.

(*) NJDEP's "Residential Direct Contact Soil Remediation Standards"

ND - Not Detected (see laboratory report for detection limits)

NA - Not Applicable/Not Available

TABLE 3 - TEST RESULTS FOR SEMI-VOLATILE ORGANIC COMPOUNDS (continued)

SAMPLING DATE:	06-18-2013 (Client)	SAMPLE MATRIX: Stone Fines

PARAMETER	SAMPLE #13-105-32 RESULT	NJDEP SOIL REMEDIATION STANDARD(*)
2,4-Dimethylphenol	ND	1200
2,4-Dinitrophenol	ND	120
2-Methylphenol (o-Cresol)	ND	310
4-Methylphenol (p-Cresol)	ND	31
Pentachlorophenol	ND	3
Phenol	ND	18,000
2,4,5-Trichlorophenol	ND	6100
2,4,6-Trichlorophenol	ND	19
Benzoic Acid	ND	NA
Acenaphthene	ND	3400
Acenaphthylene	ND	NA
Anthracene	ND	17,000
Benzo[a]anthracene	ND	0.6
Benzo[a]pyrene	ND	0.2
Benzo[b]fluoranthene	ND	0.6
Benzo[k]fluoranthene	ND	6
Carbazole	ND	24
Chrysene	ND	62
Dibenz[a,h]anthracene	ND	0.2
Dibenzofuran	ND	NA
Fluoranthene	ND	2300
Fluorene	ND	2300
Indeno[1,2,3-cd]pyrene	ND	0.6
Naphthalene	ND	6
2-Methylnaphthalene	ND	230
Pyrene	ND	1700
Benzo[g,h,i]perylene	ND	380000
Phenanthrene	ND	NA
Total	ND	NA
Tentatively Identified Compounds (TICs)	ND	NA
Total	ND	NA

Results are in mg/kg (milligrams per kilogram) unless otherwise specified.

(*) NJDEP's "Residential Direct Contact Soil Remediation Standards"

ND - Not Detected (see laboratory report for detection limits)
NA - Not Applicable/Not Available

TABLE 4- TEST RESULTS FOR PESTICIDES AND PCBs

SAMPLING DATE:	06-18-2013 (Client)	SAMPLE MATRIX: Stone Fines

PARAMETER	SAMPLE #13-105-32 RESULT	NJDEP SOIL REMEDIATION STANDARDS(*)
PESTICIDES		
Aldrin	ND	0.04
4,4' – DDD	ND	3
4,4' – DDE	ND	2
4,4' – DDT	ND	2
Dieldrin	ND	0.04
Endosulfan I and Endosulfan II	ND	470
Endosulfan sulfate	ND	470
Endrin	ND	23
Heptachlor	ND	0.1
Heptachlor epoxide	ND	0.07
alpha-BHC	ND	0.1
beta-BHC	ND	0.4
gamma – BHC (Lindane)	ND	0.4
Methoxychlor	ND	390
Toxaphene	ND	0.6
Chlordane (Alpha and Gamma)	ND	0.2
PCBs		
Aroclor - 1016	ND	NA
Aroclor - 1221	ND	NA
Aroclor - 1232	ND	NA
Aroclor - 1242	ND	NA
Aroclor - 1248	ND	NA
Aroclor - 1254	ND	NA
Aroclor - 1260	ND	NA
Aroclor - 1262	ND	NA
Aroclor - 1268	ND	NA
Total PCBs	ND	0.20 (TOTAL PCBs)

Results are in mg/kg (milligrams per kilogram) unless otherwise specified.

(*) NJDEP's "Residential Direct Contact Soil Remediation Standards"

ND - Not Detected (see laboratory report for detection limits)
NA - Not Applicable/Not Available

S & S ENVIRONMENTAL SCIENCES, INC.

Environmental Engineering, Testing and Consultation

98 Sand Park Rad, Cedar Grove, NJ 07009
Tel (973) 857-7188 Fax (973) 239-8380

NJDEP Lab Certification No. 07073

SAMPLE CHAIN OF CUSTODY

CLIENT	Severson Environmental / TILCON	SSES PROJECT NO.	
ADDRESS	2749 Lock Port Road	TEL. NO.	
	Niagra Falls, N.Y. 14305	FAX NO.	
PROJECT	Study Area 7 Sediment Remedy	PROJECT LAB ID NO.	13-105

SAMPLE NUMBER	SAMPLING DATE	SAMPLING TIME	SAMPLE TYPE	NO. OF BOTTLES	ANALYSES REQUESTED
32 A	6/18/13	7:00 Am	Grab	1	Clean Fill
32 B	6/18/13	7:00 Am	Grab	1	Clean Fill

Comments: Tilcon NY, NJ Division
"Grits" from Mt. Hope Quarry

Field Measurements: pH= _____ Temp.= _____ Flow Rate= _____

Sample Preservation: Cooled at 4° C ✓ H_2SO_4 _____ NaOH _____

HNO_3 _____ HCl _____ Sodium Thiosulfate _____ Other _____

Sampled By: Richard Lorta

RELINQUISHED BY:	RECEIVED BY:	DATE AND TIME:
[signature]	[signature]	6-18-13 3:12 pm

INTEGRATED ANALYTICAL LABORATORIES, LLC.

SUMMARY REPORT

Client: S & S Environmental
Project: MT. HOPE - 32
Lab Case No.: E13-05736

Lab ID:		**05736-001**	
Client ID:		**13-105-32**	
Matrix:		**Soil**	
Sampled Date		**6/18/13**	
PARAMETER(Units)	Conc	Q	MDL
Volatiles (Units)		*(mg/Kg-ppm)*	
Methylene chloride	0.00279	B	0.00198
TOTAL VO's:	0.00279	B	
TOTAL TIC's:	ND		
TOTAL VO's & TIC's:	0.00279	B	
Semivolatiles - BNA (Units)		*(mg/Kg-ppm)*	
TOTAL BNA'S:	ND		
TOTAL TIC's:	ND		
TOTAL BNA'S & TIC's:	ND		
PCB's (Units)		*(mg/Kg-ppm)*	
Aroclor-1016	ND		0.00066
Aroclor-1221	ND		0.00066
Aroclor-1232	ND		0.00066
Aroclor-1242	ND		0.00066
Aroclor-1248	ND		0.00066
Aroclor-1254	ND		0.00066
Aroclor-1260	ND		0.00066
Aroclor-1262	ND		0.00066
Aroclor-1268	ND		0.00066
PCBs	ND		0.00066
Pesticides (Units)		*(mg/Kg-ppm)*	
alpha-BHC	ND		0.000165
beta-BHC	ND		0.000165
gamma-BHC (Lindane)	ND		0.000165
delta-BHC	ND		0.000165
Heptachlor	ND		0.000165
Aldrin	ND		0.000165
Heptachlor epoxide	ND		0.000165
Endosulfan I	ND		0.000165
4,4'-DDE	ND		0.000165
Dieldrin	ND		0.000165
Endrin	ND		0.000165
Endosulfan II	ND		0.000165
4,4'-DDD	ND		0.000165
Endrin aldehyde	ND		0.000165
Endosulfan sulfate	ND		0.000165
4,4'-DDT	ND		0.000165
Endrin ketone	ND		0.000165
Methoxychlor	ND		0.000165
alpha-Chlordane	ND		0.000165
gamma-Chlordane	ND		0.000165
Toxaphene	ND		0.00198
Endosulfan (I and II)	ND		0.000165
Chlordane (alpha and gamma)	ND		0.000165
NJ-EPH-C40 (Units)		*(mg/Kg-ppm)*	
C9-C40	21.6	J	9.07

ND = Analyzed for but Not Detected at the MDL
J = The concentration was detected at a value below the RL and above the MDL
B = The compound was detected in the blank and the sample

INTEGRATED ANALYTICAL LABORATORIES, LLC.

SUMMARY REPORT

Client: S & S Environmental
Project: MT. HOPE - 32
Lab Case No.: E13-05736

Lab ID:		**05736-001**	
Client ID:		**13-105-32**	
Matrix:		**Soil**	
Sampled Date		**6/18/13**	
PARAMETER(Units)	Conc	Q	MDL
Metals (Units)		*(mg/Kg-ppm)*	
Aluminum	2650		5.23
Antimony	ND		0.261
Arsenic	0.630		0.261
Barium	19.3		2.61
Beryllium	0.325	J	0.209
Cadmium	ND		0.131
Calcium	3950		26.1
Chromium	1.44	J	0.523
Cobalt	3.08		0.523
Copper	6.13		0.523
Iron	10200		13.1
Lead	ND		0.131
Magnesium	1710		13.1
Manganese	97.7		0.261
Mercury	ND		0.00561
Nickel	1.74		0.523
Potassium	787		13.1
Selenium	ND		1.05
Silver	ND		0.131
Sodium	141		26.1
Thallium	ND		0.131
Vanadium	4.21		0.523
Zinc	11.9		2.09
General Analytical (Units)			
Hexavalent Chromium(mg/Kg-ppm)	ND		0.278
Cyanide, Total(mg/Kg-ppm)	ND		0.509
pH/Corrosivity(SU)	8.10		NA

ND = Analyzed for but Not Detected at the MDL
J = The concentration was detected at a value below the RL and above the MDL

S S Environmental
Project Name: MT. HOPE - 32
IAL SDG No:E13-05736

Sample #:		NJDEP SOIL REMEDIATION STANDARDS			13-105-32			
Field ID:								
Lab ID:		Residential SRS	Non-Res SRS	Default IGW Screening Level	05736-001			
Date Sampled:					06/18/2013			
Depth(ft):								
	CAS	(mg/Kg)	(mg/Kg)	(mg/Kg)				
Volatiles (mg/Kg)					Conc	Q	RL	MDL
Dichlorodifluoromethane	75-71-8	490	230000	25	ND		0.002	0.00056
Chloromethane	74-87-3	4	12	NS	ND		0.002	0.00029
Vinyl chloride	75-01-4	0.7	2	0.005	ND		0.002	0.00039
Bromomethane	74-83-9	25	59	0.03	ND		0.001	0.00048
Chloroethane	75-00-3	220	1100	NS	ND		0.001	0.00037
Trichlorofluoromethane	75-69-4	23000	340000	22	ND		0.002	0.0003
1,1-Dichloroethene	75-35-4	11	150	0.005	ND		0.002	0.00041
Acetone	67-64-1	70000	NS	12	ND		0.005	0.00055
Carbon disulfide	75-15-0	7800	110000	4	ND		0.001	0.00031
Methylene chloride	75-09-2	34	97	0.007	0.00279	B	0.002	0.00198
trans-1,2-Dichloroethene	156-60-5	300	720	0.4	ND		0.002	0.00034
Methyl tert-butyl ether (MTBE)	1634-04-4	110	320	0.2	ND		0.002	0.00025
1,1-Dichloroethane	75-34-3	8	24	0.2	ND		0.001	0.0003
cis-1,2-Dichloroethene	156-59-2	230	560	0.2	ND		0.001	0.00028
2-Butanone (MEK)	78-93-3	3100	44000	0.6	ND		0.002	0.00029
Bromochloromethane	74-97-5	NS	NS	NS	ND		0.001	0.00025
Chloroform	67-66-3	0.6	2	0.2	ND		0.001	0.00027
1,1,1-Trichloroethane	71-55-6	290	4200	0.2	ND		0.001	0.00026
Carbon tetrachloride	56-23-5	0.6	2	0.005	ND		0.001	0.00025
1,2-Dichloroethane (EDC)	107-06-2	0.9	3	0.005	ND		0.001	0.00022
Benzene	71-43-2	2	5	0.005	ND		0.001	0.00027
Trichloroethene	79-01-6	7	20	0.007	ND		0.001	0.00034
1,2-Dichloropropane	78-87-5	2	5	0.005	ND		0.001	0.00026
1,4-Dioxane	123-91-1	NS	NS	NS	ND		0.200	0.011
Bromodichloromethane	75-27-4	1	3	0.005	ND		0.001	0.00021
cis-1,3-Dichloropropene	10061-01-5	NS	NS	NS	ND		0.001	0.00021
4-Methyl-2-pentanone (MIBK)	108-10-1	NS	NS	NS	ND		0.001	0.00021
Toluene	108-88-3	6300	91000	4	ND		0.001	0.00025
trans-1,3-Dichloropropene	10061-02-6	NS	NS	NS	ND		0.001	0.00022
1,1,2-Trichloroethane	79-00-5	2	6	0.01	ND		0.001	0.00021
Tetrachloroethene	127-18-4	2	5	0.005	ND		0.001	0.00025
2-Hexanone	591-78-6	NS	NS	NS	ND		0.001	0.00027
Dibromochloromethane	124-48-1	3	8	0.005	ND		0.001	0.00021
1,2-Dibromoethane (EDB)	106-93-4	0.008	0.04	0.005	ND		0.001	0.0002
Chlorobenzene	108-90-7	510	7400	0.4	ND		0.001	0.00028
Ethylbenzene	100-41-4	7800	110000	8	ND		0.001	0.00028
Total Xylenes	1330-20-7	12000	170000	12	ND		0.002	0.0008
Styrene	100-42-5	90	260	2	ND		0.001	0.00022
Bromoform	75-25-2	81	280	0.02	ND		0.001	0.00024

Standards are based upon published regulatory information.
Users are encouraged to consult appropriate regulatory sources for current values and updates.
IAL assumes no responsibility for the accuracy of these values.

EDD created on 7/2/13

Isopropylbenzene	98-82-8	NS	NS	NS	ND		0.001	0.00029
1,1,2,2-Tetrachloroethane	79-34-5	1	3	0.005	ND		0.001	0.00023
1,3-Dichlorobenzene	541-73-1	5300	59000	12	ND		0.001	0.00024
1,4-Dichlorobenzene	106-46-7	5	13	1	ND		0.001	0.0002
1,2-Dichlorobenzene	95-50-1	5300	59000	11	ND		0.001	0.00028
1,2-Dibromo-3-chloropropane	96-12-8	0.08	0.2	0.005	ND		0.001	0.0002
1,2,4-Trichlorobenzene	120-82-1	73	820	0.4	ND		0.001	0.00026
1,2,3-Trichlorobenzene	87-61-6	NS	NS	NS	ND		0.001	0.00032
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	NS	NS	NS	ND		0.002	0.00037
Methyl acetate	79-20-9	78000	NS	14	ND		0.002	0.00022
Cyclohexane	110-82-7	NS	NS	NS	ND		0.002	0.00039
Methylcyclohexane	108-87-2	NS	NS	NS	ND		0.001	0.00036
1,3-Dichloropropene (cis- and trans-)	542-75-6	2	7	0.005	ND		0.001	0.00022
TOTAL VO's:		NS	NS	NS	0.00279	B		NA
TOTAL TIC's:		NS	NS	NS	ND			NA
TOTAL VO's & TIC's:		NS	NS	NS	0.00279	B		NA

Semivolatiles - BNA (mg/Kg)					Conc	Q	RL	MDL
Benzaldehyde	100-52-7	6100	68000	NS	ND		0.032	0.024
Phenol	108-95-2	18000	210000	5	ND		0.032	0.014
Bis(2-chloroethyl) ether	111-44-4	0.4	2	0.2	ND		0.032	0.00965
2-Chlorophenol	95-57-8	310	2200	0.5	ND		0.032	0.00708
2-Methylphenol	95-48-7	310	3400	NS	ND		0.032	0.00965
Bis(2-chloroisopropyl) ether	108-60-1	23	67	3	ND		0.032	0.00805
4-Methylphenol **	106-44-5	31	340	NS	ND		0.032	0.00901
N-Nitrosodi-n-propylamine	621-64-7	0.2	0.3	0.2	ND		0.032	0.00933
Acetophenone	98-86-2	2	5	2	ND		0.032	0.00901
Hexachloroethane	67-72-1	35	140	0.2	ND		0.032	0.00772
Nitrobenzene	98-95-3	31	340	0.2	ND		0.032	0.00933
Isophorone	78-59-1	510	2000	0.2	ND		0.032	0.00676
2-Nitrophenol	88-75-5	NS	NS	NS	ND		0.032	0.011
2,4-Dimethylphenol	105-67-9	1200	14000	0.7	ND		0.032	0.00998
Bis(2-chloroethoxy) methane	111-91-1	NS	NS	NS	ND		0.032	0.014
2,4-Dichlorophenol	120-83-2	180	2100	0.2	ND		0.032	0.015
Naphthalene	91-20-3	6	17	16	ND		0.032	0.00698
4-Chloroaniline	106-47-8	NS	NS	NS	ND		0.032	0.00805
Hexachlorobutadiene	87-68-3	6	25	0.6	ND		0.032	0.00837
Caprolactam	105-60-2	31000	340000	8	ND		0.032	0.011
4-Chloro-3-methylphenol	59-50-7	NS	NS	NS	ND		0.032	0.011
2-Methylnaphthalene	91-57-6	230	2400	5	ND		0.032	0.00734
Hexachlorocyclopentadiene	77-47-4	45	110	210	ND		0.032	0.011
2,4,6-Trichlorophenol	88-06-2	19	74	0.2	ND		0.032	0.00901
2,4,5-Trichlorophenol	95-95-4	6100	68000	44	ND		0.032	0.012
1,1'-Biphenyl	92-52-4	3100	34000	90	ND		0.032	0.012
2-Chloronaphthalene	91-58-7	NS	NS	NS	ND		0.032	0.00772
2-Nitroaniline	88-74-4	39	23000	NS	ND		0.032	0.00805
Dimethyl phthalate	131-11-3	NS	NS	NS	ND		0.032	0.0074
2,6-Dinitrotoluene	606-20-2	0.7	3	NS	ND		0.032	0.00869
Acenaphthylene	208-96-8	NS	300000	NS	ND		0.032	0.017
3-Nitroaniline	99-09-2	NS	NS	NS	ND		0.032	0.00644
Acenaphthene	83-32-9	3400	37000	74	ND		0.032	0.00827
2,4-Dinitrophenol	51-28-5	120	1400	0.3	ND		0.032	0.028
4-Nitrophenol	100-02-7	NS	NS	NS	ND		0.032	0.00965
2,4-Dinitrotoluene	121-14-2	0.7	3	NS	ND		0.032	0.00998
Dibenzofuran	132-64-9	NS	NS	NS	ND		0.032	0.00965
Diethyl phthalate	84-66-2	49000	550000	57	ND		0.032	0.00901
Fluorene	86-73-7	2300	24000	110	ND		0.032	0.00837
4-Chlorophenyl phenyl ether	7005-72-3	NS	NS	NS	ND		0.032	0.00772
4-Nitroaniline	100-01-6	NS	NS	NS	ND		0.032	0.012
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	NS	NS	ND		0.032	0.011
2,3,4,6-Tetrachlorophenol	58-90-2	NS	NS	NS	ND		0.032	0.011
4,6-Dinitro-2-methylphenol	534-52-1	6	68	0.3	ND		0.032	0.020
N-Nitrosodiphenylamine	86-30-6	99	390	0.2	ND		0.032	0.00579

4-Bromophenyl phenyl ether	101-55-3	NS	NS	NS	ND		0.032	0.0074
Hexachlorobenzene	118-74-1	0.3	1	0.2	ND		0.032	0.00998
Atrazine	1912-24-9	210	2400	0.2	ND		0.032	0.00837
Pentachlorophenol	87-86-5	3	10	0.3	ND		0.032	0.011
Phenanthrene	85-01-8	NS	300000	NS	ND		0.032	0.00743
Anthracene	120-12-7	17000	30000	1500	ND		0.032	0.012
Carbazole	86-74-8	24	96	NS	ND		0.032	0.014
Di-n-butyl phthalate	84-74-2	6100	68000	620	ND		0.032	0.012
Fluoranthene	206-44-0	2300	24000	840	ND		0.032	0.00898
Pyrene	129-00-0	1700	18000	550	ND		0.032	0.00869
Butyl benzyl phthalate	85-68-7	1200	14000	150	ND		0.032	0.00708
3,3'-Dichlorobenzidine	91-94-1	1	4	0.2	ND		0.032	0.012
Benzo[a]anthracene	56-55-3	0.6	2	0.5	ND		0.032	0.00933
Chrysene	218-01-9	62	230	52	ND		0.032	0.00943
Bis(2-ethylhexyl) phthalate	117-81-7	35	140	790	ND		0.032	0.00965
Di-n-octyl phthalate	117-84-0	2400	27000	3300	ND		0.032	0.017
Benzo[b]fluoranthene	205-99-2	0.6	2	2	ND		0.032	0.018
Benzo[k]fluoranthene	207-08-9	6	23	16	ND		0.032	0.025
Benzo[a]pyrene	50-32-8	0.2	0.2	0.2	ND		0.032	0.014
Indeno[1,2,3-cd]pyrene	193-39-5	0.6	2	5	ND		0.032	0.00998
Dibenz[a,h]anthracene	53-70-3	0.2	0.2	0.5	ND		0.032	0.010
Benzo[g,h,i]perylene	191-24-2	380000	30000	NS	ND		0.032	0.019
Dinitrotoluene (2,4- and 2,6-)	25321-14-6	0.7	3	0.2	ND		0.032	0.00998
TOTAL BNA'S:		NS	NS	NS	ND			NA
TOTAL TIC's:		NS	NS	NS	ND			NA
TOTAL BNA'S & TIC's:		NS	NS	NS	ND			NA

S S Environmental
Project Name: MT. HOPE - 32
IAL SDG No:E13-05736

PCB's (mg/Kg)					Conc	Q	RL	MDL
Aroclor-1016	12674-11-2	NS	NS	NS	ND		0.00165	0.00066
Aroclor-1221	11104-28-2	NS	NS	NS	ND		0.00165	0.00066
Aroclor-1232	11141-16-5	NS	NS	NS	ND		0.00165	0.00066
Aroclor-1242	53469-21-9	NS	NS	NS	ND		0.00165	0.00066
Aroclor-1248	12672-29-6	NS	NS	NS	ND		0.00165	0.00066
Aroclor-1254	11097-69-1	NS	NS	NS	ND		0.00165	0.00066
Aroclor-1260	11096-82-5	NS	NS	NS	ND		0.00165	0.00066
Aroclor-1262	37324-23-5	NS	NS	NS	ND		0.00165	0.00066
Aroclor-1268	11100-14-4	NS	NS	NS	ND		0.00165	0.00066
PCBs	1336-36-3	0.2	1	0.2	ND		0.00165	0.00066

Standards are based upon published regulatory information.
Users are encouraged to consult appropriate regulatory sources for current values and updates.
IAL assumes no responsibility for the accuracy of these values.

Pesticides (mg/Kg)					Conc	Q	RL	MDL
alpha-BHC	319-84-6	0.1	0.5	0.002	ND		0.00033	0.000165
beta-BHC	319-85-7	0.4	2	0.002	ND		0.00033	0.000165
gamma-BHC (Lindane)	58-89-9	0.4	2	0.002	ND		0.00033	0.000165
delta-BHC	319-86-8	NS	NS	NS	ND		0.00033	0.000165
Heptachlor	76-44-8	0.1	0.7	0.3	ND		0.00033	0.000165
Aldrin	309-00-2	0.04	0.2	0.1	ND		0.00033	0.000165
Heptachlor epoxide	1024-57-3	0.07	0.3	0.009	ND		0.00033	0.000165
Endosulfan I	959-98-8	NS	NS	NS	ND		0.00033	0.000165
4,4'-DDE	72-55-9	2	9	12	ND		0.00033	0.000165
Dieldrin	60-57-1	0.04	0.2	0.003	ND		0.00033	0.000165
Endrin	72-20-8	23	340	0.6	ND		0.00033	0.000165
Endosulfan II	33213-65-9	NS	NS	NS	ND		0.00033	0.000165
4,4'-DDD	72-54-8	3	13	3	ND		0.00033	0.000165
Endrin aldehyde	7421-93-4	NS	NS	NS	ND		0.00033	0.000165
Endosulfan sulfate	1031-07-8	470	6800	1	ND		0.00033	0.000165
4,4'-DDT	50-29-3	2	8	7	ND		0.00033	0.000165
Endrin ketone	53494-70-5	NS	NS	NS	ND		0.00033	0.000165
Methoxychlor	72-43-5	390	5700	100	ND		0.00033	0.000165
alpha-Chlordane	5103-71-9	NS	NS	NS	ND		0.00033	0.000165
gamma-Chlordane	5103-74-2	NS	NS	NS	ND		0.00033	0.000165
Toxaphene	8001-35-2	0.6	3	0.2	ND		0.00413	0.00198
Endosulfan (I and II)	115-29-7	470	6800	2	ND		0.00033	0.000165
Chlordane (alpha and gamma)	57-74-9	0.2	1	0.03	ND		0.00033	0.000165

S S Environmental
Project Name: MT. HOPE - 32
IAL SDG No:E13-05736

NJ-EPH-C40 (mg/Kg)					Conc	Q	RL	MDL
C9-C40	IALC9C40	NS	NS	NS	21.6	J	36.3	9.07

Standards are based upon published regulatory information.
Users are encouraged to consult appropriate regulatory sources for current values and updates.
IAL assumes no responsibility for the accuracy of these values.

EDD created on 7/2/13

S S Environmental
Project Name: MT. HOPE - 32
IAL SDG No:E13-05736

Metals (mg/Kg)					Conc	Q	RL	MDL
Aluminum	7429-90-5	78000	NS	3900	2650		10.5	5.23
Antimony	7440-36-0	31	450	6	ND		1.05	0.261
Arsenic	7440-38-2	19	19	19	0.630		0.523	0.261
Barium	7440-39-3	16000	59000	1300	19.3		10.5	2.61
Beryllium	7440-41-7	16	140	0.5	0.325	J	0.366	0.209
Cadmium	7440-43-9	78	78	1	ND		0.523	0.131
Calcium	7440-70-2	NS	NS	NS	3950		52.3	26.1
Chromium	7440-47-3	NS	NS	NS	1.44	J	2.09	0.523
Cobalt	7440-48-4	1600	590	59	3.08		2.09	0.523
Copper	7440-50-8	3100	45000	7300	6.13		2.09	0.523
Iron	7439-89-6	NS	NS	NS	10200		26.1	13.1
Lead	7439-92-1	400	800	59	ND		0.523	0.131
Magnesium	7439-95-4	NS	NS	NS	1710		52.3	13.1
Manganese	7439-96-5	11000	5900	42	97.7		1.05	0.261
Mercury	7439-97-6	23	65	0.1	ND		0.012	0.00561
Nickel	7440-02-0	1600	23000	31	1.74		1.05	0.523
Potassium	7440-09-7'	NS	NS	NS	787		52.3	13.1
Selenium	7782-49-2	390	5700	7	ND		2.09	1.05
Silver	7440-22-4	390	5700	1	ND		0.523	0.131
Sodium	7440-23-5	NS	NS	NS	141		105	26.1
Thallium	7440-28-0	5	79	3	ND		0.523	0.131
Vanadium	7440-62-2	78	1100	NS	4.21		2.09	0.523
Zinc	7440-66-6	23000	110000	600	11.9		2.09	2.09

Standards are based upon published regulatory information.
Users are encouraged to consult appropriate regulatory sources for current values and updates.
IAL assumes no responsibility for the accuracy of these values.

General Analytical					Conc	Q	RL	MDL
Hexavalent Chromium-mg/Kg	18540-29-9	**240**	**20**	**NS**	ND		1.02	0.278
Cyanide, Total-mg/Kg	57-12-5	**1600**	**23000**	**13**	ND		1.02	0.509
pH/Corrosivity-SU	SRP 6	**NS**	**NS**	**NS**	8.10		NA	NA

NJDEP Soil Remediation Standards: Remediation Standards N.J.A.C. 7:26E, May 2012

BOLD Conc	Indicates a concentration that exceeds applicable criteria.
BOLD RL	Indicates RL that exceeds applicable criteria.
BOLD MDL	Indicates MDL that exceeds applicable criteria.

NS = No Standard Available
ND = Analyzed for but Not Detected at the MDL
J = The concentration was detected at a value below the RL and above the MDL
All qualifiers on individual Volatiles & Semivolatiles are carried down through summation.
B = The compound was detected in the blank and the sample

Integrated Analytical Laboratories LLC

PROJECT INFORMATION

E13-05736: MT. HOPE - 32

To: Dr. Yilmaz Arhan
S & S Environmental
Fax: 1(973) 239-8380
EMail: angelal@sorlabs.com;Alig@sorlabs.con

Report To

S & S Environmental
98 Sand Park Road
Cedar Grove, NJ 07009
Attn: Dr. Yilmaz Arhan

Bill To

S & S Environmental
98 Sand Park Road
Cedar Grove, NJ 07009
Attn: Dr. Yilmaz Arhan

Report Format	P.O. #	Received At Lab	TPHC Due	Verbal Due	Hardcopy Due
Reduced	13-105-32	Jun 19, 2013 @ 13:00	NA	Jul 03, 2013	Jul 11, 2013 *

* Any ***Conditional or Hold*** status will delay final hardcopy report sent date.

Diskette Req. Not Required

**** QC Requirement (must meet):** NJ IGW

Lab ID	Client Sample ID	Depth	Sampling Time	Matrix	Unit	Field pH/Temp
05736-001	13-105-32	NA	06/18/13@07:00	Soil	mg/Kg (ppm)	

Sample #	Test	Status	QA Method	TAT	Holding Time Expires
001	TCL VO + 15	Analyze	8260B	STD/2 WKS	7/2/2013
	TCL BNA + 15	Analyze	8270C	STD/2 WKS	7/2/2013
	TCL PCB	Analyze	8082	STD/2 WKS	7/2/2013
	NJ-EPH-C40	Analyze	Method 10.08 Rev 3	STD/2 WKS	7/2/2013
	NJ-EPH-Fractionated	**Hold**	Method 10.08 Rev 3	STD/2 WKS	7/2/2013
	TCL Pesticides	Analyze	8081A	STD/2 WKS	7/2/2013
	TAL Metals	Analyze	6020/7471A	STD/2 WKS	7/16/2013
	pH/Corrosivity	Analyze	9045C	STD/2 WKS	7/16/2013
	Cr-VI (Hexavalent Chromium)	Analyze	3060A/7196A	STD/2 WKS	7/18/2013
	Cyanide, Total	Analyze	9012B	STD/2 WKS	7/2/2013

273 Franklin Road
Randolph, NJ 07869
Phone: 973 361 4252
Fax: 973 989 5288

IAL is a NELAP New Jersey Accredited Lab (14751) and maintains certification in Connecticut (PH-0699), New York (11402), Pennsylvania (68-00773) and West Virginia TO-15 and Method 18

IAL Integrated Analytical Laboratories LLC
Integrated Analytical Labs
273 Franklin Road
Randolph, NJ 07869

Contact Us: 973-361-4252
Fax: 973-989-5288
Web: www.ialonline.com

CUSTOMER INFO	
Company:	S+S
Address:	
Telephone #:	
Fax #:	
Project Manager:	Dr G. Arhan
EMAIL Address:	
Sampled by:	CR
COMPLETED BY IAL:	
Field Sampling	Equipment Rental
Project Name:	Mt. Hope -32
Project Location (State):	NJ
Bottle Order #:	

REPORTING INFO	
REPORT TO:	
Address:	Same
Attn:	
FAX #	
INVOICE TO:	
Address:	Same
Attn:	
PO #	13-105-32
Quote #	

Please print legibly and fill out completely. Samples cannot be processed and the turnaround time will not start until any ambiguities have been resolved. Turnaround Time starts the following day if samples rec'd at lab > 5PM

*Lab notification is required for RUSH TAT prior to sample arrival. RUSH TAT IS NOT GUARANTEED WITHOUT LAB APPROVAL. **RUSH SURCHARGES WILL APPLY IF ABLE TO ACCOMMODATE

PHC - MUST CHOOSE

NJ EPH DRO (5 day TAT) NJ EPH Fractionated (5 day TAT)
NJ EPH - C40 (5 day TAT)
DRO-8015 (3-5 day TAT) QAM025

Verbal/Fax: Std 2 wk unless otherwise specified
24 hr** 48 hr** 72 hr** 96 hr** 1 wk**
Other** (specify): 2 wk 7/3/13
Hard Copy: Std 3 week * Other - call for price

Rush TAT Charge **	Report Format	EDDs
24 hr - 100%....	NJ Results Only / NY Cat A	NJ SRP format
48 hr - 75%....	NJ Reduced	NYSDEC
72 hr - 50%....	NJ Regulatory / NY Cat B	lab approved custom EDD
96 hr - 35%....	15% Surcharge applies	
5 day - 25%....		
6-9 day 10%	Other (describe)	NO EDD/CD REQ'D

Cooler Temp 4 °C

Sample Matrix
DW - Drinking Water AQ - Aqueous WW - Waste Water OI - Oil
LIQ - Liquid (Specify) S - Soil SL - Sludge SOL - Solid W - Wipe

SAMPLE INFORMATION

Client ID	Depth (ft only)	Sampling Date	Sampling Time	Matrix	# containers	IAL #	TAL/TCL +30	pH, Cr+6	EPH	HCL	HNO3	MeOH	NaOH	H2SO4	Other	None	Encore
13-105-32		6/18/13	7am	S	5	1	✓	✓	✓			1			2	2	

Vial# 13855 - 5g
50307 - 5g
50312 - 5g

ANALYTICAL PARAMETERS

 # BOTTLES & PRESERVATIVES

Known Hazard: Yes or No
Describe:
Conc. Expected: Low Med High

MDL Req: NJ GWQS / NJ IGW / NJ SRS / NY TOGS / NY CP51 / NY Part 375 Restricted / NY Part 375 Unrestricted / Other (specify):

Carrier (check one): IAL Courier Client Courier FedEx/UPS

	Signature/Company	Date	Time		Signature/Company	Date	Time
Relinquished by:	[signature]	6/18/13	9:45	Received by:	[signature] / IAL	6/19/13	9:45
Relinquished by:	[signature] / IAL	6/19/13	13:00	Received by:	[signature]	6/19/13	1300
Relinquished by:				Received by:			
Relinquished by:				Received by:			
Relinquished by:				Received by:			

Comments:

Lab Case # 05736

PAGE: of

LAB COPIES - WHITE & YELLOW; CLIENT COPY - PINK

I:\COCs\2013 COC

01/2013 rev

INTEGRATED ANALYTICAL LABORATORIES, LLC

SAMPLE RECEIPT VERIFICATION

CASE NO: **E 13** **05736** CLIENT: SHS

COOLER TEMPERATURE: 2° - 6°C: ✓ (See Chain of Custody)

COC: (COMPLETE) / INCOMPLETE

Comments

KEY

✓ = **YES/NA**
✗ = **NO**

VOA received: (check one) ☐ Encore ☐ Terra Core ☐ IGW - Methanol ☐ No Preservative

✓ Bottles Intact
✓ no-Missing Bottles
✓ no-Extra Bottles

✓ Sufficient Sample Volume
✓ no-headspace/bubbles in VOs
✓ Labels intact/correct
✓ pH Check (exclude VOs)[1]
✓ Correct bottles/preservative
✓ Sufficient Holding/Prep Time[1]
☐ Multiphasic Sample
☐ Sample to be Subcontracted
✓ **Chain of Custody is Clear**

[1] All samples with "Analyze Immediately" holding times will be analyzed by this laboratory past the holding time. This includes but is not limited to the following tests: pH, Temperature, Free Residual Chlorine, Total Residual Chlorine, Dissolved Oxygen, Sulfite.

ADDITIONAL COMMENTS:

SAMPLE(S) VERIFIED BY: INITIAL [signature] DATE 6/19/13

CORRECTIVE ACTION REQUIRED: **YES** ☐ (SEE BELOW) **NO** ☐

If COC is **NOT** clear, ***STOP*** until you get client to authorize/clarify work.

CLIENT NOTIFIED: YES ☐ Date/ Time: _____ NO ☐
PROJECT CONTACT:
SUBCONTRACTED LAB:
DATE SHIPPED:

ADDITIONAL COMMENTS:

VERIFIED/TAKEN BY: INITIAL [signature] DATE 6.20.13

REV 03/2013

NOTE: THIS IS A COURTESY COPY OF THIS RULE. ALL OF THE DEPARTMENT'S RULES ARE COMPILED IN TITLE 7 OF THE NEW JERSEY ADMINISTRATIVE CODE.

APPENDIX 1 - SOIL REMEDIATION STANDARDS TABLES

Table 1A - Residential Direct Contact Health Based Criteria and Soil Remediation Standards (mg/kg)

Contaminant	CAS No.	Ingestion-Dermal Health Based Criterion	Inhalation Health Based Criterion	Soil PQL	Residential Direct Contact Soil Remediation Standard
Acenaphthene	83-32-9	3,400	NA	0.2	3,400
Acenaphthylene	208-96-8	NA	NA	0.2	NA
Acetone (2-Propanone)	67-64-1	70,000	NA	0.01	70,000
Acetophenone	98-86-2	6,100	2	0.2	2
Acrolein	107-02-8	39	0.5	0.5	0.5
Acrylonitrile	107-13-1	1	0.9	0.5	0.9
Aldrin	309-00-2	0.04	5	0.002	0.04
Aluminum	7429-90-5	78,000	NA	20	78,000
Anthracene	120-12-7	17,000	380,000	0.2	17,000
Antimony	7440-36-0	31	360,000	6	31
Arsenic	7440-38-2	0.4	980	1	19*
Atrazine	1912-24-9	210	NA	0.2	210
Barium	7440-39-3	16,000	910,000	20	16,000
Benzaldehyde	100-52-7	6,100	NA	0.2	6100
Benzene	71-43-2	3	2	0.005	2
Benzidine	92-87-5	0.002	0.004	0.7	0.7
Benzo(a)anthracene (1,2-Benzanthracene)	56-55-3	0.6	38,000	0.2	0.6
Benzo(a)pyrene	50-32-8	0.06	3,800	0.2	0.2
Benzo(b)fluoranthene (3,4-Benzofluoranthene)	205-99-2	0.6	38,000	0.2	0.6
Benzo(ghi)perylene	191-24-2	NA	380,000	0.2	380,000
Benzo(k)fluoranthene	207-08-9	6	38,000	0.2	6
Beryllium	7440-41-7	16	1,800	0.5	16
1,1'-Biphenyl	92-52-4	3,100	NA	0.2	3,100
Bis(2-chloroethyl)ether	111-44-4	0.4	0.6	0.2	0.4
Bis(2-chloroisopropyl)ether	108-60-1	2,400	23	0.2	23
Bis(2-ethylhexyl) phthalate	117-81-7	35	NA	0.2	35
Bromodichloromethane (Dichlorobromomethane)	75-27-4	10	1	0.005	1
Bromoform	75-25-2	81	98	0.005	81
Bromomethane (Methyl bromide)	74-83-9	110	25	0.005	25
bromide)					
2-Butanone (Methyl ethyl ketone) (MEK)	78-93-3	3,100	NA	0.01	3,100
Butyl benzyl phthalate	85-68-7	1,200	NA	0.2	1,200
Cadmium	7440-43-9	78	1,000	0.5	78
Caprolactam	105-60-2	31,000	NA	0.2	31,000
Carbazole	86-74-8	24	740,000	0.2	24
Carbon disulfide	75-15-0	7,800	NA	0.5	7,800
Carbon tetrachloride	56-23-5	7	0.6	0.005	0.6

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Contaminant	CAS No.	Ingestion-Dermal Health Based Criterion	Inhalation Health Based Criterion	Soil PQL	Residential Direct Contact Soil Remediation Standard
Chlordane (alpha and gamma)	57-74-9	0.2	42,000	0.002	0.2
Chlorobenzene	108-90-7	510	NA	0.005	510
Chloroethane (Ethyl chloride)	75-00-3	220	NA	0.005	220
Chloroform	67-66-3	780	0.6	0.005	0.6
Chloromethane (Methyl chloride)	74-87-3	NA	4	0.005	4
2-Chlorophenol (o-Chlorophenol)	95-57-8	310	910	0.2	310
Chrysene	218-01-9	62	380,000	0.2	62
Cobalt	7440-48-4	1,600	9,100	5	1,600
Copper	7440-50-8	3,100	NA	3	3,100
Cyanide	57-12-5	1,600	NA	3	1,600
4,4'-DDD	72-54-8	3	61,000	0.003	3
4,4'-DDE	72-55-9	2	670	0.003	2
4,4'-DDT	50-29-3	2	44,000	0.003	2
Dibenz(a,h)anthracene	53-70-3	0.06	3,500	0.2	0.2
Dibromochloromethane (Chlorodibromomethane)	124-48-1	8	3	0.005	3
1,2-Dibromo-3-chloropropane	96-12-8	0.3	0.08	0.005	0.08
1,2-Dibromoethane	106-93-4	0.008	0.1	0.005	0.008
1,2-Dichlorobenzene (o-Dichlorobenzene)	95-50-1	5,300	NA	0.005	5,300
1,3-Dichlorobenzene (m-Dichlorobenzene)	541-73-1	5,300	NA	0.005	5,300
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	610	5	0.005	5
3,3'-Dichlorobenzidine	91-94-1	1	3	0.2	1
Dichlorodifluoromethane	75-71-8	16,000	490	0.005	490
1,1-Dichloroethane	75-34-3	510	8	0.005	8
1,2-Dichloroethane	107-06-2	5	0.9	0.005	0.9
1,1-Dichloroethene	75-35-4	11	61	0.005	11
1,2-Dichloroethene (cis) (c-1,2-Dichloroethylene)	156-59-2	780	230	0.005	230
1,2-Dichloroethene (trans) (t-1,2-Dichloroethylene)	156-60-5	1,300	300	0.005	300
2,4-Dichlorophenol	120-83-2	180	NA	0.2	180
1,2-Dichloropropane	78-87-5	9	2	0.005	2
1,3-Dichloropropene (cis and trans)	542-75-6	6	2	0.005	2
Dieldrin	60-57-1	0.04	1	0.003	0.04
Diethyl phthalate	84-66-2	49,000	NA	0.2	49,000
2,4-Dimethyl phenol	105-67-9	1,200	NA	0.2	1,200
Di-n-butyl phthalate	84-74-2	6,100	NA	0.2	6,100
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	534-52-1	6	730,000	0.3	6
2,4-Dinitrophenol	51-28-5	120	NA	0.3	120
2,4-Dinitrotoluene	121-14-2	0.7	6	0.2	0.7
2,6-Dinitrotoluene	606-20-2	0.7	2	0.2	0.7
2,4-Dinitrotoluene/2,6-Dinitrotoluene (mixture)	25321-14-6	0.7	NA	0.2	0.7
Di-n-octyl phthalate	117-84-0	2,400	NA	0.2	2,400
1,2-Diphenylhydrazine	122-66-7	0.6	5	0.7	0.7

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Contaminant	CAS No.	Ingestion-Dermal Health Based Criterion	Inhalation Health Based Criterion	Soil PQL	Residential Direct Contact Soil Remediation Standard
Endosulfan I and Endosulfan II (alpha and beta)	115-29-7	470	NA	0.003	470
Endosulfan sulfate	1031-07-8	470	NA	0.003	470
Endrin	72-20-8	23	NA	0.003	23
Ethyl benzene	100-41-4	7,800	NA	0.005	7,800
Fluoranthene	206-44-0	2,300	NA	0.2	2,300
Fluorene	86-73-7	2,300	NA	0.2	2,300
alpha-HCH (alpha-BHC)	319-84-6	0.1	0.7	0.002	0.1
beta-HCH (beta-BHC)	319-85-7	0.4	8,000	0.002	0.4
Heptachlor	76-44-8	0.1	6	0.002	0.1
Heptachlor epoxide	1024-57-3	0.07	5	0.002	0.07
Hexachlorobenzene	118-74-1	0.3	1	0.2	0.3
Hexachloro-1,3-butadiene	87-68-3	6	12	0.2	6
Hexachlorocyclopentadiene	77-47-4	370	45	0.2	45
Hexachloroethane	67-72-1	35	83	0.2	35
Indeno(1,2,3-cd)pyrene	193-39-5	0.6	38,000	0.2	0.6
Isophorone	78-59-1	510	NA	0.2	510
Lead	7439-92-1	400	44,000	1	400
Lindane (gamma-HCH) (gamma-BHC)	58-89-9	0.4	3	0.002	0.4
Manganese	7439-96-5	11,000	91,000	2	11,000
Mercury	7439-97-6	23	27	0.1	23
Methoxychlor	72-43-5	390	NA	0.02	390
Methyl acetate	79-20-9	78,000	NA	0.005	78,000
Methylene chloride (Dichloromethane)	75-09-2	46	34	0.005	34
2-Methylnaphthalene	91-57-6	230	NA	0.17	230
2-Methylphenol (o-Creosol)	95-48-7	310	NA	0.2	310
4-Methylphenol (p-Creosol)	106-44-5	31	NA	0.2	31
Methyl tert-butyl ether (MTBE)	1634-04-4	780	110	0.005	110
Naphthalene	91-20-3	2,400	6	0.2	6
Nickel (Soluble salts)	7440-02-0	1,600	360,000	4	1,600
2-Nitroaniline	88-74-4	NA	39	0.3	39
Nitrobenzene	98-95-3	31	160	0.2	31
N-Nitrosodimethylamine	62-75-9	0.01	0.02	0.7	0.7
N-Nitrosodi-n-propylamine	621-64-7	0.07	0.2	0.2	0.2
N-Nitrosodiphenylamine	86-30-6	99	NA	0.2	99
Pentachlorophenol	87-86-5	3	590	0.3	3
Phenanthrene	85-01-8	NA	NA	0.2	NA
Phenol	108-95-2	18,000	NA	0.2	18,000
Polychlorinated biphenyls (PCBs)	1336-36-3	0.2	20	0.03	0.2
Pyrene	129-00-0	1,700	NA	0.2	1,700
Selenium	7782-49-2	390	NA	4	390
Silver	7440-22-4	390	NA	1	390

NOTE: THIS IS A COURTESY COPY OF THIS RULE. ALL OF THE DEPARTMENT'S RULES ARE COMPILED IN TITLE 7 OF THE NEW JERSEY ADMINISTRATIVE CODE.

Contaminant	CAS No.	Ingestion-Dermal Health Based Criterion	Inhalation Health Based Criterion	Soil PQL	Residential Direct Contact Soil Remediation Standard
Styrene	100-42-5	16,000	90	0.005	90
Tertiary butyl alcohol (TBA)	75-65-0	1,400	4,800	0.1	1,400
1,1,2,2-Tetrachloroethane	79-34-5	10	1	0.005	1
Tetrachloroethene (PCE) (Tetrachloroethylene)	127-18-4	8	2	0.005	2
Thallium	7440-28-0	5	360,000	3	5
Toluene	108-88-3	6,300	NA	0.005	6,300
Toxaphene	8001-35-2	0.6	70	0.2	0.6
1,2,4-Trichlorobenzene	120-82-1	73	NA	0.005	73
1,1,1-Trichloroethane	71-55-6	290	NA	0.005	290
1,1,2-Trichloroethane	79-00-5	31	2	0.005	2
Trichloroethene (TCE) (Trichloroethylene)	79-01-6	21	7	0.005	7
Trichlorofluoromethane	75-69-4	23,000	NA	0.005	23,000
2,4,5-Trichlorophenol	95-95-4	6,100	NA	0.2	6,100
2,4,6-Trichlorophenol	88-06-2	19	340	0.2	19
Vanadium	7440-62-2	78	NA	5	78
Vinyl chloride	75-01-4	2	0.7	0.005	0.7
Xylenes	1330-20-7	12,000	NA	0.005	12,000
Zinc	7440-66-6	23,000	NA	6	23,000

NA = Standard not available

* The direct contact standard for arsenic is based on natural background

CHROMIUM SOIL CLEANUP CRITERIA

September 2008 Revised April 2010[1]

The Department did not develop soil remediation standards for trivalent or hexavalent chromium as part of its Remediation Standards rules at N.J.A.C. 7:26D. The Department was awaiting the release of the final report from the National Toxicology Program (NTP) study evaluating hexavalent chromium as an oral carcinogen prior to proposing soil remediation standards. The NTP report was released in August 2008. The Department is reviewing the report and will make a determination regarding the adoption of remediation standards for chromium. Until such time, the Department will continue to use the following soil cleanup criteria for trivalent and hexavalent chromium as guidance.

Soil Cleanup Criteria for Chromium

Residential (mg/kg)						
Contaminant	**CAS No.**	**Ingestion-Dermal**	**Inhalation**	**Allergic Contact Dermatitis (ACD)**	**Soil PQL**	**Residential Criterion**
Trivalent Chromium	16065-83-1	120,000	NA	NA	2	120,000
Hexavalent Chromium	18540-29-9	240	270	Site-specific determination	2	240 or ACD value whichever is lower

Non-Residential (mg/kg)						
Contaminant	**CAS No.**	**Ingestion-Dermal**	**Inhalation**	**Allergic Contact Dermatitis**	**Soil PQL**	**Non-Residential Criterion**
Trivalent Chromium	16065-83-1	NA	NA	NA	2	Not Regulated
Hexavalent Chromium	18540-29-9	6,100	20	Site-specific determination	2	20

NA = Standard not available

[1] This revision corrects the CAS numbers that were mistakenly used for trivalent and hexavalent chromium in the September 2008 version. The CAS numbers were inadvertently switched.

Impact to ground water soil remediation standards must be developed on a site-specific basis for chromium. For Class II ground water, the ground water quality standard is 70 ug/l measured as total chromium but assuming that it is all in the form of hexavalent chromium.

In addition to the cleanup criteria listed above, all remedial actions at sites that have hexavalent chromium must comply with Commissioner Jackson's memorandum dated February 8, 2007. A copy of this memorandum can be found on the Department web site at http://www.state.nj.us/dep/dsr/chromium/crmorlift200702.pdf

More information about the Department chromium work group and chromium research efforts are available on the NJDEP web site at http://www.state.nj.us/dep/dsr/chromium .

Appendix B
Road Construction Details

Section 2
Geotextile Fabric Information

HANES GEO COMPONENTS
A Leggett & Platt COMPANY

TerraTex N11

Nonwoven Geotextile

TerraTex N11 is a nonwoven geotextile made up of polypropylene fibers. These fibers are needled to form a stable and durable network such that the fibers retain their relative position. It is non-biodegradable and resistant to most soil chemicals, acids and alkali with a pH range of 3 to 12. TerraTex N11 is manufactured to meet or exceed the following minimum average roll values:

Property	Test Method	Minimum Average Roll Value English	Minimum Average Roll Value Metric
Tensile Strength	ASTM D-4632	270 lb	1.22 kN
Tensile Elongation	ASTM D-4632	50%	50%
Puncture Strength	ASTM D-4833	165 lb	0.733 kN
Trapezoid Tear	ASTM D-4533	100 lb	0.45 kN
UV Resistance	ASTM D-4355	70% @ 500 hr	70% @ 500 hr
AOS	ASTM D-4751	100 US Sieve	0.15 mm
Permittivity	ASTM D-4491	0.94 sec-1	0.94 sec-1
Water Flow Rate	ASTM D-4491	75 gal/min/ft^2	3055 l/min/m^2
Coefficient of Permeability	ASTM D-4491	0.3 cm/sec	0.3 cm/sec
Thickness	ASTM D-5199	110 mils	2.79 mm

Appendix D
Exploratory Test Pit Logs

Contents

1. 2010 Exploratory Test Pit Logs
2. 2013 Exploratory Test Pit Logs

Appendix D
Exploratory Test Pit Logs

Section 1
2010 Exploratory Test Pit Logs

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER SS-WL- SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : Hardcastle
ELEVATION : CONTRACTOR : Lewis Environmental
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/27/10, 1330
WATER LEVEL : APPROX. DIMENS: Length: 5' Width: 3' Max. Depth: ~3'

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0-2		0-0.2' - organic root layer leaves + sticks 0.2-3.0 - organic silt (OL) wet, black (10YR 2/1), soft, non-plastic / rapid dilatancy	~8.0	Strong chemical (unknown) odor - soil structure is very soft +
2	2-3		homogenous,		spongey, wet
3	—	—	Bottom of trench	—	- unable to excavate further due to cave-in material sloughing in from sides -
4					
5					
6					
7					
8					
9					
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings

Depth of groundwater

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER SS-SA SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : A Hardcrode
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/25/10
WATER LEVEL : ~7.5' APPROX. DIMENS: Length: 11.5' Width: 2.5' Max. Depth: 8.2

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0-2		Intermixed silt, sand (f-c), gvl (f-c)/ sub ang to subrounded, (SP)/fill, brown, 10YR, 5/3, loose, dry/moist trace/some cinder-like material (black)	0.9-1.2	
2	2.0-2.5		Concrete "slab" circular shaped	NA	
3	2.5-6.0		Same as 0-2'		
4	6.0-7.0		Sandy silt, ML, vy dk, brwn 10YR, 3/3, loose, moist, obvious product odor, some fine-med, subrounded ~~cob~~ gravel, product (black) observed	4.5-12.3	
6			entering pit @ ~7' bg		
7	7.0-8.2		Mixed debris - wood, brick, cobbles, boulders, product stained w/liquid product intermixed sporadically; loose, wet (WT @ ~7.5' bg), black/brown, obvious product odor (wood is predominant component)	40.6	
8					
9					
10			excavation terminated @ ~8.2' bg		

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings : 0.9-40.6

Depth of groundwater : ~7.5' bg

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pics#: 147-154

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER SS-NA3 SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson
ELEVATION : CONTRACTOR : Lewis Environmental LOGGER : Hardcastle
EXCAVATION EQUIPMENT USED : Case 590 Super L
WATER LEVEL : ~ APPROX. DIMENS: Length: Width: Max. Depth: DATE EXCAVATED: 9/27/10

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm):	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
1, 2	0-2'		Silty sand with gravel/cobbles (SM/SP) fill, loose: wet/moist dark brown, organic not layer		Rain - light to moderate (2 test pits attempted prior to SS-NA3 - refusal @ ~3.5-4.5' bgs - gravel/possible concrete pad (SS-NA1 and (SS-NA2)
3, 4			SAA - large gravel + large cobbles, loose moist, black/dark gray discoloration, strong petro-like odor, gasoline fragment		← wires + metal refuse
5, 6			SAA - wet water table approx 4' bgs. Bottom of trench	1.2 ppm	← wood fragments high NAPL content
7, 8					
9, 10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings

Depth of groundwater

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER H-1 SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : H Hardevale
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/28/10
WATER LEVEL : NA APPROX. DIMENS: Length: 12.0 Width: 2.5 Max. Depth: 11.5

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY. → homogenous)	COMMENTS (DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) PID (ppm):	Notes
1	0-5.5		Sand, some silt, ~~some~~ trace f-m, sub-round - sub-ang. gravel, (SW), strong brown, 7.5 yr, 5/8, loose, moist some vy dark gray @ ~ 4' bg (7.5yr 3/1, transitions to all vy dk gray	0.9	
2			@ ~ 5.5' bg,		
3	5.5-10		Same as above but vy dk grey 7.5yr, 3/1, ~~moderate~~ (AH) obv. petro odor	12.2	test pit walls sloughed quickly as pit deepened
4	10-11.5		material above grades/transitions into silty clay / clayey silt (we observed both) (CL/ML) very dark grey, 7.5yr, 3/1, moist, soft, low/mod. plasticity, obvious petrol odor, trace f-m sand	13-42	
5					
6					
7			excavation terminated @ ~11.5' bg		
8					
9					Overall low LNAPL contamination relative to test pit thus far
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings : 0.9 - 42

Depth of groundwater N/A - we did not observe groundwater

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pics # 154-160

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER A-2 SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : A Herdero
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/28/10
WATER LEVEL : ~7.5' APPROX. DIMENS: Length: 11.5 Width: 2.5 Max. Depth: 12

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1 2	0-5		Silty sand, some f-c, sub-ang to sub-rounded gvl, some sub ang to sub-rounded cobbles, organic matter present (SM/SP), brown, 10YR, 5/3, moist, loose, less organic matter w/ increasing depth	0.0-4.2	Storage drum (metal) "larcass" excavated from approx 1.5' bg highly corroded/crushed many holes
3 4	5-7		same as above but more gravel content, no organic matter, aw vy dk grey, 10YR, 3/1, obvious product odor	3.3	
5 6	7-8		same as above but more gravel and some sub-ang cobbles, some silt	4.8	water table @ ~7.5' bg
	8-11.5		intermixed debris: wood, brick, cobbles, broken rock; black, product present, obvious product odor loose, wet, black	3.9-38.9	some cinder block pieces also
7 8	11.5-12		clay, some wood fragment, trc/some silt (CL), vy dk gray 10YR, 3/1 to black, moist, soft	119	possible petroleum waste sludge material
9 10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 0.0 - 119

Depth of groundwater ~7.5

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pics #: 161-171

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER
H-3	SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : A. Hardenbergh

ELEVATION : CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : DATE EXCAVATED: 9/25/12

WATER LEVEL : APPROX. DIMENS: Length: 12.5 Width: 2.5 Max. Depth: 12

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
0–1	0-2.5		f-m sand, trace silt, trace f-m sub ang - sub round gvl, strong brown, 7.5YR, 5/6, dry - moist, loose	0.8	
2–3	2.5-7.0		Same as above but more gvl, vy dk grey, 10YR, 3/1, Fe(AA)	1.7	
4–5	7.0-11.5		Intermixed debris in matrix of above (2.5-7.0): wood, brick, rock cobbles/boulders some concrete, black, obvious product odor	2.3	
6–7	11.5-12.0		silty clay, (CL), vy dk grey, 10YR, 3/1, moist, soft, mod. plasticity, obv. product odor	12.2	
8–9–10			terminate test pit @ ~12' bgs		

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 0.8

Depth of groundwater : Groundwater not observed during/immediately after excavation

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pics # 171 - 178

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER H-4	SHEET 1 OF

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER :
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/28/10
WATER LEVEL : ~8.5' APPROX. DIMENS: Length: 13.5 Width: 2.5 Max. Depth: 10.5

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1 2	0.0-3.0		Sand, silt, gravel intermixed (SP) fill, brown, 7.5YR,3/3 Some organic matter, loose, dry/moist	0.8-1.2	bucket scraped off a concrete "ledge" @ ~1.5' on west wall of pit
3	3.0-4.0		Debris - concrete, brick, some cobbles	0.6	
4	4.0-7.0		Same as 0.0-3.0 w/ some fractured brick	0.4-0.8	~6.5' bg - NAPL seep into pit
5	7.0-8.0		Same as 0.0-3.0 w/ more brick, gravel, transitions into an olive gray 5Y,4/1 clay w/ chemical odor, soft, moist	0.9-100	
6 7	8.0-9.0		clay, olive grey same as above	19-100	
8	9.0-9.5		Debris: wood, brick, cobbles in a matrix similar to 0.0-3.0'	2.3	
9 10	9.5-10.5		clay, some silt, vy dk grey, 10YR,3/1 almost black moist, soft-m. stiff, PHC odor. Terminate @ ~10.5' bg	1.9-5.9	

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 0.4-100

Depth of groundwater ~8.5' bg

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pics #: 202-211

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER H-5 SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : A Henderlite
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/28/10
WATER LEVEL : 8.5' APPROX. DIMENS: Length: 12.5 Width: 2.2 Max. Depth: 10.5

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0.0-6.5		Sand: stormixed w silt, gravel, brick, organic matter/roots. (SP)/fill, brown, 7.5YR, 3/3, dry, loose/m. dense	0.4-3.2	Additional/Added (H5) location ~5' north of PZ-9 to attempt to find more "hot/high" areas
3	6.5-10		Same as above but v. dk grey 10YR, 3/1 and dy dk brown, dry-wet w/depth, obv prod. odor, product staining/product present, some paper-like sheety material @ ~9.5/10'	1.6-37.2	
5	10-10.5		Silty clay (CL), black, moist/wet, soft, low-mod plasticity obv. product odor	67-118	potential petro-sludge material?
6					
7					
8					
9					
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 0.4-

Depth of groundwater ~8.5'

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.
pics 213-220

9

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER H-8 SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : A. Hardenrode
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/28/10
WATER LEVEL : 9.5' APPROX. DIMENS: Length: 13 Width: 2.5 Max. Depth: 11'

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0.0 - 5.5		Sand w/silt, some f-m s. round gvl, some organic matter/root mat, brown, 7.5YR, 3/3 (dk brn) loose, dry	0.7	Added location to try to locate another "high" contamination area ~ 60' south of H-2
2 3	5.5 - 10		Same as above w/ some wood and more gravel, black, obv. product odor, product present (more debris w/ depth)	2.7 - 17.2	some brick + concrete water table @ ~9.5'
4 5	10 - 11		silty clay (CL), black/vy dk grey 10YR, 3/1, moist, soft, low-mod. plasticity, obv. prod. odor	2.9	(3rd attempt @ H-6) H-6, H-7 hit concrete (H-8 closest to road)
6 7			terminate @ ~ 11' bg		
8 9 10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 0.7 - 17.2

Depth of groundwater ~9.5'

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

Pics #: 225

High	M	L
H5	H8	H1
(done) H2	L4	L3c
M3	M2	L1
M1	M10	L2

H4 = yellowish red weird clay (1) + petro sludge (1)
M2 = petro sludge (1)
M10 = white clay-like material (1)

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER
	M-1 SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : A Hardenado
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/29/10
WATER LEVEL : ~5' APPROX. DIMENS: Length: 12.5' Width: 2.2 Max. Depth: 10

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0-2'		Silty sand w/ f-c, sub ang-sub rnd gravel/some root mat/organics (SP/SM), dark brown, 7.5YR, 3/3, moist, loose	23-52	
2	2-8.5		Coarse sand and f-c gravel dark brown, 7.5YR, 3/3, dry to wet (wet @ ~5'), loose/v. loose obvious ~~[illegible]~~ chemical-like odor (SP)	48-304	wet @ ~5'
3	8.5-10		silty clay, black (CL), moist, soft, low/med. plasticity, trace/some fn sand, obvious ~~[illegible]~~ chemical-like odor	23-47	
4			terminate @ ~10' bg		
5					
6					
7					
8					
9					
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings : 23-304

Depth of groundwater : ~5'

GPS coordinates of at least 4 end points and dimensions :

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

Pics #: 239-248.

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER M-2	SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER :
ELEVATION : CONTRACTOR :
EXCAVATION EQUIPMENT USED : DATE EXCAVATED:
WATER LEVEL : ~5.5' APPROX. DIMENS: Length: Width: Max. Depth:

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0.0-7.5'		Coarse sand f-c sub-ang-sub rounded, some f cobbles, sub-ang, dk brn, 7.5YR, 3/3, moist/wet obv. pho odor, some wood	2.1-52.3	water table @ ~5.5' bgs
2	7.5-8.0		fractured rock/boulders in matrix of above	6.3	
3	8.0-9.0		silty clay, black (CL), moist, soft, low-mod. plasticity, obv odor	2.3-4.9	possible petroleum waste sludge product
4			terminate @ ~9' bgs		
5					water on sheeting emanating from spoils had a yellowish/brown color and a "thick/
6					viscous" appearance,
7					also had a "skin" on the top.
8					
9					
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 0.2-42

Depth of groundwater ~5.5'

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

Pics #: 231-239

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER M-3	SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER :
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/29/10
WATER LEVEL : ~6' APPROX. DIMENS: Length: 11.0 Width: 2.5 Max. Depth: 12

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1, 2	0.0 - 6.0		Intermixed f-c sand, f-c gvl, brick, wood, cobbles, some silt (SP/fill) dk brn, 7.5YR, 3/3, moist, m. dense to loose w/ depth	1.2 - 2.9	
3	6.0 - 9.5		Same as above but w/ obvious phc odor and product observed	23.9 - 38.4	black product observed entering test pit from 2 small areas on sw wall
4	9.5 - 12		silty clay, trace f. sand, black, moist, soft, obv. phc odor, some root matter present	31.3 - 39.1	
5			terminate @ 12'		~6.5'
6					
7					
8					
9					
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 1.2 - 39.1

Depth of groundwater : ~6'

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pics#: 281-

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER
	M-8 (4th attempt & M-4) SHEET 1 OF

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : H Hardenwal

ELEVATION : CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/28/10

WATER LEVEL : APPROX. DIMENS: Length: 11.5 Width: 2.1 Max. Depth: ~12

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	COMMENTS (DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) PID (ppm):	Notes
1	0.0-5.0		Same log / subsurface description as H-2	2.7-2.9	M-8 located ~ 25' north of H-2 but oriented ~ east/west instead of SW/NE (H2)
2 3	5-7			2.3-5.2	Product entering test pit @ ~6' bg (very small rivulet into pit)
4 5	7-8			3.7-4.2	
	8-11.5			12.2-41.1	
6 7	11.5-12		Terminate @ ~12' bg	81-98	clay / possible petroleum wash sludge material
8 9 10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 2.7-98

Depth of groundwater ~7.5' bg

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pics #: 193 - 201

(Tom P's L-1)

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER	
~~M-10~~	M-10	SHEET OF

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : H Hardcrode

ELEVATION : CONTRACTOR : Lewis DATE EXCAVATED: 9/29/10

EXCAVATION EQUIPMENT USED : Case 590 Super L

WATER LEVEL : APPROX. DIMENS: Length: 11.0 Width: 2.5 Max. Depth: 10

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0-2.5		Mixed debris: wood, piping, silty sand, cobbles, brick, dk bwn, 7.5YR, 3/3, moist, dense	1.2-6.9	Excavation began w/ east/west orientation but only a small gap was observed b/w 2 concrete walls @ ~ 3' deep
2	2.5-9.0		gravel and sand - f-c rounded sub-rounded gvl (GP/fill), dark bwn, 7.5YR, 3/3, moist - wet w/ depth (WT @ ~ 6' bg) some boulders/cobbles, ~~dark bwn, 7.5YR, 3/3, moist to~~ loose,	6.7-37.9	The trench was then rotated 90° to be oriented approx. N-S to deepen the existing gap b/w
3					
4			obvious product odor (PHC)		the concrete walls
5			@ ~ 6.0-6.5 white clay like material observed	2.2	slight yellowish color in gw on sheeting coming from soil
6	9-11		silt grades into silty clay, (CL) black, moist, soft, low/mod. plasticity (obv. phc odor observed from ~ 9-10')	6.7-6.9	
7					
8					
9					
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings

Depth of groundwater

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pics #:

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER L1 SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : A Hawkeside
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/29/10
WATER LEVEL : 5' APPROX. DIMENS: Length: 12.5 Width: 2.2 Max. Depth: 11

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0.0 - 1.5		Silt and sand, some f-m gvl, and organic matter/root mat (ML/OL) dk brn, 7.5yr, 3/3, moist, loose/m dense	1.7-2.3	2 surficial pipes of unknown origin, depth, orientation, dip exposed approx. 25' north of L1
3	1.5-8.5		Gravel (f-c): very well rounded, some rounded gvl, some brick and wood, some coarse sand, dk brown 7.5yr, 3/3; chemical type odor	8.7-67.9	possible gravel from some type of processing extremely round/spherical
5	8.5-9.5		Silt w/clay, black, (ML), wet, soft, mod plasticity, chemical-like odor	3.3-6.7	
6	9.5-		clay, some silt, same as above	2.7-4.3	
7	11		terminated @ ~11'		
8					
9					
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 1.7 - 67.9

Depth of groundwater: 5' (minor incandescent sheen on water)

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pics #: 249-255.

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER L2	SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : A Hardcrode
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/29/10
WATER LEVEL : ~5.5' APPROX. DIMENS: Length: 12.0 Width: 3.3 Max. Depth: 9

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0.0-1.3		Silt, some sand, w/ root mat and organics (ML/OL), dk brn, 7.5YR, 3/3, moist loose, some debris: bottles, brick	1.2	
2	1.3-2.5		coarse angular gravel with coarse sand, (GP) fill, dk brn, 7.5YR, 3/3, and gray, 10YR, 5/1, moist, m. dense	2.2-2.7	
3	2.5-5.5		well rounded m-c gravel w/ m-c sand, dk brn, 7.5YR, 3/3, moist- wet w/ depth, loose	2.7-23.2	
5	5.5-6.75		clay-like material, white, moist, m. stiff, pasty when manipulated	2.3-3.2	possible gypsum process waste?
7	6.75-7.25		Same as 2.5-5.5	3.9-23.2	
8	7.25-9.0		clay (silty) (CL), black, moist, soft some root mat	3.9	possible waste petroleum sludge material?
9			terminate @ ~9.0		
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings 1.2 - 23.2

Depth of groundwater ~ 5.5'

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

pic #: 258-263.

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER ~~L3a~~ L3c SHEET 1 OF

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER :
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/29/10
WATER LEVEL : ~6' APPROX. DIMENS: Length: 14 Width: 2.5 Max. Depth: 11.5

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0-2		coarse angular gravel and m-c sand, dk brwn, 7.5YR, 3/3, v. dense, dry/moist (GP/Fill)	1.2	3rd attempt @ L3: roughly 80-90' NW of L3a (mapped location) which was the
2, 3	2-9		f-c rounded to subang gvl w/ f-c sand, (approx 2.5-3.0) layer of olive clay-like material observed @ location yesterday), some brick, trace wood, dk brwn, 7.5YR, 3/3, loose, dry to wet w/ depth	4.7-69.2	incandescent sheen on gw
5	9-10		clay-like, homogeneous, black, wet, soft.	2.7-3.3	possible petroleum crude sludge material
6	10-10.75		Sandy silt, dk brwn (ML), 7.5YR, 3/3, wet, loose/m. stiff		
7	10.75-11.5		clay w/ silt (CL), black, moist, soft, low plasticity	7.7	concrete ledge on north wall ~3.9' deep ☆
8			terminate @ ~11.5'		
9					
10					

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings

Depth of groundwater ~ 6'

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.

~~PICS #: 264-263~~ PICS #:

L3b: pic 271 (retrieval @ ~0.5' bg (concrete slab)

CH2MHILL

PROJECT NUMBER	TEST PIT NUMBER L4	SHEET 1 OF 1

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : A Hardcrode
ELEVATION : CONTRACTOR : Lewis
EXCAVATION EQUIPMENT USED : Case 590 Super L DATE EXCAVATED: 9/28/10
WATER LEVEL : ~9.5' APPROX. DIMENS: Length: 13.5' Width: 2.1' Max. Depth: 12.5'/13.0'

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1	0-6'		silty sand w/ sub-rounded to sub-angular gravel, some roots and organic matter decreasing w/ depth (SP/SM), fill, brown, 10YR, 5/3, dark brown 10YR, 3/3, and pink (@ ~3.4')	0.7-~10	
2, 3			10YR, 7/3, no staining/product observed, no obvious odors observed		
4, 5	6-8'		flat rock boulders able to be broken w/ excavator bucket and removed veneer of material from 0-6' above coating rocks, product observed entering pit @ ~6.2' bg	0.1-6.2	
6, 7	8-12'		Heterogeneous mix of loose wood, brick, concrete, rock in matrix of silty sand similar to 0-6' above product observed entering test pit	1.5-70'	water table @ ~9.5'
8, 9			@ ~9' below grade, some product staining and odor observed		
10	12'-12.5	(AH)	clay, some silt (CL), native, black 10YR, 2/1 mottled w/ ry dk grey ~~10YR~~ 7.5YR, 3/1, moist, soft, low plasticity, product odor observed	~120 max	

1) Record
Spoils matrix - soil composition; color; staining; odor; debris (concrete, metal, brick, glass, timbers, plastic, etc.); and any pieces of large debris and drums

PID readings : 0.7 - ~70 ppm

Depth of groundwater ~9.5

GPS coordinates of at least 4 end points and dimensions

2) Take photographs showing: general wide-angle, four sides, bottom, the pile of exhumed spoils, and any points of interest.
pics # 141-146

Appendix D
Exploratory Test Pit Logs

Section 2
2013 Exploratory Test Pit Logs

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-1A

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/11/13 1415

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 12 (ft) Width: 3' (ft) Max. Depth: 1.5 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
0			Silty sand + gravel (SW), brown (10YR 4/3), dry, wood debris, blocks, bricks + pipe		- approx 2" diameter metal pipe along sidewall of excavation N → S
1.5			Concrete slab on bottom of excavation at 1.5' bgs		

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-1A

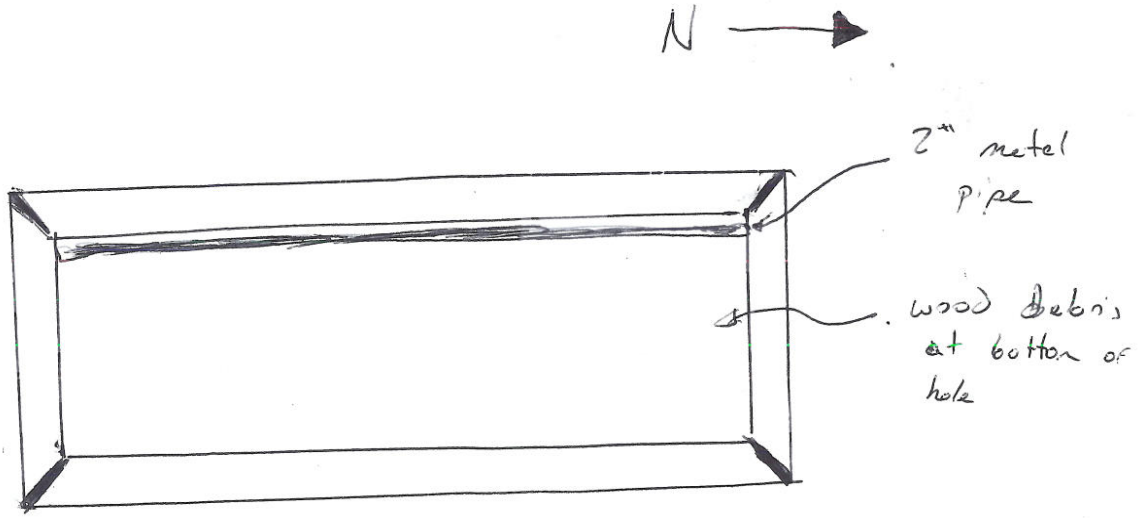
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates				
Corner 1 See Appendix H				
Corner 2				
Corner 3				
Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	No			
-Sludge / oil presence	No			
-Unknown materials	No			
-Sludge materials	No			
-Any other observations	Slab			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation	Yes			
-Bottom of the excavation	Yes			
-Pile of exhumed spoils	Yes			

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-1B

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/11/13 1430

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 12 (ft) Width: 3 (ft) Max. Depth: 1.5' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm):	COMMENTS Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
0			Silty Sand (SM) with gravel + concrete debris brown (10YR 4/3) - Faint petroleum-like odor with depth - black staining noted	0.0	4" steel pipe (broken) observed inside excavation - material inside pipe block "sludge" like material
1.5'			Concrete pad noted at 1.5' bgs		

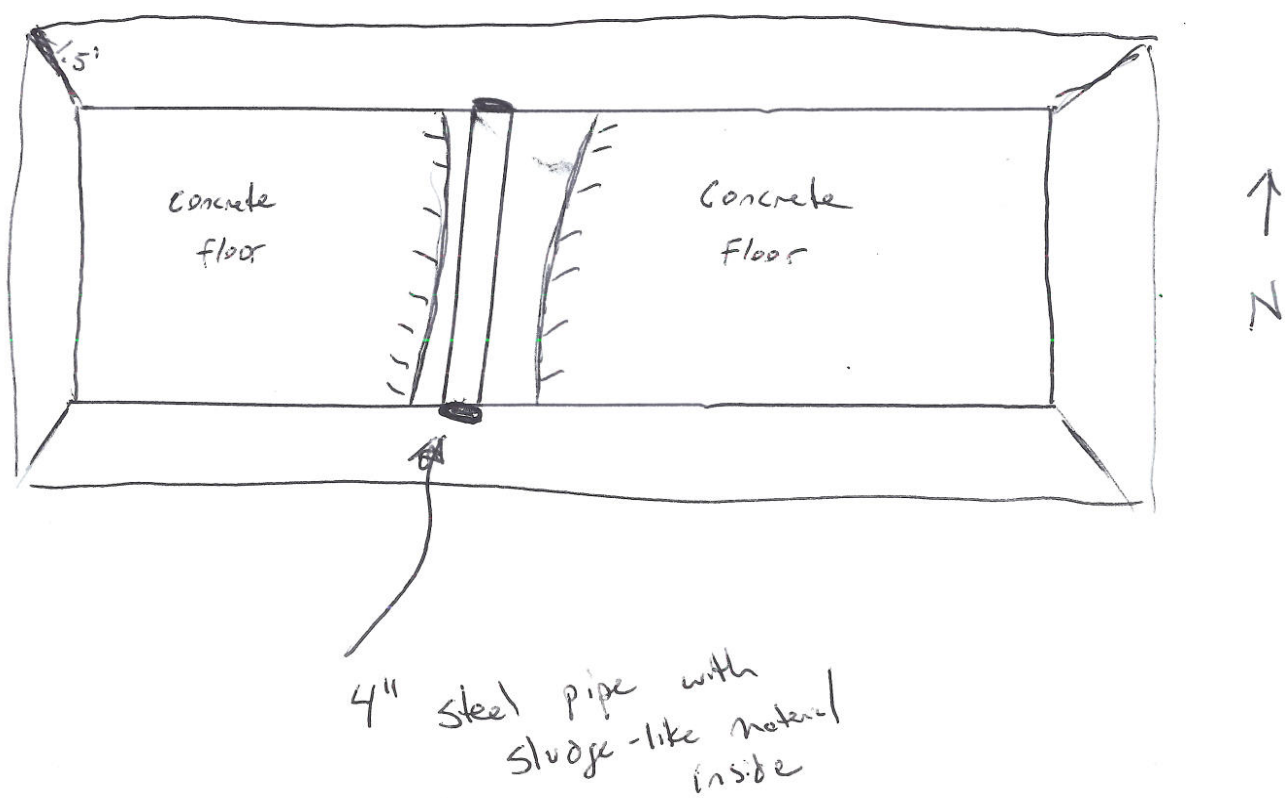
CH2MHILL	PROJECT NUMBER: 402358	TEST PIT NUMBER: TP-113 SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 Corner 3 Corner 4	See Appendix H			

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest		Yes		
-Large debris, concrete blcks	Yes			
-Drums	NO			
Staining and odor	Yes			
- Sludge / oil presence	~~Yes~~ No (TP)			
-Unknown materials	NO			
-Sludge materials	Yes			
-Any other observations	Sludge in Pipe			
	Photograph			
Photographs	Yes			
-General wide-angle with landmark	Yes			
-All four side walls of excavation	Yes			
-Bottom of the excavation	Yes			
Pile of exhumed spoils	Yes			

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-1C, 1D, 1E

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D

DATE EXCAVATED: 1445 11/11/13

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: _____ (ft bgs) Length: 10 (ft) Width: 3 (ft) Max. Depth: 1.5' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE		SOIL DESCRIPTION	COMMENTS
	INTERVAL	NUMBER AND TYPE	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm): Notes
			Similar to TP-1A + 1B - All encountered refusal at 1.5' bgs due to concrete Floor	

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-1C, 1D, 1E

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates See Appendix H Corner 1 Corner 2 Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	Slab	Yes		
-Drums	No			
-Staining and odor				
-Sludge / oil presence				
-Unknown materials				
-Sludge materials				
-Any other observations				
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)

Concrete slab at bottom of excavation

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-1F

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/11/13 1456

WATER LEVEL : 3.5' (ft bgs) DEPTH OF CLAY: 7.6 (ft bgs) Length: 8.5' (ft) Width: 3 (ft) Max. Depth: 8.5 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

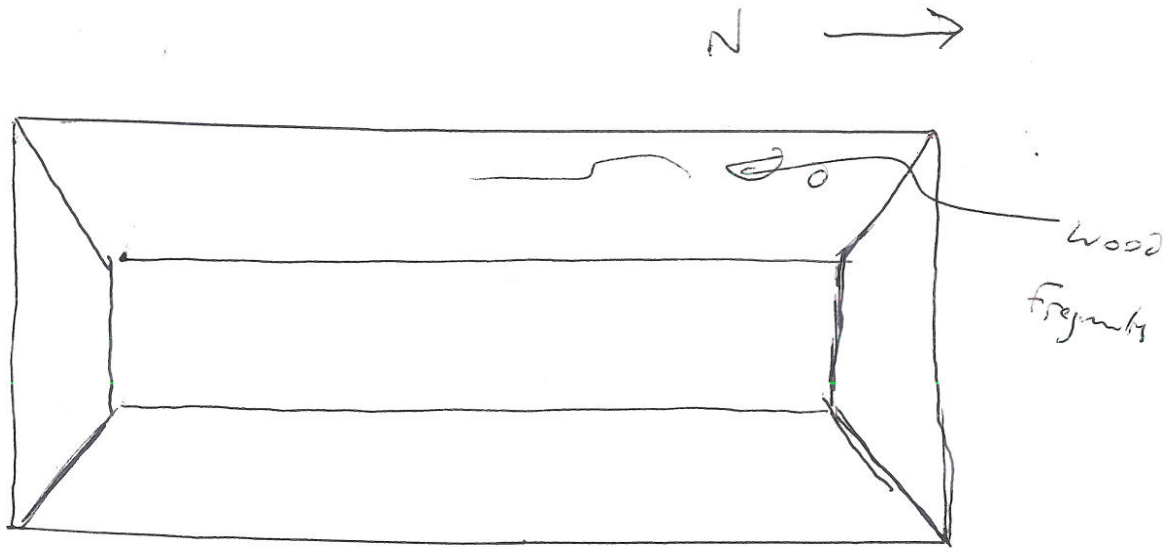
DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm)	COMMENTS Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
0			Silty sand (SM) with gravel, dark brown to dark brown with black staining, petroleum-like odor, dry, moist below 2', water encountered @ 3.5' bgs	<10ppm 160ppm	wood fragments, concrete gravel, pipe, + brick observed to 7' bgs - water entering excavation from ~ 3.5' bgs - Slight sheen on water surface
7'			Gravelly sand (SW), dark gray (10YR 3/1), wet, loose	<10ppm	hard / cemented clay
7.5' 7.6'			Thin layer of brown silt (10YR 4/4)		
8.5'			Silty clay (CL), brown (10YR 4/3), dry / moderately cemented, v. stiff/hard Bottom of excavation 8.5' bgs		

CH2MHILL	PROJECT NUMBER: 402358	TEST PIT NUMBER: TP - 1F SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easing		
Coordinates Corner 1 See Appendix Corner 2 Corner 3 H Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	Yes	Yes		
-Sludge / oil presence	NO			
-Unknown materials	No			
-Sludge materials	NO			
-Any other observations	NO			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-2

SHEET 1 OF 3

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/12/13 1315

WATER LEVEL : 6 (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 9 (ft) Width: 3 (ft) Max. Depth: 9 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
1			Silty sand with gravel (SW), brown (10YR 4/4), dry, loose, organic material + roots, concrete fragments + gravel up to 2" in diameter, angular	7ppm	plastic, rubble, bricks, blocks + wood
2					
3				150	
4					metal strips noted along west sidewall
5			color change at 3' bgs - increased black staining + petroleum-like odor with depth		
6				200	
7					black NAPL seep observed on top of concrete-like material
8		# sample collected	increasing moisture content below 4' bgs; wet below 6' bgs	80	
			white/yellow concrete-like material, weak/moderate cementation - white rounded pebbles approx 0.5" in diameter cemented together (weakly) by yellow sandy material; # pit 12-23		Directly under/attached to concrete-like material is a soft yellow laminated material that is flat/smooth, texture less to somewhat fibrous, easily compressible + friable approx 0.5-1.0" thick

CH2MHILL

PROJECT NUMBER: 402358

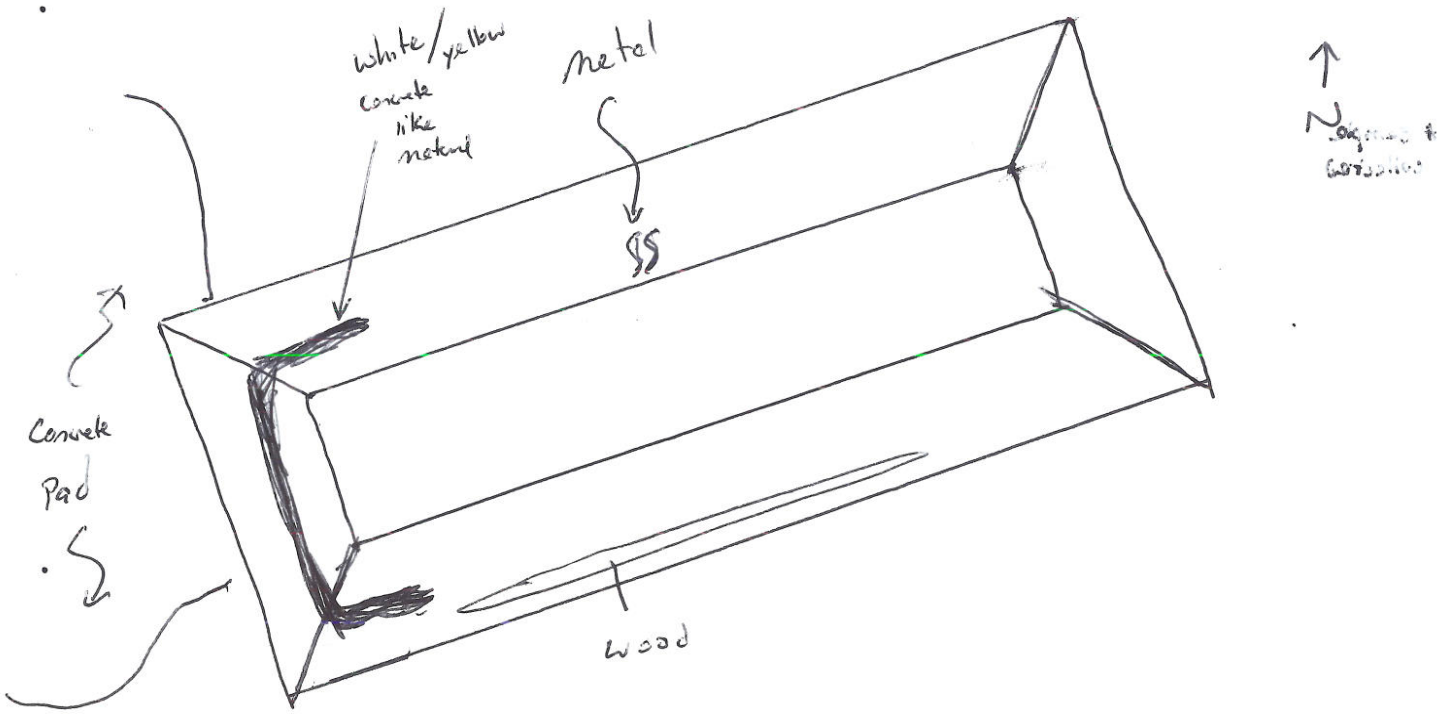
TEST PIT NUMBER: TP-2

SHEET 2 OF 3

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates See Appendix H Corner 1 Corner 2 Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	Yes	Yes		
-Sludge / oil presence	Yes	Yes		
-Unknown materials	Yes	Yes		
-Sludge materials	Yes	Yes		
-Any other observations	NAPL Seep			
	Photograph			
Photographs				
-General wide-angle with landmark	Y			
-All four side walls of excavation	Y			
-Bottom of the excavation	Y			
-Pile of exhumed spoils	Y			

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-2

SHEET 3 OF 3

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : See Page 1

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED :

DATE EXCAVATED: _____

WATER LEVEL : _____ (ft bgs) DEPTH OF CLAY: _____ (ft bgs) Length: _____ (ft) Width: _____ (ft) Max. Depth: _____ (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm):	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
8'			Black silt (ML), (10YR2/1), moist/wet, homogeneous - black/brown layering thin laminations - horizontal bedding - trace organic/root materials	8.0	← 8.5' black "sludge"-like material, v. soft, little to no texture
		*sample collected			
9			Bottom of test pit 9' bgs		

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-2

SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates See Appendix H				
Corner 1				
Corner 2				
Corner 3				
Corner 4				
	Observed See Page 1	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks				
-Drums				
-Staining and odor				
-Sludge / oil presence				
Unknown materials				
-Sludge materials				
-Any other observations				
	Photograph			
Photographs				
-General wide-angle with landmark				
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-3

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : Murphy

ELEVATION : NA CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D DATE EXCAVATED: 11/12/13 0900

WATER LEVEL : 7 (ft bgs) DEPTH OF CLAY: 4.5 (ft bgs) Length: 8.5 (ft) Width: 3' (ft) Max. Depth: 8.0' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
1			Silty Sand (SM) with gravel, brown (10YR 5/2), dry, few gravel up to 3" diameter, loose	<10ppm	bricks, pipe + concrete fragments - concrete pad noted along eastern sidewall approximately 0.75' bgs and extending for 0.5' (concrete was ~6" thick)
2			Increased silt content/decreased gravel content with depth, black staining and petroleum-like odor noted below 2' bgs		
3					
4		4'	white "clay-like material observed in clumps + small pockets		pH measurement 11.9
4.5'					Abrupt change 4.5'
5			Silt (ML) with sand, yellowish red (5R 5/6), wet, v. soft, trace clay → increasing clay content w/ depth		yellow "sulfur-like" colored nodules noted at top of silty layer
6					Black staining / NAPL saturation observed @ approx 6' bgs
7			Silt, grayish brown (10YR 5/2) moist, low plasticity, cohesive, firm, top of silty interval penetrated by NAPL + has black staining		NAPL seep observed at NW corner of excavation. Abrupt change 7.0'

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-3

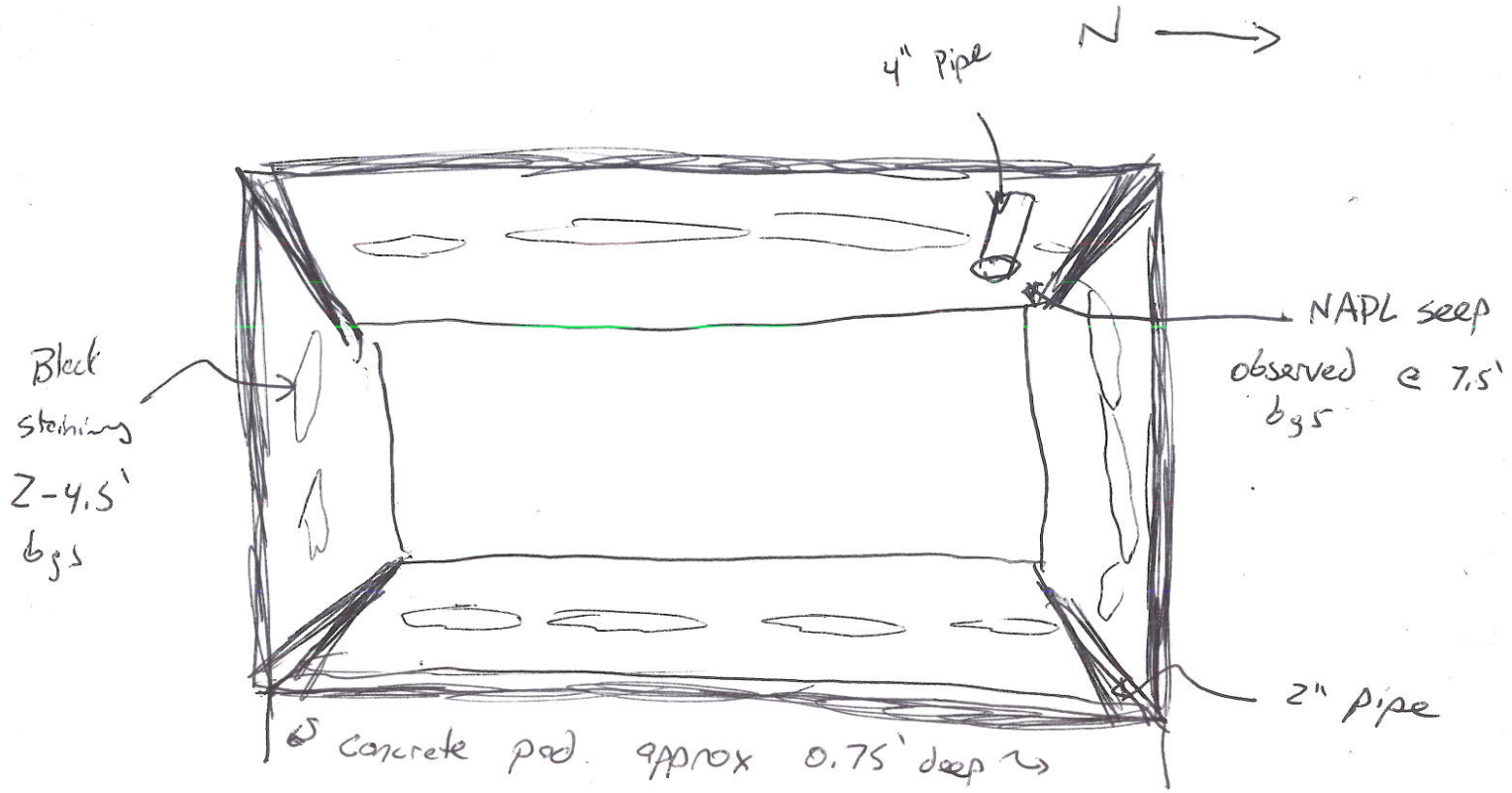
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates				
Corner 1 See Appendix H				
Corner 2				
Corner 3				
Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	Yes	Y		
-Drums	No	NA		
-Staining and odor	Yes	Y		
Sludge / oil presence	Yes	Y		
-Unknown materials	DB ~~N~~ Yes	NA		
-Sludge materials	N	NA		
-Any other observations	concrete	Y		
	Photograph			
Photographs				
-General wide-angle with landmark	Y			
-All four side walls of excavation	Y			
-Bottom of the excavation	Y			
-Pile of exhumed spoils	Y			

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-4

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D

DATE EXCAVATED: 11/11/13 1300

WATER LEVEL : 9.5' (ft bgs) DEPTH OF CLAY: NA (ft bgs) Length: 8 (ft) Width: 3 (ft) Max. Depth: 10' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
			Silty sand (SM), brown (10YR 4/3), dry, little gravel - up to 2" diameter - subangular	0.0	Debris includes: glass, bottles, plates, plastic sheeting, tubes.
2					Abrupt change
			Silt with clay + organic matter, black (10YR 2/1), moist/wet, high/med plasticity, trace sand (fine) noted, trace coal-like gravel fragment, microcrystalline mica observed, medium soft - increased organic matter noted below 4' bgs - - Fibrous material + (roots) phragmites decomposition - black/dark gray layering observed below 5' bgs	5.0ppm	Debris includes - steel lid of drum (no drum observed), glass, bottles - strong petroleum-like odor
4					
6				0.0	Abrupt change
8					Cinder-like material observed at ~7.5' bgs - 8.5/9.0' bgs
					organic root material, fibrous wood fragments, coal-like fragments
					"perched" water (trickle) entering excavation
10			Silty sand with clay (SM), dry, black (10YR 2/1), well graded, loose - color change to gray (10YR 4/1) + decrease in fines with depth - few coarse sand below 8' - subangular - v. fine sand lense observed @ 9.0-9.5' bgs, moist/wet, brown (10YR 4/3)		Bottom of excavation 10' bgs

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-4

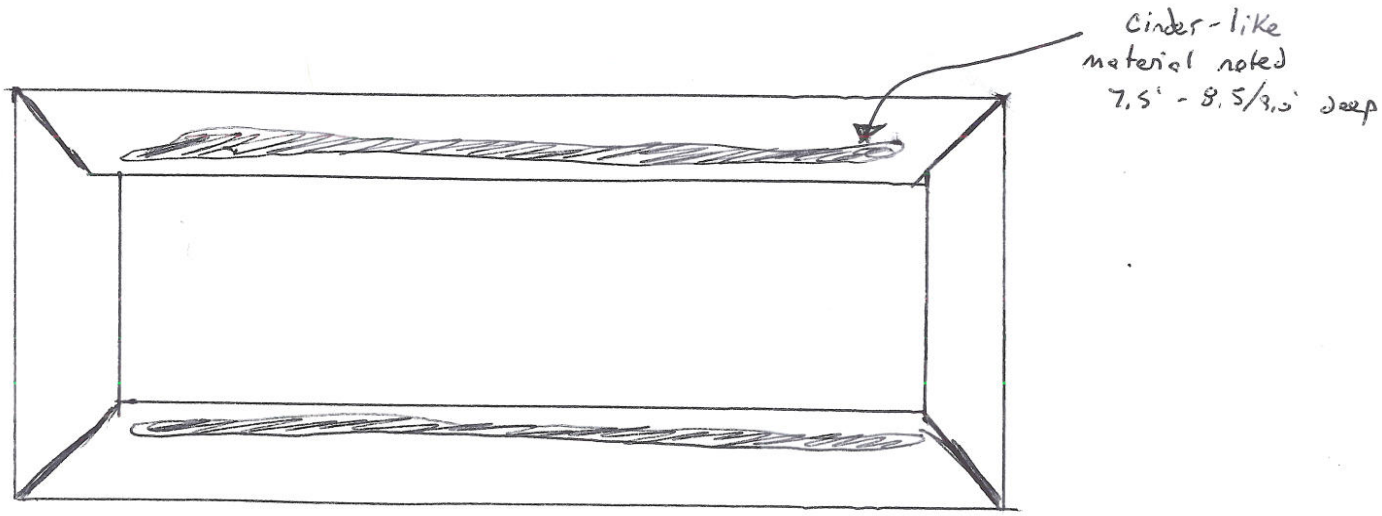
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates See Appendix H Corner 1 Corner 2 Corner 3 Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	No			
-Drums	No			
-Staining and odor	Yes	Yes		
-Sludge / oil presence	No	Yes		
-Unknown materials	No			
-Sludge materials	No			
-Any other observations	Refuse			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation	Yes			
-Bottom of the excavation	Yes			
-Pile of exhumed spoils	Yes			

*** Stetch (note general locations of where features of interest observed, locations and directions of photographs)**



CH2MHILL

PROJECT NUMBER: 402358	TEST PIT NUMBER: TP - 5
	SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : Murphy

ELEVATION : NA CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D DATE EXCAVATED: 11/13/13 0815

WATER LEVEL : 7.5 (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 10' (ft) Width: 3' (ft) Max. Depth: 9' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm):	COMMENTS: Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
1, 2', 3'	5/6 sample collected (combined)		Silty sand (SM) with gravel, brown (10YR 4/4), dry, dense, gravel - mostly angular up to 1" diameter - color change to 2' bgs to dark brown (10YR 5/1)	10 ppm	Debris: wood, concrete, glass, pipe; v. dense concrete layer at surface; Sulfur yellow sandy material - sample collected
4', 5'	*sample collected		Abrupt change to white-clay-like material, dry/moist, massively bedded, weak cementation - easily crumbled by hand pressure	3 ppm	Abrupt change; pH - 10.9
6, 7.5'			Silty sand with gravel (SW-SM), trace cobbles/boulders, black (10YR 2/1), gravel is round and perfectly spherical and magnetic, few brown silty soil clods observed	7.6 ppm	Abrupt change; NAPL seep observed along N-sidewall
9	Sample collected *		Soil grades to silt (SM) with little sand, black (10YR 2/1), soft, moist/wet, moderately plastic, cohesive - some brown/black horizontal lamination/bedding observed - few organic root material + sticks noted	5.0 ppm	"Sludge-like" material noted between ~~8~~ 7.5-8.0' bgs, black, structureless, amorphous, v. soft/liquid

CH2MHILL

PROJECT NUMBER: 402358

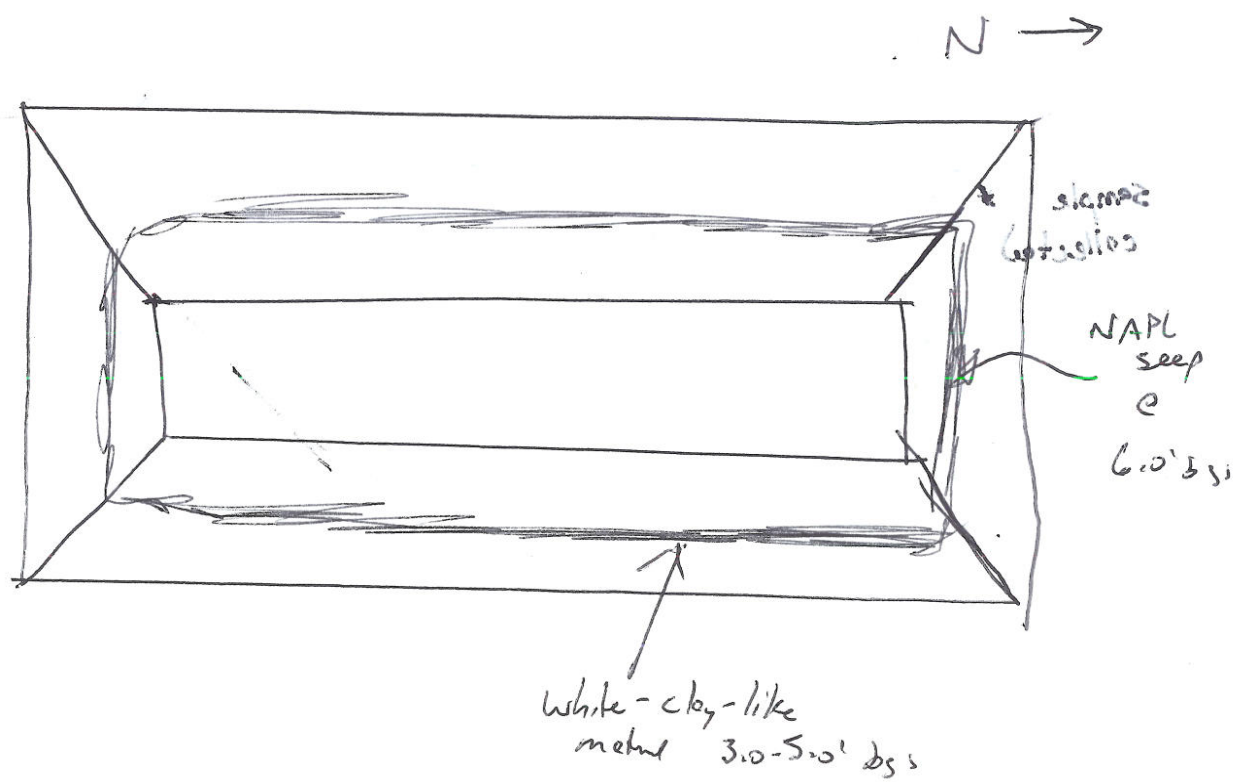
TEST PIT NUMBER: TP-5

SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 Corner 3 Corner 4	See Appendix H			
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
- Staining and odor	Yes			
Sludge / oil presence	Yes			
-Unknown materials	Yes			
-Sludge materials	Yes			
-Any other observations	No			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-6

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : Murphy

ELEVATION : NA CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D DATE EXCAVATED: 11/13/13 0915

WATER LEVEL : – (ft bgs) DEPTH OF CLAY: 8.8 (ft bgs) Length: 10 (ft) Width: 3 (ft) Max. Depth: 9 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
			Silty Sand with gravel (SM), brown (10YR 5/3) dry, loose	32ppm	debris: wood, bricks, pipe, concrete
2					
4		S/6 sample collected			Sulfur - yellow packet of sandy material noted at ~ 5.0' bgs on NE corner
6		sample collected	Abrupt change to white-chy-like material, dry/moist, massively bedded, weak cementation, easily crumbled by hand	2.8ppm	water - possibly perched - Flowing into excavation above clay-like material
7.5				1.8 ppm	pH - 12.15
8.8			Black silt (ML) - increasing vegetation matter with depth, medium plasticity, soft		
9.0			Grading to greyish brown silt (10YR 4/2), medium plastic, trace black/brown lamination		Bottom of excavation @ 9.0' bgs.

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-6

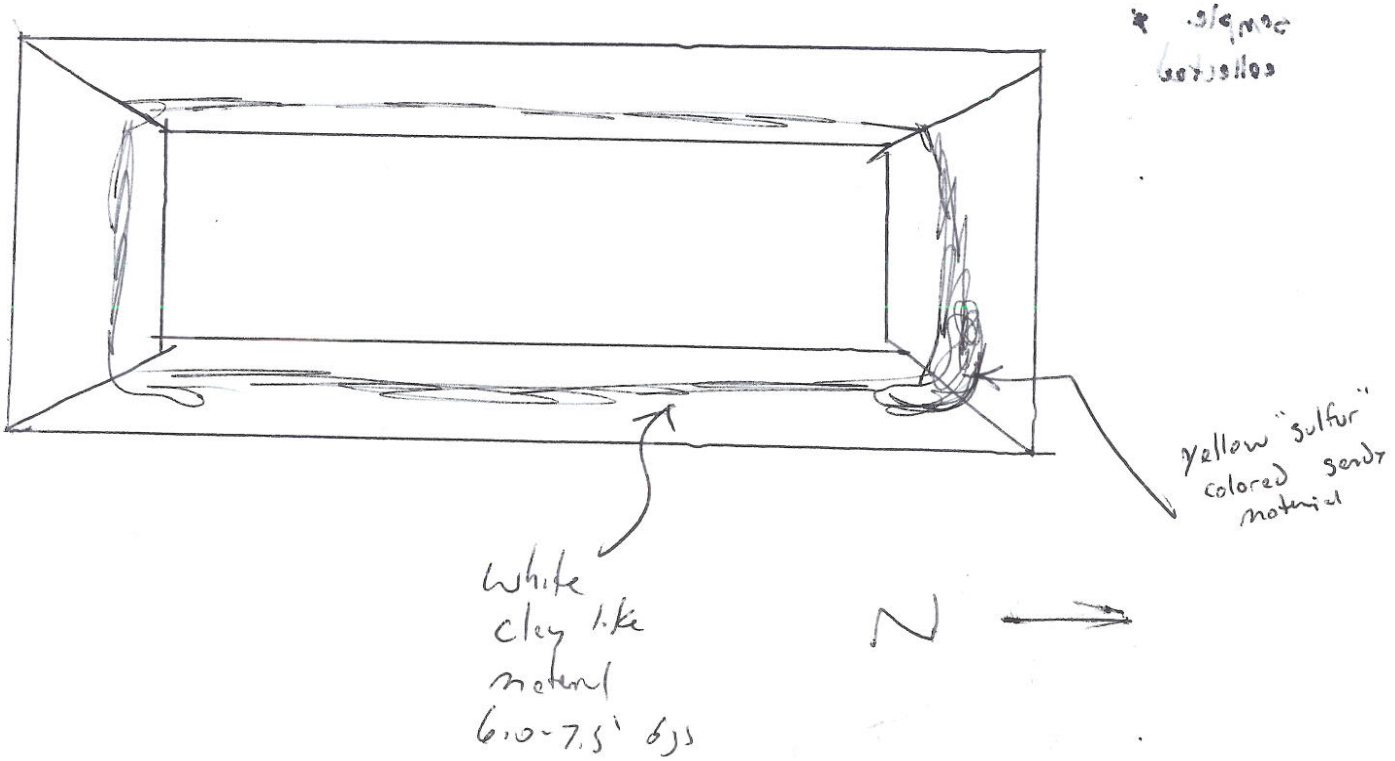
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 See Appendix H Corner 3 Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	Yes			
-Sludge / oil presence	No			
-Unknown materials	Yes			
-Sludge materials	No			
-Any other observations	No			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Sketch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-07

PAGE 1

SHEET 1 OF 3

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D

DATE EXCAVATED: 11/12/13 1005

WATER LEVEL : 7' (ft bgs) DEPTH OF CLAY: 7' (ft bgs) Length: 8.0' (ft) Width: 3.0' (ft) Max. Depth: 8.0' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm)	COMMENTS Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
0.0			Silty Sand (SM) with gravel, brown (10YR 4/2) dry Increased gravel content with depth w/ decrease in silt content Gradual color change to dark grayish brown (10 YR 3/2), angular gravel up to 2" in diameter (trap rock / crushed concrete)	<10 ppm	Debris consisting of wood fragments, metal pipe, misc. concrete + rubble yellow "sulfur-like" material noted at 2.0-2.5' bgs on North sidewall - sandy texture
2.5			Abrupt change to gravelly sand (SW), black (10YR 2/1) grading to grey (10YR 3/2) - above 4' gravel appears angular to subround - below 4' gravel becomes more round and indicative of a process stone - color change noted below 4' bgs to dark reddish grey (10R 3/1) - extremely round + spherical gravel - when broken up it appears to resemble iron filings. - round gravel IS magnetic		white "clay-like" material noted at approximately 3.0-3.5' bgs, moist/wet, soft - pH = 11.90 - collect sample collect sample of rounded spherical gravel groundwater noted at 7' bgs - oil slick observed on water surface
	Sample * collected				
7'	Sample * collected				

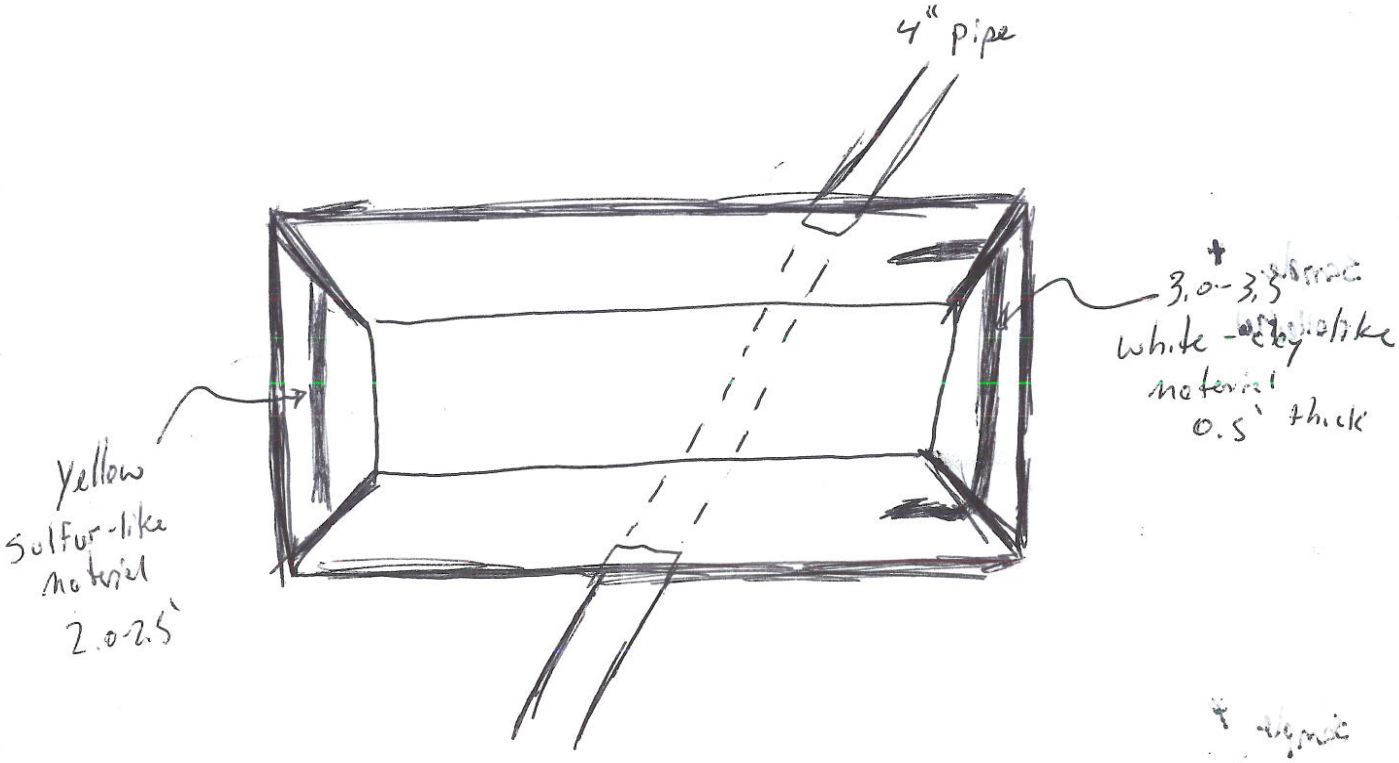
CH2MHILL	PROJECT NUMBER: 402358	TEST PIT NUMBER: TP-7 SHEET 2 OF 3

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 Corner 3 Corner 4 See Appendix H				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	NO	NA		
- Staining and odor	Yes	Yes		
- Sludge / oil presence	No/Possibly	Yes		
-Unknown materials	Yes	Yes		
-Sludge materials	No	NA		
-Any other observations	Spherical = Magnetic	NA		
	Photograph			
Photographs				
-General wide-angle with landmark	Y			
-All four side walls of excavation	Y			
-Bottom of the excavation	Y			
-Pile of exhumed spoils	Y			

Sketch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-07

SHEET 3 OF 3

PAGE 3

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

See Page 1

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED :

DATE EXCAVATED: _____

WATER LEVEL : _____ (ft bgs) DEPTH OF CLAY: _____ (ft bgs) Length: _____ (ft) Width: _____ (ft) Max. Depth: _____ (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
7.0			Abrupt change @ 7' bgs to silt with black staining (MC) thoughout, silt is gray (10YR 4/1) with black (10YR 2/1) wavy laminations of black petroleum saturated silty clay, moist, soft, low plasticity, trace organic matter + root material	<10ppm ↓	
8.0			Bottom of excavation 8.0'		

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-1

SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates				
Corner 1				
Corner 2 See Appendix H				
Corner 3				
Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks				
-Drums	See sheet			
- Staining and odor				
- Sludge / oil presence		1		
- Unknown materials				
-Sludge materials				
-Any other observations				

	Photograph			
Photographs				
-General wide-angle with landmark				
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)

See sheet 1

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-8

SHEET 1 OF 3

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D

DATE EXCAVATED: 11/13/13 1115

WATER LEVEL : 6' (ft bgs) DEPTH OF CLAY: – (ft bgs) Length: 8' (ft) Width: 3' (ft) Max. Depth: 8' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm):	COMMENTS: Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
			Silty sand (SM), few gravel, brown (10YR 4/4) loose, dry, debris	4 ppm	Concrete rubble + large fragments, drum lid, bricks, blocks + pipe
			Abrupt color change at 2' bgs to black (10YR 2/1) with slight dark red (10R 3/1)	99 ppm	petroleum-like odor; metal
4.5'			Sandy gravel (GW), brown (10YR 4/2), moist above ~6' - wet below 6' bgs, gravel up to 1" diameter, rounded/spherical, identical to spherical gravel observed in nearby test pits, magnetic	<10 ppm	water noted at ~6' bgs; white clay like material observed at 6.5' bgs along North sidewall
7'					

CH2MHILL

PROJECT NUMBER: 402358

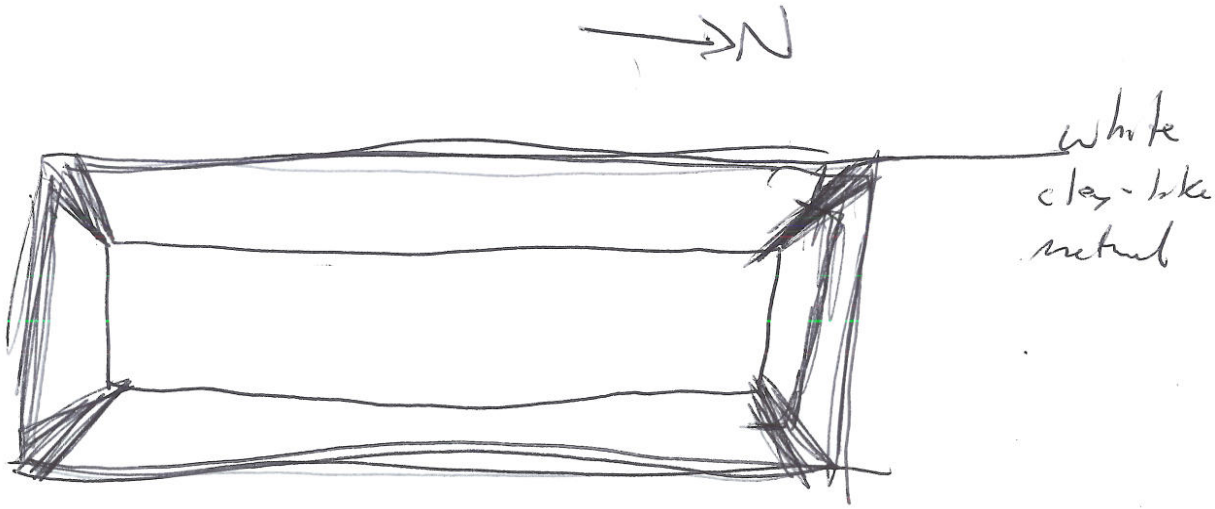
TEST PIT NUMBER: TP-8

SHEET 2 OF 3

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 See Appendix Corner 2 H Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
arge debris, concrete blcks	Yes	Yes		
-Drums	No			
- Staining and odor	Yes			
- Sludge / oil presence	No			
-Unknown materials	~~No~~ Yes			
-Sludge materials	No			
-Any other observations	No			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Sketch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-3

SHEET 2 OF 3

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : See Page 1

ELEVATION : NA CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : DATE EXCAVATED: _____

WATER LEVEL : _____ (ft bgs) DEPTH OF CLAY: _____ (ft bgs) Length: _____ (ft) Width: _____ (ft) Max. Depth: _____ (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.)	PID (ppm):	Notes
7			Abrupt change to black silt with organic matter, vi soft, wet, streaks of gray (10YR 5/2)		<10ppm	
8						

CH2MHILL	PROJECT NUMBER: 402358	TEST PIT NUMBER: TP-3 SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 See Appendix H Corner 2 Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks				
-Drums				
-Staining and odor				
-Sludge / oil presence				
-Unknown materials				
-Sludge materials				
-Any other observations				
	Photograph			
Photographs				
-General wide-angle with landmark				
-All four side walls of excavation				
Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)

See sheet 1

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-9a

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 10/15/13 1000

WATER LEVEL : – (ft bgs) DEPTH OF CLAY: – (ft bgs) Length: 12' (ft) Width: 3' (ft) Max. Depth: 5.5 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1			Brown silty sand + gravel, (10YR 4/3) wood fragments, loose	210 ppm	glass, plastic, wood fragments, refuse
2					
3					
4					
5	5.5'		color change black - trash + plastic		petro-like odor
6			concrete refusal		
7					
8					

CH2MHILL

PROJECT NUMBER: 402358

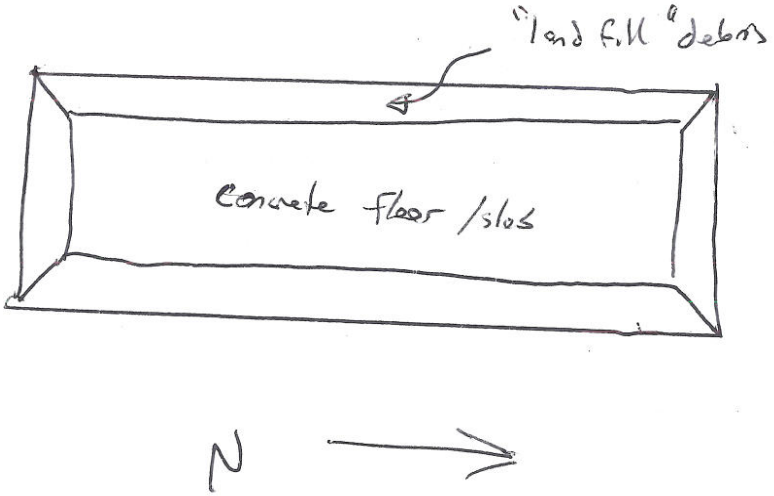
TEST PIT NUMBER: TP-9A

SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 See Appendix H Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
- Staining and odor	Yes			
- Sludge / oil presence	No			
-Unknown materials	No			
-Sludge materials	No			
-Any other observations	Trash			
	Photograph			
Photographs	Yes			
-General wide-angle with landmark				
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Sketch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP - 9B

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 10/15/13 1040

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: _____ (ft) Width: _____ (ft) Max. Depth: _____ (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. PID (ppm):	Notes
1			I defined to TP-9A	<10ppm ↓	
2					
3					Greg Hetton offsite 10:45
4			Concrete at 5.5'		
5					
6					
7					
8					

CH2MHILL

PROJECT NUMBER: 402358

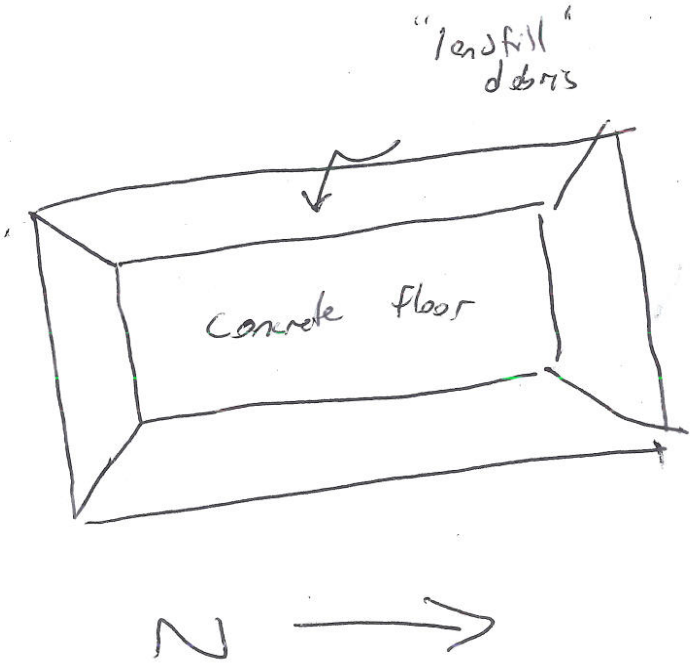
TEST PIT NUMBER: TP-9B

SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 See Appendix H Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	Yes			
-Sludge / oil presence	No			
-Unknown materials	No			
-Sludge materials	No			
Any other observations	Trash			
	Photograph			
Photographs	Yes			
-General wide-angle with landmark				
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-9C

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/15/13 1115

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 15' (ft) Width: 3' (ft) Max. Depth: 9' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

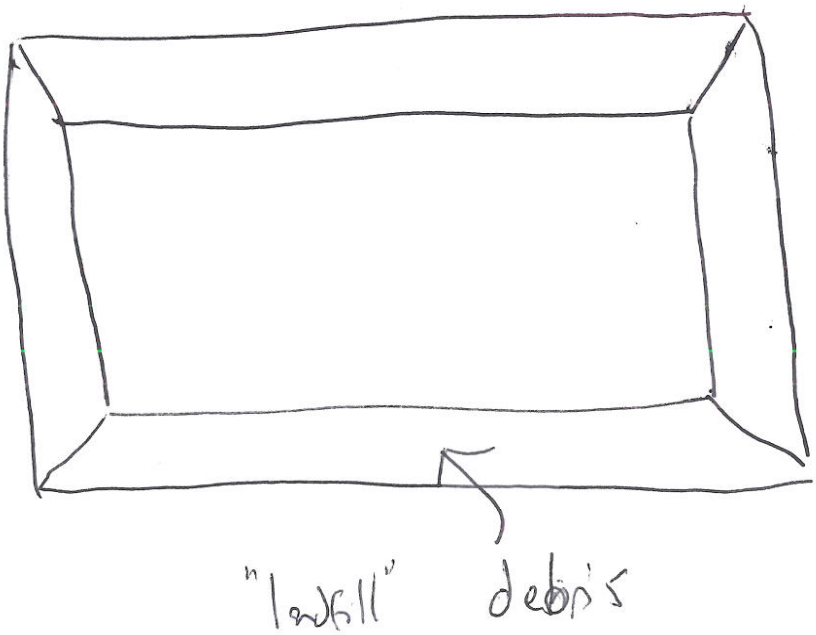
DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm):	COMMENTS Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
			Silty Sand (SM), brown (10YR 4/4) dry, loose, trace gravel, trash + debris	<10ppm	debris - root material, plastic sheeting, bricks, sticks,
2			Increase silt content with depth		← petroleum-like odor below 2.5' bgs - concrete debris noted to ~5' bgs - concrete chunk @ 5' appears to have a green discoloration/staining
4					
6'			Vegetation matter - phragmites + root matter		
8					← NAPL saturated lense noted above more cohesive silt lense @ ~8.5' bgs
8.5 / 9.2			Silt with sand, very dark brown (10YR 3/2), soft, cohesive, low plastic, moist		slight petro-like odor
			Bottom of excavation 9' bgs		

CH2MHILL	PROJECT NUMBER: 402358	TEST PIT NUMBER: TP-8C SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 see Appendix H Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	Yes			
-Sludge / oil presence	Yes			
-Unknown materials	No			
-Sludge materials	Yes			
Any other observations	No			
	Photograph			
Photographs	Yes			
-General wide-angle with landmark				
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-10

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D

DATE EXCAVATED: 11/13/13 1315

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 10' (ft) Width: 3' (ft) Max. Depth: 8.5' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
1			Silty sand (SM), with gravel, brown (10YR 4/4), dry, concrete + debris	0ppm	Concrete wall + footer observed along east sidewall - footer approximately 2.5' deep - debris in excavation includes wood, metal, bricks
2			color change to dark grayish brown (10YR 3/2), moist	30ppm	
3				58ppm	
3.5			white-clay-like material dry, weak cementation, easily crumbled	17.6ppm	
4.0			Gravelly sand (SW), very dark gray (10YR 3/1), dry gravel is spherical, up to 1" diameter, magnetic, moderately strong	11.3 ppm	4.0 - 4.5' fire brick / concrete fragments very thin lense (1") of soft "sludge-like" material
7.0			Silt (ML), moist, black (10YR 2/1), organic matter (roots + leaves) noted medium plasticity, cohesive	4.3 ppm	Abrupt change - very soft - amorphous - no structure - slight petro-odor
8.5					

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-10

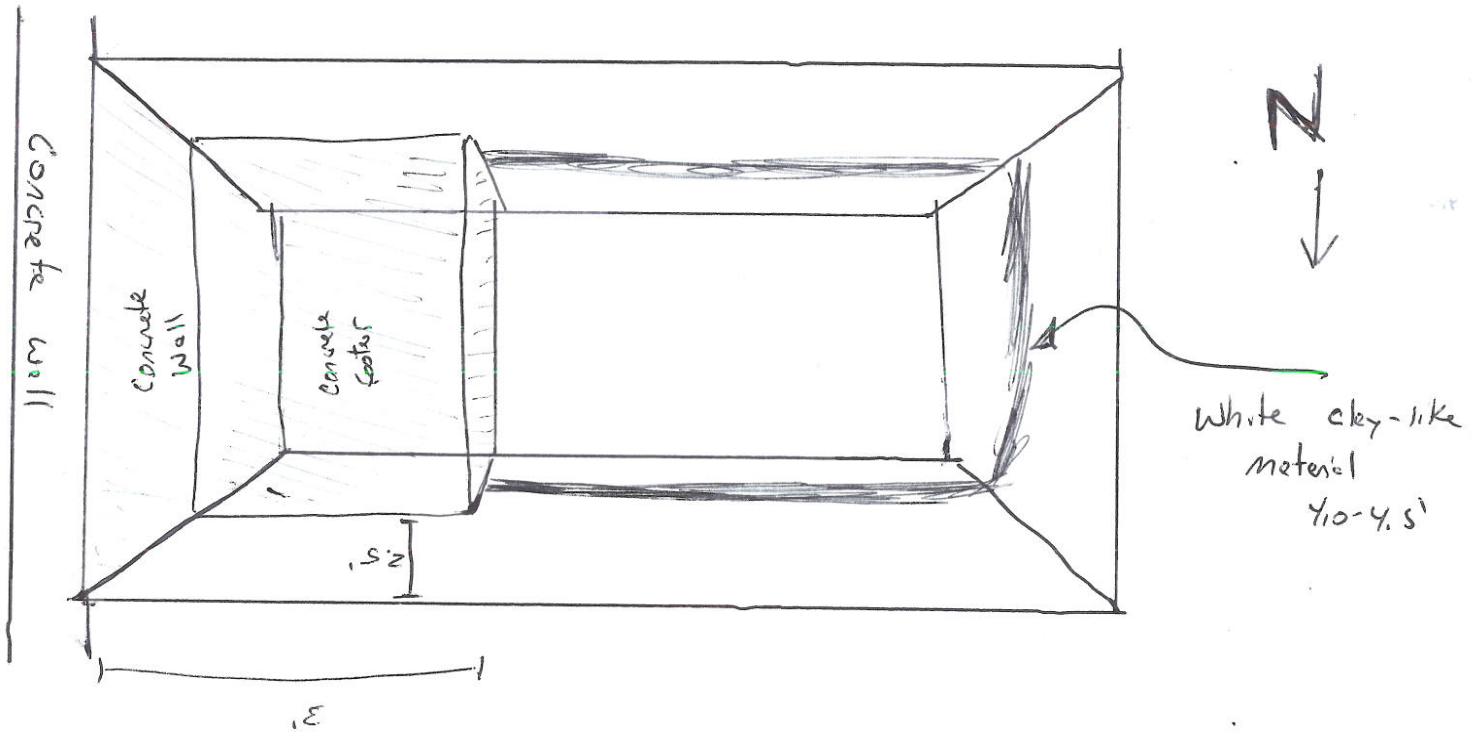
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates				
Corner 1 See Appendix H				
Corner 2				
Corner 3				
Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	Yes			
-Sludge / oil presence	Yes			
-Unknown materials	Yes			
-Sludge materials	Yes			
-Any other observations	Concrete			
	Photograph			
Photographs	Yes			
-General wide-angle with landmark				
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-11

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/13/13 1410

WATER LEVEL : – (ft bgs) DEPTH OF CLAY: – (ft bgs) Length: 8 (ft) Width: 3 (ft) Max. Depth: 8 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm):	COMMENTS: Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
1			Silty sand (SM) with gravel, dry loose brown (10YR 4/3)	10	Concrete fragments
2			color change @ 2' bgs to black (10YR 2/1) gravel up to 1.5" diameter + angular	50	
3					
4			gravel becomes rounded, spherical, magnetic balls	15	
5				35	
6					
7			Abrupt transition to silt, black (10YR 2/1), moist, medium plastic, soft trace fibrous organic material odor	4.7*	
8					

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-11

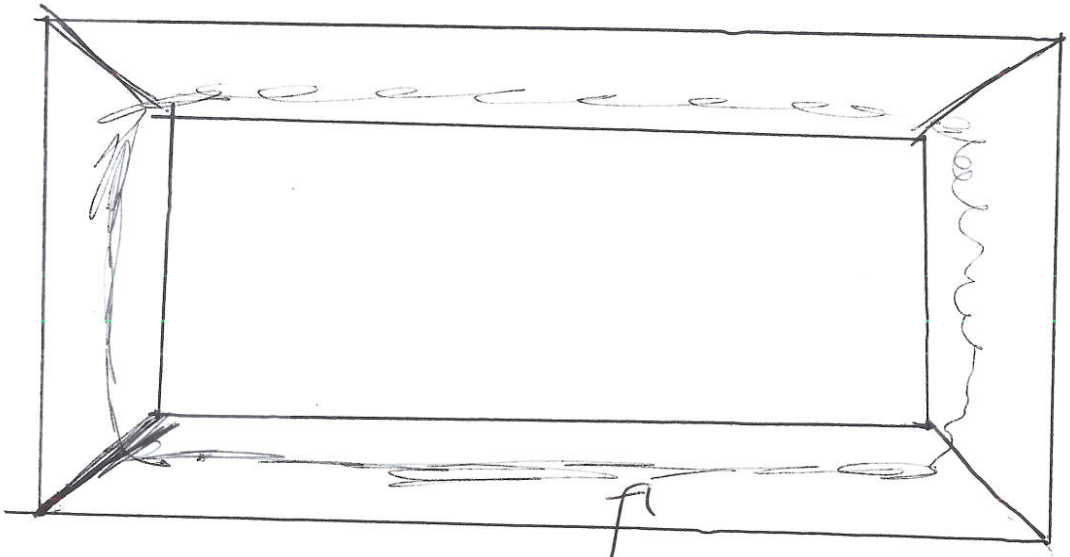
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 Corner 3 Corner 4	See Appendix H			
	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	Yes			
-Sludge / oil presence	No			
Unknown materials	Yes			
-Sludge materials	No			
-Any other observations	No			
	Photograph			
Photographs	Yes			
-General wide-angle with landmark				
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)

N →



round spherical gravel

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-12

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D

DATE EXCAVATED: 11/15/13 1330

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: 7.5 (ft bgs) Length: 8' (ft) Width: 3' (ft) Max. Depth: 8' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm)	COMMENTS: Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
0.5			- brown silty sand (SM), dry	0.0	metal pipe (1") with wires inside
			Coarse gravel + cobbles (GW), round/subround, trace sand, dry, up to 4" in diameter		
2.0					
			Abrupt transition to silty sand (SM) black (10YR 2/1), few gravel, gravel - angular to subangular, dry		Black spherical gravel balls observed immediately above 4'
4.0					
4.5			Concrete (soft/degraded) + debris + bricks		
			silt, black (10YR 2/1), high organic matter - increase in visible organic fibers with depth, cohesive, low/medium plasticity	6.0	wooden boards noted immediately below concrete; wet - water pouring into excavation immediately below concrete - sheen
			horizontal bedding laminations noted below 6.5' bgs		
7.5'			Brown silt (ML), (10YR 4/3), moist, low plastic, cohesive	0.0	Bottom of excavation 8.0' bgs
8.0'					

CH2MHILL

PROJECT NUMBER: 402358

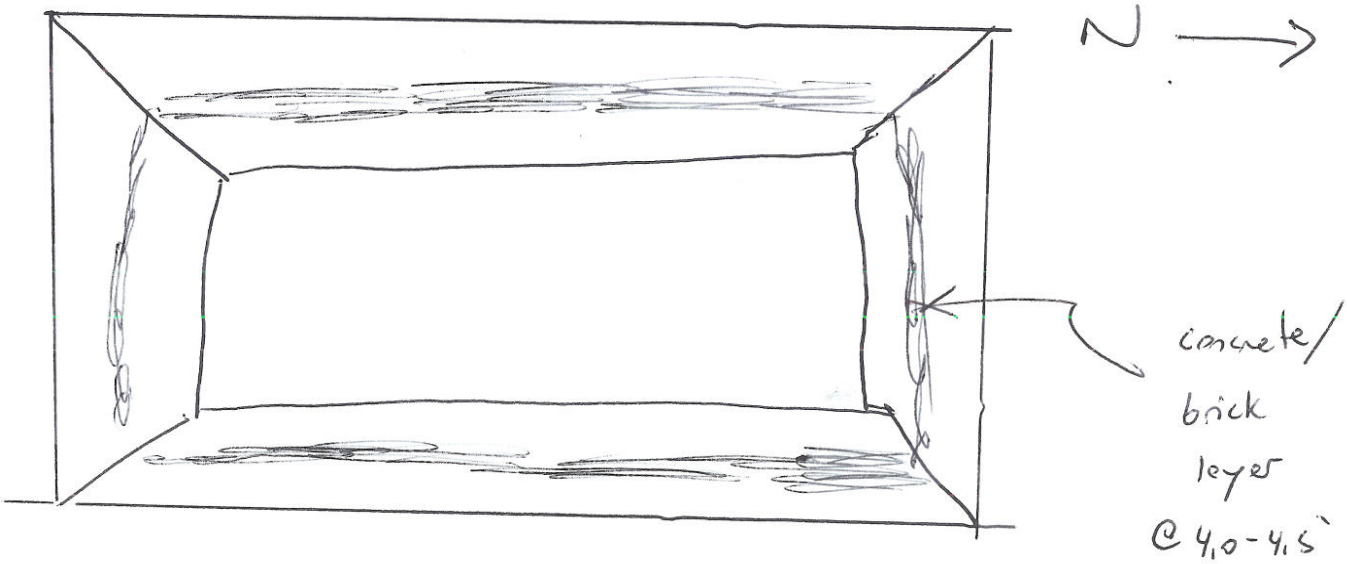
TEST PIT NUMBER: TP-12

SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 See Appendix H Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest		Yes		
-Large debris, concrete blcks	Yes			
-Drums	No			
-Staining and odor	Yes			
-Sludge / oil presence	No			
-Unknown materials	Yes			
-Sludge materials	No			
-Any other observations	No			
	Photograph			
Photographs	Yes			
-General wide-angle with landmark				
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-14

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/14/13 1440

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 16 (ft) Width: 3 (ft) Max. Depth: 11 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm):	COMMENTS: Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
2			Silty sand (SM), brown (10YR 4/4), dry, trace gravel, organic matter	0.0	Concrete boulder, bricks, bottles
3'					
4			Sandy silt (ML), black (10YR 2/1), few gravel, dry, landfill debris		Tires, glass, plastic, metal
6				6 ppm → 1.5 ppm	Buried drum carcass @ 6' bgs on southern sidewall - not removed from excavation
8					Sand lense noted at approx 8.5-9.0' bgs, brown (10YR 5/3) dry,
10					
11			Bottom of excavation 11' bgs		

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-14

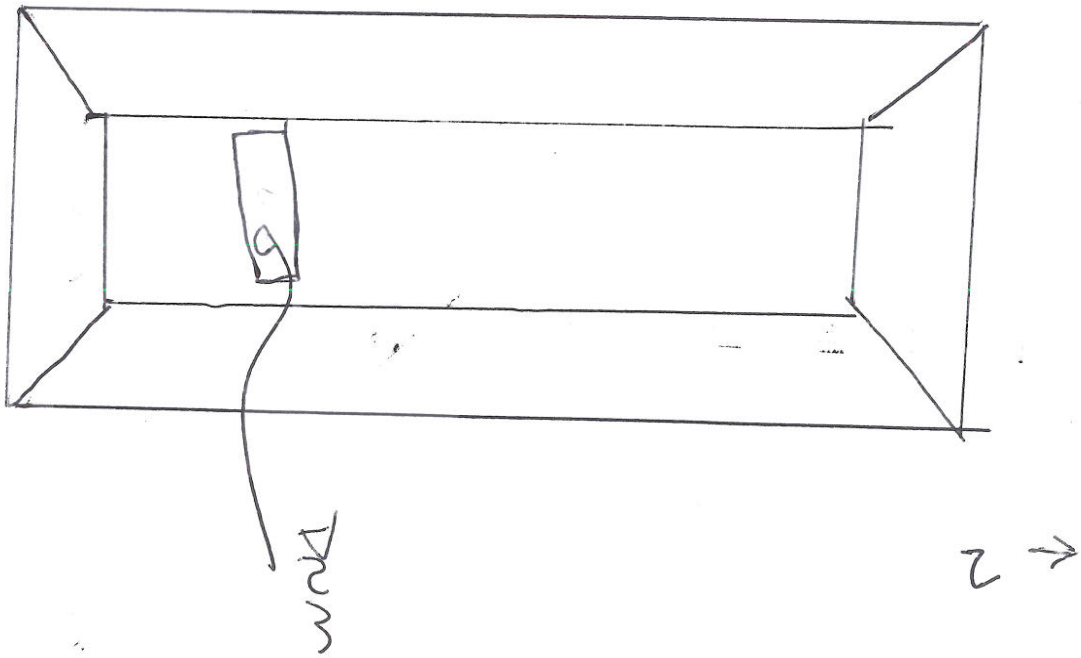
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 Corner 3 Corner 4	See Appendix H			

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
arge debris, concrete blcks	Yes	Yes		
-Drums	Yes			
- Staining and odor	Yes			
- Sludge / oil presence	No			
-Unknown materials	Yes (drum)	PR		
-Sludge materials	No			
-Any other observations	~~[illegible]~~ trash			
	Photograph			
Photographs	Yes			
-General wide-angle with landmark				
-All four side walls of excavation				
Bottom of the excavation				
-Pile of exhumed spoils				

Sketch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-15

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D

DATE EXCAVATED: 11/14/13 1345

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 16 (ft) Width: 3 (ft) Max. Depth: 12 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
3'			silty sand (SM), brown (10YR 4/4), dry, concrete fragments	0.0	Concrete fragments + debris
6'			Sandy gravel (GW), black, dry, bricks + debris	200.1	lots of bricks + debris petro-like odor
9		Sample collected	greenish yellow material - Portions of material are sulfur-yellow - other portions are greenish-yellow - texture - silty clay with sand, few gravel up to 1" diameter (white/subrand) moist, cohesive, low plastic	0.0	strong "sour" odor pit 12.80
12			silt, black (10YR 2/1), (ML) moist, m. soft, cohesive, m. plasticity, trace fibrous organic material	5.8	slight petro-like odor
					Bottom of excavation @ 12' bgs

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-13

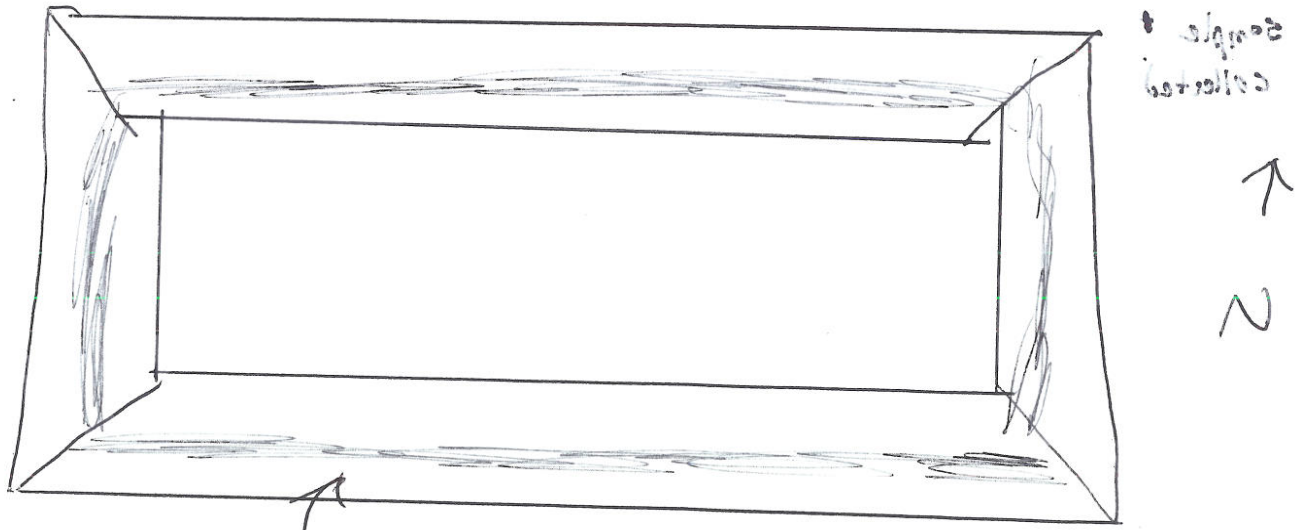
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates				
Corner 1 See Appendix H				
Corner 2				
Corner 3				
Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	Yes			
-Sludge / oil presence	No			
-Unknown materials	Yes			
-Sludge materials	No			
-Any other observations	No			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



greenish yellow material 6-8'

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-16

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/15/13 1230

WATER LEVEL : 7' (ft bgs) DEPTH OF CLAY: – (ft bgs) Length: 15' (ft) Width: 3' (ft) Max. Depth: 11' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm):	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
			Fine sand (SW) with gravel, grayish brown (10YR 4/2), dry	0.0	
2			Fine sand (SP), yellowish brown (10YR 5/6)		
4					black staining noted @ 3.8-4.0'
5			Concrete - weathered, soft, excavator capable to remove		flat slab that excavator was able to grind through
6			Sandy gravel (GW), black, trace silt, brick fragments noted throughout, dry		timbers noted below concrete
7			greenish yellow material - silty clay with sand - moist/wet		- Identical appearance to TP-15 (6-9') - pH - 12.80 - strong "sour" odor
10			Black sandy gravel (GW), (10YR 2/1), wet, bricks sheen on water surface pH - 12.23		
			Silty black (10YR 2/1), moist cohesive, n. plastic, trace mica crystals (microcrystalline) black/brown laminations noted throughout pH - 8.10		2ND brick/concrete layer noted @ 10' bgs
			Bottom of excavation 11' bgs		

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-16

SHEET 2 OF 2

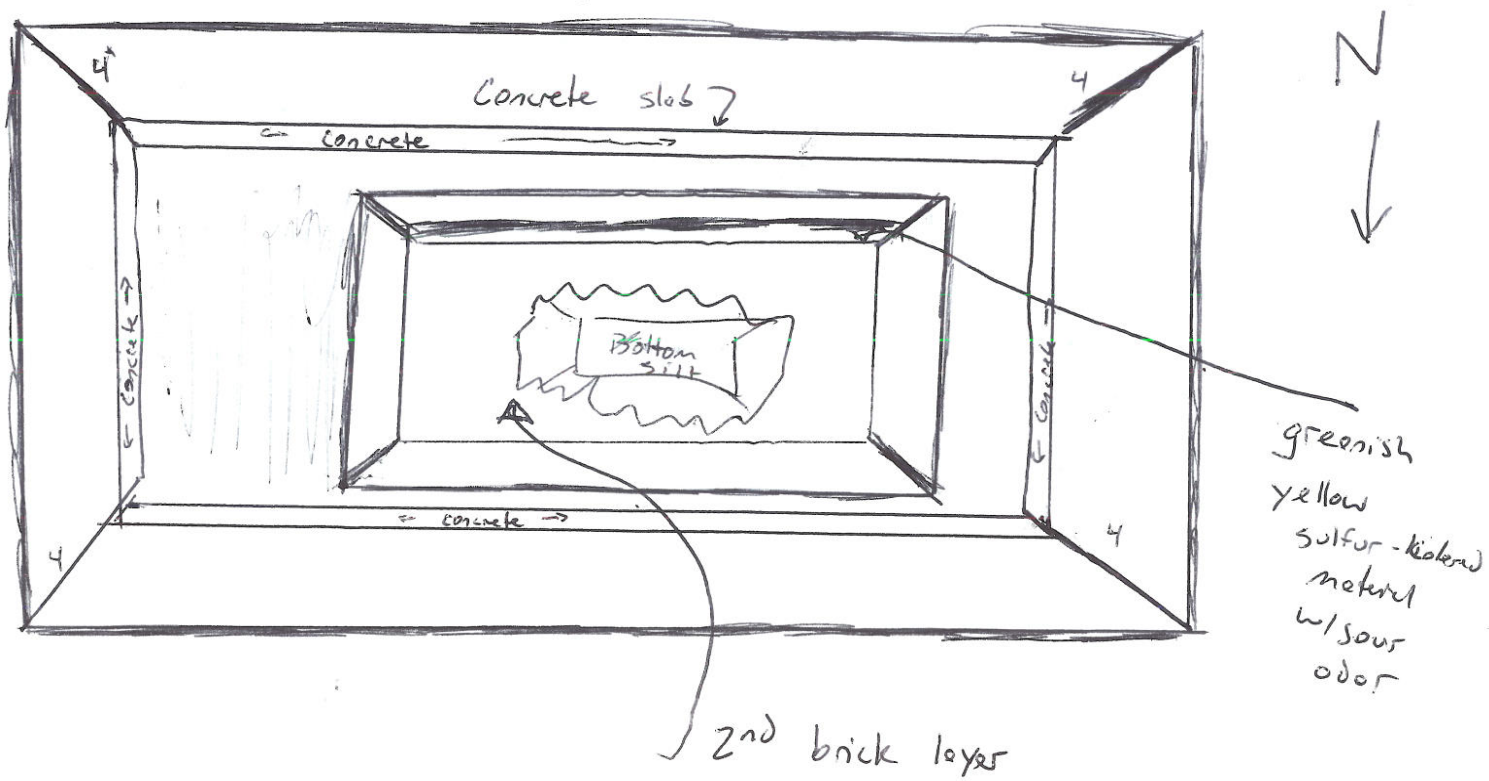
TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates				
Corner 1				
Corner 2 See Appendix H				
Corner 3				
Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
arge debris, concrete blcks	Yes	Yes		
-Drums	No			
- Staining and odor	Yes			
- Sludge / oil presence	No			
-Unknown materials	Yes			
-Sludge materials	No			
-Any other observations	Concrete			
	Photograph			
Photographs				
General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Sketch (note general locations of where features of interest observed, locations and directions of photographs)

"Telescoping" Hole



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-17

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314 D

DATE EXCAVATED: 11/14/13 12 45

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: 11.5' (ft bgs) Length: 15 (ft) Width: 3 (ft) Max. Depth: 12' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm)	COMMENTS Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
			Silty sand, brown (10YR 4/4), dry, loose concrete debris	0.0	concrete fragments + debris
2					
			color change @ 3' bgs to black (10YR 2/1), moist, debris noted		← debris: concrete, cans, bottles, bricks, glass, pipes
4				70	
6					
8					
10	10.5'				
	11.5		Silt (ML), black (10YR 2/1) moist, m. soft, m. plastic, cohesive, transition to ↓	140 60	Abrupt transition ← petro-like odor
12			Silty clay, brown (10YR 4/3), medium soft, medium plastic, moist,		Bottom of excavation 12' bgs

CH2MHILL

PROJECT NUMBER: 402358

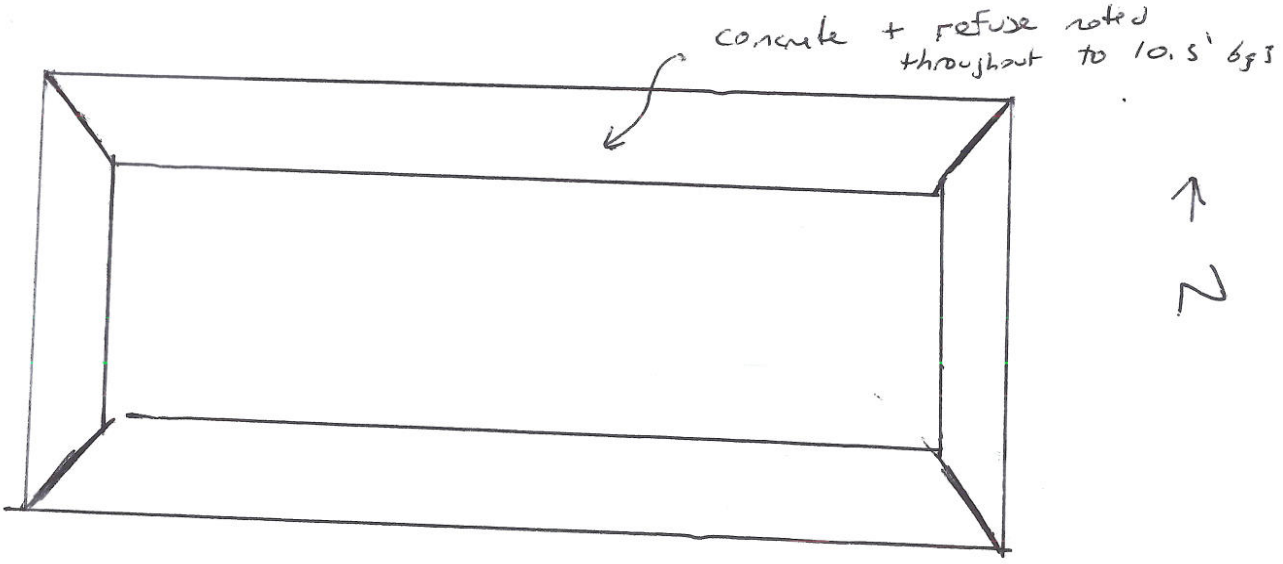
TEST PIT NUMBER: TP-17

SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 See Appendix H Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
- Staining and odor	Yes			
- Sludge / oil presence	No			
-Unknown materials	No			
-Sludge materials	No			
-Any other observations	No			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-18

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/15/13 0915

WATER LEVEL : 8.5 (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 18' (ft) Width: 3' (ft) Max. Depth: 11' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
2, 4, 5'			Fine sand (SP), yellowish brown (10YR 5/6), dry few gray layers noted with depth < 0.3' increased fine content with depth	1.0ppm	organic root material top 0.5'
6, 8, 8.5			silty sand, black (10YR 2/1), bricks + concrete gravel, increasing finely graded with depth	22ppm	wood debris; large wooden timbers
11'			silt, black (10YR 2/1), moist, medium/low plasticity, trace phragmites material noted throughout - increasing with depth	31	water entering excavation rapidly from under wooden timbers
			Bottom of excavation @ 11.0' bgs		

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-13

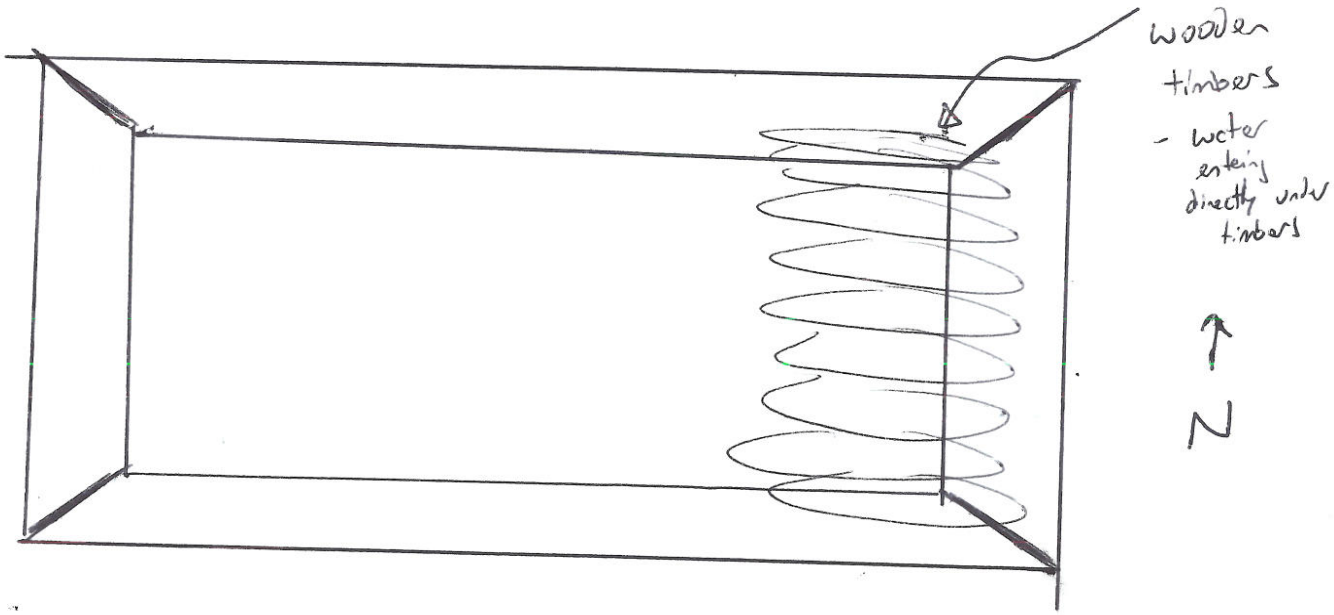
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates				
Corner 1				
Corner 2	See Appendix H			
Corner 3				
Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
-Staining and odor	Yes			
-Sludge / oil presence	No			
-Unknown materials	No			
-Sludge materials	No			
-Any other observations	No			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Sketch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-19A

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/14/13

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 4.5' (ft) Width: 3' (ft) Max. Depth: 4' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
			Brown silty sand w/ gravel, dry, loose, pH 7.27	0.0	gravel, concrete fragments, phragmites
1					
2			Drum carcass removed from excavation - placed back in hole once complete		3.5' (pocket is ~ 2' wide x 1' thick) small pocket of microcrystalline white material "dry paint" like appearance, sweet - perfume-like odor, hard, conchoidal fracture when struck with hammer, brown weathering/oxidation
3		sample collected *		5ppm	
				0.0	pit - 12.70
4			Bottom of testpit - concrete floor noted throughout		

CH2MHILL

PROJECT NUMBER: 402358

TFST PIT NUMBER: TP-19A

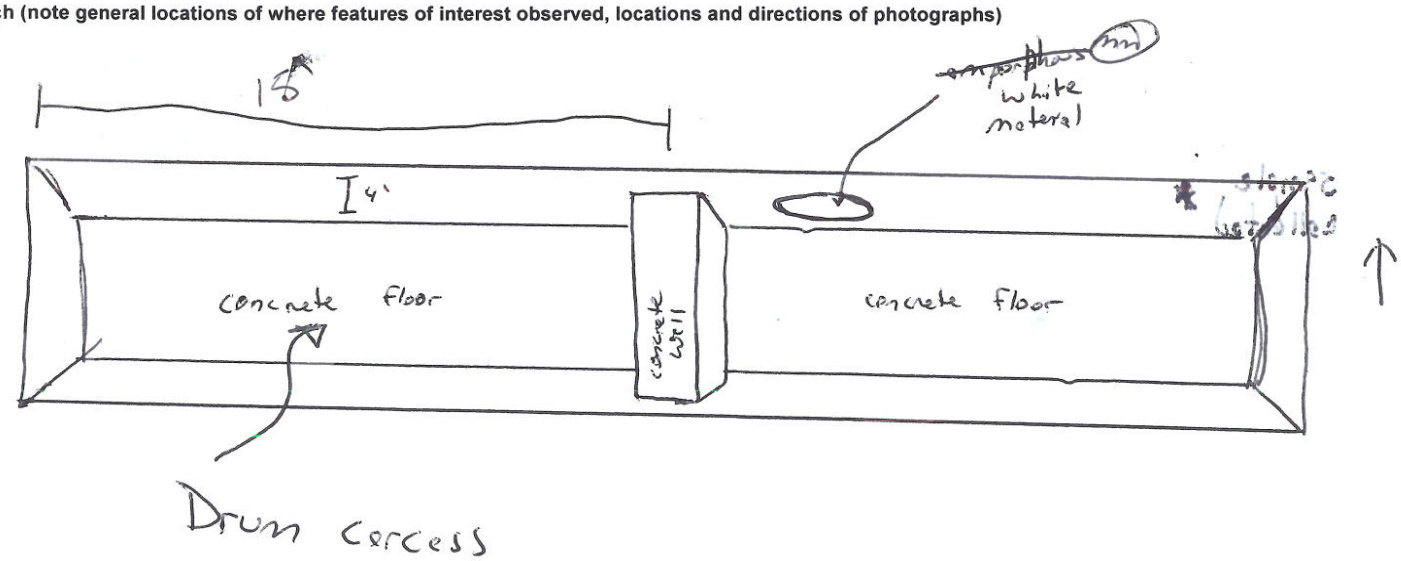
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 Corner 3 Corner 4	See Appendix H			

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Recc d features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	Yes			
- Staining and odor	Yes			
- Sludge / oil presence	No			
-Unknown materials	Yes			
-Sludge materials	No			
Any other observations	~~No~~ concrete			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-198

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : Murphy

ELEVATION : NA CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D DATE EXCAVATED: 10/14/13 0915

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 20' (ft) Width: 3' (ft) Max. Depth: 7' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: NUMBER AND TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm):	COMMENTS: Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
1			Silty sand with gravel (SM), dry, loose, brown (10YR 4/4)	0.0ppm	gravel, concrete fragments phragmites, tire + plastic refuse
2					
3					
4					
5					
6			gravel - subround - wet - sheen observed on water	50ppm	concrete floor + depression noted
7'			Bottom of test pit - concrete floor noted throughout		

CH2MHILL

PROJECT NUMBER: 402358

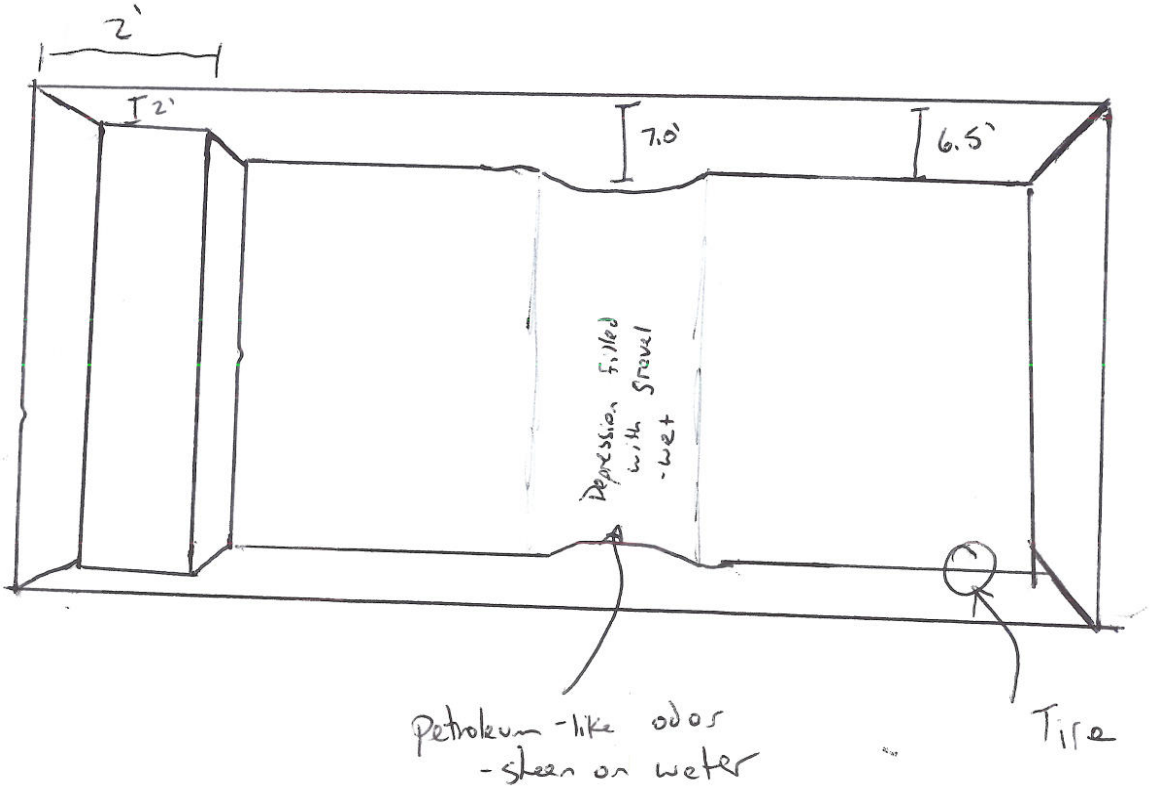
TEST PIT NUMBER: TP-19B

SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 See Appendix H Corner 3 Corner 4				
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No	↓		
- Staining and odor	Yes			
- Sludge / oil presence	No			
-Unknown materials	No			
-Sludge materials	No			
-Any other observations	Concrete			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation	↓			
-Bottom of the excavation				
-Pile of exhumed spoils				

Sketch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-20

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/14/13 1030

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: 12' (ft bgs) Length: 18' (ft) Width: 3' (ft) Max. Depth: 13' (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
			Sand (SP), brown (10YR 5/6), trace gravel fine/medium grain size sand, dry, homogeneous, uniform, black/dark brown color change below 9' bgs	5ppm	organic root material
					corrugated pipe (12") pulled from excavation ~~approximately~~ 2-3' bgs
			DRY		Unstable sidewalls lots of cave-in
				79ppm	
12					
13	Sample collected *		Silty clay, grayish brown (10YR 5/2), moist, soft, black staining	114ppm	petro-like odor Potential sludge strike material (DR)
			Bottom of excavation @ 13' bgs		

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: TP-20

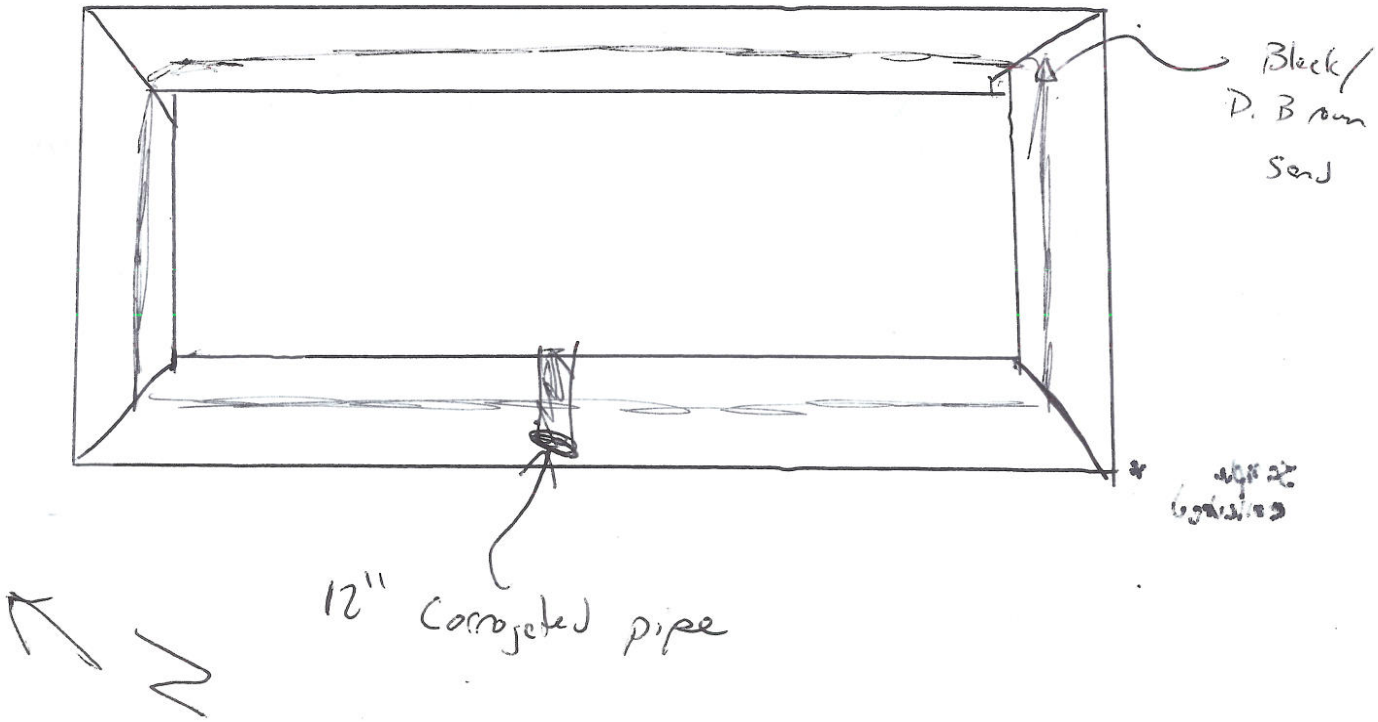
SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 See Appendix H Corner 3 Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	Yes	Yes		
-Drums	No			
- Staining and odor	Yes			
- Sludge / oil presence	No			
-Unknown materials	No			
-Sludge materials	~~No~~ Yes (DR)			
-Any other observations	Pipe			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)



CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: SC-1

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson LOGGER : Murphy

ELEVATION : NA CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D DATE EXCAVATED: 11/15/13 0830

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 6 (ft) Width: 3 (ft) Max. Depth: 5 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.)	PID (ppm)	COMMENTS (Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT; PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT; DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS.) Notes
1			organic silt, brown, (10YR 4/4), Few sand phragmites + root matter dry		
	Sample * collected		Black sludge-like material - - liquid - no physical strength - Fluid with "Ketchup-like" viscosity - slippery	30 ppm	Faint petroleum-like odor
5			Bottom of excavation ~5' bgs		

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: SL-1

SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates				
Corner 1	See Appendix H			
Corner 2				
Corner 3				
Corner 4				

	Observed	Photographed (Y for all observed)	GPS coordinate - Northing	GPS coordinate - Easting
Record features of interest				
-Large debris, concrete blcks	No	NA		
-Drums	No	NA		
-Staining and odor	Yes	Yes		
-Sludge / oil presence	Yes			
-Unknown materials	No			
-Sludge materials	Yes			
-Any other observations	No			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Stetch (note general locations of where features of interest observed, locations and directions of photographs)

Bucket scoped out of sludge lagoon approx 5' deep

- west side

CH2MHILL

PROJECT NUMBER: 402358

TEST PIT NUMBER: SL-2

SHEET 1 OF 2

TEST PIT LOG

PROJECT: Diamond Head Oil Superfund Site

LOCATION : Harrison Ave, Kearny, NJ 07032 (Hudson

LOGGER : Murphy

ELEVATION : NA

CONTRACTOR : Lewis

EXCAVATION EQUIPMENT USED : CAT 314D

DATE EXCAVATED: 11/15/13 0815

WATER LEVEL : — (ft bgs) DEPTH OF CLAY: — (ft bgs) Length: 6 (ft) Width: 3 (ft) Max. Depth: 5 (ft)

GPS COORDINATES OF 4 CORNERS - record on next page

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	PID (ppm):	COMMENTS Record following under comments: FEATURES OF INTEREST - SEE LOG ATTACHMENT PHOTOGRAPHS TO TAKE - SEE LOG ATTACHMENT DIFFICULTY IN EXCAVATION, RUNNING GRAVEL CONDITION, COLLAPSE OF WALLS, SAND HEAVE, DEBRIS ENCOUNTERED, WATER SEEPAGE, GRADATIONAL CONTACTS, TESTS, INSTRUMENTS. Notes
0.5			organic silt, brown (10YR 7/4) few sand, phragmites, root mat		dry
	sample collected		Black sludge like material - liquid - No physical strength - Fluid w/ "ketchup-like" viscosity - slippery	31ppm	
5.0					
			Bottom of excavation ~ 5' bgs		

CH2MHILL	PROJECT NUMBER: 402358	TEST PIT NUMBER: SL-2 SHEET 2 OF 2

TEST PIT LOG

	GPS coordinate - Northing	GPS coordinate - Easting		
Coordinates Corner 1 Corner 2 Corner 3 Corner 4	See Appendix H			
	Observed	**Photographed (Y for all observed)**	**GPS coordinate - Northing**	**GPS coordinate - Easting**
Record features of interest				
-Large debris, concrete blcks	No	NA		
-Drums	NO	NA		
- Staining and odor	Yes	Yes		
-Sludge / oil presence	Yes			
-Unknown materials	No			
-Sludge materials	Yes			
-Any other observations	No			
	Photograph			
Photographs				
-General wide-angle with landmark	Yes			
-All four side walls of excavation				
-Bottom of the excavation				
-Pile of exhumed spoils				

Sketch (note general locations of where features of interest observed, locations and directions of photographs)

Bucket scoped out of sludge lagoon approx 5' deep - east side

Appendix E
Soil Boring Logs and Piezometer Construction Diagrams

Contents

1. Soil Boring Logs
2. Temporary Piezometer Construction Diagrams
3. Temporary Piezometer Well Records
4. Temporary Piezometer Form B's
5. Well Abandonment Form – PZ-15

Appendix E
Soil Boring Logs and Piezometer Construction Diagrams

Section 1
Soil Boring Logs

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-23	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698243.0 N, 593964.0 E)

ELEVATION : 7.0 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.1 ft bgs
START : 12/16/13 09:00
END : 12/16/13 09:50
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Asphalt** 0-1.2' - black, dry, base layer		PID: 0 PPM to 4 PPM at 3 ft BGS ▼
		3.3	-1	**Sand (SP)** 1.2-3' - brown, (10YR 4/3), dry, loose, fine to medium grained, uniform		
5	5.0					
		2.1	-2	**Sand (SP)** 5-7.1' - Same as Above except wet, brick fragments at 7.0' BGS		PID: <1 PPM
	8.0					
10		2.7	-3	**Sand (SP)** 8-10.7' - Same as Above except trace round gravel noted at bottom of recovery		PID: 4 PPM at 10 ft BGS
	11.0					
		4.0	-4	**Sand (SP)** 11-13.5' - Same as Above		abrupt change at 13.5 ft and 13.8 ft BGS PID: 1.9 PPM at 11.5" BGS; 3.9 PPM at 13.6' BGS; and 0.6 PPM at 14' BGS
				Silt With Clay (ML) 13.5-13.8' - black, (10YR 2/1), wet, soft, moderate plasticity, cohesive		
15	15.0			**Sand (SP)** 13.8-15' - olive yellow to 14.1' bgs grayish brown, (5YR 6/8), 10yr 3/2, wet, few silt decreasing with depth, horizontal lamination/layering noted below 14/5' BGS		
				Bottom of Boring at 15.0 ft bgs on 12/16/13 09:50		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-24 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (698273.9 N, 594055.7 E)

ELEVATION : 7.9 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.0 ft bgs START : 12/13/13 09:25 END : 12/13/13 10:00 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Sand With Gravel (SW)** 0-1' - dry, fine to coarse grained, trace brick fragments		PID: 0 at 1' BGS, 9 PPM at 1.5' BGS, 18 @ 2.5' BGS ▼
				Pulvarized Concrete Fragments 1-1.7'		
		2.7	-1	**Silty Sand, Few Gravel (SM)** 1.7-2.7' - black, (10YR 2/1), moist/wet, rounded to subrounded, slight petro-like odor		
5	5.0					
		2.3	-2	**(SM)** 5-6.5' - Same as Above except brown, (10YR 3/3), increasing silt content with depth		PID: <1 PPM below 5' BGS
				Silt With Clay (ML) 6.5-7.3' - black, (10YR 2/1), moist, soft, moderate plasticity, gray "streaking"/laminations noted, organic material		
	8.0			Bottom of Boring at 8.0 ft bgs on 12/13/13 10:00		
10						
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD_PDI.GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-25 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (698272.2 N, 594142.6 E)

ELEVATION : 8.0 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.9 ft bgs START : 12/13/13 10:00 END : 12/13/13 10:30 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.4	-1	**Sand, Trace Silt And Trace Gravel (SP)** 0-0.5' - moist, medium grained **Pulvarized Concrete Fragments** 0.5-0.9' **Sand With Gravel (SP)** 0.9-2.2' - black, (10YR 2/1), wet, rounded to subrounded, gravel size up to 0.5" diameter, petro-like odor		PID: 1 PPM at .9' BGS, 44 PPM at 1.5' BGS, 55 PPM at 2' BGS ▼
5	5.0	0.9	-2	**Silty Sand, Trace Gravel (SP)** 5-5.2' - brown, (10YR 4/3), wet, subrounded, abrupt change at 5' BGS, gravel up to 1" diameter **Pulvarized Concrete Fragments** 5.2-5.9'		PID: 1 PPM
	8.0	1.0	-3	**Silt (ML)** 8-9' - black, (10YR 2/1), moist/wet, soft, moderate to high plasticity, cohesive, organic content		PID: 0 PPM
10	10.0			Bottom of Boring at 10.0 ft bgs on 12/13/13 10:30		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD_PDI.GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-26	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698272.2 N, 594224.6 E)

ELEVATION : 7.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.0 ft bgs
START : 12/18/13 11:00
END : 12/18/13 11:25
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.3	-1	**Silty Sand (SM)** 0-2.5' - dark brown, (10YR 3/2), moist, wood fragments, organic matter noted at top of recovery coal-like gravel fragments - black, smooth, shiny, angular, noted at 0.5' BGS broken glass fragments **Silt With Sand, Trace Gravel (ML)** 2.5-3.3' - brown, (10YR 4/3), moist		PID: 0 PPM at 0 ft, 0.8 PPM at 2.4' BGS ▼
5	5.0	3.3	-2	**(ML)** 5-5.5' - Same as Above except wet **Silty Clay (CL)** 5.5-6.5' - black, moist/wet, medium soft, trace organic matter NAPL impacted **Pulvarized Concrete Fragments** 6.5-7.3' - soft and degraded **Silty Sand (SM)** 7.3-7.6' - black, saturated NAPL - has a honey-like texture, sticky, brown staining **Silt With Clay (ML)** 7.6-8.3' - black, moist, plastic plasticity		PID: 5 PPM at 5.5' BGS, 2 PPM at 7' BGS, 10 PPM at 7.5' BGS, 18 PPM at 8' BGS
10	10.0			Bottom of Boring at 10.0 ft bgs on 12/18/13 11:25		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-27	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698184.7 N, 593972.6 E)

ELEVATION : 7.6 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.4 ft bgs
START : 12/13/13 14:30
END : 12/13/13 15:45
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand With Gravel (SM)** 0-1.5' - dark brown, (2.5YR 3/3), dry, wood fragments and vegetation debris noted in top 0.5' charcoal-like fragments noted at ~1' BGS - black, hard, very finely grained, significant vesicules, concrete fragments noted at bottom of interval		PID: 0 PPM ▼
		3.0	-1	**Gravelly Sand With Silt (SW)** 1.5-2.5' - dark reddish brown, (5YR 3/4), wet, loose, rounded to subrounded, gravel pieces up to 1.25" diameter magnetic		identical to unknown white material during test pits
				Unknown White Material 2.5-3' - silt/clay like texture, low plasticity, cohesive, blocky structure/fracturing		
5	5.0			**Silt With Clay (ML)** 5-6.4' - black, (10YR 2/1), moist, soft, medium plasticity		PID: 0 PPM
		1.8	-2	**Silt With Trace Sand (ML)** 6.4-6.8' - black, (10YR 2/1), wet, fine grained, nonplastic, trace organic matter, organic fibrous material, non-cohesive		
	8.0			Bottom of Boring at 8.0 ft bgs on 12/13/13 15:45		
10						
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-28 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (698190.3 N, 594057.9 E)

ELEVATION : 8.0 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.2 ft bgs START : 12/16/13 10:00 END : 12/16/13 11:00 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.1	-1	**Silty Sand With Gravel (SM)** 0-3.1' - black to dark reddish brown, (10YR 2/1), 5yr 3/2, dry, yellow sulfur-like pulverized concrete-like material noted at 2' BGS, v. small pocket (1" thick) gravel is rounded/spherical up to 1/2" diameter, loose, magnetic petro-like odor		PID: 50 PPM at 1.5' BGS, 107 PPM ▼
5	5.0	2.4	-2	**(SM)** 5-6' - Same as Above		PID: 70 PPM at 5' BGS, 48 PPM at 7' BGS
				Silt With Clay, Trace Gravel (ML) 6-6.5' - dark grayish brown, (10YR 3/2), wet, soft, subangular, gravel 1/4" diameter		abrupt change abrupt change
				Sand (SP) 6.5-7' - dark grayish brown, (10YR 4/2), wet, fine grained, petro-like odor		
	8.0			**Silt, Trace Sand (ML)** 7-7.4' - black, (10YR 2/1), wet, fine grained, nonplastic to low plasticity, petro-odor, increasing clay content with depth Bottom of Boring at 8.0 ft bgs on 12/16/13 11:00		
10						
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-29 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698185.5 N, 594176.5 E)

ELEVATION : 8.3 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 5.4 ft bgs
START : 12/13/13 10:33
END : 12/13/13 10:55
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.8	-1	**Silty Sand, Few Gravel (SM)** 0-2.8' - dark brown, (10YR 3/2), moist, little organic material-decreases with depth, wood and brick fragments noted below 1' BGS increase gravel with depth petro-like odor		Attempts 1 and 2 at stake had refusal at 10' BGS, location moved halfway between PZ-29 and PZ-30 to reattempt. PID: 45 PPM, 55 PPM, and 20 PPM 0-2.8' BGS
5	5.0	2.0	-2	**Sandy Silt With Gravel (ML)** 5-6.8' - brown, (10YR 4/3), wet, nonplastic, faint petro-like odor		PID: 5 PPM at 5' BGS, 1 PPM at 6.8' BGS ▼
	8.0			**Silt With Clay (ML)** 6.8-7' - black, (10YR 2/1), moist, soft, med/low plasticity, organic material noted Bottom of Boring at 8.0 ft bgs on 12/13/13 10:55		
10						
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD_PDI.GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-30 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698187.4 N, 594243.7 E)

ELEVATION : 8.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.8 ft bgs
START : 12/18/13 11:40
END : 12/18/13 12:15
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand (SM)** 0-1.5' - dark brown, (10YR 3/2), moist, dense, concrete and gravel noted		PID: 0 PPM ▼
		2.9	-1	**Concrete Gravel Fragments** 1.5-2.9' - wet, black silt intermixed throughout		
5	5.0			**Silt With Clay, Few Gravel (ML)** 5-5.5' - black, wet, soft/v. soft, gravel decreases with depth		PID: 42 PPM at 5.5' BGS
		1.1	-2	**Sludge-Like Material** 5.5-6.1' - black, slight petro-like odor slippery/amorphous texture trace organic matter trace fine sand completely disintegrated structure when worked by hand not sticky-"greasy" texture when worked by hand, trace organic material		
10	10.0			Bottom of Boring at 10.0 ft bgs on 12/18/13 12:15		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-31	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698136.3 N, 594272.4 E)

ELEVATION : 22.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 14.5 ft bgs
START : 12/12/13 13:30
END : 12/12/13 15:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.0	-1	**Silty Sand With Gravel (SM)** 0-2.5' - dark reddish brown, (5YR 3/4), dry, trace organic matter at top of recovery brick and wood fragments at 2.5' BGS		PID: 0 PPM
				Silt With Little Sand (ML) 2.5-3' - dark brown, (10YR 3/3), moist, low plasticity, abrupt change, woody organic material noted cohesive		
5	5.0	3.0	-2	**Silt With Little Sand (ML)** 5-8' - dark brown, (10YR 3/3), moist, low plasticity, decreasing sand content with depth plastic and wood debris, fabric fragments, significant organic materal noted throughout leaf and root matter cohesive		PID: 4 PPM
10	10.0	1.8	-3	**Silt With Little Sand (ML)** 10-10.6' - dark brown, (10YR 3/3), moist, low plasticity		PID: 4 PPM at 10' BGS, 8 PPM at 11' BGS
				Silty Sand, Trace Gravel (SM) 10.6-11.8' - black, (10YR 3/3), moist, dense, significant glass shards noted at ~11' BGS moderate petro-like odor trace wood/fibrous organic matter		▼
15	15.0	2.6	-4	**Silt With Clay, Trace Sand (ML)** 15-16.6' - black, (10YR 2/1), moist, soft, medium grained sand, wood fibers and glass fragments noted throughout		PID: 3 PPM
				Concrete Fragments And Gravel 16.6-17.6' - moist/wet, soft/degraded concrete fragments		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-31	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698136.3 N, 594272.4 E)

ELEVATION : 22.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 14.5 ft bgs
START : 12/12/13 13:30
END : 12/12/13 15:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silt With Clay (ML)** 20-22.2' - black, moist, medium stiff, med/high plasticity, trace organic fibers		PID: 18 PPM
		2.2	-5			
25	25.0			Bottom of Boring at 25.0 ft bgs on 12/12/13 15:00		
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD_PDI.GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-32	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698094.9 N, 593974.9 E)

ELEVATION : 9.8 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 3.5 ft bgs
START : 12/13/13 13:50
END : 12/13/13 14:25
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Sandy Silt With Gravel (ML)** 0-2' - dark reddish brown, (5YR 3/4), dry, dense, trace rounded gravel with depth (magnetic) plastic sheeting and wood noted		PID: 0 PPM
		2.8	-1	**Sand, Trace Silt (SW)** 2-2.8' - very dark grayish brown, (10YR 4/2), wet, very fine to coarse grained, cinder-like material (loose, low density, gray/white coarse sand particles) noted throughout		▼
5	5.0			**(SW)** 5-5.9' - Same as Above		PID: 0 PPM
		2.6	-2	**Silt With Clay (ML)** 5.9-7.6' - black, (10YR 2/1), moist/wet, medium soft, medium plasticity, trace organic fibers noted throughout - organic leaf material noted at bottom of interval approximately 0.5" thick gradual transition to silt with fine sand below 6.5' BGS, low/non plastic, slightly cohesive		
10	10.0			Bottom of Boring at 10.0 ft bgs on 12/13/13 14:25		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-33	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698092.1 N, 594063.3 E)

ELEVATION : 8.4 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.0 ft bgs
START : 12/13/13 13:00
END : 12/13/13 13:35
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand With Gravel (SM)** 0-1' - dark grayish brown, moist/wet, organic root matter		PID: 21 PPM at .5' BGS, 5 PPM at 1.5' BGS
		3.1	-1	**Sand Silt With Gravel (ML)** 1-3.1' - dark reddish brown, (5YR 3/4), dry/moist, rounded/subrounded, gravel up to 1/4" diameter - magnetic		
5	5.0					
		2.7	-2	**Sandy Silt With Gravel (ML)** 5-5.5' - Same as above **Clay, Trace Sand, Trace Silt (CL)** 5.5-6' - dark brown, (7.5YR 3/3), wet, soft, fine grained, medium plasticity, cohesive **Silt With Clay, Trace Gravel (ML)** 6-7.7' - black, (10YR 2/1), wet, soft, gradual transition with increasing fine content with depth trace wood and organic fragments		PID: 3 PPM at 5.5' BGS
	8.0					
		1.8	-3	**Silt With Clay (ML)** 8-9.4' - black, (10YR 2/1), wet, soft, high plasticity		
10	10.0			**Peat** 9.4-9.7' - dark brown, (7.5YR 3/4), moist, soft, spongy content **Silty Sand (SM)** 9.7-9.8' - dark brown, (7.5YR 3/4), wet, high organic content Bottom of Boring at 10.0 ft bgs on 12/13/13 13:35		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED.GLB DIAMONDHEAD.PDLGPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-34 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698099.1 N, 594139.2 E)

ELEVATION : 9.2 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.7 ft bgs
START : 12/13/13 11:30
END : 12/13/13 11:50
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Topsoil** 0-0.6' - dark brown, (10YR 4/4), organic and root material, silty		PID: 2.5 PPM at 0.5' BGS, 20 PPM at 1' BGS, 53 PPM at 2' BGS, 56 PPM at 2.5' BGS, 54 PPM at 3.5' BGS ▼
		3.5	-1	**Sandy Silt With Gravel (ML)** 0.6-3.5' - dark reddish brown, (5 YR3/4), dry, rounded gravel up to 1/2" diameter - magnetic gravel content increases with depth		
5	5.0			**Sandy Silt With Gravel (ML)** 5-5.5' - rounded gravel up to 1/2" diameter - magnetic, gravel content increases with depth		PID: 10 PPM at 5.5' BGS, 35 PPM at 6.5' BGS
		1.5	-2	**Silt (ML)** 5.5-6.5' - black, (10YR 2/1), moist, low plasticity, trace fibrous organic material microcrystaline/shiny mica observed vegetation matter (phragmites noted) cohesive faint petro-like odor observed, decreasing with depth		
	8.0			**Silt (ML)** 8-10.2' - Same as Above		PID: 10 PPM at 8.5' BGS, 5 PPM at 10' BGS
		2.2	-3			
10	11.0			Bottom of Boring at 11.0 ft bgs on 12/13/13 11:50		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-35 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (698121.8 N, 594226.0 E)

ELEVATION : 8.9 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.6 ft bgs START : 1/13/14 13:45 END : 1/13/14 14:20 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silt With Sand (SM)** 0-2' - brown, (7.5YR 4/3), wet, wood fragments and organic debris noted plastic, broken glass, gravel fragments noted at ~2' BGS		PID: 24 PPM at 2' BGS ▼
		2.4	-1	**Sand With Gravel, Trace Silt (SW)** 2-2.4' - black to dark gray, (10YR 3/1), wet, NAPL saturated at 2.1-2.2' BGS - NAPL is viscous, sticky, "honey-like" texture petro-like odor noted		
5	5.0					
		2.8	-2	**Sand With Gravel, Trace Silt (SW)** 5-5.5' - Same as Above except angular **Silt With Clay (ML)** 5.5-7.8' - black, (10YR 2/1), wet, med soft to med stiff, petro-like odor, decreases with depth silty sand pocket at 6' BGS Fibrous organic matter (trace) noted throughout		PID: 10-72 PPM throughout
10	10.0			Bottom of Boring at 10.0 ft bgs on 1/13/13 14:20		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-36	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698091.9 N, 594293.9 E)

ELEVATION : 23.8 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 17.1 ft bgs
START : 12/12/13 12:10
END : 12/12/13 13:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.3	-1	**Silty Sand (SM)** 0-3.3' - dark brown, (10YR 3/3), dry, loose, organic root material, fibrous matter, glass, plastic sheeting, rubber fragments noted throughout and increases with depth slightly cohesive, 1.5" diameter rock fragment noted at bottom of recovery		PID: 0 PPM
5	5.0	4.0	-2	**Silt With Sand (ML)** 5-9' - dark brown, (10YR3/3), dry/moist, low plasticity, wood fragments, broken glass, and brick fragments noted throughout faint petro-like odor noted at bottom of recovery slightly cohesive, black (10YR2/1) below 6.2'		PID: 5 PPM throughout
10	10.0	3.7	-3	**Silt With Clay (ML)** 10-13.7' - black, (10YR 2/1), moist, med/low plasticity, trace sand, wood and broken glass fragments		PID: 4-26 PPM, increases with depth
15	15.0	2.9	-4	**Silt With Clay (ML)** 15-15.5' - Same as Above **Silty Sand With Gravel (SM)** 15.5-16' - black, (10YR 2/1), moist, medium dense, slight petro-like odor **Silt With Clay, Little/few Gravel (ML)** 16-17' - black, (10YR 2/1), moist, medium plasticity, wood, and concrete fragments noted **Silty Sand (SM)** 17-17.9' - dark brown, (10YR 3/3), black 10yr 2/1, moist/wet, strong petro-like odor slightly cohesive		PID: 4 PPM at 15.5' BGS, 18 PPM at 16' BGS, 4 PPM at 17' BGS ▼
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-36 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (698091.9 N, 594293.9 E)

ELEVATION : 23.8 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 17.1 ft bgs START : 12/12/13 12:10 END : 12/12/13 13:00 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	20.0			**Silty Sand (SM)** 20-21.6' - Same as Above except very fine to medium grained, rounded, decreasing sand content with depth trace organic matter and fibrous plant debris slight/faint petro-like odor		PID: 8 PPM at 21.6' BGS, 4 PPM at 22.5' BGS, 40 PPM at 23' BGS
		3.3	-5	**Silt With Clay (ML)** 21.6-22.9' - black, (10YR 2/1), moist, medium stiff, low plasticity, trace mica flakes (<1 mm in diameter) petro-like odor slightly cohesive		
				Silty Clay (CL) 22.9-23.3' - brown, (10YR 4/3), moist, medium stiff, low plasticity, cohesive Bottom of Boring at 9.0 ft bgs on 12/12/13 13:00		
25	25.0					
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-37	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698015.1 N, 593974.0 E)

ELEVATION : 12.2 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 4.7 ft bgs
START : 12/16/13 10:40
END : 12/16/13 11:15
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	0.0			**Sandy Silt With Gravel (ML)** 0-1.9' - grayish brown, (10YR 4/2), broken glas and trace wood fragments		PID: 1-2 PPM throughout
		2.5	-1	**Silt (ML)** 1.9-2.5' - light/low density, compressible, "pillowy", gray to reddish orange trace gravel fragments and glass noted throughout, cinder-like material previously observed similar material in TP-2		
5	5.0					▼
		1.6	-2	**Silty Sand With Gravel (SM)** 5-6' - yellow, (10YR 8/6), dry, loose, coal-like gravel fragments and trace amber glass fragments		PID: <1 PPM
				Wood And Glass 6-6.5' - black, wet, trace sand and silt		
				Silt With Clay (ML) 6.5-7.6' - black, (10YR 2/1), moist/wet, med soft, trace organic fibrous material gray laminations noted within soil matrix trace mica crystals noted		
10	10.0			Bottom of Boring at 10.0 ft bgs on 12/16/13 11:15		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-38	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698018.3 N, 594128.2 E)

ELEVATION : 9.4 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.0 ft bgs
START : 12/16/13 13:45
END : 12/16/13 14:15
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	0.0			**Silty Sand With Gravel (SM)** 0-2' - gray to black, (10YR 4/1), 10yr 2/1, dry, concrete debris noted, slight yellow (sulfur) staining on concrete		PID: 9 at 1' BGS, 35 at 1.5' BGS, 21 at 2' BGS, < 1 2.5 BGS ▼
		3.4	-1	**Sand With Silt (SM)** 2-2.7' - dark brown, (10YR 4/4), moist to wet, coarse grained, magnetic round gravel noted		identical material found in test pit TP-5
				Unknown White Material 2.7-3.2'		
				Sand (SW) 3.2-3.5' - dark brown, (10YR3/2), wet, coarse grained, round spherical gravel-magnetic		
5	5.0			**Sand (SW)** 5-5.7' - Same as Above except coarse grained, non-magnetic quartz gravel noted		PID: <1 PPM throughout
				Unknown White Material 5.7-6' - Same as 2.7 to 3.2 interval except slight blue oxidation/discolorization		
		1.4	-2	**Silt, Trace Sand** 6-6.4' - brown, (7.5YR 4/3), dry to moist, very fine grained, low plasticity, cohesive		
10	10.0			Bottom of Boring at 10.0 ft bgs on 12/16/13 14:15		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-39 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698018.3 N, 594128.2 E)

ELEVATION : 9.4 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.7 ft bgs
START : 1/13/14 09:30
END : 1/13/14 10:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand, Trace/little Gravel** 0-0.5' - dark grayish brown, (10YR 3/2), moist to wet		location was moved approximately 10' west of stake due to standing water around stake PID: 26 PPM at 1.5' BGS, 33 PPM at 3' BGS ▼
				Pulvarized Concrete Fragments 0.5-1.5'		
		3.1	-1	**Silty Sand, Few Gravel (SM)** 1.5-3.1' - dark grayish brown, (10YR 4/2), moist to wet, petro-like odor, wet below 2.7' BGS, pocket ofgravel rounded - magnetic		"UNKNOWN WHITE MATERIAL" noted at 2.2' BGS as previously seen in TP-5
5	5.0					
		2.6	-2	**Silty Sand, Few Gravel (SM)** 5-6.4' - Same as ABOVE		PID: 0 PPM
				Black "sludge-Like" Material 6.4-7.6' - very soft, no discernable soil structure, sticky, wet (possibly), no discernable petro-like odor		
10	10.0					
		2.5	-3	**Silt With Clay (ML)** 10-11.7' - black, (10YR 2/1), moist, low plasticity, trace fibrous organic matter, trace mica (< 1 mm), cohesive		PID: 0 PPM
				Peat 11.7-12.3'		
				Silty Sand (SM) 12.3-12.5' - brown, (7.5YR 4/4), wet		
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/13/14 10:00		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED.GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-40 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698014.2 N, 594227.0 E)

ELEVATION : 9.4 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.8 ft bgs
START : 1/2/14 11:40
END : 1/2/14 12:15
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand With Gravel (SM)** 0-1.5' - reddish brown, (5YR 4/3), dry, concrete and brick fragments, wood fragments at bottom of interval		PID: 23 PPM at 1.5' BGS ▼
		2.0	-1	**Sandy Silt (ML)** 1.5-2' - black, (10YR 2/1), moist, low to non plasticity, cohesive, petro-like odor		
5	5.0					
		2.2	-2	**Sandy Silt** 5-5.2' - Same as ABOVE **Silt With Clay (ML)** 5.2-6.5' - black, (10YR 2/1), wet, very soft to medium stiff, increases with depth, amorphous "sludge-like" soft, sticky, petro-like odor materaial at top of interval (1" thick) **Sand (SP)** 6.5-7.2' - brown, (10YR 4/3), moist to wet, very fine grained, silt content increases with depth (trace to few)		abrupt change at 5.2' BGS PID: 3 PPM at 5.2' BGS, 10 PPM at 6.5' BGS sheen noted on water surface abrupt change at 6.5' BGS
10	10.0					
		2.5	-3	**Silt With Clay (ML)** 10-11.7' - black, (10YR 2/1), medium stiff, moderate plasticity, trace vegetation matter and wavy gray laminations, trace mineral/mica flakes noted with in soil structure cohesive **Peat** 11.7-12.5' - soft, brown, wet few sand noted at bottom of recovery		PID: 40 at 10' BGS, 20 PPM at 11' BGS, 10 PPM at 11.5' BGS
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/2/14 00:15		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED.GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-41 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698016.0 N, 594251.0 E)

ELEVATION : 9.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.4 ft bgs
START : 1/10/14 13:30
END : 1/10/14 14:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.0	-1	**Silty Sand (SM)** 0-2.7' - brown, (10YR 4/3), dry, medium dense, trace organic/wood root matter at top of recovery, trace wood and plastic fragments throughout, brick fragments at 2.4' BGS, black staining at 2.7' BGS		PID: 4 PPM at 2' BGS ▼
				Pulverized Concrete Fragments 2.7-3'		low resistence-relatively easy to drill to
5	5.0	3.2	-2	**Silty Sand** 5-5.2' - brown, wet **Silt With Clay (ML)** 5.2-8.2' - cohesive, tile fragments noted at 6.5' BGS - NAPL staining at ~6.5' BGS, reduced petro-like odor with depth, dark gray laminations below 7.7' BGS, tile fragments - flat angulay grabel - appears to be man made		tile fragments - flat angular gravel - appears to be man made PID: 29 PPM at 5' BGS, 53 PPM at 6' BGS, 27 PPM at 7' BGS, 14 PPM at 7.5' BGS, 8 PPM at 8' BGS
10	10.0			Bottom of Boring at 10.0 ft bgs on 1/10/14 14:00		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-42	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698018.8 N, 594325.3 E)

ELEVATION : 23.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 20.2 ft bgs
START : 12/12/13 14:40
END : 12/12/13 15:45
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.6	-1	**Silty Sand With Gravel (SM)** 0-3.6' - dark brown, (7.5YR 3/2), dry, medium dense, glass and plastic sheeting observed at 2.5' BGS wood fragments noted at bottom of recovery		PID: 0.5 PPM
5	5.0	1.8	-2	**Silt With Clay, Trace Sand (ML)** 5-6.8' - black, moist, medium stiff, medium grained, medium to low plasticity, broken glass, rubber, plastic sheeting, and wood fragments noted throughout cohesive		PID: 1.5 PPM
10	10.0	2.9	-3	**Silt With Clay, Trace Sand (ML)** 10-12' - Same as above except pocket of white material - like dry paint, very thinly laminated layers of horizontal/flat bedded material - ~0.5" thick **Asphault** 12-12.9' - refuse material - dry "discs" of resembling roof shingles, black - dry "tar" on fibrous paper material, flexible concrete fragments noted		PID: 2 PPM at 10' BGS, 18 PPM at 12' BGS
15	15.0	2.2	-4	**Silty Sand, Few Gravel (SM)** 15-17.2' - black, (10YR 2/1), moist to wet, rounded to subrounded, wood fragments and plastic sheeting noted throughout 2" of newspaper refuse noted at bottom of recovery		PID: 7 PPM at 15' BGS, 17 PPM at 17' BGS
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-42	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (698018.8 N, 594325.3 E)

ELEVATION : 23.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 20.2 ft bgs
START : 12/12/13 14:40
END : 12/12/13 15:45
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silty Sand, Few Gravel (SM)** 20-21.6' - Same as ABOVE except increasing fine content with depth plastic noted at 21.6' BGS		PID: 4 PPM at 20' BGS, 11.7 PPM at 21.6' BGS, 2.2 PPM at 22.6' BGS ▼
		3.0	-5	**Gravel** 21.6-21.9' - wet, angular, red gravel-possible broken brick or pulverized block		
				Silt With Clay (ML) 21.9-22.6' - black, (10YR 2/1), moist, medium stiff, moderate plasticity, cohesive, fibrous organic matter noted throughout		
				Silty Clay (CL) 22.6-23' - brown, (10YR 4/3), moist, medium stiff, cohesive		
25	25.0			Bottom of Boring at 25.0 ft bgs on 12/12/13 15:45		
30						
35						
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SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-43	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697931.3 N, 593975.2 E)

ELEVATION : 12.6 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 6.2 ft bgs
START : 12/16/13 11:15
END : 12/16/13 12:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Sandy Silt With Gravel (ML)** 0-1.7' - dark brown, (10YR 3/3), dry, trace organic material at top of recovery, broken glass below 1' BGS		PID: <1 PPM
		1.7	-1			
5	5.0			**Sandy Silt With Gravel (ML)** 5-6.4' - brick fragments noted at 5.3' BGS wet below 5.3' BGS. change below brick fragments dark gray (10YR 3/1) to black (10YR 2/1), sandy silt with soft material platy structure, friable-similar to shredded paper, intermixed with broken glass		PID: <1 PPM ▼
		1.4	-2			
10	10.0			**Sandy Silt With Gravel (ML)** 10-10.4' - Same as ABOVE **Silt With Clay (ML)** 10.4-11.4' - black, (10YR 2/1), wet, soft, medium plasticity, cohesive, trace organic matter, gradual grading from fine silt to fine sand with depth, brown (10YR 4/3) below 10.7' BGS		abrupt change at 10.4' BGS PID: <1 PPM
		1.4	-3			
15	15.0			Bottom of Boring at 15.0 ft bgs on 12/16/13 12:00		
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SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-44	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697928.0 N, 594056.8 E)

ELEVATION : 9.0 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.8 ft bgs
START : 1/13/14 10:20
END : 1/13/14 11:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.5	-1	**Silty Sand With Gravel (SM)** 0-2.5' - brown, (10YR 4/3), dark grayish brown (10yr 3/2), dry to wet below 1.5', subangular to angular, concrete fragments note at 1' BGS, black staining at 1.5'-1.6' BGS, slight petro-like odor, decrease silt content below 1.7' BGS, round magnetic gravel below 2' BGS		PID: 151 PPM at 1.5' BGS ▼
5	5.0	2.2	-2	**Sand (SW)** 5-7.2' - grayish brown, (10YR 5/2), wet, rounded grained, well graded at 6.5' BGS - abrupt increase/presence of rounded gravel - magnetic brick fragments and color change to dark grayish brown (10YR 3/2)		PID: 35 PPM at 5' BGS, 14 PPM at 5.5' BGS, 7 PPM at 6' BGS, 5 PPM at 7.2 PPM
10	10.0	2.8	-3	**Sand (SW)** 10-10.1' - Same as ABOVE **Silt With Clay (ML)** 10.1-11.7' - black, (10YR 2/1), wet, stiff, low to medium plasticity, cohesive, trace organic matter **Peat** 11.7-12.4' **Silty Sand (SM)** 12.4-12.8' - yellowish brown, (10YR 5/6), wet, color changed to gray with depth		PID: 0 PPM
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/13/14 11:00		
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SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-45 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697928.9 N, 594139.1 E)

ELEVATION : 9.5 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.9 ft bgs
START : 1/2/14 14:20
END : 1/2/14 14:45
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.7	-1	**Silty Sand With Gravel (SM)** 0-2.7' - reddish brown, brown dark greyish brown, dry to moist, broken glass, brick and concrete fragments noted, color grading from black staining at 1' BGS with depth		PID: 6 PPM at 1' BGS ▼
5	5.0	1.4	-2	**Silty Sand With Gravel (SM)** 5-6' - Same as ABOVE except wet, broken glass, brick and concrete fragments noted increased gravel content, purple sand lense (<.25" thick) **Silt With Clay (ML)** 6-6.4' - black, (10YR 2/1), moist to wet, soft to medium stiff, medium plasticity, trace organice matter, cohesive		abrubt change at 6' BGS PID: 0 PPM
10	10.0	2.2	-3	**Silt With Clay (ML)** 10-11.5' - Same as ABOVE **Peat** 11.5-12.2'		PID: <2 PPM
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/2/14 14:45		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-46	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697973.3 N, 594230.1 E)

ELEVATION : 9.5 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.9 ft bgs
START : 12/10/13 08:30
END : 12/10/12 09:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand (SM)** 0-1.6' - dark grayish brown, (10YR 3/2), dry to moist, little organic matter and root material, red silty gravel at 1.4-1.6' BGS		Attempt #1 hit refusal at 4-5' BGS, area is known to have concrete debris/structures throughout. Driller moved to a midpoint between PZ-46 and PZ-40 locations PID: 8 PPM ▼
		4.0	-1	**Silt With Gravel (ML)** 1.6-3' - black, (10YR 2/1), moist, low plasticity, subangular to angular, increasing gravel content with depth up to 3/8" diamter gravel pieces, slightly cohesive		
				Silty Sand, Trace To Little Gravel (SM) 3-3.5' - brown, (10YR 4/4), moist to wet, subangular to angular		
5	5.0			**Gravel (GW)** 5-6' - black, (10YR 2/1), round to very round, strong petro-like odor, gravel approximately 1/4" to 1/2" diameter, paper/fibrous material noted at aprroximately 6.0' BGS		PID: 16 PPM @ 5', 33 PPM @ 6', and 15 PPM @ 6.6'
		1.7	-2	**Silt With Clay (ML)** 6-6.6' - black, (10YR 2/1), moist to wet, laminated bedding, brown coloration observed within soil matrix, trace fibrous organic matter, trace mica flakes <1mm		
	9.0			Bottom of Boring at 9.0 ft bgs on 12/10/12 09:00		
10						
15						
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SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-47 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697928.7 N, 594273.6 E)

ELEVATION : 9.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.4 ft bgs
START : 1/2/14 11:00
END : 1/2/14 11:30
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand, Trace Gravel (SM)** 0-1' - brown, (10YR 5/4), dry to moist		PID: 0.3 PPM at 1' BGS ▼
				Silt With Clay (ML) 1-2' - black, (10YR 2/1), moist, cohesive, trash and plastic noted throughout		abrupt change at 1' BGS
		2.0	-1			
5	5.0			**Silt With Clay** 5-6' - Same as ABOVE		PID: 1 PPM at 6' BGS
				Silty Clay (CL) 6-6.6' - black, (10YR 2/1), gray, moist, trace organic matter, laminating/bedding noted		
		1.6	-2			
10	10.0			Bottom of Boring at 10.0 ft bgs on 1/2/14 11:30		
15						
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SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-48	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697915.9 N, 594352.2 E)

ELEVATION : 24.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 24.5 ft bgs
START : 1/9/14 09:15
END : 1/9/14 10:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.2	-1	**Silty Sand, Trace Gravel (SM)** 0-3.2' - dark brown, (7.5YR 3/3), dry, very fine to coarse grained, trace organic matter at top of recovery, sand is poorly graded, increase silt content with depth		PID: 0 PPM
5	5.0	2.0	-2	**Silt With Clay, Trace Sand (ML)** 5-6.2' - grayish brown, (10YR 3/2), dry to moist, fine grained, broken glass **Concrete Fragments** 6.2-6.5' - dry, pulverized **Silt With Clay (ML)** 6.5-7' - black, (10YR 2/1), dry to moist, medium stiff, fibrous paper-like material noted at top of recovery, trace wood fragments, petro-like odor		PID: 8.5 PPM
10	10.0	2.5	-3	**Silt With Clay (ML)** 10-12.5' - Same as ABOVE except decresed clay content below 10' BGS, increased fine sand plastic, rubber and fabric with NAPL staining/saturation, non-aqueous oil-like product observed on plastic sheeting debris		non-aqueous oil-like product observed on plastic sheeting debris PID: 22 PPM at 12' BGS
15	15.0	1.5	-4	**Silt With Clay, Few Sand (ML)** 15-16.5' - black, (10YR 2/1), moist, fine to medium grained, broken glass, fibrous paper-like material, petro-like odor		PID: 3-11 PPM
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SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-48 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697915.9 N, 594352.2 E)

ELEVATION : 24.7 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 24.5 ft bgs START : 1/9/14 09:15 END : 1/9/14 10:00 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silt With Clay, Few Sand (ML)** 20-21.8' - Same as ABOVE except Increasing sand content below 21' BGS, wood fragments and glass		PID: 2 PPM at 21' BGS
		2.2	-5	**Silty Sand With Gravel (SM)** 21.8-22.2' - reddish brown, (7.5YR 4/4), wet		
25	25.0			**Silt With Clay, Trace Sand (ML)** 25-27.6' - black, (10YR 2/1), moist, medium stiff, fine grained, low plasticity, cohesive, trace organic matter		PID: 2 at 26' BGS
		3.6	-6	**Peat** 27.6-28.6'		
30	30.0			Bottom of Boring at 30.0 ft bgs on 1/9/14 10:00		
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-49 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697845.9 N, 593969.7 E)

ELEVATION : 16.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 9.6 ft bgs
START : 12/6/13 13:00
END : 12/6/13 13:25
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	1.6	-1	**Sandy Silt, Few Gravel (ML)** 0-1.6' - brown, (10YR 4/3), dry, trace organic matter, broken glass, plastic fragments, concrete and brick fragments noted below .5' BGS		PID: <1 PPM
5	5.0	1.4	-2	**Sandy Silt, Few Gravel (ML)** 5-5.5' - Same as ABOVE except plastic sheeting noted at 5.5' BGS **Silty Clay (CL)** 5.5-6' - gray, (10YR 6/1), moist, low plasticity, few wood fragments, cohesive **Sand, Trace Gravel (SW)** 6-6.4' - yellow, (10YR 5/6), dry, angular, white quartz like grains up to 1/4" diameter		PID: 14 PPM at 6' BGS, 61 PPM at 6.2' BGS, 20 PPM at 6.4' BGS ▼
10	10.0	1.5	-3	**Silty Sand (SM)** 10-10.5' - brown, (10YR 3/2), wet, pocket of white angular gravel with sand, pulvarized quarta **Silt With Sand (ML)** 10.5-11' - black, (10YR 2/1), wet, wood fragments and rubber debris noted **Silt With Clay (ML)** 11-11.5' - black, (10YR 2/1), moist to wet, soft, low to medium plasticity, trace mica crystals noted thoughout soil matrix, trace gray laminations/mottling - noted throughout soil matrix		PID: 18 PPM
15	15.0			Bottom of Boring at 15.0 ft bgs on 12/6/13 13:25		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-50 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697848.1 N, 594058.0 E)

ELEVATION : 9.0 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.9 ft bgs START : 1/13/14 11:15 END : 1/13/14 11:40 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.6	-1	**Silty Sand With Gravel (SM)** 0-2.6' - dark grayish brown, (10YR 3/2), moist to wet, concrete fragments at 0.6' BGS abupt color change to brown (7.5YR 4/3) wet below 2' BGS, wood fragments below 2' BGS slight petro-like odor		PID: 1 PPM at 1' BGS, 6 PPM at 1.5' BGS, 24 PPM at 2' BGS ▼
5	5.0	1.5	-2	**Silty Sand With Gravel (SM)** 5-6' - Same as ABOVE except increased gravel content and wood fragments noted at 6' BGS **Silt With Clay (ML)** 6-6.5' - black, (10YR 2/1), wet, med soft, medium to high plasticity, trace mica, trace organic fragments (phragmites, stalks and roots)		PID: 9 PPM at 5' BGS, 2 PPM at 5.5' BGS, 1 PPM at 6' BGS
10	10.0			Bottom of Boring at 10.0 ft bgs on 1/13/14 11:40		
15						
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SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-51 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697849.9 N, 594145.7 E)

ELEVATION : 9.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.6 ft bgs
START : 1/2/14 13:50
END : 1/2/14 14:10
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand, Trace Gravel (SM)** 0-1' - brown, (10YR 4/3), dry		PID: 1 PPM at 1' BGS, 35 PPM at 1.5' BGS ▼
				Red Brick Fragments 1-1.3' - pulvarized		
				Silty Sand (SM) 1.3-1.7' - dark grayish brown, (10YR 3/2)		
		2.2	-1	**Concrete Fragments** 1.7-2.2' - yellow discolorization - sulfur-like		
5	5.0			**Silty Sand With Gravel (SM)** 5-6.5' - brown, (10YR 4/3), wet, dense, magnetic rounded gravel (1/8" diameter), slight "sour"-like odor, slight reddish hue (5YR 4/4) with depth sulfur-yellow sandy gravel lense at 6.5' BGS		sheen noted on water surface PID: 60 PPM at 5.5' BGS, 11 PPM at 7' BGS
				Silt With Clay (ML) 6.5-7.2' - black, (10YR 2/1), moist to wet, soft, trace organic matter, trace mica flakes (<1 mm diameter)		
		2.2	-2			
10	10.0			Bottom of Boring at 10.0 ft bgs on 1/2/14 14:10		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-52	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697854.7 N, 594232.8 E)

ELEVATION : 10.5 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : 3.0 ft bgs
START : 12/9/13 13:45
END : 12/9/13 14:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand (SM)** 0-2.3' - very dark brown, (10YR 3/2), dry, few gravel and concrete debris, brick and concrete fragments		PID: 22 PPM ~2', 44 PPM ~2.3 ft
		3.3	-1	**Sand With Silt (SP)** 2.3-3.2' - black, (10YR 2/1), poorly graded, abrupt change		
				Concrete Fragments 3.2-3.5' - black, abrupt change, concrete fragments at 3.3 ft, 3.3-3.5 ft - black silty sand with gravel, NAPL Saturated		
5	5.0			**Concrete Fragments And Gravel Debris** 5-6.3' - dry to moist		PID: 46 PPM
		1.3	-2			
	8.0			**Silt (ML)** 8-8.5' - black, (10YR 2/1), moist to wet, soft, medium plasticity, trace mica flakes noted up to 1 mm diameter, trace gray laminations with the soil matrix		PID 1.0-8.3 PPM, Top of recovery is NAPL saturated likely due to oil NAPL entering borehole from above
10		4.0	-3	**Silt (ML)** 10.2-11.2' - brown, (10YR 5/2), wet, low plasticity		
				Silt 11.2-12' - black, (10YR 2/1), vegetation noted		
	13.0			Bottom of Boring at 13.0 ft bgs on 12/9/13 14:00		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-53 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697832.8 N, 594292.0 E)

ELEVATION : 9.6 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.5 ft bgs
START : 1/2/14 10:15
END : 1/2/14 10:50
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	1.7	-1	**Sand, Trace Silt, Trace Gravel (SP)** 0-1.7' - yellowish brown, (10YR 5/6), dry to moist, abrupt increase in gravel content below 1.5' BGS		PID: 0 PPM ▼
5	5.0	2.0	-2	**Sand, Trace Silt, Trace Gravel (SP)** 5-7' - Same as ABOVE except increase silt content with depth, color change to dark brown		PID: 15 PPM at 15.5 BGS, 17 PPM at 6' BGS, 32 at 7' BGS
10	10.0	3.4	-3	**Sand, Trace Silt, Trace Gravel (SP)** 10-12' - Same as ABOVE except NAPL beeds noted throughout **Sandy Silt With Clay (ML)** 12-13' - dark grayish brown, black, moist, medium plasticity, gradual transition, organic matter and wood fragments, cohesive **Peat/organic Matter** 13-13.4'		PID: 24 PPM at 10.5, 15 PPM at 12' BGS, 11 PPM at 13' BGS
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/2/14 10:50		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-54	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697875.9 N, 594372.9 E)

ELEVATION : 24.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 20.9 ft bgs
START : 1/10/14 09:45
END : 1/10/14 10:15
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand (SM)** 0-1.8' - dark brown, (7.5YR 3/3), dry, concrete fragments at top of recovery, gravel 1/4" diameter, metal fragments - rusty organge and green oxidation at ~1' BGS		PID: 0 PPM
		2.0	-1	**Sand (SW)** 1.8-2' - yellow, (10YR 7/6), dry, fine to coarse grained, subangular to angular, well graded		abrupt change at 1.8' BGS
5	5.0					
		2.7	-2	**Silt With Sand, Trace Clay (ML)** 5-7.7' - dark grayish brown, (10YR 3/2), dry to moist, increasing clay content with depth, then abrupt decrease to fine sand content wood and glass fragments noted throughout, white plastic/PVC fragments noted		PID: <1 PPM
10	10.0					
		2.0	-3	**Silt With Sand, Trace Clay (ML)** 10-12' - Same as ABOVE except fragile concrete fragments noted at 11' BGS-slight petro-like odor noted below concrete, increasing odor with depth		PID: 6 PPM at 10.5' BGS, 27 PPM at 11' BGS, 32 PPM at 11.5' BGS
15	15.0					
		3.0	-4	**Silt With Sand, Trace Clay (ML)** 15-18' - Same as ABOVE except dark grayish brown, (10YR 3/2), dry to moist, increasing clay with depth, wood fragments at 16-18' BGS, plastic sheeting noted at 15.8' BGS, strong petro-like odor with depth, NAPL staining on soil surface, paper debris noted at 17.8' BGS-white fibrous		PID: 11.6 PPM at 15' BGS, 35 PPM at 16' BGS, 78 PPM at 17' BGS, 110 PPM at 18' BGS
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-54	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697875.9 N, 594372.9 E)

ELEVATION : 24.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 20.9 ft bgs
START : 1/10/14 09:45
END : 1/10/14 10:15
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silt With Sand, Trace Clay (ML)** 20-21' - Same as ABOVE		PID: 63 PPM at 20' BGS, 28 PPM at 21' BGS, 20 PPM at 22' BGS, 13 PPM at 22.5' BGS ▼
				Sand (SP) 21-22' - light gray, (10YR 6/1), wet, fine grained, black staining		
		2.5	-5	**Silt With Clay (ML)** 22-22.5' - black, (10YR2/1), gray (10yr 4/1), moist, stiff, low to medium plasticity, trace organic matter fibrous and root material, cohesive		
25	25.0			Bottom of Boring at 25.0 ft bgs on 1/10/14 10:15		
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-55	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697758.9 N, 593972.0 E)

ELEVATION : 17.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 7.4 ft bgs
START : 1/6/14 09:40
END : 1/6/14 10:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	0.0	1.7	-1	**Silty Sand (SM)** 0-1.7' - dark brown, (10YR 5/2), dry, loose, non-cohesive% fines, nonplastic, trace wood fragments, organic matter at top of interval, wood fragments and broken glass noted below 1' BGS		PID: 0 PPM
5	5.0	1.9	-2	**Silty Sand (SM)** 5-6.9' - Same as above except black, (10YR 2/1), moist to wet, color change at 6' BGS, petro-like odor and staining noted increased sand content at 6' BGS and gradual increas in silt content		PID: 0-19 PPM PID throughout ▼
10	10.0	1.8	-3	**Silty Sand (SM)** 10-11.8' - Same as above except wood fragments noted between 10.5-11' BGS		PID: 25 PPM
15	15.0	2.7	-4	**Silty Sand (SM)** 15-15.2' - Same as above except black, (10YR 2/1), broken glass fragments **Silt With Clay (ML)** 15.2-17.7' - dark grayish brown, (10YR 3/2), wet, soft to medium stiff, low plasticity, light brown laminating noted to ~16.8' BGS, color change below 16.8' BGS to black (10YR 2/1), cohesive		PID: 0-8 PPM throughout
20	20.0			Bottom of Boring at 20.0 ft bgs on 1/6/14 10:00		

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-56 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697761.6 N, 5994057.4 E)

ELEVATION : 10.4 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.3 ft bgs
START : 1/6/14 10:25
END : 1/6/14 10:50
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand With Gravel (SM)** 0-2.2' - red, (2.5YR 4/6), dry, subrounded, concrete fragments and pulverized cement noted at 1.6-1.8' BGS, wood fragments noted below black silty gravel lense ~1.9-2' BGS		PID: 22 PPM at 1.5' BGS ▼
		2.2	-1			
5	5.0			**Silty Sand With Gravel (SM)** 5-7' - Same as ABOVE except gray, (10YR 5/2), wet, pocket of white sand at 6' BGS, slight "sour" odor below 6' BGS, wood fragments noted 6' BGS and 7' to bottom of recovery		PID: 12 PPM at 6' BGS
		2.0	-2			
10	10.0			**Silt With Clay (ML)** 10-12' - black/dark gray, (10YR 2/1), (10yr 4/1), moist, soft, increasing stiffness with depth		PID: 0 PPM
		2.5	-3			
	12.5			**Peat** 12-12.5' - soft, organic matter		
15				Bottom of Boring at 15.0 ft bgs on 1/6/14 10:50		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-57 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697758.5 N, 594140.5 E)

ELEVATION : 10.8 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 2.3 ft bgs START : 1/6/14 11:00 END : 1/6/14 11:25 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.4	-1	**Silty Sand, Few Gravel (SM)** 0-2.4' - strong brown, (7.5YR 5/6), moist to wet, fine grained, wet to 0.7' BGS, moist .7-2' BGS, wet below 2' BGS brick and wood debris noted below 0.7' BGS color change below 0.8' BGS to dark grayish brown (10YR 3/2) sticky "tar-like" pocket of sludge-like material noted at 1.8-1.85' BGS (black, thick/viscous, sticky, and petro-like odor) color change at 2' BGS to gray (10YR 5/1), broken glass and black staining noted through out petro-like odor		PID: 0-51 PPM throughout interval ▼
5	5.0	2.8	-2	**Silty Sand, Few Gravel (SM)** 5-6.5' **Silt With Sand And Gravel (ML)** 6.5-7.2' - reddish brown, (7.5YR 4/4), moist to wet, wood fragments noted throughout, pocket of white sandy material noted just below fibrous paper material (~.5" thich), slight "sour" odor **Silt With Clay (ML)** 7.2-7.8' - black, (10YR 2/1), moist, soft, trace gray laminations (horizontal and wavy) noted throughout, trace mica flakes (<1mm dm) noted within soil matrix, light brown staining on gloves		PID: 8-63 PPM throughout interval
10	10.0			Bottom of Boring at 10.0 ft bgs on 1/6/14 11:25		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-58 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697758.9 N, 594225.1 E)

ELEVATION : 11.4 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : 3.0 ft bgs
START : 1/2/14 13:00
END : 1/2/14 13:20
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Sand With Silt And Gravel (SP)** 0-1.6' - brown, (10YR 4/3), concrete and gravel fragments		PID: 2 PPM at 1' BGS, 55 PPM at 2' BGS, 52 PPM at 2.5' BGS
		2.5	-1	**Silty Sand (SM)** 1.6-2.5' - grayish brown, (10YR 4/2), trace yellow silty material, "sour" odor		
5	5.0					
		2.5	-2	**Silty Sand (SM)** 5-7.5' - reddish brown, (5YR 4/4), increased sulfur yellow "sour" odor noted below 6' BGS		PID: 25 PPM at 5.5' BGS, 2 PPM at 6.5' BGS, 23 PPM at 7' BGS
10	10.0					
		3.3	-3	**Silt With Clay (ML)** 10-13.3' - black, (10YR 2/1), wet, medium soft, trace organic matter (leaf and rood debris), brown/gray lamination throughout		PID: 5 PPM throughout interval
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/2/14 13:20		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-59 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697761.9 N, 594314.7 E)

ELEVATION : 10.9 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.3 ft bgs START : 1/13/14 13:00 END : 1/13/14 13:30 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.6	-1	**Silt With Sand, Trace Clay (SM)** 0-2.6' - dark brown, (7.5YR 3/3), dry to moist, trace organic matter, concrete fragments noted at 0.5' BGS, color change to black (10YR 2/1) at 2' BGS, plastic and broken glass noted at 2' BGS		PID: 0 PPM ▼
5	5.0	2.7	-2	**Silt With Sand, Trace Clay (SM)** 5-6.6' - Same as ABOVE except plastic fragments noted at 6.6' BGS		PID: 5 PPM at 5' BGS, 6 PPM at 6.6', 3 PPM at 6'
				Concrete Fragments 6.6-7.1' - pulverized		abrupt change at 6.6' BGS
				Silt With Clay (ML) 7.1-7.7' - black, (10YR 2/1), moist to wet, medium stiff to stiff, stiffness increases with depth		
10	10.0	1.8	-3	**Silt With Clay (ML)** 10-11.8' - Same as ABOVE except color change gradualy below 10.5' BGS with black wavy laminations noted throughout, color change at 11.1' BGS back to black		PID: 0 PPM
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/13/14 13:30		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED.GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-60	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697759.1 N, 594390.7 E)

ELEVATION : 24.9 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 22.3 ft bgs
START : 12/20/13 09:00
END : 12/20/14 09:55
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.5		**Sandy Silt With Gravel (ML)** 0-2.5' - brown, (7.5YR 4/3), dry, trace organic matter at top of interval, brick and broken glass fragments, plastic sheeting and rubber noted		PID: 3.5 PPM at 2.5' BGS
5	5.0	3.0		**Silt With Clay (ML)** 5-8' - dark grayish brown, (10YR 3/2), dry to moist, low to non plasticity, abrubt increase with clay, sliightly cohesive, glass and plastic fragments noted - decreasing plastic with depth, wood and organic debris noted, petro-like odor		PID: 2.0-6.1 PPM throughout
10	10.0	3.2		**Silt With Clay (ML)** 10-13.2' - black, (10YR 2/1), increasing fine sand with content, metallic disk noted at bottom of recovery		PID: 1.0-5.0 PPM throughout
15	15.0	3.0		**Silt With Clay (ML)** 15-18' - moist to wet, little fine sand, faint petro-like odor, wood and fibrous organic matter noted throughout		PID: 1.0 PPM
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-60	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697759.1 N, 594390.7 E)

ELEVATION : 24.9 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 22.3 ft bgs
START : 12/20/13 09:00
END : 12/20/14 09:55
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silt With Clay (ML)** 20-22.7' - Same as above		PID: 1.0 - 2.0 PPM
		3.4		**Silty Sand (SM)** 22.7-23.4' - grayish brown, (10YR 4/2), wet		
25	25.0			**Silty Sand (SM)** 25-25.7' - Same as above		PID: 1.0 - 2.0 PPM
				Silt, Trace Sand (ML) 25.7-27.7' - brown, (10YR 4/3), moist, very fine grained, nonplastic, slightly cohesive, pockets of black silt with clay noted with organic material <1" thick		
		4.2		**Silt With Clay (ML)** 27.2-29.2' - black, (10YR 2/1), moist, med soft, low plasticity, cohesive, fibrous organic matter noted throughout, trace gray laminations noted within soil matrix		
30	30.0			Bottom of Boring at 30.0 ft bgs on 12/20/14 09:55		
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED.GLB DIAMONDHEAD.PDT.GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-61 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697675.9 N, 593973.3 E)

ELEVATION : 15.9 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 7.6 ft bgs
START : 12/10/13 13:30
END : 12/10/13 14:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	1.3	-1	**Silt With Sand, Little Gravel (ML)** 0-1.3' - brown, (10YR 4/6), dry, trace organic matter and root debris - plastic sheeting/debris noted above 0.9' - concrete fragments debris noted 0.9-1.0'		PID: 0 PPM
5	5.0	3.1	-2	**Silt With Sand, Little Gravel (ML)** 5-8.1' - Same as above except wood fragments noted, increased content with depth color change below 6' BGS to black (10YR 2/1), broken glass, brick, and plastic fragments, green "hair"-like fibers noted at 6.0' concrete noted at 7.0-7.5' BGS		PID: 0 PPM ▼
10	10.0	3.0	-3	**Silt With Sand, Little Gravel (ML)** 10-11' - Same as Above **Silt With Clay (ML)** 11-12.2' - black, (10YR 2/1), moist/wet, soft, low plasticity, trace fibrous organic material, trace mica flakes < 1mm, cohesive, faint petro-like odor **Silty Gravel (GM)** 12.2-12.8' - black, wet, broken glass noted, strong petro-like odor **Silt With Clay (ML)** 12.8-13' - black, (10YR 2/1), moist/wet, soft, gray lamination noted throughout soil matrix		PID: 0 PPM @ 11.5', 15 @ 12.2', abd 5 PPM @ 13'
15	15.0			Bottom of Boring at 15.0 ft bgs on 12/10/13 14:00		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-62	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697685.1 N, 594056.1 E)

ELEVATION : 12.5 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 2.2 ft bgs
START : 12/10/13 12:40
END : 12/10/13 13:20
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	0.0			**Silt With Sand (ML)** 0-1.5' - reddish brown, dry, block/brick fragments noted throughout		PID: 0 PPM at top, 44 PPM @ 2.0'
				Concrete 1.5-1.8' - pulverized		▼
		3.3	-1	**Silt With Fine Sand, Trace To Little Gravel (ML)** 1.8-3.3' - black, (10YR 2/1), dry to moist, nonplastic, slightly cohesive, yellow sulfur-like sand silt inclusions noted throughout - sour odor		
5	5.0					
		3.0	-2	**Silt With Fine Sand, Trace To Little Gravel (ML)** 5-7.9' - Same as Above except fibrous paper-like material at 7.9' BGS		PID: 50 PPM @ 6.0'
				Silty Sand, Few Gravel (SM) 7.9-8.3' - reddish brown, wet, NAPL saturated/oil observed in open pore space brick fragments noted at 8.2-8.3' BGS		
	9.0			**Silty Sand, Few Gravel (SM)** 9-10' - Same as Above		PID: 44 PPM @ 9' and 15 PPM @ 11'
10		3.0	-3	**Silt With Clay (ML)** 10-12' - black, (10YR 2/1), wet/moist, soft, low plasticity, gray/black lamination throughout soil matrix trace fibrous material and phramites detritus observed cohesive		
	13.0			Bottom of Boring at 13.0 ft bgs on 12/10/13 13:20		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-63 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697674.9 N, 594136.3 E)

ELEVATION : 12.0 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.3 ft bgs
START : 12/10/13 10:50
END : 12/10/13 11:25
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	0.0	3.3	-1	**Silty Sand With Gravel (SM)** 0-3.4' - brown to yellowish brown to black with depth, organic root material at top of recovery		PID: <1 PPM ▼
5	5.0	3.8	-2	**Silty Sand With Gravel (SM)** 5-5.5' - wood fragments noted **Silt With Clay, Few Sand (ML)** 5.5-8.9' - gray, moist/wet, stiff, sulfur-yellow silty material noted at 6.5-7.5' BGS, "sour" odor noted 6.5-9.0' BGS reddish brown silty sand pockets noted within the soil matrix		PID: 44 PPM at 5.5' and 15 PPM @ 6'
	9.0	0.0	-3			no recovery
10						
	13.0			Bottom of Boring at 13.0 ft bgs on 12/10/13 11:25		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-64 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697679.8 N, 594223.6 E)

ELEVATION : 11.0 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.9 ft bgs
START : 1/6/14 13:45
END : 1/6/14 14:10
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Sand, Trace Silt** 0-1.3' - yellowish brown, (10YR 5/6), wet		abrupt change at 1.3' BGS PID: 6.4 PPM at 1' BGS, 84 PPM at 1.5' BGS ▼
		1.7	-1	**Silt With Sand (ML)** 1.3-1.7' - black, (10YR 2/1), wet, wood fragments noted, strong petro-like odor, trace brick fragments		
5	5.0			**Silt With Sand (ML)** 5-6.2' - Same as ABOVE		PID: 35 PPM at 5' BGS and 16 PPM at 6' BGS
		1.4	-2	**Silt With Clay (ML)** 6.2-6.4' - black, (10YR 2/1), moist, soft, low to medium plasticity, increasing stiffness with depth, cohesive		
10	10.0			**Silt With Clay (ML)** 10-12.3' - Same as ABOVE		
		2.3	-3			
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/6/14 14:10		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-65	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697690.2 N, 594310.1 E)

ELEVATION : 12.3 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 6.5 ft bgs
START : 1/9/14 15:00
END : 1/9/14 15:30
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand, Trace Gravel (SM)** 0-1.5' - yellowish brown, (10YR 5/6), dry, subangular, wood fragments and concrete at 1.2-1.4' BGS		abrupt change at 1.5' BGS PID: <1 PPM
		3.7	-1	**Silt With Clay (ML)** 1.5-3.7' - dark brown to black, (7.5YR 3/3), (10yr 2/1), dry to moist, wood debris noted throughout		
5	5.0			**Silt With Clay (ML)** 5-6.5' - Same as ABOVE		PID: < 1 PPM except at 6.5' BGS - 2 PPM
		2.7	-2	**Sand (SP)** 6.5-7.5' - gray, (10YR 6/1), wet, medium dense, uniform/poorly graded		▼
				Silt With Clay (ML) 7.5-7.7' - black, (10YR 2/1), wet to moist with depth, soft to stiff with depth, fibrous organic matter (roots and leaves) noted trhoughout, trace horizontal laminations gray in color		
10	10.0			**Silt With Clay (ML)** 10-13.2' - Same as ABOVE except gray (10YR 3/1) below 12.6' BGS		PID: < 1 PPM
		3.2	-3			
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/9/14 15:30		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-66	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697680.5 N, 594392.9 E)

ELEVATION : 24.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 21.7 ft bgs
START : 1/9/14 12:30
END : 1/9/14 13:55
LOGGER : Muprhy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.6	-1	**Silty Sand, Trace/little Gravel (SM)** 0-2.5' - brown to black, (10YR 4/3), (10yr 2/1), dry, trace organic matter at top of recovery, wood fragments throughout, concrete fragments noted between 1-2' BGS		PID: 2 PPM at 3' BGS
				Silt With Sand, Trace/little Clay 2.5-3.6' - black, (10YR 2/1), dry, wood and gravel (concrete) noted throughout		
5	5.0	1.9	-2	**Silt With Sand, Trace/little Clay** 5-6.9' - Same as ABOVE		PID: 3 PPM at 5.5' BGS
10	10.0	1.0	-3	**Silt With Clay, Trace Sand** 10-11' - Same as ABOVE except increased clay content with depth		PID: < 1 PPM throughout
15	15.0	1.9	-4	**Silt With Clay, Trace Sand** 15-16.9' - Same as ABOVE except brick fragment at 16' BGS		PID: < 1 PPM throughout
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-66 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697680.5 N, 594392.9 E)

ELEVATION : 24.7 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 21.7 ft bgs START : 1/9/14 12:30 END : 1/9/14 13:55 LOGGER : Muprhy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silt With Clay, Trace Sand** 20-20.5' - Same as ABOVE		PID: 30 PPM at 21' BGS, less then 1 PPM all other areas black staining at bottom of sand interval ~21.6' BGS ▼
				Sand (SP) 20.5-21.6' - gray, (10YR 5/1), wet, medium dense, fine grained, faint petro-like odor, uniform/poorly graded		
		2.0	-5	**Silt With Clay, Trace Sand (ML)** 21.6-22' - black, (10YR 2/1), moist, very fine grained, low plasticity, cohesive, trace organic matter, trace mica flakes noted within soil matrix		
25	25.0			Bottom of Boring at 25.0 ft bgs on 1/9/14 13:55		
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-67	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697592.3 N, 594060.0 E)

ELEVATION : 11.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 2.1 ft bgs
START : 12/10/13 14:10
END : 12/10/13 14:45
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.9	-1	**Fine Sand (SP)** 0-2.9' - yellow, (10YR 6/6), dry, loose, well sorted, uniform - moist at 2' BGS - wet at 2.5' BGS - below 2.5' BGS - slight increase in silt content and color change to dark reddish brown		PID: 2 PPM bottom of recovery ▼
5	5.0	3.1	-2	**Silty Sand, Few Gravel (SW)** 5-7.7' - dark reddish brown, wet, NAPL saturated gravel layer at 6.0-6.2' BGS, NAPL is very viscous and tarlike with the appearance of asphalt and wood fragments NAPL saturated pockets of oil-like NAPL		PID: 2-21 PPM throughout, 21PPM @ 7.0' BGS
				Silt With Sand (ML) 7.7-8' - greyish brown, low plasticity, slight cohesive, sulfur-like "sour" odor		
10	10.0	3.1	-3	**Silt (ML)** 8-8.2' - brown, (10YR 4/3), abrupt transition, high organic matter above 8.2' (possible OL), fibrous root matter that decreases with depth to trace organic fibers, trace brown/greyish brown laminations observed in soil matrix **Silt (ML)** 10-13.2' - Same as Above except gradual transition to brown at 12' BGS		PID: <1 PPM
15	15.0			Bottom of Boring at 15.0 ft bgs on 12/10/13 14:45		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED.GLB DIAMONDHEAD_PD1.GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-68	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697590.8 N, 594141.6 E)

ELEVATION : 11.6 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.8 ft bgs
START : 12/10/13 09:25
END : 12/10/13 09:50
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Sand (SP)** 0-2.2' - dark brown to yellow, (10YR3/2), dry, top interval (0-1') has organic root material dramatic decrease in organic material below 1'		PID: 2.4 PPM @ 1', 6.5 PPM @ 1.5', 4.0 PPM @ 2', 45 PPM @3' ▼
		3.1	-1	**Sludge** 2.2-3.1' - black, amorphous liquid with paste-like viscosity, petro like odor		
5	5.0			**Sludge** 5-6.3' - friable coal-like gravel fragments noted at bottom of sludge interval, light/low density, friable, horizontal/planer bedding/shear zone		PID: 21 PPM @ 6', 23 PPM @ 6.3', 25 PPM @ 6.6'
		1.8	-2	**Concrete** 6.3-6.6' - pulverized, wood framents noted immediately below concrete **Silty Clay (CL)** 6.6-6.8' - brown, wet, soft, medium to high plasticity, sticky/fatty clay, uniform		
	9.0			Bottom of Boring at 9.0 ft bgs on 12/10/13 09:50		
10						
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-69 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697316.7 N, 594221.9 E)

ELEVATION : 11.2 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.8 ft bgs START : 12/10/13 10:00 END : 12/10/13 10:40 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand (SM)** 0-1' - brown, (10YR 4/4), dry, organic matter		Attempt #1 refusal at 4' BGS, moved, 10' North of original location Attempt #2 refusal at 4' BGS moved, 15' North of original location Attempt #3 refusal at 4' BGS, moved 20' North of original location Attempt #4 drilled to 9' BGS PID: 10 PPM @ 2.5'
				Silty Sand (SM) 1-2.4' - dry, wood, concrete, and gravel fragments intermixed through out		
		2.4	-1			
5	5.0			**Silty Sand With Gravel (SM)** 5-7.5' - black, (10YR 2/1), wet, wood fragements noted, large 2" wood fragment noted at 7' BGS		PID: 20 PPM @ 7.5'
		3.5	-2			
				Silt With Clay (ML) 7.5-8.5' - dark brown, (10YR 3/2), soft, low plasticity, black lamination noted within soil matrix, cohesive, strong petro like odor		
	9.0			Bottom of Boring at 9.0 ft bgs on 12/10/13 10:40		
10						
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-70 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697590.3 N, 594276.3 E)

ELEVATION : 12.4 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 3.9 ft bgs START : 1/6/14 12:45 END : 1/6/14 13:10 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.0	-1	**Sandy Silt (ML)** 0-5' - brown, (10YR 3/2), moist, trace organic matter at top of recovery, brick fragments noted at 1.5-2.5' BGS color change to black below 2' BGS, decreased sand content below 2' BGS, wood and glass fragments noted		Attempt 1 - refusal at 9' BGS at orginal stake Attempt 2 - refusal at 7' BGS 20' N of stake PID: 0 PPM throughout ▼
5	5.0	3.0	-2	**Sandy Silt** 5-5.5' - Same as ABOVE **Silt, Trace Gravel** 5.5-7.5' - gray, (10YR 6/1), moist, subrounded, gravel peices up to 1" diameter, appearance of degraded/pulvarized concrete at 7' BGS		PID: 25 PPM at 7" BGS, 7 PPM at 7.5 PPM
				Silty Gravel (GM) 7.5-8' - gray, (10YR 6/1), wet, concrete		Piezometer installed at location 1, above the concrete refusal
	9.0			Bottom of Boring at 9.0 ft bgs on 1/6/14 13:10		
10						
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-71	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697606.6 N, 594352.7 E)

ELEVATION : 23.8 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 20.1 ft bgs
START : 1/10/14 11:00
END : 1/10/14 12:10
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	0.0			**Silty Sand (SM)** 0-2' - brown, (7.5YR 5/6), dry, dense, fine grained, trace organic matter at top of recovery		
		3.5	-1	**Silt With Clay, Trace Sand (ML)** 2-3.5' - very dark grayish brown, (10YR 3/2), dry, fine grained, low plasticity, broken glass and wood fragments, cohesive		
5	5.0					
		2.4	-2	**Silt With Clay, Trace Sand (ML)** 5-7.4' - Same as ABOVE except fine to medium grained, fibrous material, broken glass, petro-like odor, slight/gradual increase of sand content/size with depth		PID ranges from 0-11 PPM through recovery
10	10.0					
		2.9	-3	**Silt With Clay, Trace Sand (ML)** 10-12.9' - Same as ABOVE except moist, fray fravel fragments at 11.2' BGS, resembles pulvarized concrete, friable faint petro-like odor, slight increase in clay content		PID: 0-2 PPM throughout recovery
15	15.0					
		2.0	-4	**Silt With Clay (ML)** 15-16' - Same as ABOVE **Refuse** 16-17' - wood fragments, newspaper, petro-like odor, black staining, wet, NAPL saturation at bottom of interval		abrupt change at 16' BGS PID: 4 PPM at 15' BGS, 7 PPM at 15.5' BGS, 52 PPM at 16' BGS, 35 PPM at 17' BGS
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-71	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697606.6 N, 594352.7 E)

ELEVATION : 23.8 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 20.1 ft bgs
START : 1/10/14 11:00
END : 1/10/14 12:10
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silt** 20-20.1' - soft, NAPL saturated		PID: 51 PPM at 20.1' BGS, 4 PPM at 20.5' BGS, 8.7 PPM at 21' BGS
				Sand (SP) 20.1-20.2' - light gray, (10YR 5/1), wet		
		1.8	-5	**Silt With Clay (ML)** 20.2-21.8' - black, (10YR 2/1), moist, stiff, low to medium plasticity, cohesive, trace organic matter, trace gray laminations-wavy and mostly horizontal		
25	25.0			Bottom of Boring at 25.0 ft bgs on 1/10/14 12:10		
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-72 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697501.6 N, 594056.8 E)

ELEVATION : 10.5 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.4 ft bgs START : 1/7/14 10:45 END : 1/7/14 11:20 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.0	-1	**Sand (SP)** 0-2' - yellowish brown, (10YR 5/6), dry to moist, well sorted		PID: 0 PPM throughout
5	5.0	3.4	-2	**Sand (SP)** 5-7' - Same as ABOVE except wet, wet below 5.5' BGS, gradual color change to black (10YR 2/1) with increasing petro-like odor		PID: 7 PPM at 6.5' BGS, 12-13 PPM at 7' BGS, 7 PPM at 8' BGS
				Silt With Clay (ML) 7-8.4' - black, (10YR 2/1), moist to wet, soft, low plasticity, trace organic matter, trace mica-flakes noted within soil matrix, cohesive, trace wavy clay laminations at depth, faint petro-like odor that decreases with depth		
10	10.0			Bottom of Boring at 10.0 ft bgs on 1/7/14 11:20		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-73 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697458.0 N, 594107.3 E)

ELEVATION : 10.3 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.3 ft bgs
START : 1/6/14 14:55
END : 1/6/14 15:30
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.0	-1	**Sand (SP)** 0-2' - red, (2.5YR 4/8), moist to wet, fine grained, color change to reddish brown (5YR 4/3), black discoloration noted below 1.8' BGS, no odor, wet below 1.3' BGS		Attempt 1 - 3' N of stake refusal at 6' Attempt 2 - 40' WSW of stake refusal at 6' BGS Attempt 3 - 40' S of stake ▼ PID: 0 PPM throughout
5	5.0	2.3	-2	**Sand (SP)** 5-5.2' - Same as ABOVE **Silt With Clay (ML)** 5.2-7.3' - black, (10YR 2/1), moist, soft to stiff increasing with depth, laminated bedding, trace organic matter, increasing brown with depth, pale brown (10YR 6/3) laminated bedding		Abrupt change at 5.2' BGS PID: 4 PPM at 5' BGS, 55 PPM at 5.5' BGS, 61 PPM at 6' BGS, 55 PPM at 7' BGS
10	10.0	3.2	-3	**Silt With Clay (ML)** 10-13' - Same as ABOVE **Peat** 13-13.2'		abrupt change at 13' BGS PID: 74 PPM at 10.5' BGS, 68 PPM at 11.5' BGS, 51 PPM at 12' BGS, 25 PPM at 13' BGS
15	15.0			Bottom of Boring at 15.0 ft bgs on 1/6/14 15:30		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED.GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-74 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION :

ELEVATION : DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : --- START : 1/6/14 14:30 END : 1/6/14 14:50 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			0-0' - No Soil Log Completed		Attempt 1 - 15' W of stake - refusal at 6' BGS Attempt 2 - 40' N of stake - refusal at 6' BGS Attempt 3 - 30 S of stake - outside fense line - refusal at 6' BGS - Broken core barrel resulting in lost barrel and drill tools down the borehole Attempt 4 - ~ 40' SSW of stake - refusal at 5' BGS Attempt 5 - ~45' SW of stake - refusal at 5' BGS No piezometer installed due to refusal.
5						
	6.0			Bottom of Boring at 6.0 ft bgs on 1/6/14 14:50		
10						
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD_PDI.GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-75 SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697517.9 N, 594286.8 E)

ELEVATION : 23.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 18.0 ft bgs
START : 12/19/13 09:30
END : 12/19/13 09:55
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.0	-1	**Silt, Trace Gravel, Trace Sand (ML)** 0-3' - dark reddish brown, (5YR 3/3), dry to moist, fine grained, nonplastic, clay content increasing with depth, color change at 2', abrupt change to black (10YR 2/1), increase gravel content and broken glass with depth, slightly cohesive, trace wood fragments, brick fragments, broken glass, and plastic noted throughout		Attempt 1 - refusal at 19' BGS moved approximately 15 W for attempt 2 which was successful PID: 0 PPM throughout recovery
5	5.0	3.0	-2	**Silt, Trace Gravel, Trace Sand (ML)** 5-8' - Same as ABOVE		PID: 0.1 PPM
10	10.0	2.2	-3	**Silt, Trace Gravel, Trace Sand (ML)** 10-11.9' - Same as ABOVE except increased clay content with depth, large wood fragment noted at bottom of interval **Sand, Trace Gravel (SM)** 11.9-12.2' - dark grayish brown, (10YR 4/2), dry, fine grained, subangular		abrupt change at 11.9' BGS
15	15.0	2.0	-4	**Sand, Trace Gravel (SM)** 15-15.2' - Same as ABOVE **Gravel, Trace Silt (GW)** 15.2-16.2' - black, wet, rounded to subangular, silt decreasing with depth **Pulverized Concrete Fragments** 16.2-17'		abrupt change at 15.2' BGS, petro-like odor PID: 9 PPM at 16' BGS ▼
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-75	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697517.9 N, 594286.8 E)

ELEVATION : 23.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 18.0 ft bgs
START : 12/19/13 09:30
END : 12/19/13 09:55
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	20.0			**Pulverized Concrete Fragments** 20-20.9'		PID: 0.9 PPM at 20.5' BGS, 2 PPM at 21' BGS
				Sand (SP) 20.9-21.8' - black, (10YR 2/1), moist to wet, fine grained, increasing silt content with depth		
		2.5	-5	**Silt (ML)** 21.8-22.5' - black, (10YR 2/1), moist to wet, soft, low plasticity, slighly cohesive, organic fibers and root matter noted throughout, trace gray lenses and trace mica flakes (1 mm diameter) noted throughout soil matrix		
				Bottom of Boring at 15.0 ft bgs on 12/19/13 09:55		
25	25.0					
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-76 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697436.5 N, 594041.8 E)

ELEVATION : 10.6 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 2.0 ft bgs START : 1/7/14 09:30 END : 1/7/14 09:50 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.5	-1	**Sand (SP)** 0-5' - yellowish brown, (10YR 5/6), dry to moist, moist below 2' BGS, trace silt at bottom of recovery		PID: 0 PPM ▼
5	5.0	3.4	-2	**Sand (SP)** 5-7.4' - pale brown, (10YR 6/3), wet, strong petro-like odor, gradual color change to black **Silt With Clay (ML)** 7.4-8.4' - black, (10YR 2/1), wet, low plasticity, petro-like odor, trace organic material, trace mica flakes (<1 mm) within soil matrix, cohesive		PID: 1-2 PPM at 6' BGS, 66 PPM at 7.4' BGS, 42 PPM at 8' BGS, 25 PPM at 8.4' BGS
10	10.0			Bottom of Boring at 10.0 ft bgs on 1/7/14 09:50		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-77	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697370.9 N, 594113.7 E)

ELEVATION : 21.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 14.1 ft bgs
START : 1/8/14 12:10
END : 1/8/14 13:30
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.9	-1	**Silty Sand, Trace/little Gravel (SM)** 0-2.5' - yellowish brown, (10YR 3/3), dry, subangular, trace organic matter		Attempt 1 - ~ 20' S of stake - refusal at ~12-13' BGS Attempt 2 - ~ 35' SW of stake - refusal at ~ 12-13' BGS Attempt 3 - ~ 50' WSW of stake PID: 0 PPM
				Silt With Sand, Trace Clay (ML) 2.5-2.9' - very dark brown, (10YR 2/2), black (10yr 2/1), dry, increasing clay content/decreasing sand content with depth gradual transition to plastic and broken glass fragments		abrupt change at 2.5' BGS
5	5.0	4.2	-2	**Silt With Sand, Trace Clay (ML)** 5-9.2' - Same as ABOVE		PID: 2 PPM at 9.2' BGS
10	10.0	3.2	-3	**Silt With Sand, Trace Clay (ML)** 10-13.2' - Same as ABOVE except trace brown sand lenses noted at 11-11.1' BGS		PID: 1-4 PPM throughout
15	15.0	2.3	-4	**Silt With Sand, Trace Clay (ML)** 15-16.3' - Same as ABOVE except wood fragments at bottom of interval, bright yellow gravel fragments, flat sided 1/4 - 1/2" thick, sandy texture		PID: 1 PPM at 15' BGS, 23 PPM at 16.2' BGS, 60 PPM at 17' BGS
				Sand (SP) 16.3-17.3' - black, (10YR 2/1), gray (10yr 4/1), moist to wet, fine grained, bedding, faint odor, black/gray bedding		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-77 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697370.9 N, 594113.7 E)

ELEVATION : 21.7 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 14.1 ft bgs START : 1/8/14 12:10 END : 1/8/14 13:30 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silt With Clay (ML)** 20-21' - black, wet		PID: 5 PPM at 20.5' BGS, 27 PPM at 21' BGS, 92 PPM at 22' BGS, 202 PPM at 22.3' BGS, 1 PPM at 23' BGS
				Sand (SP) 21-22.3' - dark gray, (10YR 3/1), wet, fine grained, strong petro-like odor		
		3.4	-5	**Silty Clay (CL)** 22.3-23.4' - brown, (10YR 4/3), moist, medium stiff, low to medium plasticity, cohesive, no odor		
25	25.0			Bottom of Boring at 25.0 ft bgs on 1/8/14 13:30		
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-78	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697329.4 N, 594061.9 E)

ELEVATION : 22.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 18.3 ft bgs
START : 12/12/13 09:30
END : 12/12/13 10:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.9	-1	**Sand, Trace Gravel (SW)** 0-1' - brown, (10YR 4/3), dry, fine to medium grained, subangular, gravel up to 1.5" diameter **Silt With Sand (ML)** 1-1.7' - very dark grayish brown, (10YR 3/2), moist, nonplastic to low plasticity, trace/little organic fibers, slightly cohesive, wood fragments at 1-1.2' BGS **Silty Sand (SM)** 1.7-2' - red **Silt With Sand (ML)** 2-2.9' - black, moist, low plasticity, wood fragments		PID: <1 PPM throughout
5	5.0	4.0	-2	**Silt With Sand (ML)** 5-9' - black, moist, wood fragments, plastic, brick pieces, vegetation matter between 8.0-8.2' BGS, slightly cohesive		PID: <1 PPM throughout
10	10.0	2.5	-3	**Silt With Sand (ML)** 10-12.5' - Same as ABOVE except wood and plastic fragments, newspaper at top of recovery (1" thick) odor noted at bottom of recovery		PID: 4.5 PPM at 10.5' BGS, 0.8 PPM at 12.5' BGS
15	15.0	3.5	-4	**Silt With Sand (ML)** 15-16' - Same as ABOVE **Silt, Trace Sand (ML)** 16-18.2' - dark brown, (10YR 3/3), moist, soft, significant organic matter noted throughout root and leaf debris, gray silt pocket noted at 16-16.1' BGS **Silt With Sand (ML)** 18.2-18.5' - black, coarse grained, NAPL saturated, viscous tar-like **Silt With Sand (ML)** 18.5-21' - Same as ABOVE		PID: 0.1 PPM throughout ▼
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-78	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697329.4 N, 594061.9 E)

ELEVATION : 22.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 18.3 ft bgs
START : 12/12/13 09:30
END : 12/12/13 10:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0					PID: 0 PPM
				Silt With Clay 21-22.3' - cohesive, increasing clay content with depth, trace mica-flakes		
		3.1	-5	**Silty Clay** 22.3-23.1' - brown, (10YR 4/3), moist, medium to low plasticity, cohesive, trace organic matter (leaf debris) noted at very bottom of recover		
25	25.0			Bottom of Boring at 25.0 ft bgs on 12/12/13 10:00		
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-79	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697294.4 N, 593939.0 E)

ELEVATION : 13.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : 3.7 ft bgs
START : 1/7/14 13:55
END : 1/7/14 14:35
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.2	-1	**Silt With Sand (ML)** 0-3.2' - brown, (7.5YR 4/3), dry, trace organic matter at top of recovery, trace wood fragments noted, abrupt color change at 2.3' BGS (10YR 2/1 Black), abrupt increase in clay content below 2.3' BGS, trace sand plastic sheeting, plastic fragments, broken glass fragments		PID: 0 PPM throughout
5	5.0	1.0	-2	**Silt With Sand, Few Gravel (ML)** 5-6' - wet, glass and brick fragments noted throughout		PID: < 1 PPM throughout
10	10.0	0.0	-3			
15	15.0	1.9	-4	**Silt With Clay, Trace Gravel (ML)** 15-16.6' - black, (10YR 2/1), wet to moist, trace fibrous organic matter noted, trace wavy gray laminations of silty clay, gravel noted at top of recovery (0.5" diameter) **Peat** 16.6-16.8' **Silty Sand (SM)** 16.8-16.9' - brown, (7.5YR 4/3), wet, fine to medium grained		indistinguishable odor PID: 0 PPM throughout
20	20.0			Bottom of Boring at 20.0 ft bgs on 1/7/14 14:35		

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-80	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697247.3 N, 593872.9 E)

ELEVATION : 13.0 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 9.0 ft bgs
START : 12/16/13 14:40
END : 12/16/13 15:15
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.3	-1	**Silt With Sand, Little Gravel (SM)** 0-3.3' - brown, (7.5YR 4/3), dry to moist, trace wood fragments, glass and plastic fragments noted throughout dark color with depth to dark grayish brown (10YR 33/2) at 1.5' BGS		PID: <1 PPM
5	5.0	1.9	-2	**Silt With Clay** 5-6.1' - black, (10YR 2/1), dry, trace gray laminations/mottling, mica crystals (<1 mm) throughout soil matrix, wood fragments noted at 6.1-6.3' BGS **Sand (SP)** 6.1-6.9' - brown, (10YR 4/3), moist to wet		PID: 6 PPM at 5' BGS ▼
10	10.0	0.5	-3	**Refuse** 10-10.5' - black, wet, fibrous wood material, plastic, broken glass, trace silt		
15	15.0	2.8	-4	**Refuse** 15-15.5' - fibrous wood material, plastic, broken glass, trace silt, red fabric **Silt With Clay (ML)** 15.5-17.1' - black, (10YR 2/1), moist, low plasticity, cohesive, trace organic matter - dramatic increase at 16.9' BGS **Peat** 17.1-17.5' - brown, moist-fibrous organic matter and leaves		PID: 0 PPM throughout
20	20.0			Bottom of Boring at 20.0 ft bgs on 12/16/13 15:15		

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-81	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697194.3 N, 593804.3 E)

ELEVATION : 12.6 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 4.9 ft bgs
START : 12/16/13 15:15
END : 12/16/13 16:05
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.0	-1	**Silt With Sand, Trace Gravel (SM)** 0-3' - brown, (7.5YR 4/3), dry to moist, trace wood, glass fragments noted bleow 1' BGS, color change noted below 2' BGS to dark grayish brown (10YR 3/2)		PID: <1 PPM at 0.5' BGS, 2.5 PPM at 1.5' BGS
5	5.0	2.5	-2	**Refuse** 5-5.5' - black, (10YR 2/1), wet, wood debris, high silt content, increases with depth **Silt, Little Clay (ML)** 5.5-6.4' - dark grayish brown, (10YR 3/2), moist, medium softness, low to non plasticity, cohesive **Sand (SP)** 6.4-6.9' - brown, wet, loose, uniform/poorly graded **Refuse** 6.9-7.5' - wood fragments-fragments wood material resembling wet compressed plywood, friable/easily broken		abrupt change at 6.4' BGS PID: 3 PPM at 5.5' BGS
10	10.0	0.0	-3			
15	15.0	1.5	-4	**Refuse** 15-16' - flat wood fragments, gravel, bottle/glass and bottle caps, newspaper, flat gravel fragments 2" diameter about 0.5" thick **Silt With Clay** 16-16.5' - black, (10YR 2/1), moist, soft, trace organic matter, mica crystals (<1mm diameter) noted throughout soil matrix		PID: <1 PPM throughout
20	20.0			Bottom of Boring at 20.0 ft bgs on 12/16/13 16:05		

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-82	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697137.4 N, 593735.8 E)

ELEVATION : 12.6 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 7.5 ft bgs
START : 12/17/13 09:30
END : 12/17/13 10:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.1		**Sandy Silt With Gravel (ML)** 0-3.1' - dark brown, (7.5YR 3/2), dry, organic matter and root debris noted at top of recovery, wood, fabric, and plastic debris noted at bottom of recovery		refusal encountered at first 2 attempts at 1' BGS PID: 0 PPM throughout
5	5.0	3.9		**Sandy Silt With Gravel (ML)** 5-6.5' - Same as above except decreases sand content **Sand, Trace Gravel (SP)** 6.5-7.5' - grayish brown, (10YR 4/2), dry, round, well graded/poorly sorted **Silty Sand With Gravel (SM)** 7.5-8.9' - black, (10YR 2/1), dry, wood fragments and broken glass noted		PID: 8.0-9.0 PPM throughout ▼
10	10.0	1.9		**Silty Sand With Gravel (SM)** 10-11.9' - Same as above except also trash and newspaper, FILL		PID: 3.0-7.0 PPM throughout
15	15.0	1.6		**Silty Sand With Gravel (SM)** 15-15.8' - Same as above except wet **Silt With Clay (ML)** 15.8-16.2' - black, (10YR 2/1), wet, med soft, trace organic material, cohesive **Peat** 16.2-16.5' - moist, brown, organic fibrous vegetation matter **Silty Sand (SM)** 16.5-16.6' - grayish brown, (10YR 4/2), wet, dense trace organic fibers noted		PID: <1.0 PPM
20	20.0			Bottom of Boring at 20.0 ft bgs on 12/17/13 10:00		

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD PDI.GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-83	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697083.1 N, 593664.6 E)

ELEVATION : 9.7 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 4.2 ft bgs
START : 12/17/13 10:50
END : 12/17/13 11:30
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.0	-1	**Silty Sand Trace Gravel (SM)** 0-0.8' - yellowish red, (5YR 5/8), dry, organic root material **Silt With Sand (ML)** 0.8-3' - dark brown, (10YR 3/3), black (10yr 2/1), dry, wood and glass fragments noted throughout		PID: 0 PPM throughout ▼
5	5.0	1.8	-2	**Sand Trace Silt (SP)** 5-5.6' - grayish brown, (10YR 2/1), moist **Fill Material, Trace Gravel** 5.6-6.8' - trash, newspapers, hair fibers		PID: 2 PPM at 5.5' BGS
10	10.0	0.0	-3			
15	15.0	1.8	-4	**Silt With Clay (ML)** 15-15.8' - black, (10YR 2/1), wet, soft, slight odor, slight sheen observed on water surface, cohesive **Silty Sand (SM)** 15.8-16.8' - grayish brown, (10YR 4/2), wet, dense, trace organic fibers noted		PID: < 1PPM throughout
20	20.0			Bottom of Boring at 20.0 ft bgs on 12/17/13 11:30		

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-84 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697033.0 N, 593599.6 E)

ELEVATION : 5.4 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.3 ft bgs START : 12/17/13 11:40 END : 12/17/13 12:25 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand** 0-1' - brown, (7.5YR 4/3), dry, trace organic matter and wood debris		PID: 0 PPM througout
		2.9	-1	**Silt With Sand** 1-2.9' - black, (10YR 2/1), moist, nonplastic, wood fragments, broken glass and plastic noted throughout interval, slightly cohesive red silty sand with gravel pocket noted at bottom of recovery		▼
5	5.0					
		2.9	-2	**Silty Sand Grades To A Silt With Clay (SM-ML)** 5-7.9' - black, (10YR 2/1), moist, color change at 7-7.5' BGS to brown, increased clay content, black below 7.5' BGS, horizontal black/gray wavy laminations, trace organic matter		PID: 0 PPM througout
10	10.0			Bottom of Boring at 10.0 ft bgs on 12/17/13 12:25		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD_PDI.GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-85 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697008.3 N, 593547.2 E)

ELEVATION : 4.2 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 0.2 ft bgs
START : 12/17/13 13:15
END : 12/17/13 13:50
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	0.0			**Silty Sand With Gravel (SM)** 0-0.9' - reddish brown, (5YR 4/4), wet, angular, gravel up to 1/2" diameter		PID: 0 PPM throughout
		0.9	-1			
5	5.0			**Silty Sand With Gravel (SM)** 5-5.2' - Same as ABOVE **Silt With Clay (ML)** 5.2-7.3' - black, (10YR 2/1), moist to wet, medium soft, trace fibrous organic material, gray wavy laminations noted throughout, gradual increase in clay content with depth		PID: 0 PPM throughout abrupt change at 5.2' BGS
		3.0	-2	**Peat** 7.3-7.9' - brown, moist, organic fibrous vegetation matter **Silty Sand (SM)** 7.9-8' - grayish brown, (10YR 4/2), wet, organic matter and root debris noted		
10	10.0			Bottom of Boring at 10.0 ft bgs on 12/17/13 13:50		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-86	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697255.9 N, 593981.8 E)

ELEVATION : 20.8 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 17.2 ft bgs
START : 1/8/14 15:00
END : 1/8/14 16:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand Trace Gravel (SM)** 0-1.8' - yellowish brown, (10YR 5/6), dry, trace organic matter		abrupt transition at 1.8' BGS PID: 0 PPM throughout
		3.5	-1	**Silt With Sand (ML)** 1.8-3.5' - dark grayish brown, (10YR 3/2), fine grained, trace clay increases with depth, cohesive, plasticity increases with depth, concrete fragments, plastic, and rubber debris noted throughout		
5	5.0					
		3.3	-2	**Silt With Sand (ML)** 5-8.3' - Same as ABOVE except black, (10YR 2/1), moist to wet, glass and plastic fragments noted at 8' BGS		PID: 2 PPM at 7' BGS
10	10.0					
		3.5	-3	**Silt With Sand (ML)** 10-13.5' - Same as ABOVE except sand lense noted at 11.4-11.7' BGS - brown, fine grained, moist/wet large wood fragment noted at 11.8-12' BGS broken glass noted at 12.5' BGS plastic sheeting noted at end of recovery		PID: <1-5 PPM increasing with depth of interval
15	15.0					
				Silt With Sand (ML) 15-16' - Same as ABOVE		PID: 0 PPM throughout
				Wood Fragments And Broken Glass With Trace Sand 16-17.3'		▼
		3.2	-4	**Silt With Clay, Trace Sand (ML)** 17.3-18.2' - black, (10YR 2/1), moist to wet, fine grained, low plasticity, cohesive, gray laminations-wavy and horizontal noted throughout trace organic matter trace sand pocket at 18-18.2' BGS		abrupt change at 17.3' BGS
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-86	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697255.9 N, 593981.8 E)

ELEVATION : 20.8 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 17.2 ft bgs
START : 1/8/14 15:00
END : 1/8/14 16:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silt With Clay, Trace Sand (ML)** 20-22.6' - Same as ABOVE		PID: 0 PPM throughout
		2.6	-5			
25	25.0			Bottom of Boring at 25.0 ft bgs on 1/8/14 16:00		
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-87	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697206.8 N, 593911.5 E)

ELEVATION : 21.0 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 18.1 ft bgs
START : 1/8/14 09:30
END : 1/8/14 11:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand Trace Gravel (SM)** 0-2' - dark brown, (7.5YR 3/3), strong brown 7.5yr 4/6, dry, rounded		PID: 0 PPM throughout
		3.5	-1	**Silt With Sand, Trace Gravel (ML)** 2-3.5' - black, (10YR 2/1), dry, decreasing sand content to trace below 3' BGS, increasing clay content, rubber/plastic/wood fragments noted throughout organic root and fibrous material noted throughout		
5	5.0					
		2.2	-2	**Silt With Clay, Trace Gravel (ML)** 5-7.2' - black, (10YR 2/1), moist, organic root and fibrous material noted throughout, wood fragments noted		PID: 0 PPM throughout
10	10.0					
		3.7	-3	**Silt With Clay, Trace Gravel (ML)** 10-13' - black, (10YR 2/1), moist, organic root and fibrous material noted throughout, wood fragments noted		PID: 0 PPM throughout
				Silty Sand (SM) 13-13.7' - black, (10YR 2/1), moist, wood and glass debris, strong cemented sandy gravel pebble 2" diameter noted, possible brick/block		
15	15.0					
		2.8	-4	**Silty Sand, Trace Gravel (SM)** 15-16.8' - black, (10YR 2/1), moist, few glass and wood fragments		PID: 0 PPM throughout
				Sand. Trace Silt (SP) 16.8-17.4' - black, (10YR 2/1), wet, fine grained, trace gray lamination noted with depth, non-cohesive, gradual increase in silt content with depth		abrupt transition at 16.8' BGS ▼
				Silt With Clay, Trace Sand (ML) 17.4-17.8' - black, (10YR 2/1), moist to wet, fine grained, low plasticity, cohesive, black/gray laminations noted throughout soil matrix, largely horizontally orientated-wavy, trace organic matter, stiffness increases with depth		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-87 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (697206.8 N, 593911.5 E)

ELEVATION : 21.0 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 18.1 ft bgs START : 1/8/14 09:30 END : 1/8/14 11:00 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0	2.8	-5	**Silt With Clay, Trace Sand (ML)** 20-22.8' - Same as ABOVE except wet		PID: 0 PPM throughout
25	25.0			Bottom of Boring at 25.0 ft bgs on 1/8/14 11:00		
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-88	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697155.0 N, 593834.0 E)

ELEVATION : 19.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 14.2 ft bgs
START : 12/19/13 13:30
END : 12/19/13 14:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	2.7	-1	**Silt With Sand (ML)** 0-2.7' - brown, (7.5YR 4/3), dry to moist, nonplastic, organic wood fibrous material noted throughout poorly cemented fine sand pocket noted at 1.5' BGS, moderately cohesive, moist at 1.7' BGS, color change at 1.7' BGS to dark grayish brown (10YR 3/2), decreasing sand content below 1.7' BGS to SILT with clay, plastic sheeting and refuse noted below 1.7' BGS		PID: < 1PPM throughout
5	5.0	2.2	-2	**Silt With Clay (ML)** 5-7.2' - Same as ABOVE except dark grayish brown, (10YR 3/2), moist, petro-like odor noted		near refusal - hard drilling at 8' BGS PID: 1 PPM at 5' BGS, 7 PPM at 5.5' BGS, 7.3' at 21' BGS, 9.5 PPM at 21.5' BGS, 8.4 PPM at 22' BGS
10	10.0	1.8	-3	**Silt With Clay, Trace Sand (ML)** 10-11.8' - Same as ABOVE except fine to medium grained, glass and plastic noted between 10.8-11.8' BGS, trace wood fragments		PID: 2 PPM at ▼
15	15.0	1.3	-4	**Silt With Clay (ML)** 15-15.8' - Same as ABOVE except wet, fibrous wood debris **Sand (SP)** 15.8-16.2' - yellowish brown, (10YR 5/6), wet **Fill Material** 16.2-16.3' - newspaper noted at bottom		PID: < 1PPM throughout abrupt change at 15.8' BGS
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-88	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697155.0 N, 593834.0 E)

ELEVATION : 19.1 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 14.2 ft bgs
START : 12/19/13 13:30
END : 12/19/13 14:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Fill Material** 20-21.1' - silty plastic material at bottom of recovery		PID: < 1PPM throughout
		1.7	-5	**Silty Sand (SM)** 21.1-21.7' - brown, (7.5YR 4/4), organic material throughout, gray bedding/lamination, peat-like, grayish brown at depth		
25	25.0			Bottom of Boring at 25.0 ft bgs on 12/19/13 14:00		
30						
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-89	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697105.0 N, 593774.8 E)

ELEVATION : 18.2 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : 14.7 ft bgs
START : 12/19/13 11:20
END : 12/19/13 12:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.4	-1	**Sandy Silt (ML)** 0-3' - black, (10YR 2/1), dry, red mudstone/shale gravel fragments noted at .8' BGS, organic matter noted at top of recovery, color chang at .8' BGS to strong brown (7.5YR 5/6), change to silt with clay below 3' BGS		PID: 2 PPM at 3' BGS
				Silt With Clay (ML) 3-3.4' - Same as above		
5	5.0	2.9	-2	**Silt With Clay (ML)** 5-7.3' - black, (10YR 2/1), moist, wood and plastic fragments noted throughout, cohesive, gray slate gravel fragment noted at 7' BGS		PID: <2 PPM throughout
10	10.0	4.0	-3	**Silt With Clay (ML)** 10-14' - Same as ABOVE except trace organic matter, glass and plastic material noted		PID: <2 PPM throughout
15	15.0	1.8	-4	**Silt With Clay (ML)** 15-15.8' - Same as ABOVE except moist organic matter		PID: 0 PPM throughout
				Sand (SW) 15.8-16.2' - interval of sand, grayish brown		
				Fill Material 16.2-16.8' - wood, paper and plastic material		
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-89	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697105.0 N, 593774.8 E)

ELEVATION : 18.2 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 14.7 ft bgs
START : 12/19/13 11:20
END : 12/19/13 12:00
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION)
	20.0			**Sand And Silt (SM)** 20-20.5' - wet, wood fragments		PID: 0 PPM throughout
		0.5	-5			
25	25.0			**Silt With Sand (ML)** 25-26.7' - black, (10YR 2/1), soft, increasing sand content with depth, wood fragments		PID: 0 PPM throughout
		2.6	-6	**Silty Sand (SM)** 26.7-27.6' - grayish brown, (10YR 4/2), wet, gradual transition from SILT with sand		
30	30.0			Bottom of Boring at 30.0 ft bgs on 12/19/13 12:00		
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-90	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697047.7 N, 593683.2 E)

ELEVATION : 16.6 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 12.7 ft bgs
START : 12/11/13 13:00
END : 12/11/13 14:50
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silt With Sand, Trace Gravel (ML)** 0-1' - dark reddish brown, (5YR 3/3), dry, soft, subrounded, few organic material		5 additional runs performed to gather volume for samples PID: < 1 PPM throughout
				Silt With Clay, Few Gravel (ML) 1-2.5' - yellowish red, (5YR 5/6), moist, medium hardness, subrounded to subangular		
		3.4	-1	**Silt Little Clay (ML)** 2.5-3.4' - black, (10YR 2/1), moist, medium stiff, significant wood and organic content as well as trash, plastic, broken glass, and sheeting		
5	5.0			**Silt Little Clay (ML)** 5-6.8' - Same as ABOVE		berm approximately 10' high PID: <1-5 PPM increasing with depth
		1.8	-2			
10	10.0			**Silt Little Clay (ML)** 10-0.3' - Same as ABOVE except wet, trash, vegetation debris		PID: 0 PPM throughout
		0.3	-3			▼
15	15.0			**Silt Little Clay (ML)** 15-16.7' - Same as ABOVE		PID: 0 PPM throughout
		1.7	-4			
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-90	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (697047.7 N, 593683.2 E)

ELEVATION : 16.6 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 12.7 ft bgs
START : 12/11/13 13:00
END : 12/11/13 14:50
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	20.0			**Silt Little Clay (ML)** 20-20.4' - Same as ABOVE		PID: 0 PPM throughout
				Silty Sand (SM) 20.4-20.8' - brown, (7.5YR 4/2), wood fragments and fibrous material, transition from silt to sand matrix		
		0.8	-5			
25	25.0			**Silty Sand, Trace Gravel (SM)** 25-26' - grayish brown, (10YR 5/2), wet, very fine grained, rounded, wood fragments at top of recovery		abrupt change at 26' BGS PID: 0 PPM throughout
				Sand (SP) 26-26.8' - grayish brown, (10YR 5/2), wet, fine grained		
		1.8	-6			
30	30.0			Bottom of Boring at 30.0 ft bgs on 12/11/13 14:50		
35						
40						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PDI.GPJ 4/30/14

PROJECT NUMBER: 480159.02.02.02	BORING NUMBER: PZ-91 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ
LOCATION : Kearny, NJ (696980.4 N, 593617.3 E)

ELEVATION : 5.4 ft NAVD 1988
DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 3.2 ft bgs
START : 12/19/13 10:00
END : 12/19/13 10:25
LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0	3.4	-1	**Silt With Sand (ML-SM)** 0-0.8' - dark reddish brown, (5YR 3/4), dry, gravel fragments (mudstone) noted at top of recovery **Silt With Clay (ML)** 0.8-3.4' - black, (10YR 2/1), dry, low plasticity, cohesive trash, glass, plastic sheeting, wood and concrete fragments noted trhoughout		PID: 0-4 PPM increasing with depth abrupt change at 0.8' BGS ▼
5	5.0	1.8	-2	**Fill** 5-6.8' - wet, trace black silty liquid throughout, wood fragments-flat surface/processed, increased silt content with depth		PID: < 1 PPM throughout
10	10.0	2.2	-3	**Silt With Clay (ML)** 10-11.1' - black, (10YR 2/1), wet, medium plasticity, trace organic matter, cohesive **Silty Sand (SM)** 11.1-12.2' - yellowish brown, (10YR 6/8), wet, fine to very fine grained, medium plasticity, gradual change to pale brown (10YR 6/3)		PID: < 1 PPM throughout
	14.0			Bottom of Boring at 14.0 ft bgs on 12/19/13 10:25		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED GLB DIAMONDHEAD.PRJ GPJ 4/30/14

PROJECT NUMBER:	BORING NUMBER:
480159.02.02.02	PZ-92 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Diamond Head Oil Superfund Site, Kearny, NJ LOCATION : Kearny, NJ (696931.2 N, 593557.2 E)

ELEVATION : 5.2 ft NAVD 1988 DRILLING CONTRACTOR : Environmental Field Services

DRILLING EQUIPMENT AND METHOD : Geoprobe 6620 DT, Direct Push

WATER LEVELS : ▼ 1.6 ft bgs START : 12/19/13 09:10 END : 12/19/13 09:40 LOGGER : Murphy

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	#TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0			**Silty Sand (SM)** 0-1.5' - brown, (7.5YR 4/4), dry to moist, medium dense, trace organic matter at top of recovery		PID: < 1 PPM throughout
				Sand (SW) 1.5-2' - grayish brown, (10YR 5/2), wet, loose		▼
		2.5	-1	**Silt With Sand And Clay (ML)** 2-2.5' - wet, nonplastic, cohesive, trace organic matter		abrupt change at 2' BGS
5	5.0			**Silt With Sand And Clay (ML)** 5-6' - Same as ABOVE except fine grained		PID: < 1 PPM throughout
				Silt With Clay (ML) 6-7' - black, (10YR 2/1), moist, medium plasticity, cohesive, trace organic matter noted throughout, gray wavy laminations noted within soil matrix		
		2.9	-2	**Peat** 7-7.9' - brown fibrous organic material and root matter		
10	10.0			Bottom of Boring at 10.0 ft bgs on 12/19/13 09:40		
15						
20						

SOIL BORING LOG DIAMOND HEAD CH2M GEOTECH REVISED.GLB DIAMONDHEAD_PDI.GPJ 4/30/14

Appendix E
Soil Boring Logs and Piezometer Construction Diagrams

Section 2

Temporary Piezometer Construction Diagrams

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-23	SHEET 1 OF 1

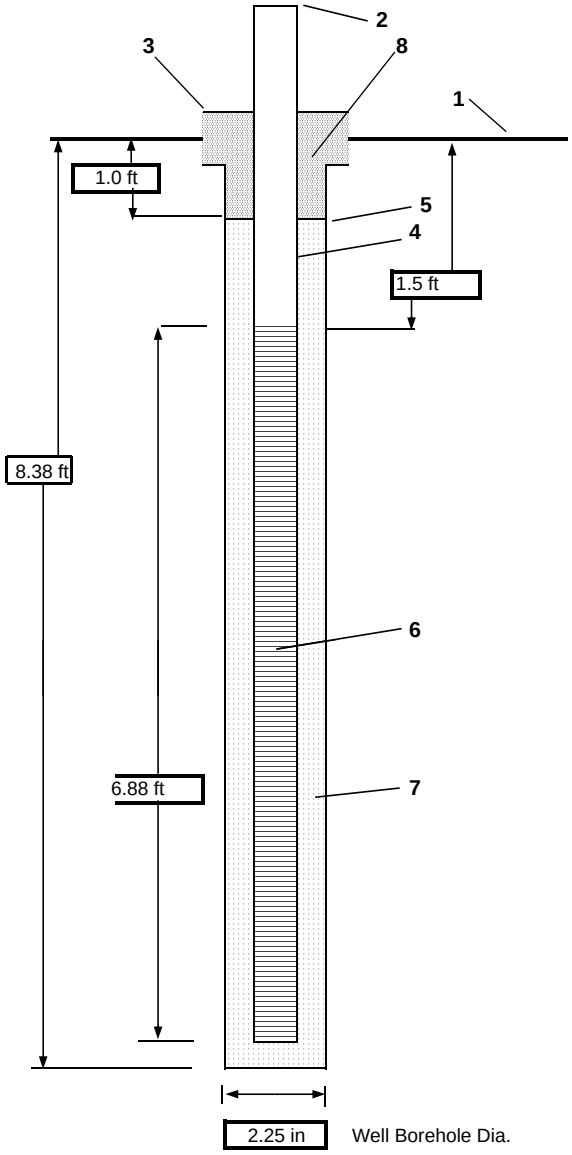
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 7.0 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.51 ft START : 12/16/13 @ 09:00 END : 12/16/13 @ 09:45 LOGGER : M. Murphy



1- Ground elevation at well 7.0 ft

2- Top of Well Casing elevation 10.48 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-24	SHEET 1 OF 1

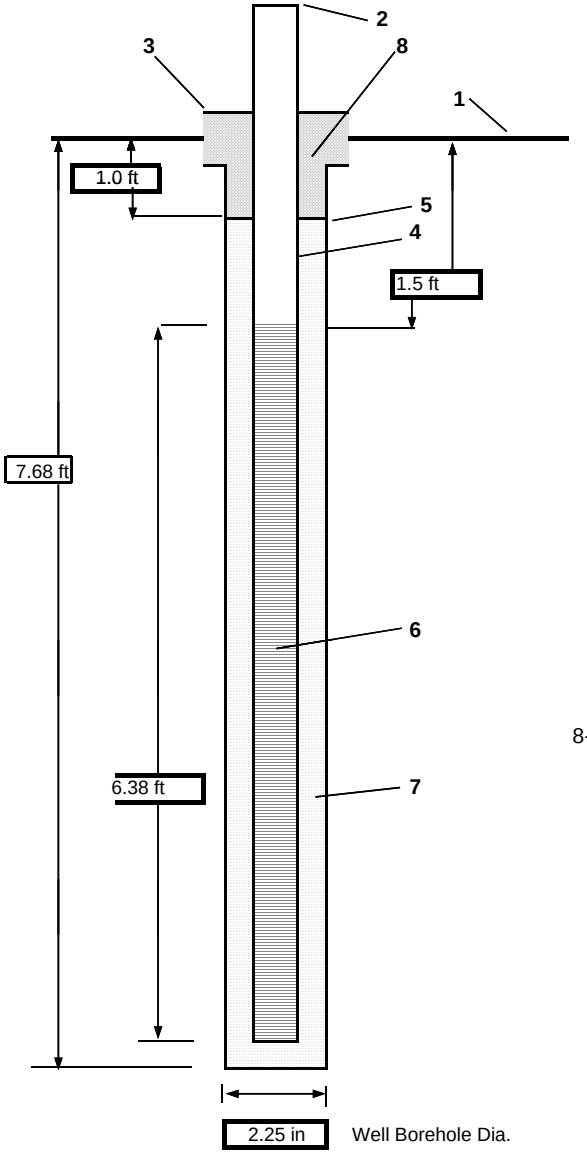
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 7.9 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.43 ft START : 12/13/13 @ 09:25 END : 12/13/13 @ 09:55 LOGGER : M. Murphy



1- Ground elevation at well 7.9 ft

2- Top of Well Casing elevation 11.34 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-25	SHEET 1 OF 1

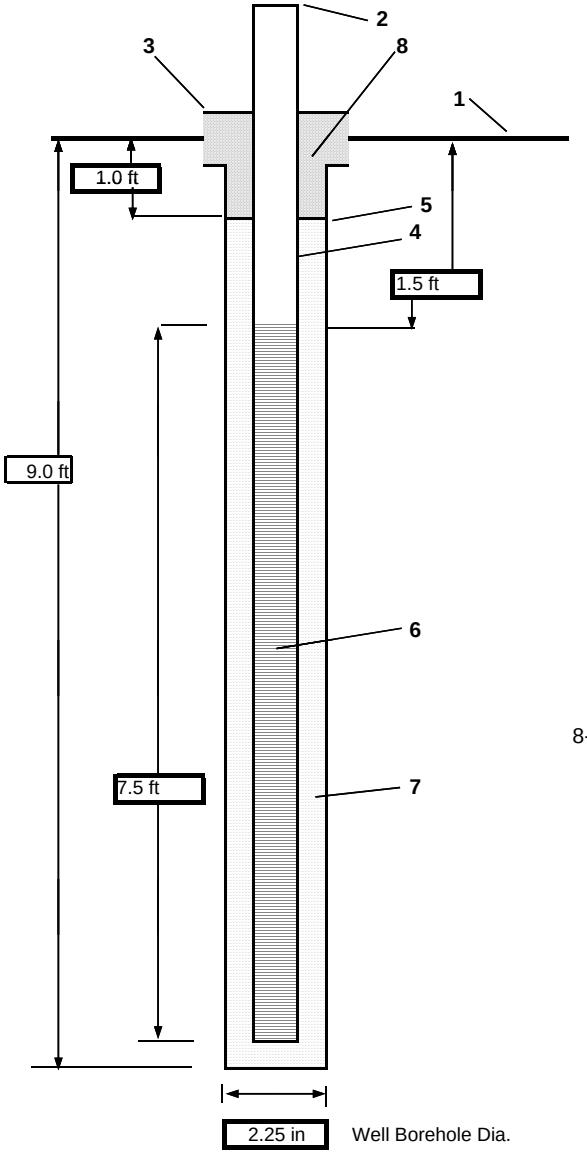
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 8.0 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.13 ft START : 12/13/13 @ 10:00 END : 12/13/13 @ 10:30 LOGGER : M. Murphy



1- Ground elevation at well 8.0 ft

2- Top of Well Casing elevation 11.27 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-26	SHEET 1 OF 1

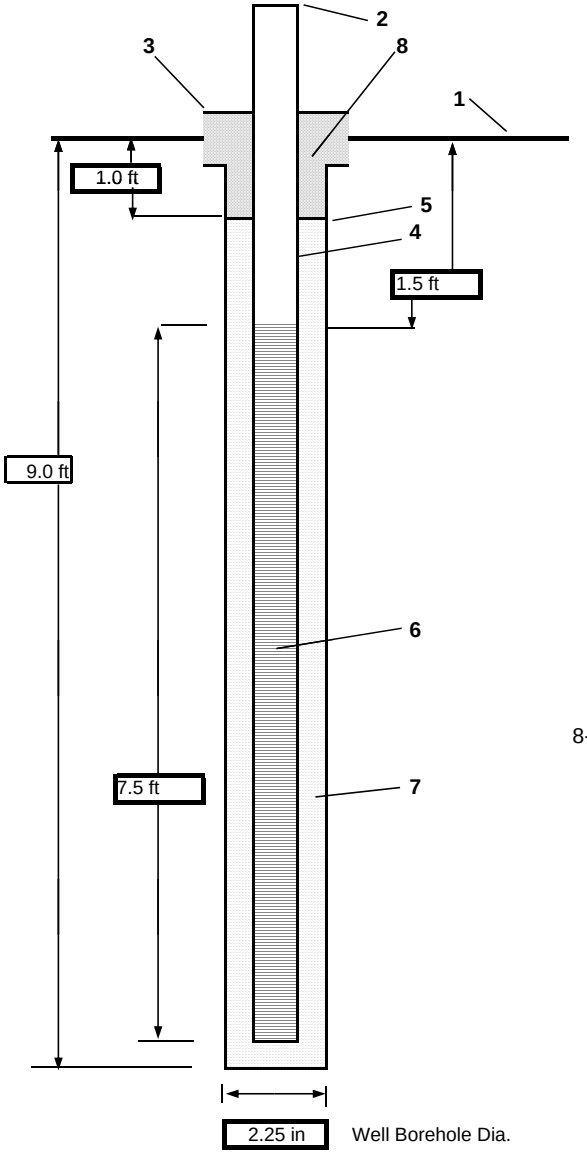
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 7.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.49 ft START : 12/18/13 @ 11:00 END : 12/18/13 @ 11:30 LOGGER : M. Murphy



1- Ground elevation at well 7.7 ft

2- Top of Well Casing elevation 11.19 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER		
480159.02.02.02	PZ-27	SHEET 1	OF 1

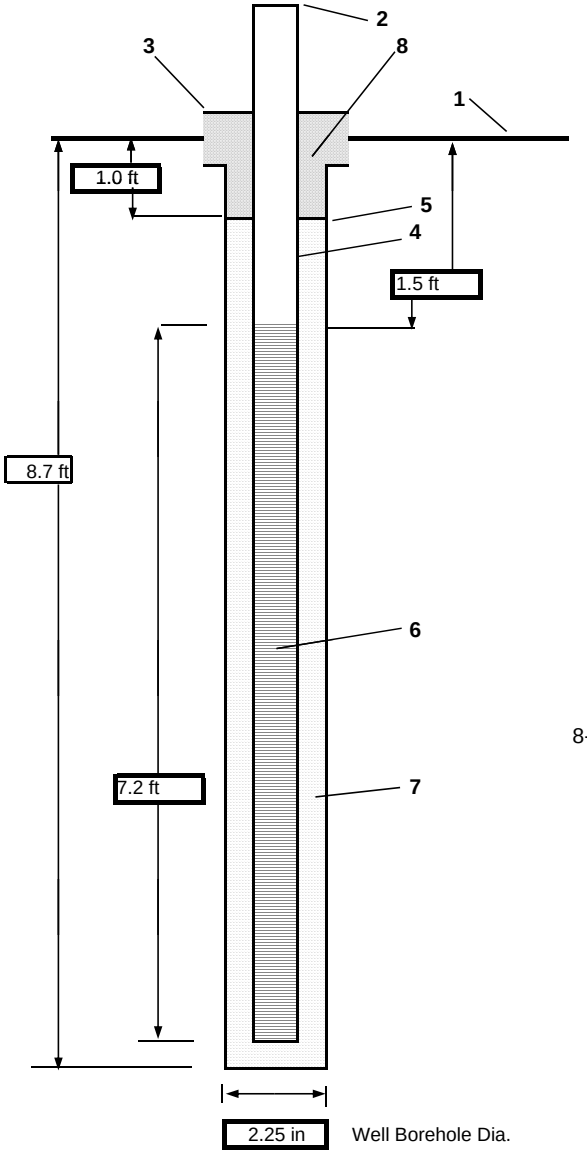
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 7.6 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.63 ft START : 12/13/13 @ 14:30 END : 12/13/13 @ 15:10 LOGGER : M. Murphy



1- Ground elevation at well 7.6 ft

2- Top of Well Casing elevation 10.82 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-28	SHEET 1 OF 1

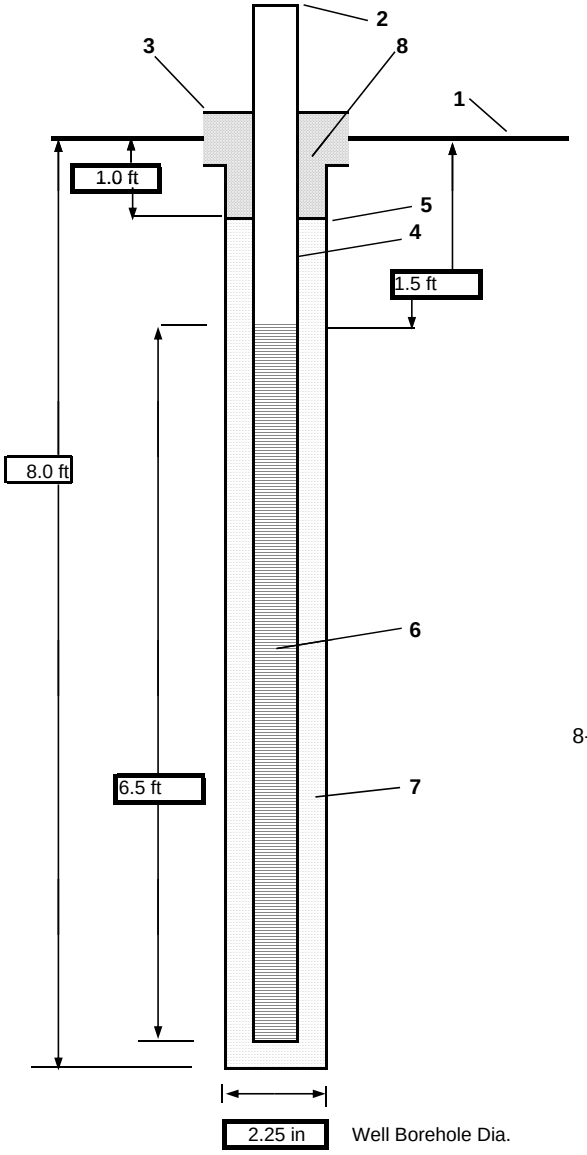
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 8.0 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.51 ft START : 12/16/13 @ 10:00 END : 12/16/13 @ 10:35 LOGGER : M. Murphy



1- Ground elevation at well 8.0 ft

2- Top of Well Casing elevation 11.28 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-29	SHEET 1 OF 1

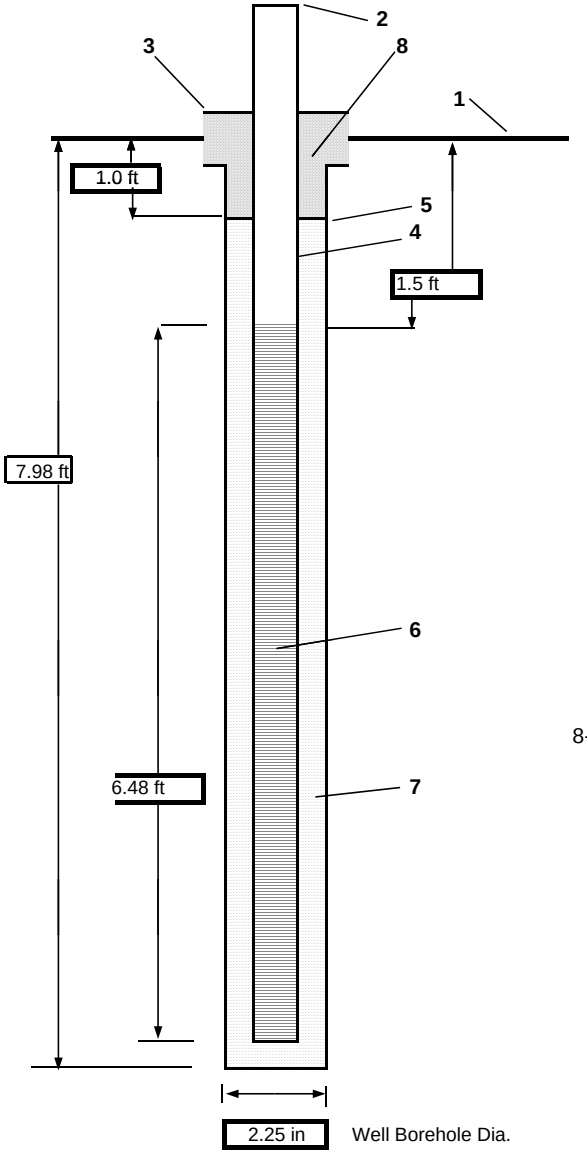
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 8.3 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 7.71 ft START : 12/13/13 @ 10:35 END : 12/13/13 @ 11:00 LOGGER : M. Murphy



1- Ground elevation at well 8.3 ft

2- Top of Well Casing elevation 11.54 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-30	SHEET 1 OF 1

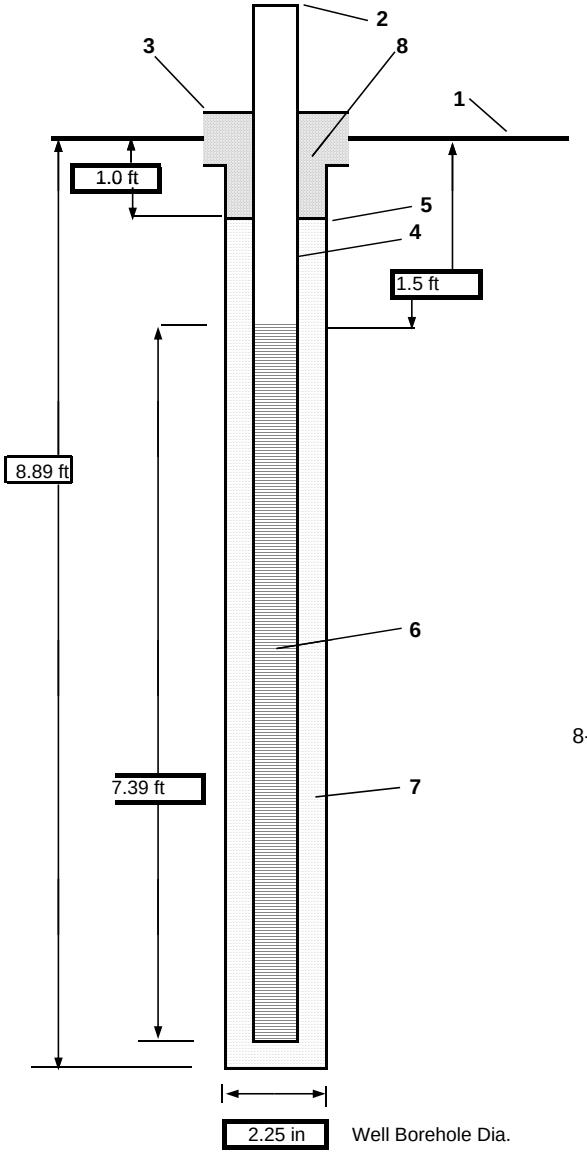
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 8.1 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.35 ft START : 12/18/13 @ 11:40 END : 12/18/13 @ 12:30 LOGGER : M. Murphy



1- Ground elevation at well 8.1 ft

2- Top of Well Casing elevation 11.62 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-31	SHEET 1 OF 1

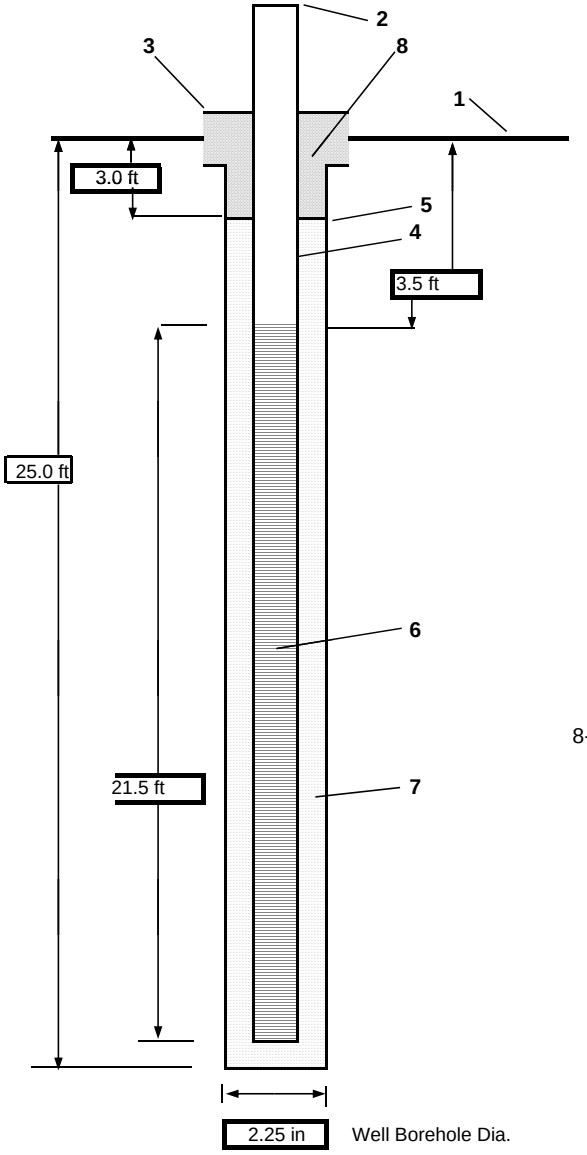
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 22.1 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 17.41 ft START : 12/12/13 @ 13:30 END : 12/12/13 @ 14:30 LOGGER : M. Murphy



1- Ground elevation at well 22.1 ft

2- Top of Well Casing elevation 25.02 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-32	SHEET 1 OF 1

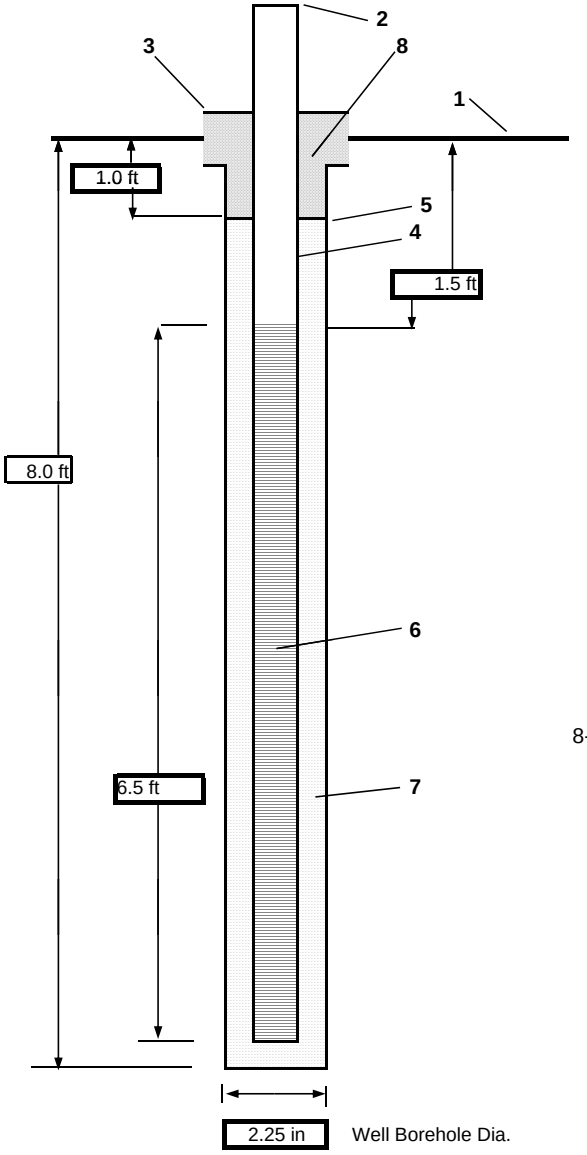
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.8 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 6.85 ft START : 12/13/13 @ 13:50 END : 12/13/13 @ 14:25 LOGGER : M. Murphy



1- Ground elevation at well 9.8 ft

2- Top of Well Casing elevation 13.17 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-33	SHEET 1 OF 1

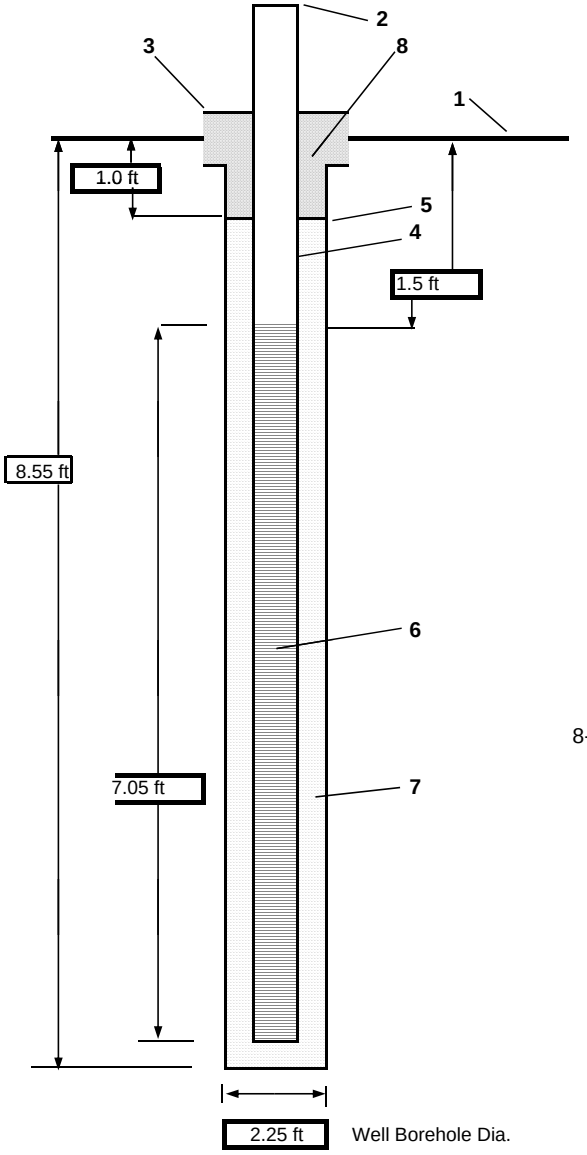
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 8.4 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.23 ft START : 12/13/13 @ 13:00 END : 12/13/13 @ 13:40 LOGGER : M. Murphy



1- Ground elevation at well 8.4 ft

2- Top of Well Casing elevation 11.59 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-34	SHEET 1 OF 1

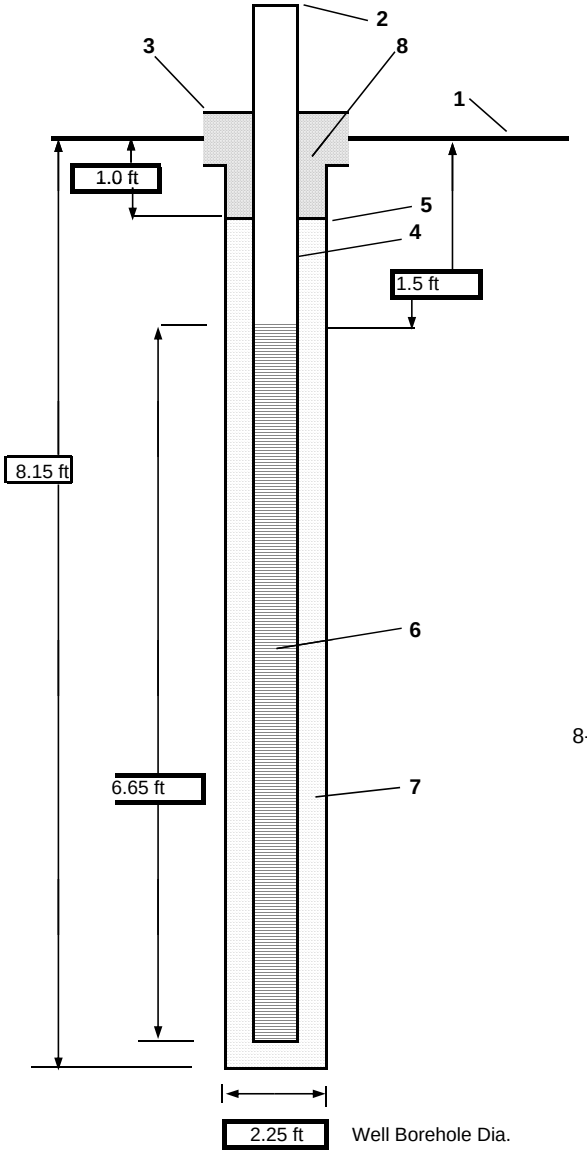
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.2 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.95 ft START : 12/13/13 @ 11:30 END : 12/13/13 @ 12:10 LOGGER : M. Murphy



1- Ground elevation at well 9.2 ft

2- Top of Well Casing elevation 12.40 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-35	SHEET 1 OF 1

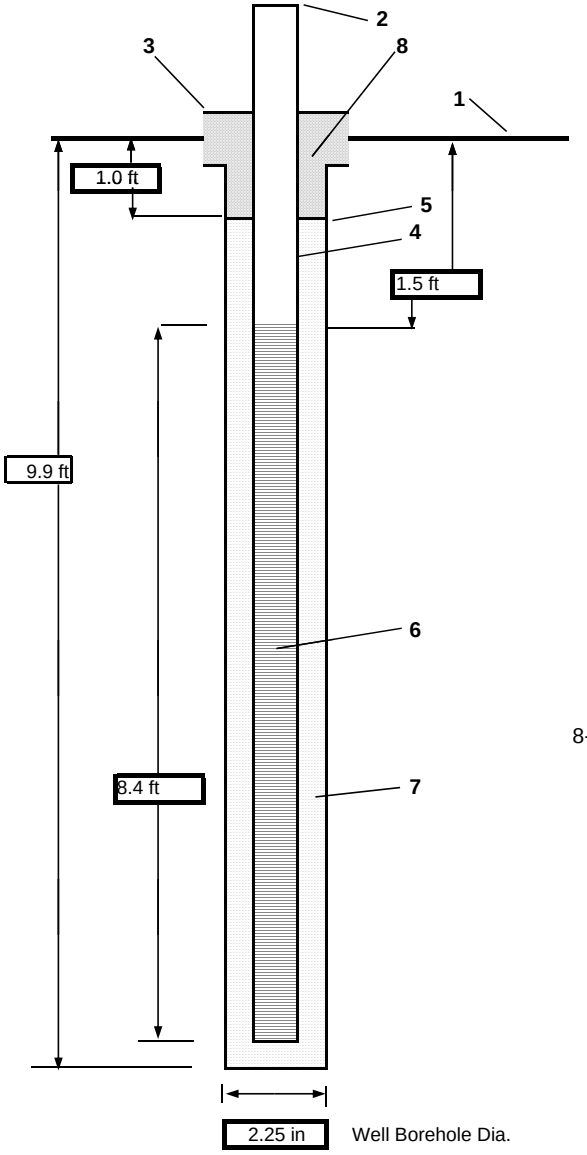
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 8.9 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.74 ft START : 1/13/14 @ 13:45 END : 1/13/14 @ 14:30 LOGGER : M. Murphy



1- Ground elevation at well 8.9 ft

2- Top of Well Casing elevation 12.06 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-36	SHEET 1 OF 1

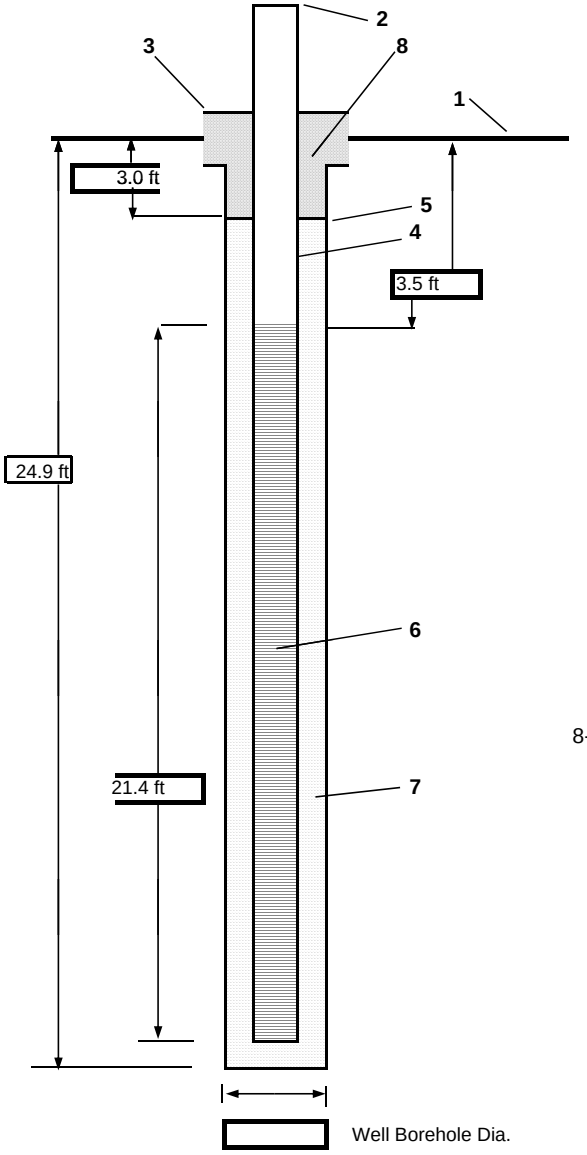
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 23.8 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 20.20 ft START : 12/12/13 @ 12:10 END : 12/12/13 @ 12:45 LOGGER : M. Murphy



1- Ground elevation at well 23.8 ft

2- Top of Well Casing elevation 26.87 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-37	SHEET 1 OF 1

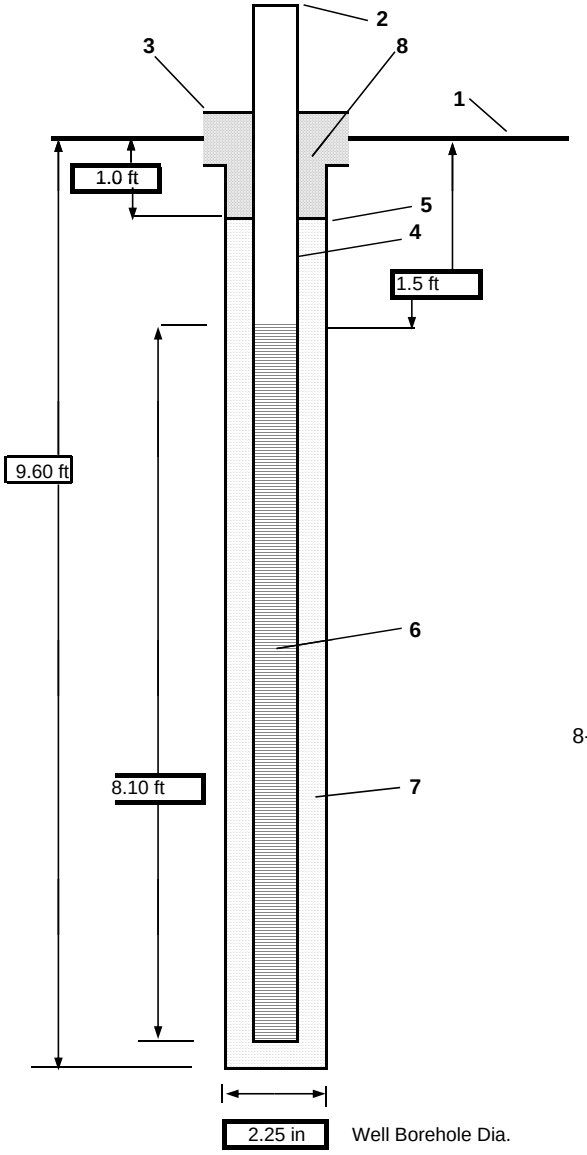
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 12.2 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 8.38 ft START : 12/16/13 @ 10:40 END : 12/16/13 @ 11:10 LOGGER : M. Murphy



1- Ground elevation at well 12.2 ft

2- Top of Well Casing elevation 15.82 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-38	SHEET 1 OF 1

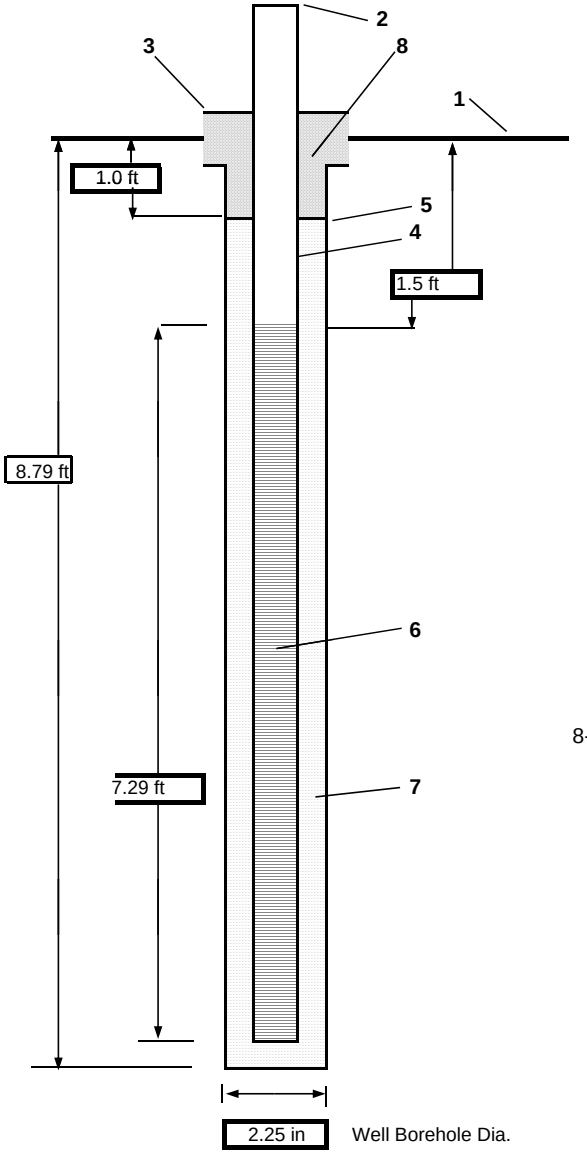
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 8.9 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.76 ft START : 12/16/13 @ 13:45 END : 12/16/13 @ 14:35 LOGGER : M. Murphy



1- Ground elevation at well 8.9 ft

2- Top of Well Casing elevation 12.17 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-39	SHEET 1 OF 1

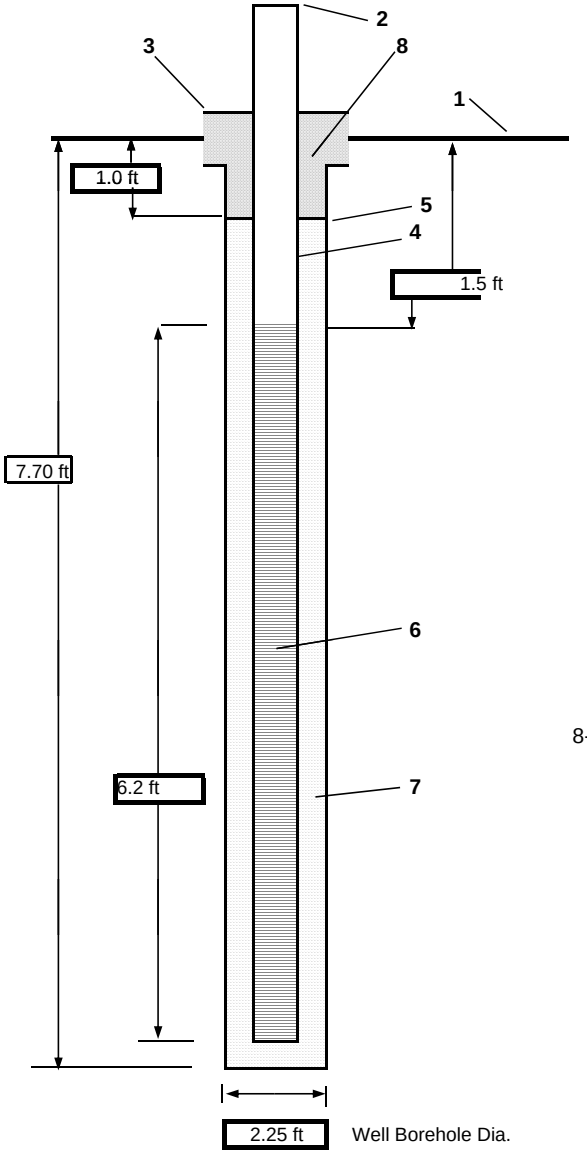
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.4 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.36 ft START : 1/13/14 @ 09:30 END : 1/13/14 @ 10:15 LOGGER : M. Murphy



1- Ground elevation at well 9.4 ft

2- Top of Well Casing elevation 13.01 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-40	SHEET 1 OF 1

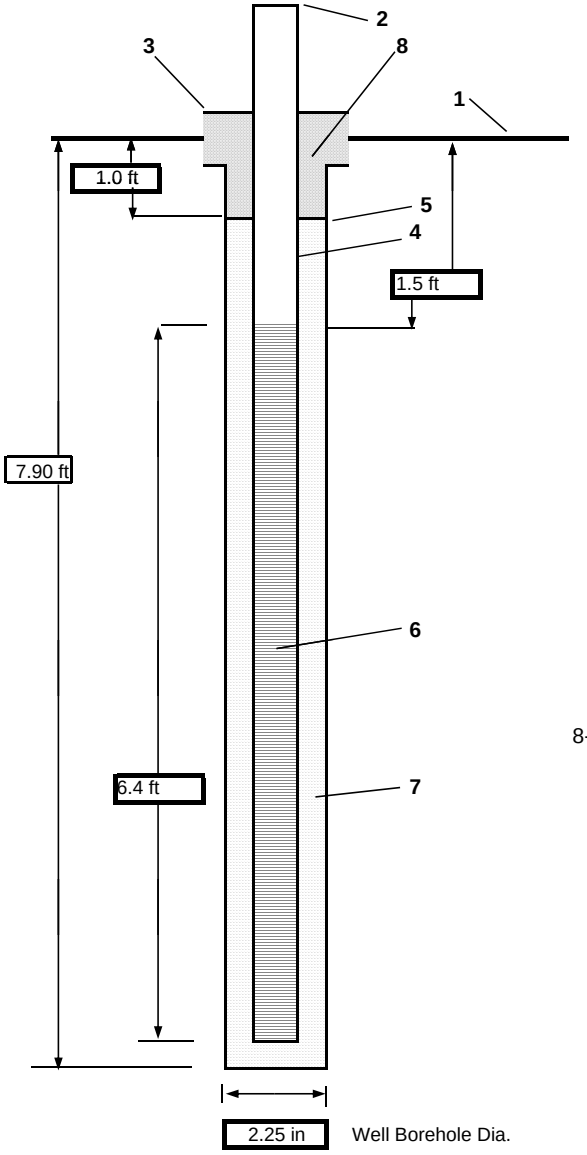
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.4 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.12 ft START : 1/2/14 @ 11:40 END : 1/2/14 @ 12:30 LOGGER : M. Murphy



1- Ground elevation at well 9.4 ft

2- Top of Well Casing elevation 12.65 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-41	SHEET 1 OF 1

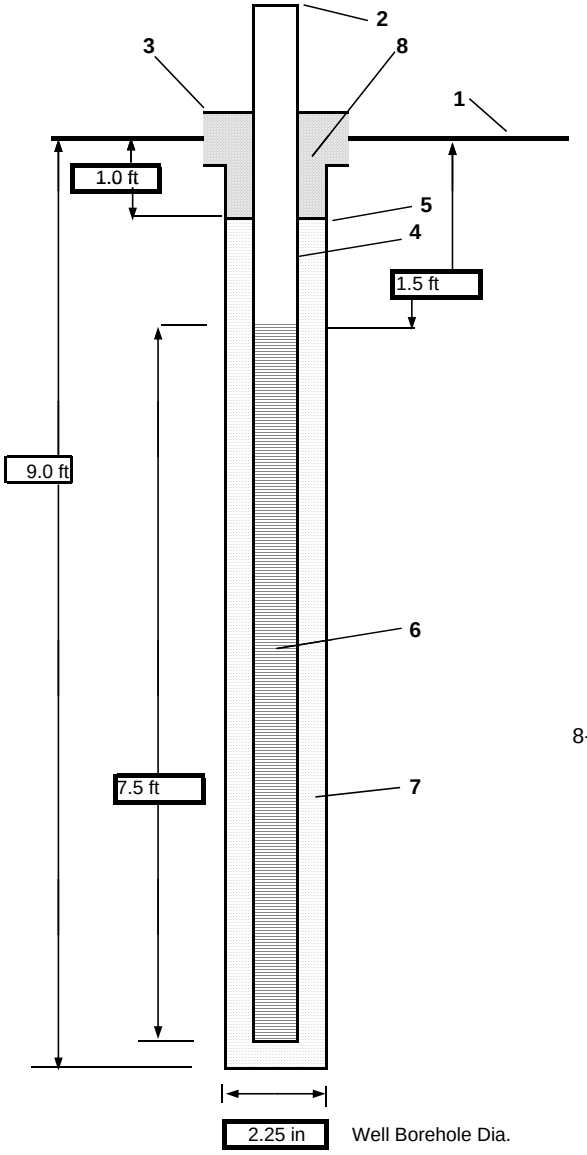
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.1 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.90 ft START : 1/10/14 @ 13:30 END : 1/10/14 @ 15:00 LOGGER : M. Murphy



1- Ground elevation at well 9.1 ft

2- Top of Well Casing elevation 12.59 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-42	SHEET 1 OF 1

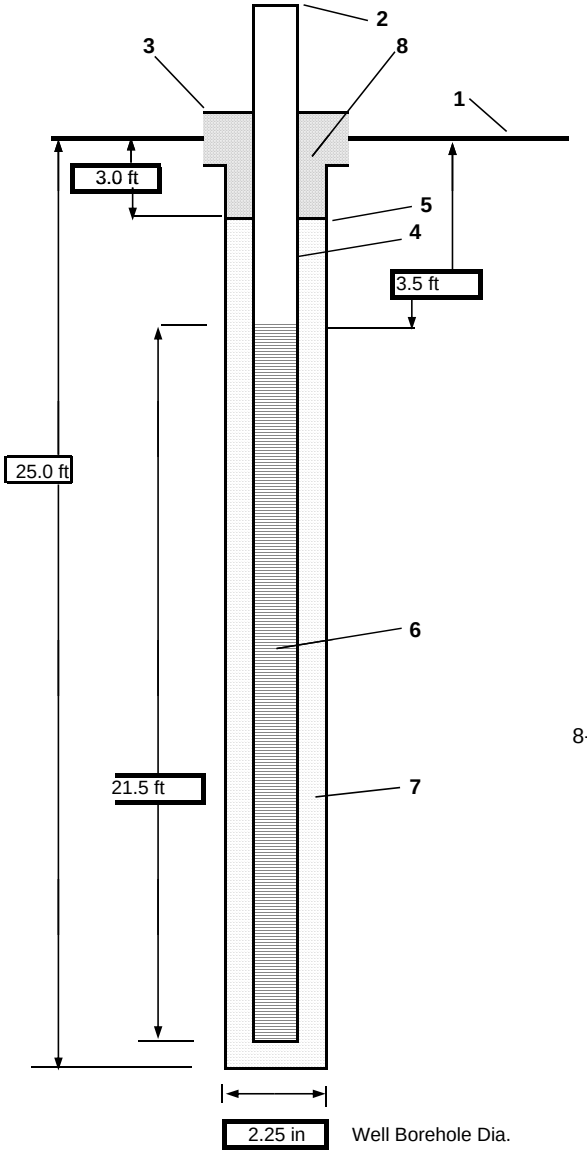
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 23.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 23.11 ft START : 12/12/13 @ 14:40 END : 12/12/13 @ 15:50 LOGGER : M. Murphy



1- Ground elevation at well 23.7 ft

2- Top of Well Casing elevation 26.54 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-43	SHEET 1 OF 1

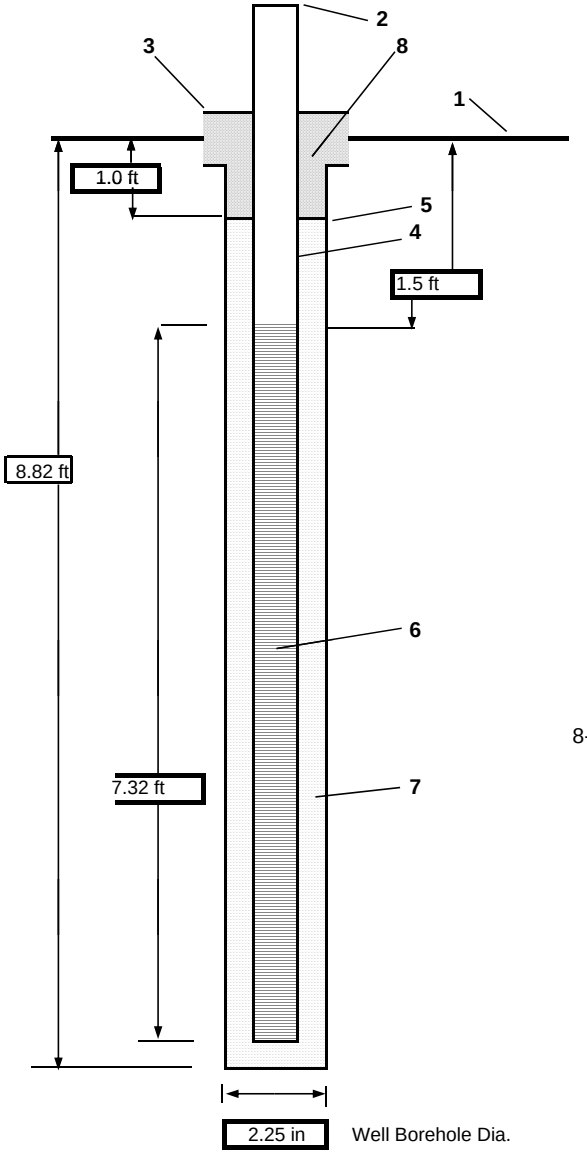
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 12.5 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 9.71 ft START : 12/16/13 @ 11:15 END : 12/16/13 @ 12:00 LOGGER : M. Murphy



1- Ground elevation at well 12.5 ft

2- Top of Well Casing elevation 16.05 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-44	SHEET 1 OF 1

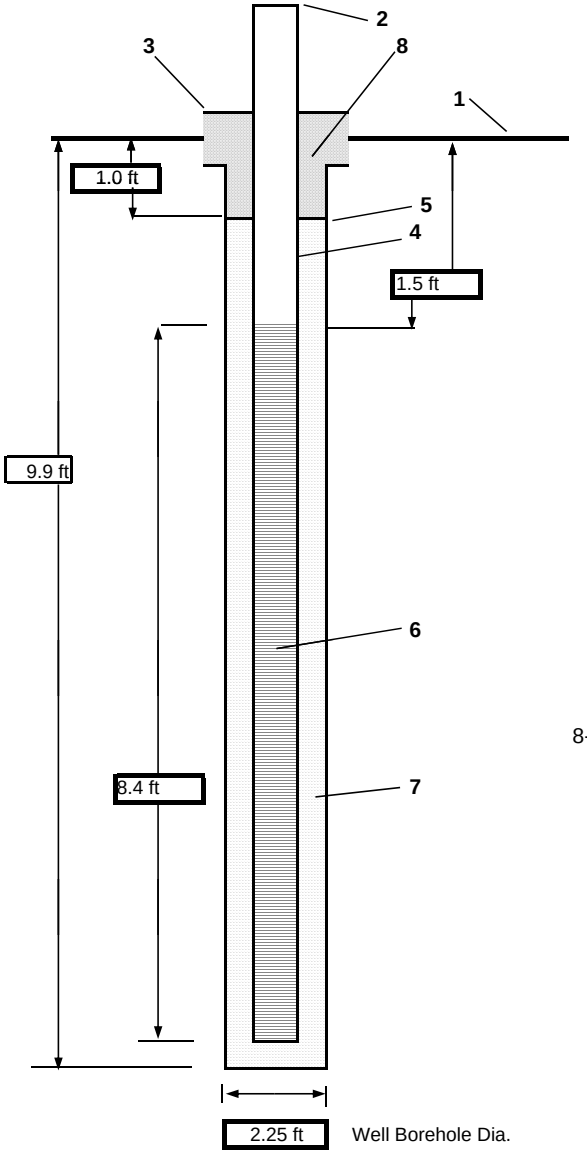
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.0 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.06 ft START : 1/13/14 @ 10:20 END : 1/13/14 @ 11:10 LOGGER : M. Murphy



1- Ground elevation at well 9.0 ft

2- Top of Well Casing elevation 12.27 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-45	SHEET 1 OF 1

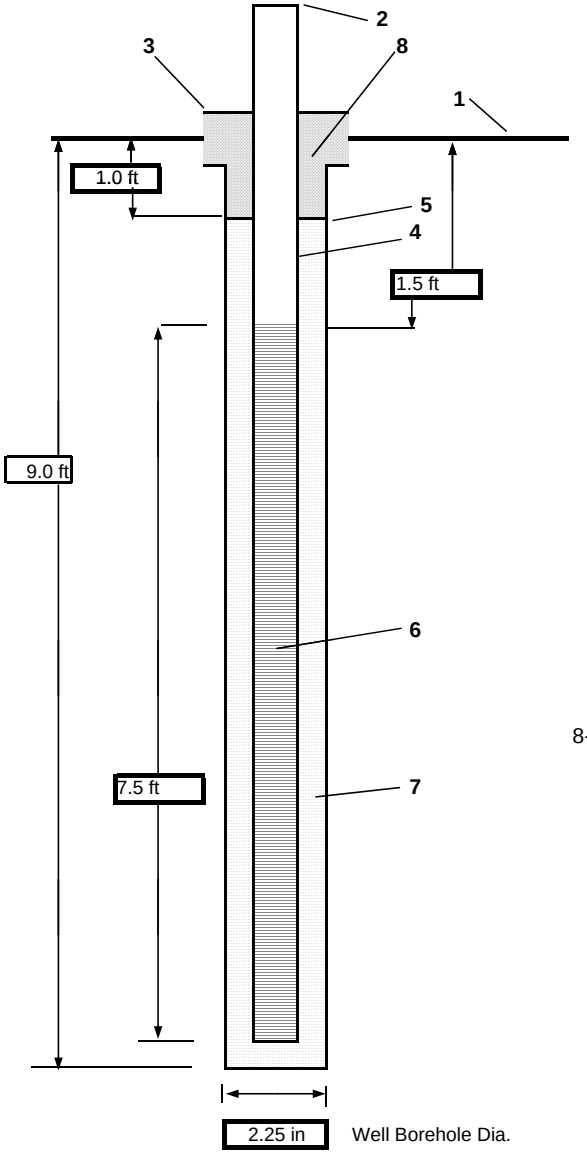
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.5 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.35 ft START : 1/2/14 @ 14:20 END : 1/2/14 @ 15:00 LOGGER : M. Murphy



1- Ground elevation at well 9.5 ft

2- Top of Well Casing elevation 12.96 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-46	SHEET 1 OF 1

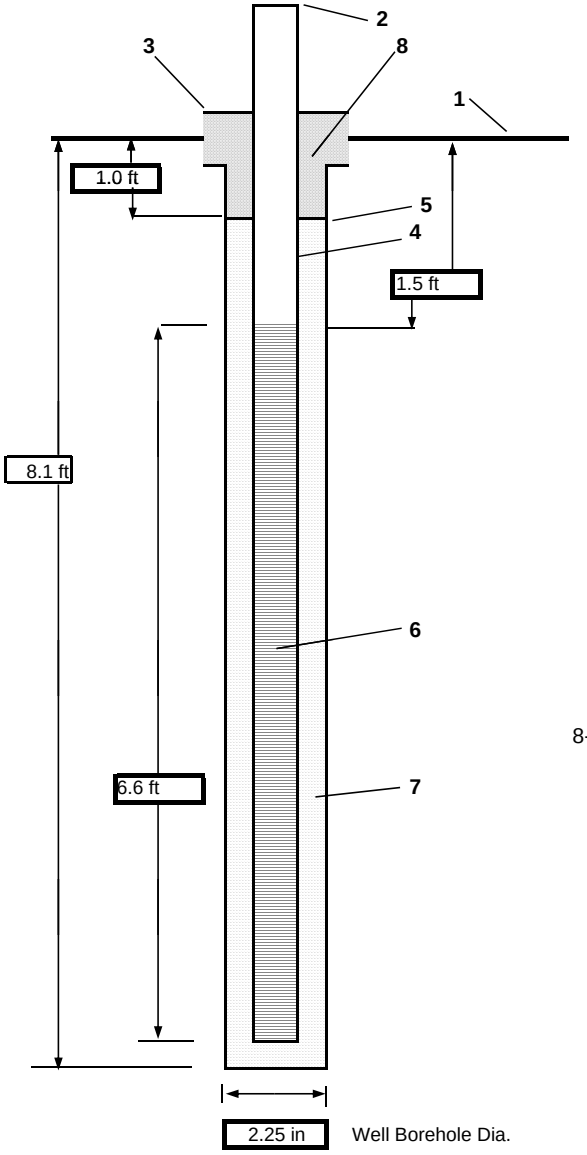
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.5 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.13 ft START : 12/10/13 @ 08:30 END : 12/10/13 @ 9:00 LOGGER : M. Murphy



1- Ground elevation at well 9.5 ft

2- Top of Well Casing elevation 12.80 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER		
480159.02.02.02	PZ-47	SHEET 1	OF 1

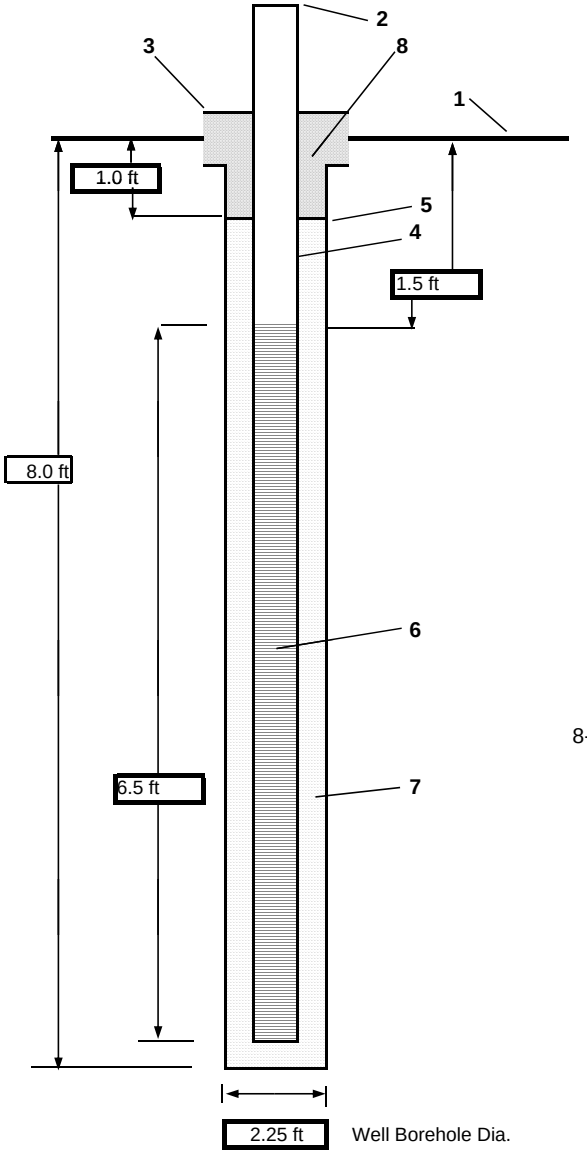
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.1 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.71 ft START : 1/2/14 @ 11:00 END : 1/2/14 @ 11:35 LOGGER : M. Murphy



1- Ground elevation at well 9.1 ft

2- Top of Well Casing elevation 12.41 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-48	SHEET 1 OF 1

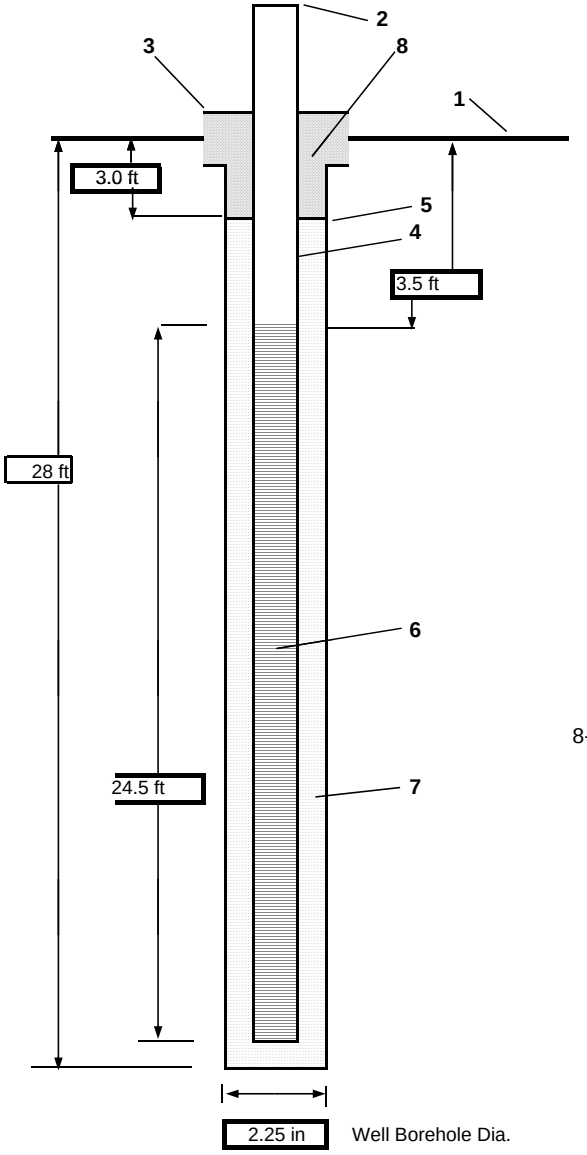
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 24.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 24.08 ft START : 1/9/14 @ 09:15 END : 1/9/14 @ 11:45 LOGGER : M. Murphy



1- Ground elevation at well 24.7 ft

2- Top of Well Casing elevation 24.23 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-49	SHEET 1 OF 1

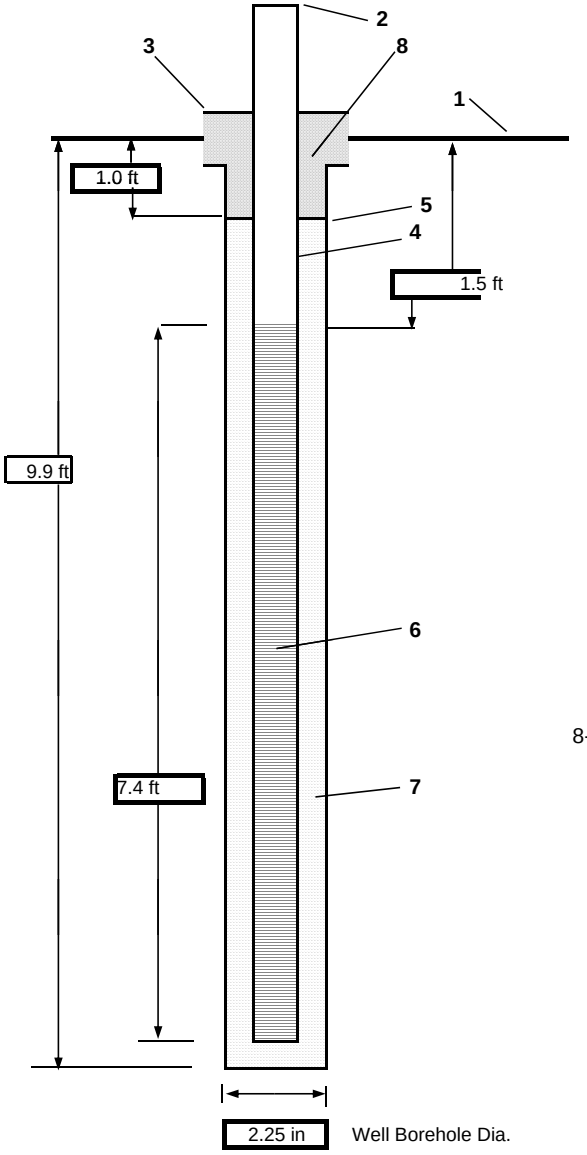
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 16.1 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 12.88 ft START : 12/16/13 @ 13:00 END : 12/16/13 @ 13:40 LOGGER : M. Murphy



1- Ground elevation at well 16.1 ft

2- Top of Well Casing elevation 19.37 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-50	SHEET 1 OF 1

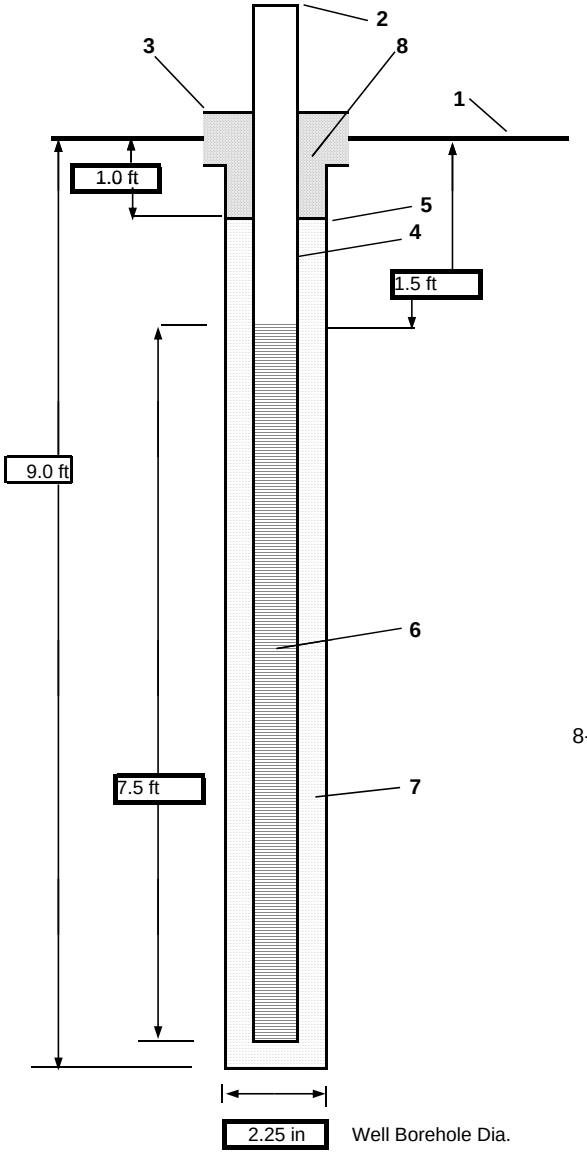
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.0 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.13 ft START : 1/13/14 @ 11:15 END : 1/13/14 @ 12:00 LOGGER : M. Murphy



1- Ground elevation at well 9.0 ft

2- Top of Well Casing elevation 12.25 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-51	SHEET 1 OF 1

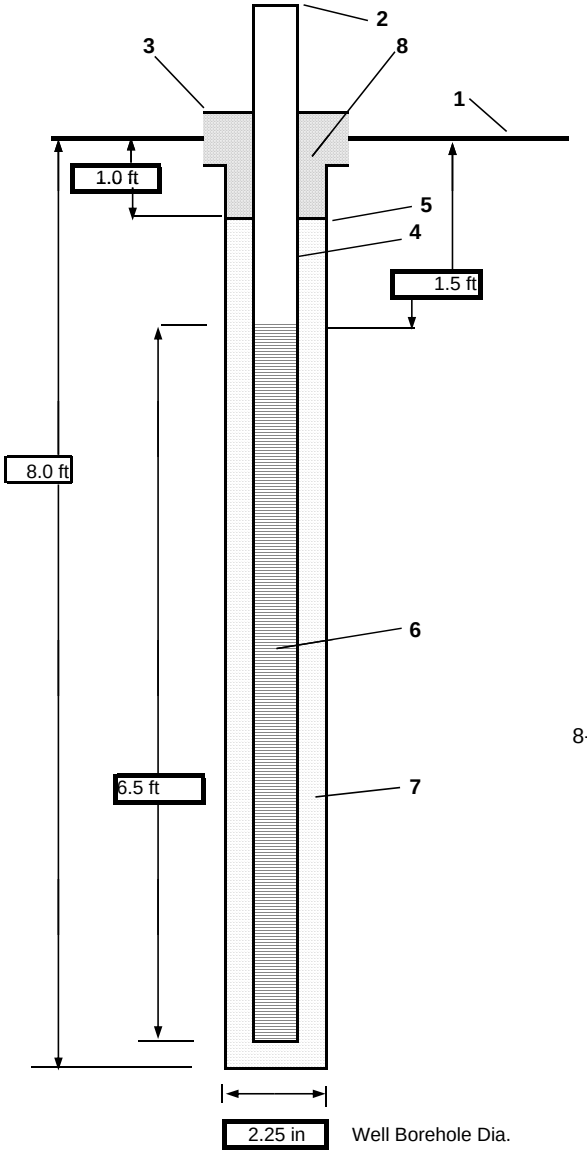
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.05 ft START : 1/2/14 @ 13:50 END : 1/2/14 @ 14:10 LOGGER : M. Murphy



1- Ground elevation at well 9.7 ft

2- Top of Well Casing elevation 13.16 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-52	SHEET 1 OF 1

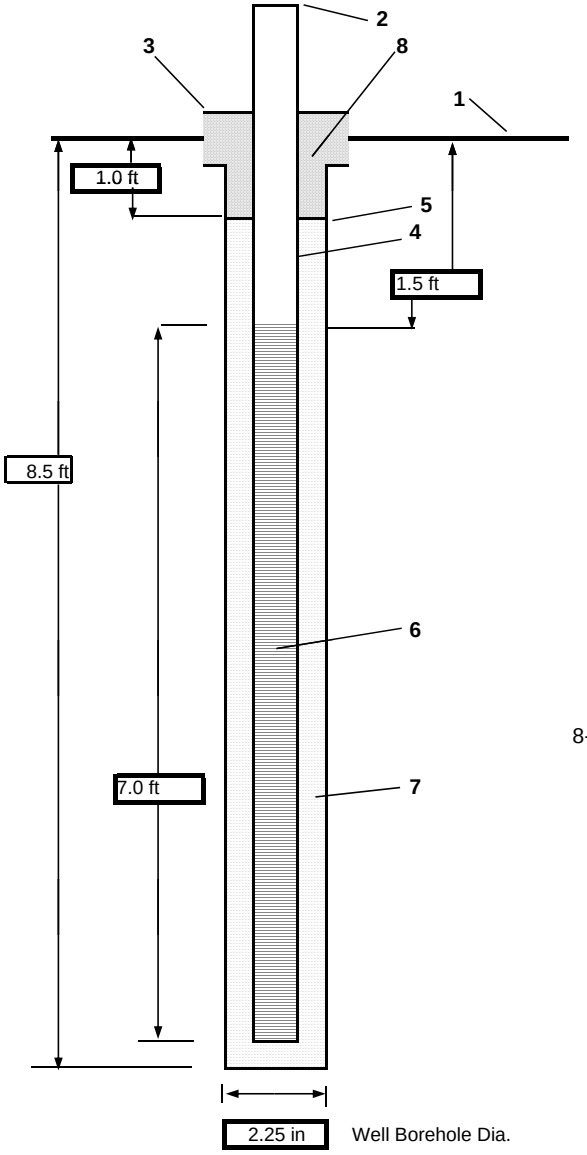
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 10.5 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 6.11 ft START : 12/9/13 @ 13:45 END : 12/9/13 @ 15:00 LOGGER : M. Murphy



1- Ground elevation at well 10.5 ft

2- Top of Well Casing elevation 13.69 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.010" (10-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-53	SHEET 1 OF 1

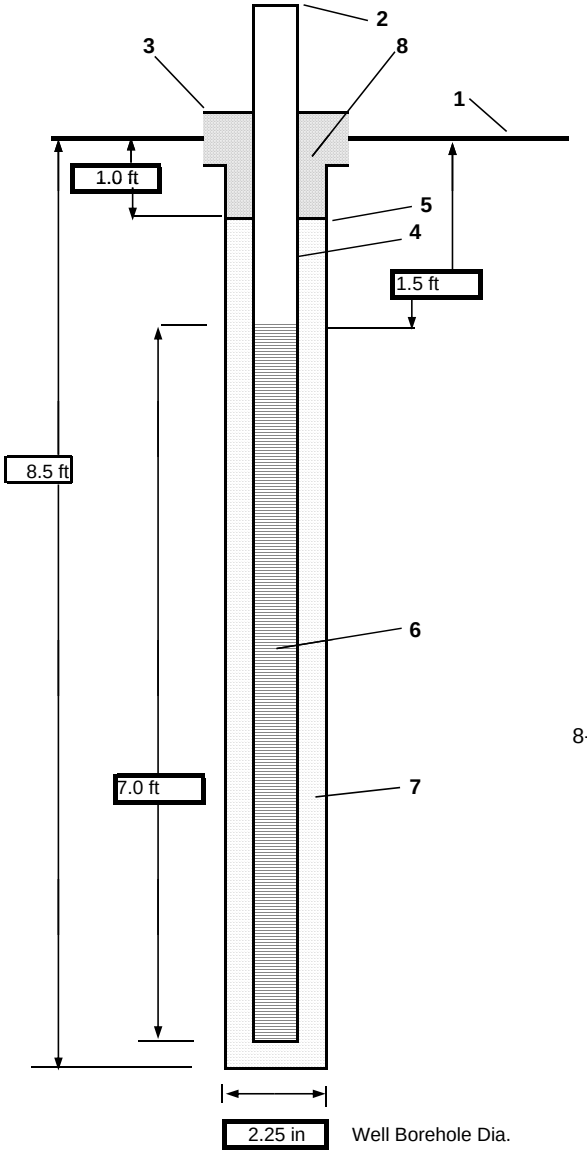
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.6 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.92 ft START : 1/2/14 @ 10:15 END : 1/2/14 @ 10:55 LOGGER : M. Murphy



1- Ground elevation at well 9.6 ft

2- Top of Well Casing elevation 13.07 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-54	SHEET 1 OF 1

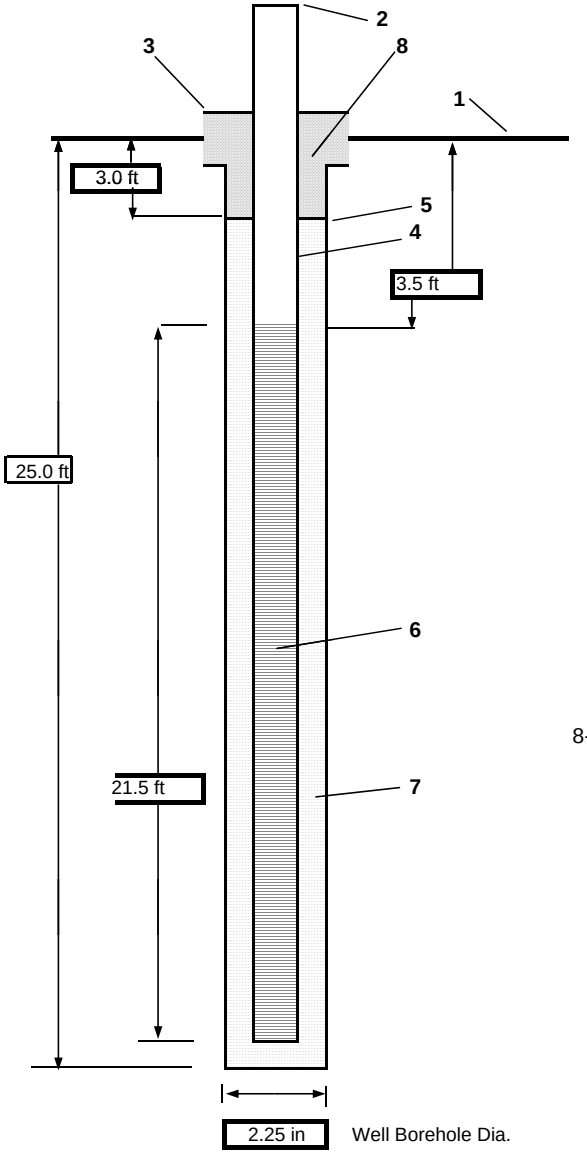
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 24.1 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 24.48 ft START : 1/10/14 @ 09:45 END : 1/10/14 @ 10:45 LOGGER : M. Murphy



1- Ground elevation at well 24.1 ft

2- Top of Well Casing elevation 27.71 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-55	SHEET 1 OF 1

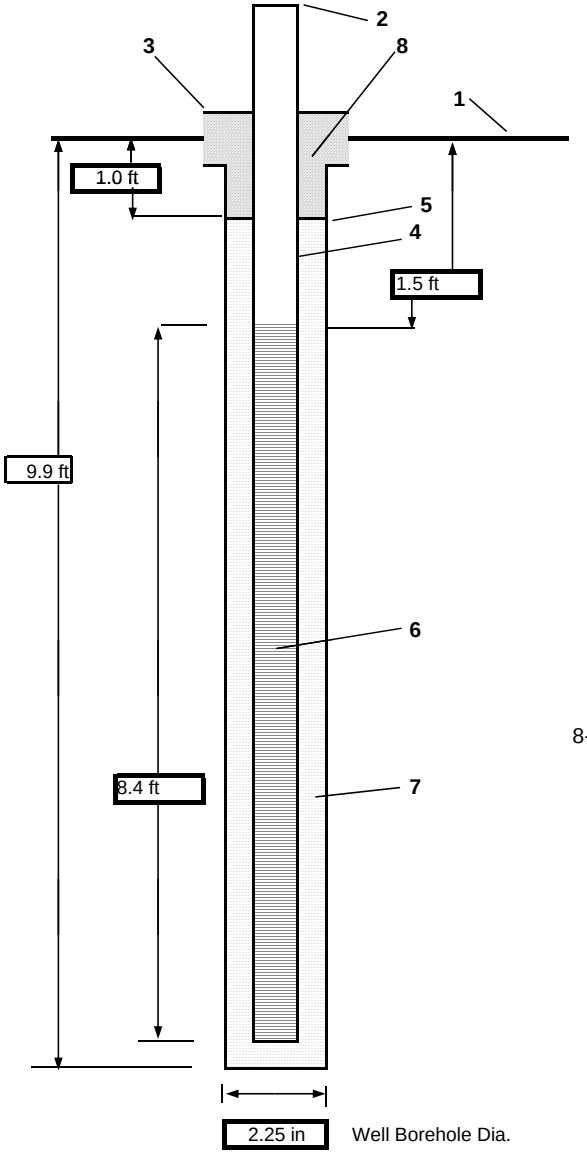
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 17.1 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 11.02 ft START : 1/6/14 @ 09:40 END : 1/6/14 @ 10:20 LOGGER : M. Murphy



1- Ground elevation at well 17.1 ft

2- Top of Well Casing elevation 20.79 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-56	SHEET 1 OF 1

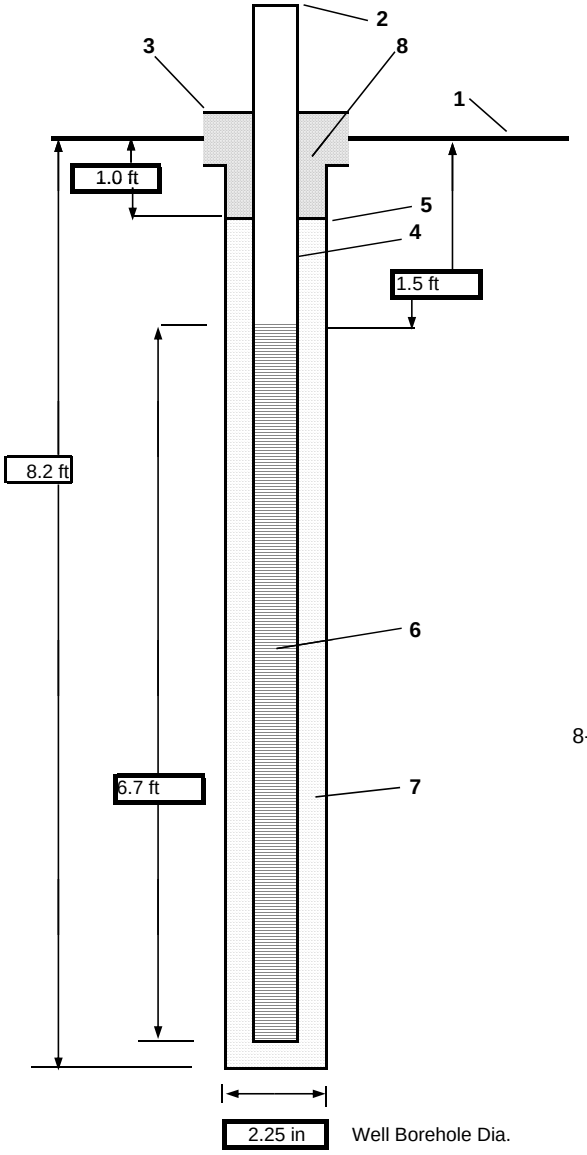
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 10.4 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.70 ft START : 1/6/14 @ 10:25 END : 1/6/14 @ 10:55 LOGGER : M. Murphy



1- Ground elevation at well 10.4 ft

2- Top of Well Casing elevation 13.80 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-57	SHEET 1 OF 1

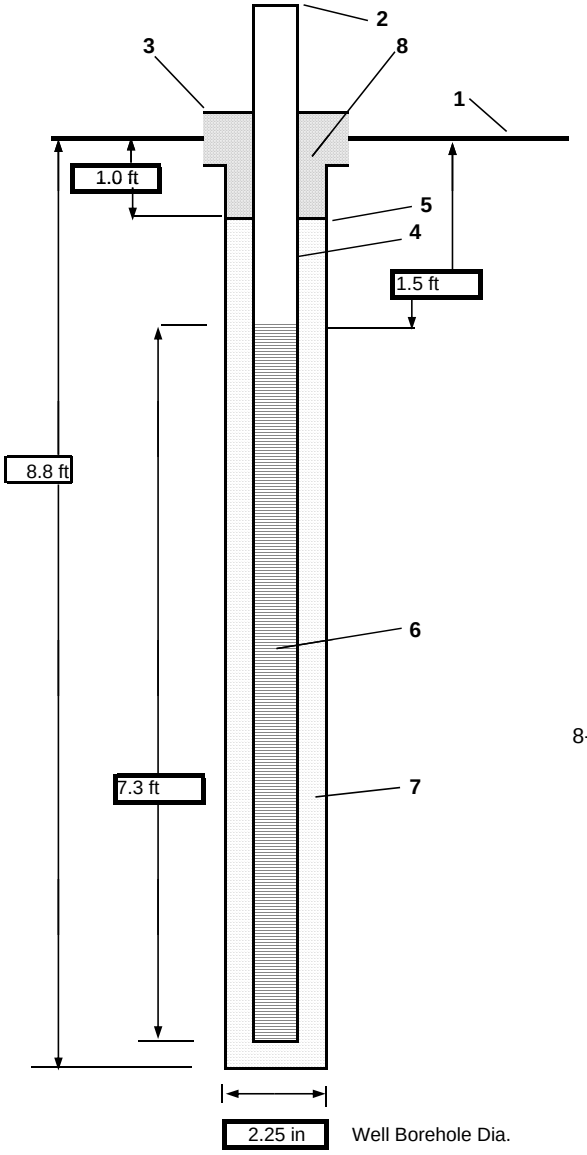
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 10.8 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 5.40 ft START : 1/6/14 @ 11:00 END : 1/6/14 @ 12:00 LOGGER : M. Murphy



1- Ground elevation at well 10.8 ft

2- Top of Well Casing elevation 13.86 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-58	SHEET 1 OF 1

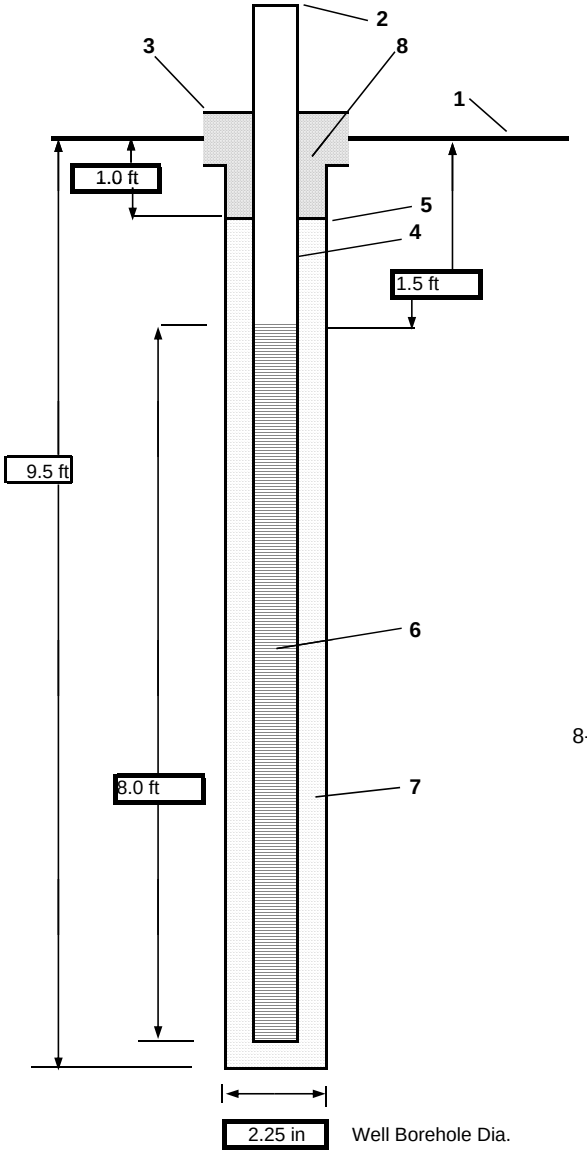
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 11.4 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 6.40 ft START : 1/2/14 @ 13:00 END : 1/2/14 @ 13:45 LOGGER : M. Murphy



1- Ground elevation at well 11.4 ft

2- Top of Well Casing elevation 14.76 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-59	SHEET 1 OF 1

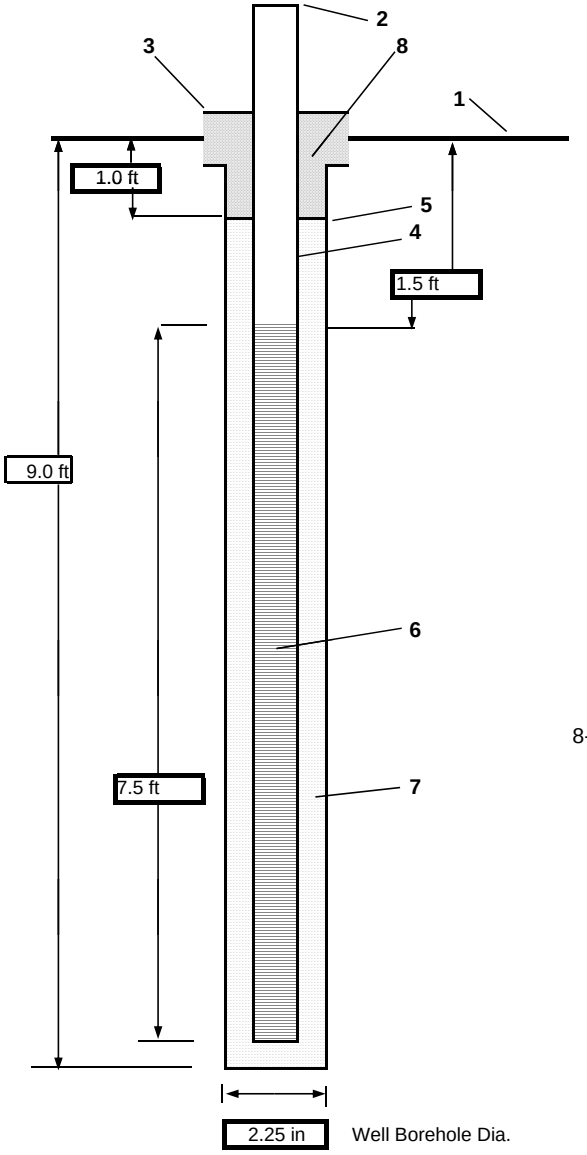
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 10.9 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.80 ft START : 1/13/14 @ 13:00 END : 1/13/14 @ 13:40 LOGGER : M. Murphy



1- Ground elevation at well 10.9 ft

2- Top of Well Casing elevation 14.38 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-60	SHEET 1 OF 1

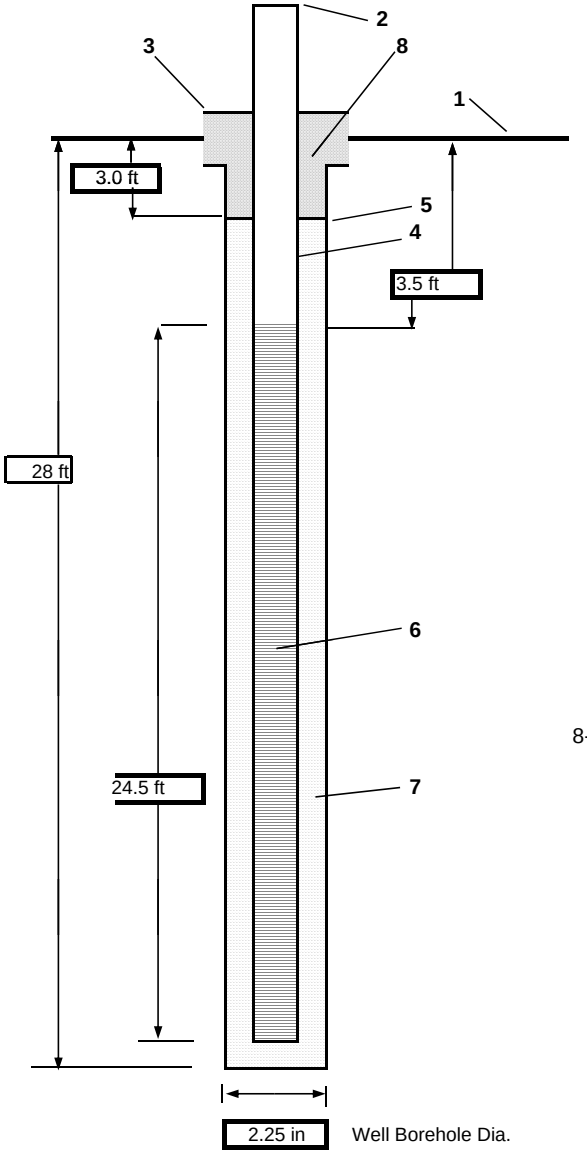
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 24.9 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 25.42 ft START : 12/20/13 @ 09:00 END : 12/20/13 @ 11:00 LOGGER : M. Murphy



1- Ground elevation at well 24.9 ft

2- Top of Well Casing elevation 28.07 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER		
480159.02.02.02	PZ-61	SHEET 1	OF 1

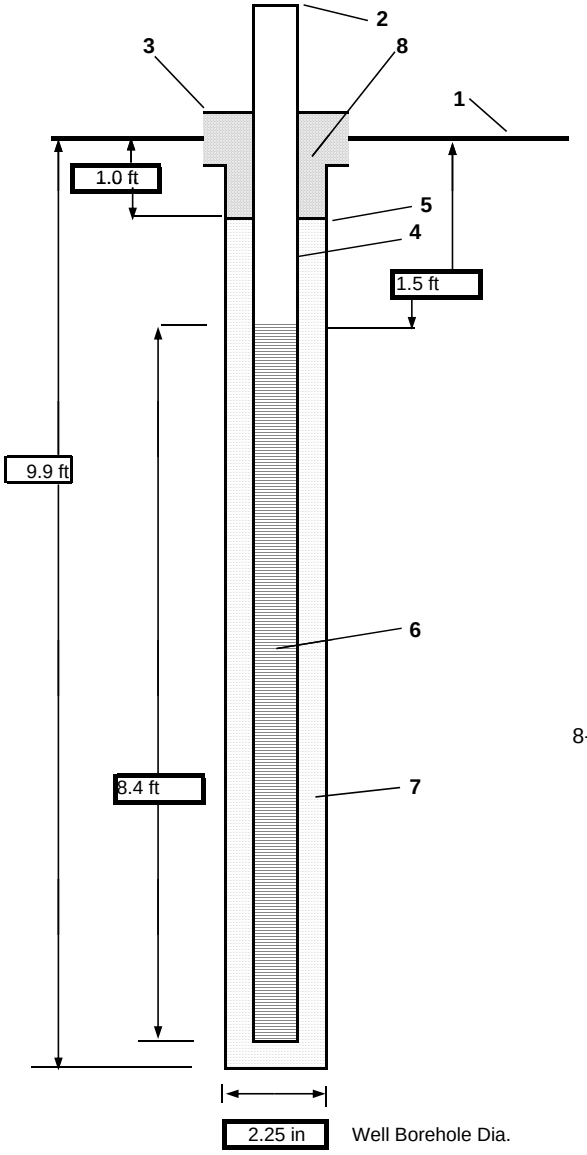
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 15.9 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 11.08 ft START : 12/10/13 @ 13:30 END : 12/10/13 @ 14:05 LOGGER : M. Murphy



1- Ground elevation at well 15.9 ft

2- Top of Well Casing elevation 19.38 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-62	SHEET 1 OF 1

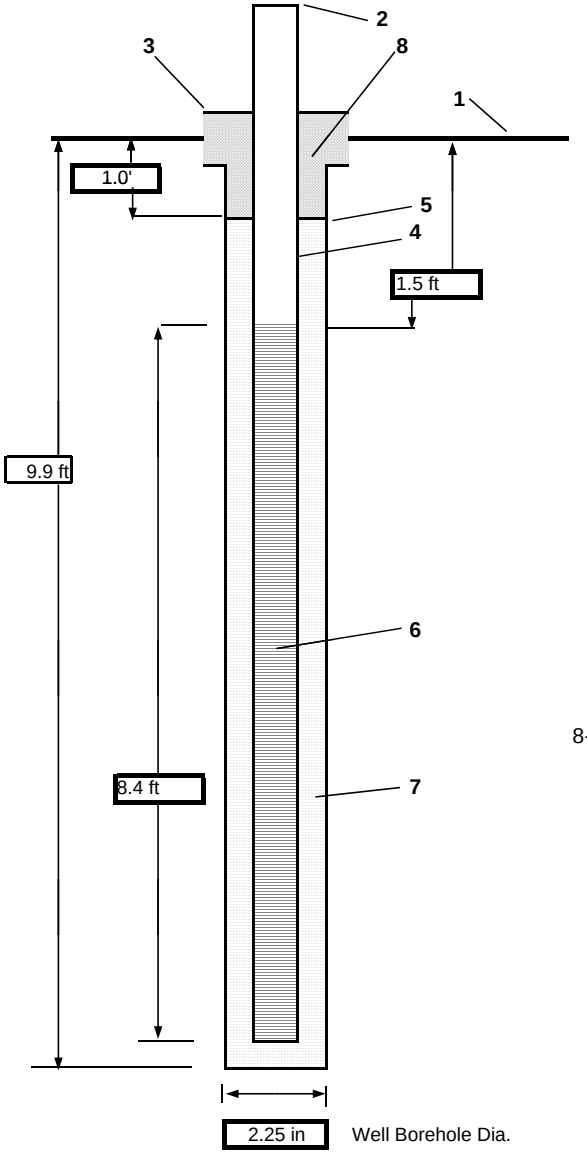
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 12.5 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 5.48 ft START : 12/10/13 @ 12:40 END : 12/10/13 @ 13:30 LOGGER : M. Murphy



1- Ground elevation at well 12.5 ft

2- Top of Well Casing elevation 15.76 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-63	SHEET 1 OF 1

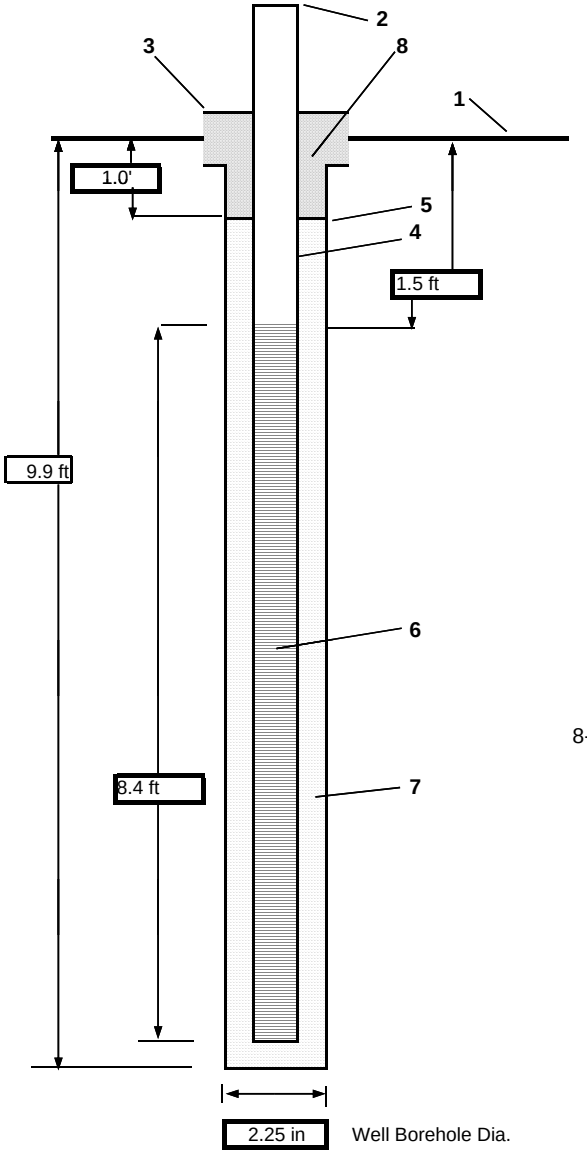
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 12.0 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.55 ft START : 12/10/13 @ 10:50 END : 12/10/13 @ 11:30 LOGGER : M. Murphy



1- Ground elevation at well 12.0 ft

2- Top of Well Casing elevation 15.21 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-64	SHEET 1 OF 1

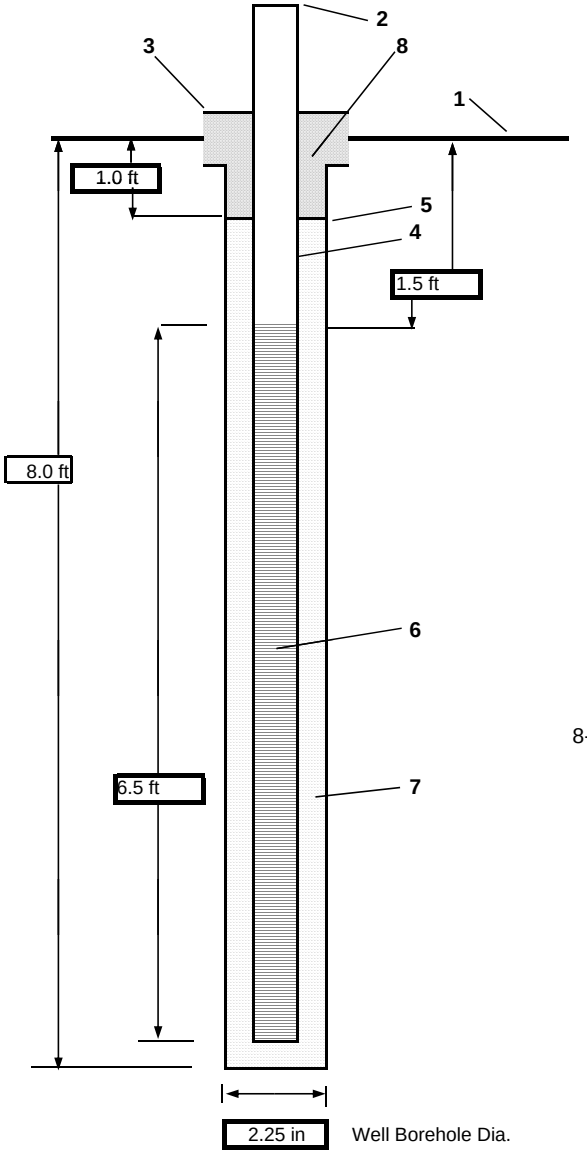
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 11.0 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.64 ft START : 1/6/14 @ 13:45 END : 1/6/14 @ 14:45 LOGGER : M. Murphy



1- Ground elevation at well 11.0 ft

2- Top of Well Casing elevation 14.73 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-65	SHEET 1 OF 1

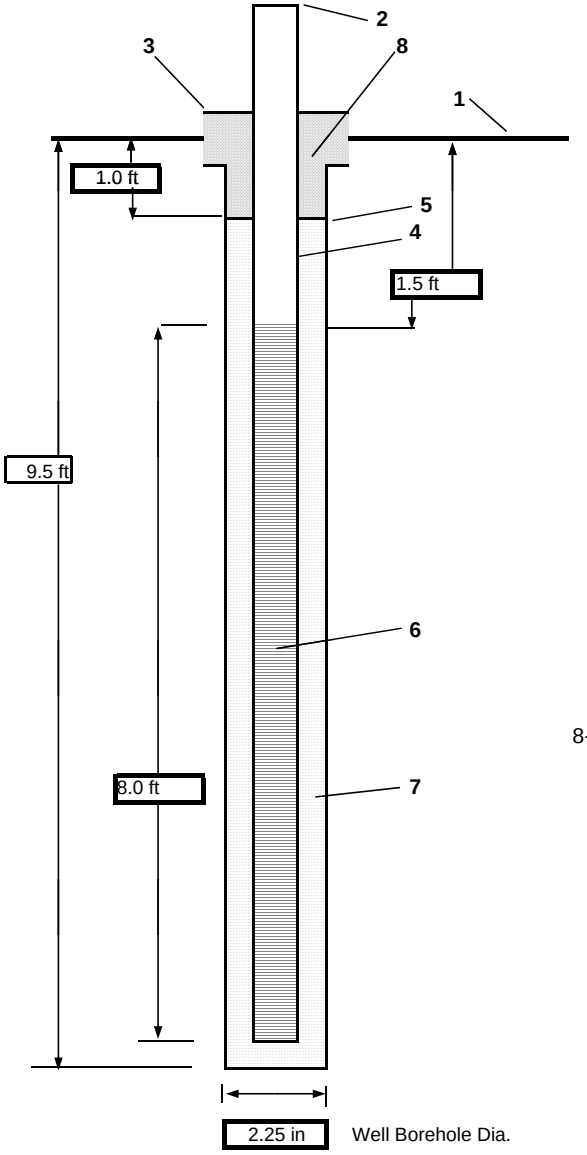
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 12.3 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 9.97 ft START : 1/9/14 @ 15:00 END : 1/9/14 @ 15:45 LOGGER : M. Murphy



1- Ground elevation at well 12.3 ft

2- Top of Well Casing elevation 15.81 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-66	SHEET 1 OF 1

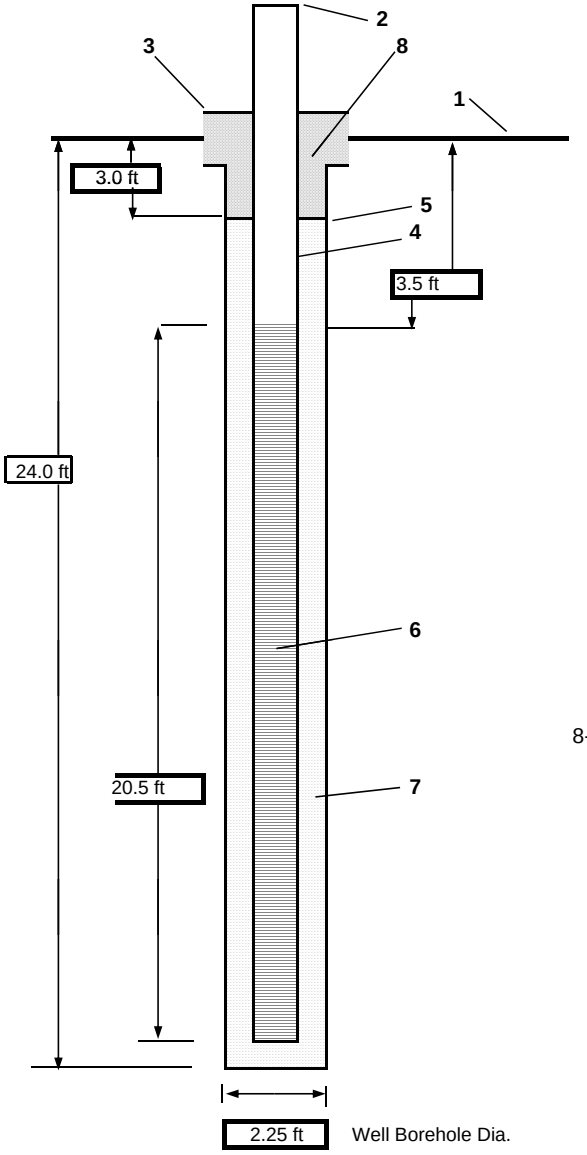
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 24.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 24.72 ft START : 1/9/14 @ 12:30 END : 1/9/14 @ 14:45 LOGGER : M. Murphy



1- Ground elevation at well 24.7 ft

2- Top of Well Casing elevation 27.72 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-67	SHEET 1 OF 1

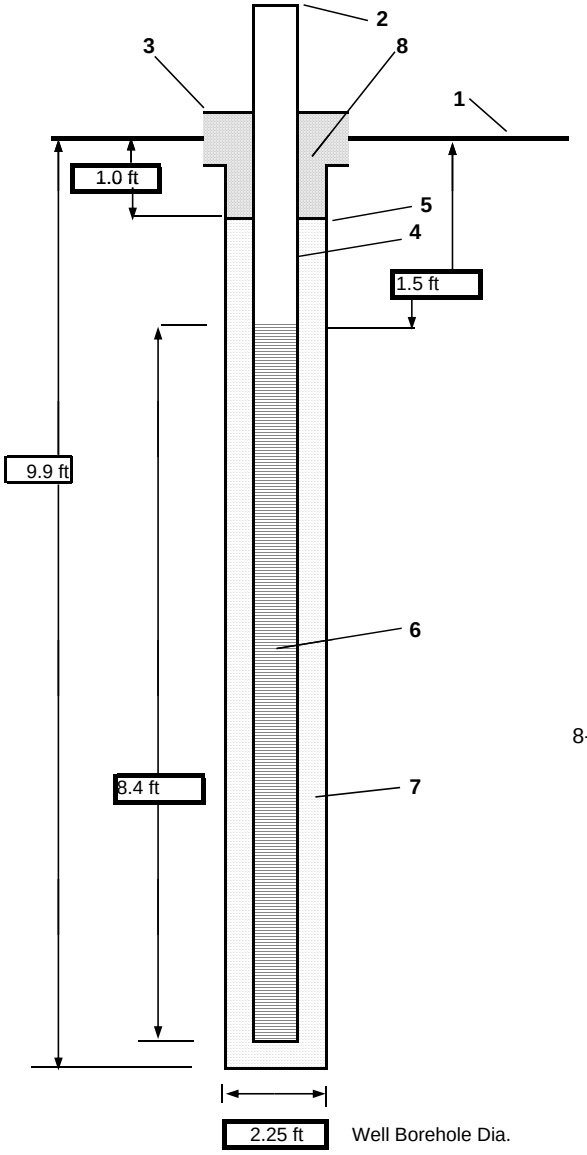
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 11.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 5.59 ft START : 12/10/13 @ 14:10 END : 12/10/13 @ 15:00 LOGGER : M. Murphy



1- Ground elevation at well 11.7 ft

2- Top of Well Casing elevation 15.19 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-68	SHEET 1 OF 1

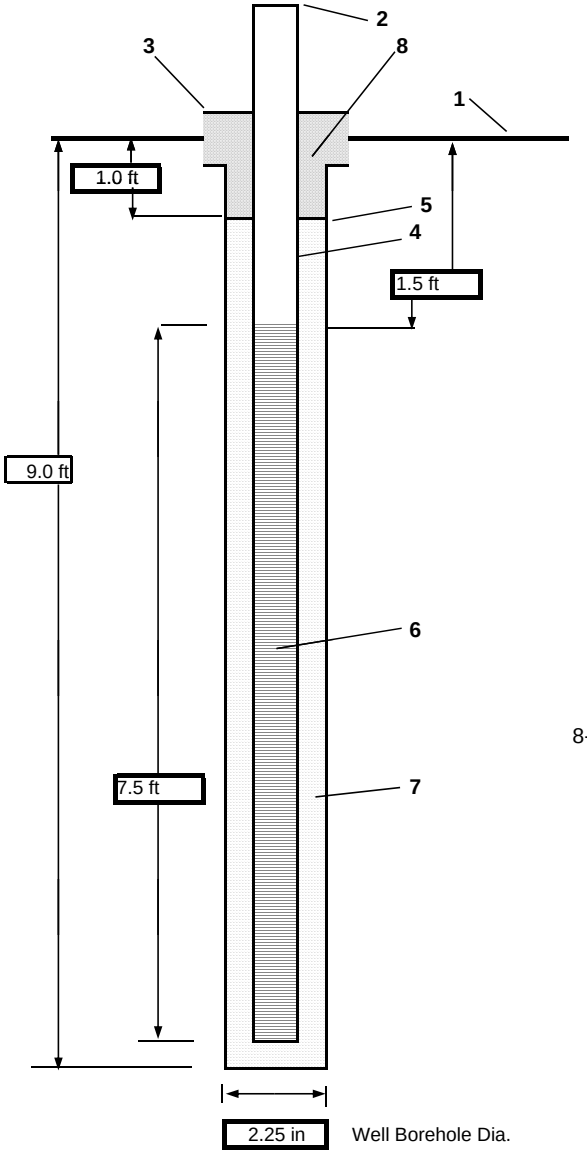
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 11.6 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 5.25 ft START : 12/10/13 @ 09:25 END : 12/10/13 @ 10:00 LOGGER : M. Murphy



1- Ground elevation at well 11.6 ft

2- Top of Well Casing elevation 15.04 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-69	SHEET 1 OF 1

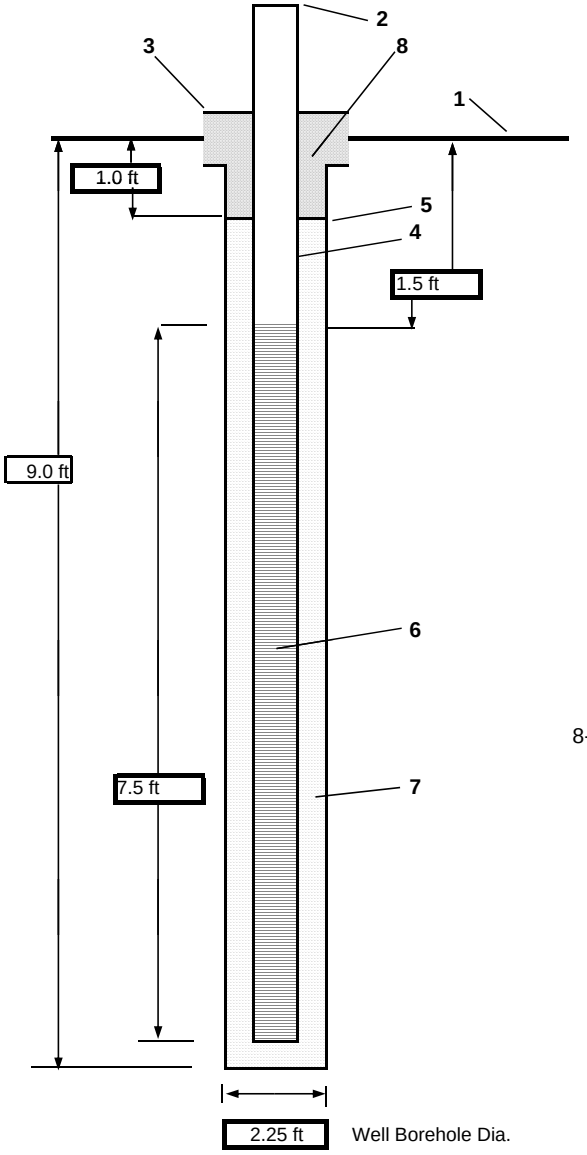
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 11.2 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.92 ft START : 12/10/13 @ 10:00 END : 12/10/13 @ 10:45 LOGGER : M. Murphy



1- Ground elevation at well 11.2 ft

2- Top of Well Casing elevation 14.33 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-70	SHEET 1 OF 1

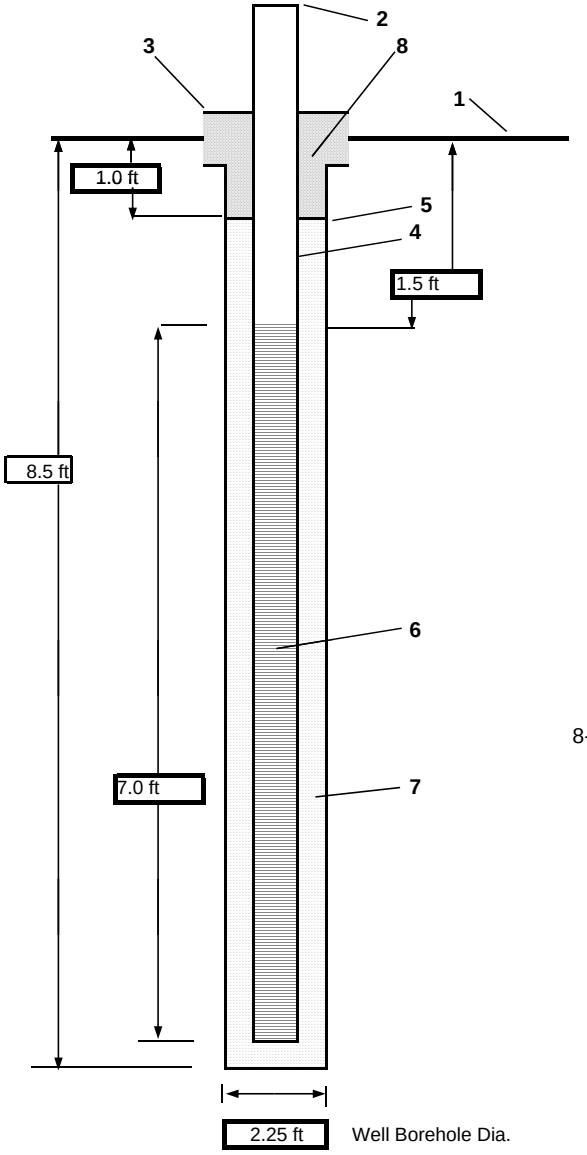
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 12.4 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 7.40 ft START : 1/6/14 @ 12:45 END : 1/6/14 @ 13:35 LOGGER : M. Murphy



1- Ground elevation at well 12.4 ft

2- Top of Well Casing elevation 15.87 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-71	SHEET 1 OF 1

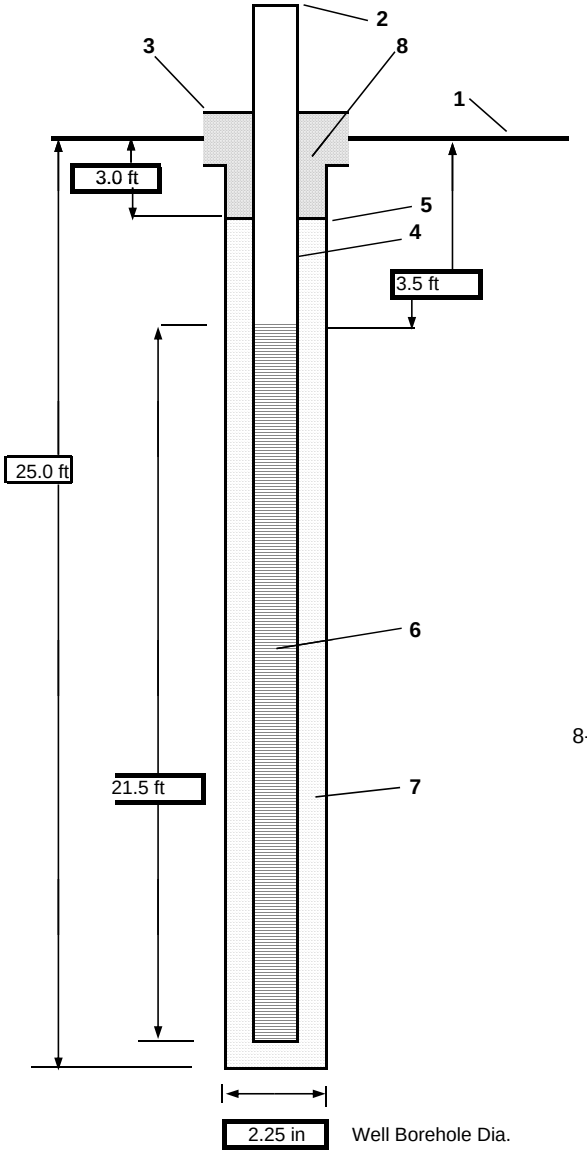
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 23.8 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 23.18 ft START : 1/10/14 @ 11:00 END : 1/10/14 @ 12:45 LOGGER : M. Murphy



1- Ground elevation at well 23.8 ft

2- Top of Well Casing elevation 26.90 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-72	SHEET 1 OF 1

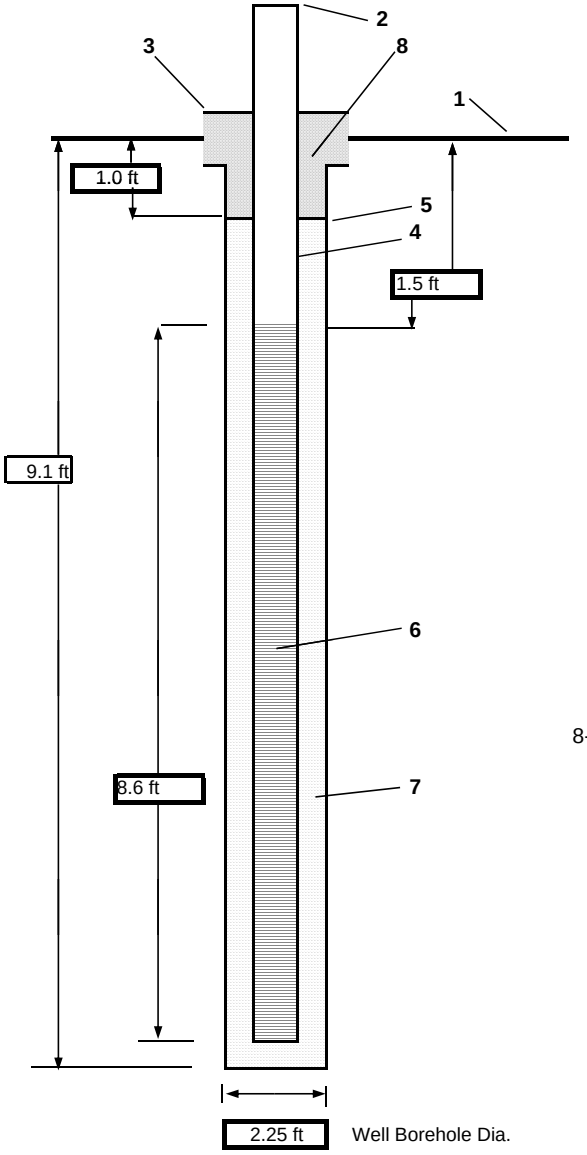
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 10.5 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.89 ft START : 1/7/14 @ 10:15 END : 1/7/14 @ 11:00 LOGGER : M. Murphy



1- Ground elevation at well 10.5 ft

2- Top of Well Casing elevation 13.97 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-73	SHEET 1 OF 1

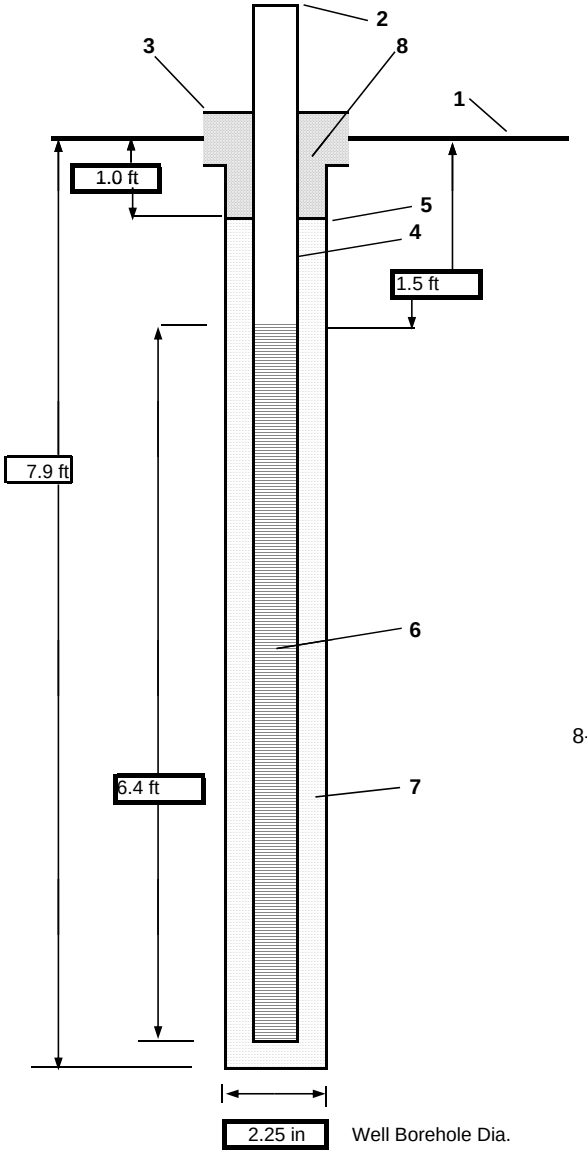
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 10.3 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.71 ft START : 1/6/14 @ 14:55 END : 1/6/14 @ 15:30 LOGGER : M. Murphy



1- Ground elevation at well 10.3 ft

2- Top of Well Casing elevation 13.75 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

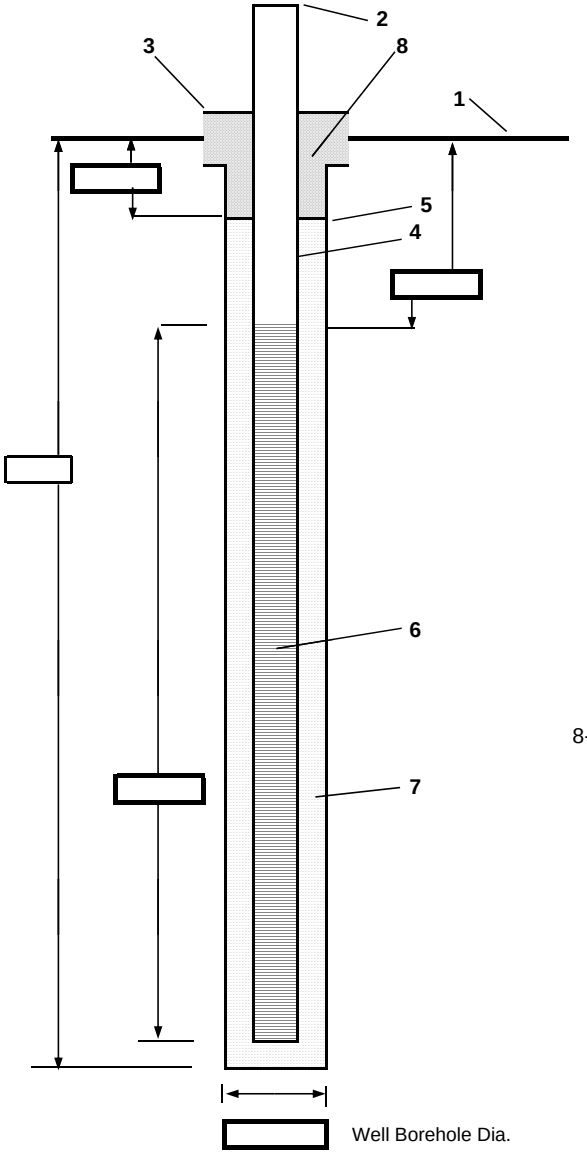
Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-74 - NOT INSTALLE	SHEET 1 OF 1

Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI	LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)
ELEVATION : NA Drilling Contractor: Environmental Field Services	
DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore	
Water Level (BTC): NA START : 1/6/14 @ 14:30 END : 1/714 @ 12:30	LOGGER : M. Murphy



NOT INSTALLED

1- Ground elevation at well NA

2- Top of Well Casing elevation NA

3- Wellhead protection type NA

4- Diameter/type of well casing NA

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen NA

7- Type screen filter NA
a) Quantity used

8- Grout
a) Grout mix used NA
b) Method of placement NA
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-75	SHEET 1 OF 1

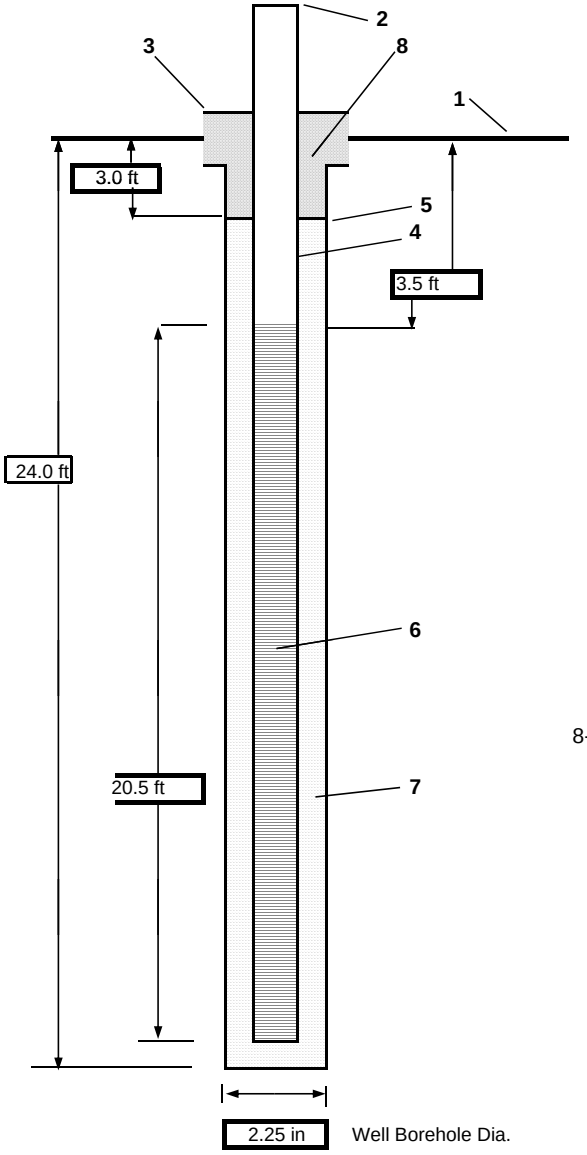
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 23.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 21.07 ft START : 12/11/13 @ 09:30 END : 12/11/13 @ 11:30 LOGGER : M. Murphy



1- Ground elevation at well 23.7 ft

2- Top of Well Casing elevation 26.82 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER		
480159.02.02.02	PZ-76	SHEET 1	OF 1

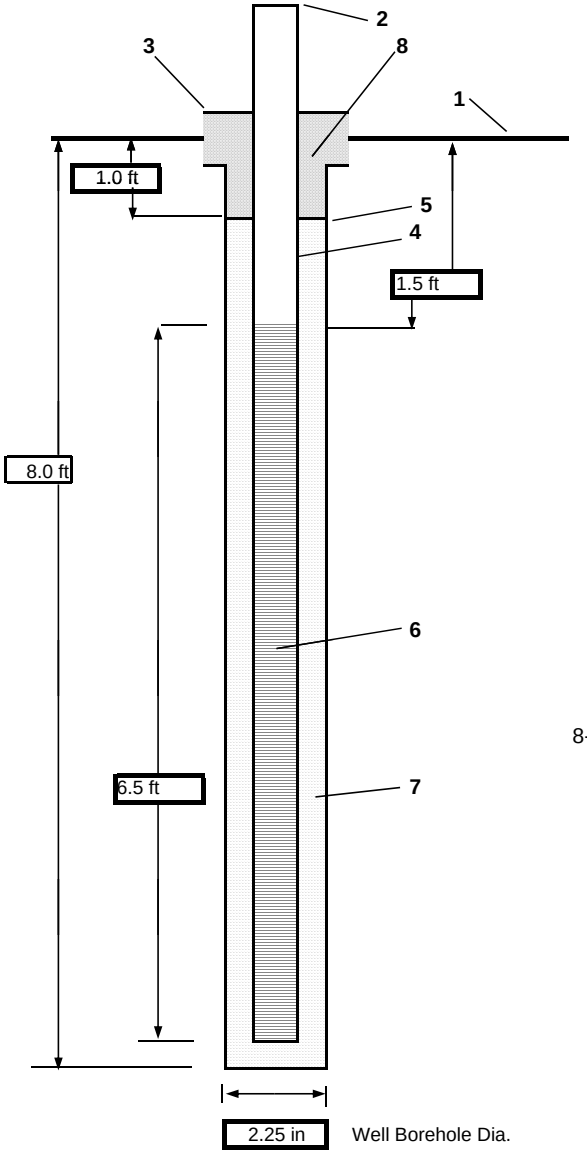
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 10.6 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 5.47 ft START : 1/7/14 @ 09:30 END : 1/7/14 @ 10:10 LOGGER : M. Murphy



1- Ground elevation at well 10.6 ft

2- Top of Well Casing elevation 14.09 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-77	SHEET 1 OF 1

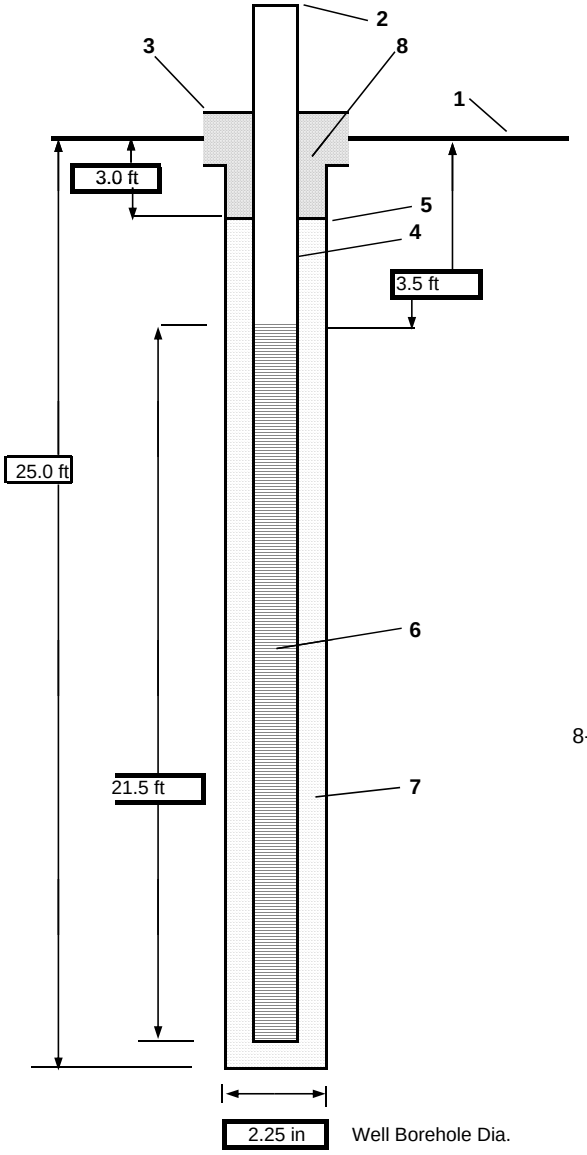
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 21.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 17.51 ft START : 1/8/14 @ 12:10 END : 1/8/14 @ 14:45 LOGGER : M. Murphy



1- Ground elevation at well 21.1 ft

2- Top of Well Casing elevation 25.11 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-78	SHEET 1 OF 1

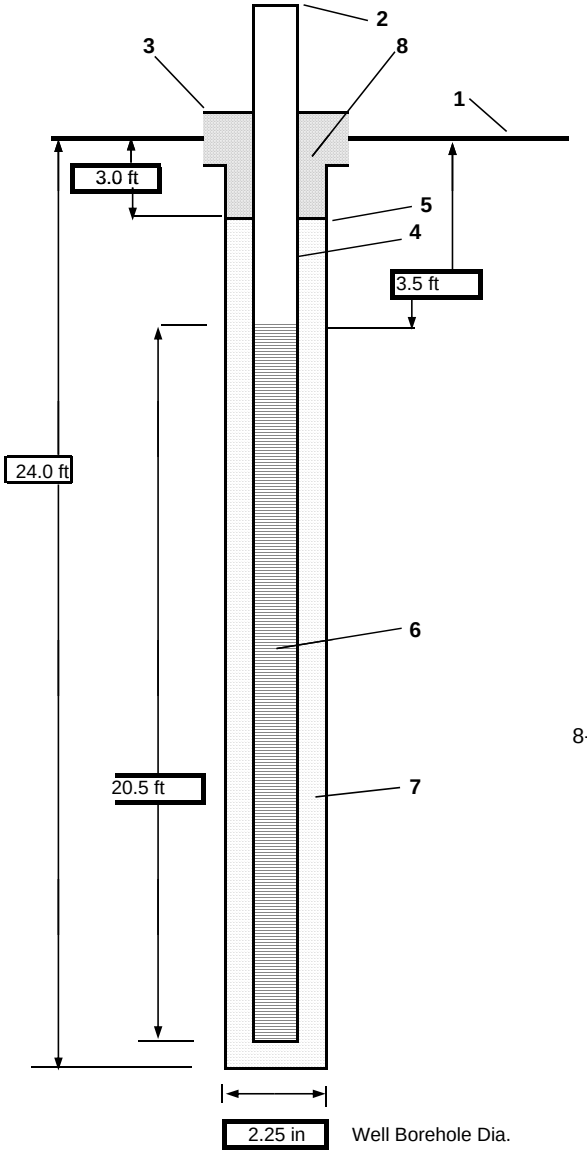
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 22.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 21.75 ft START : 12/12/13 @ 09:30 END : 12/12/13 @ 12:00 LOGGER : M. Murphy



1- Ground elevation at well 22.7 ft

2- Top of Well Casing elevation 26.14 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-79	SHEET 1 OF 1

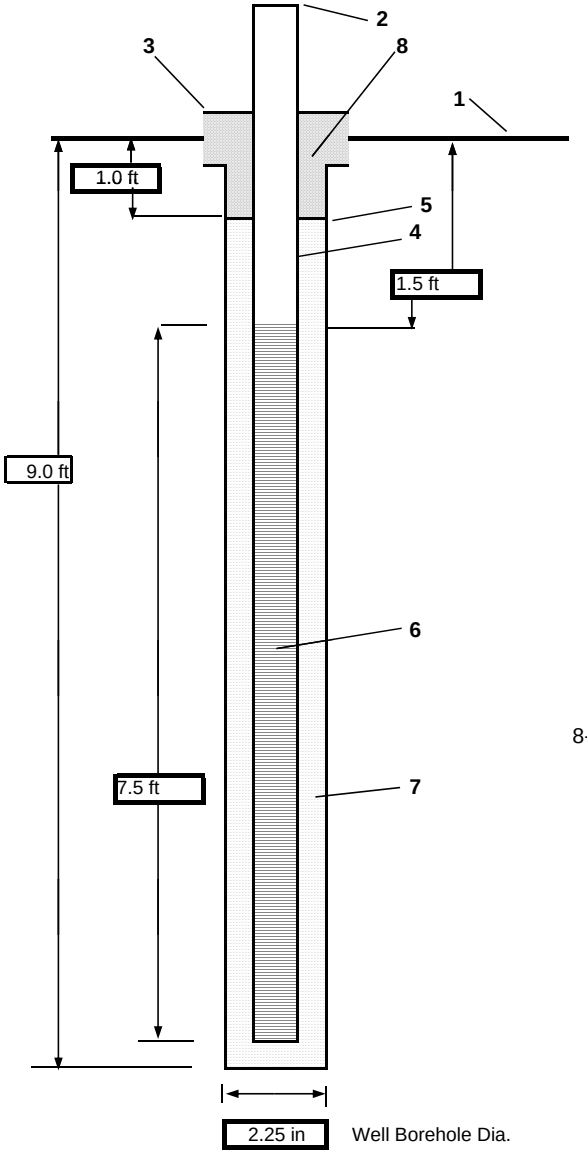
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 13.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

WATER LEVELS : 7.52 ft START : 1/7/14 @ 13:55 END : 1/7/14 @ 14:25 LOGGER : M. Murphy



1- Ground elevation at well 13.7 ft

2- Top of Well Casing elevation 17.44 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-80	SHEET 1 OF 1

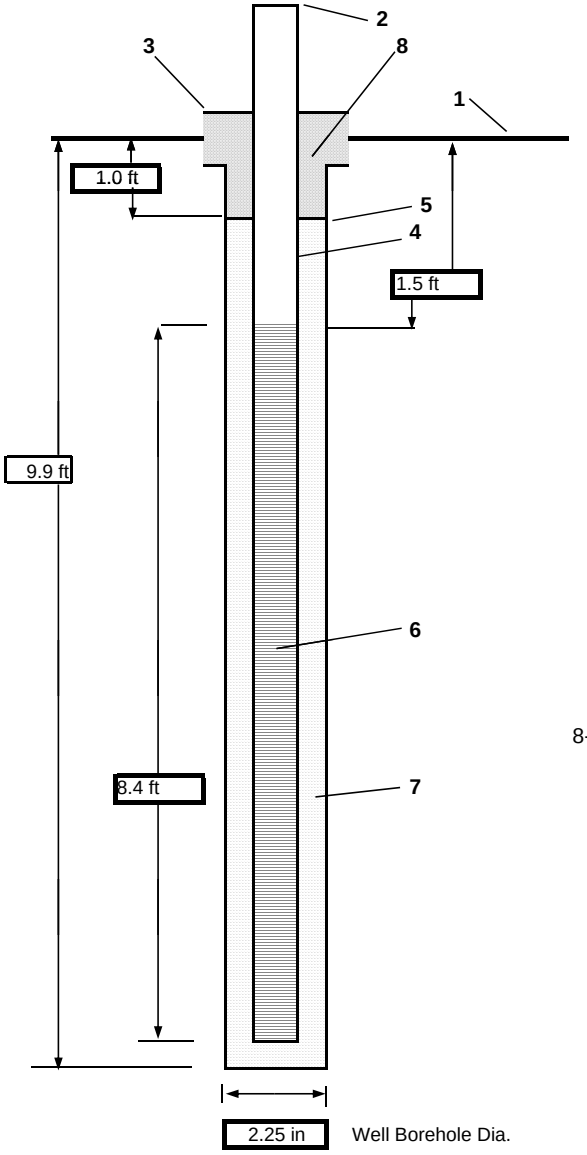
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 13.0 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 12.47 ft START : 12/16/13 @ 14:40 END : 12/16/13 @ 15:10 LOGGER : M. Murphy



1- Ground elevation at well 13.0 ft

2- Top of Well Casing elevation 16.51 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-81	SHEET 1 OF 1

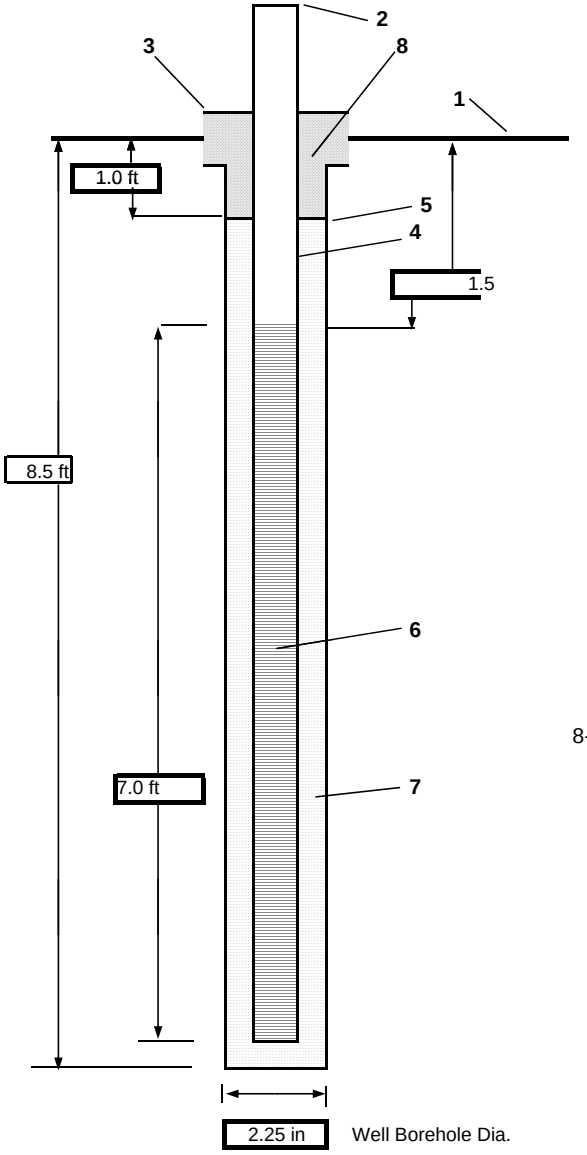
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 12.6 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 8.33 ft START : 12/16/13 @ 15:15 END : 12/16/13 @ 16:10 LOGGER : M. Murphy



1- Ground elevation at well 12.6 ft

2- Top of Well Casing elevation 16.01 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-82	SHEET 1 OF 1

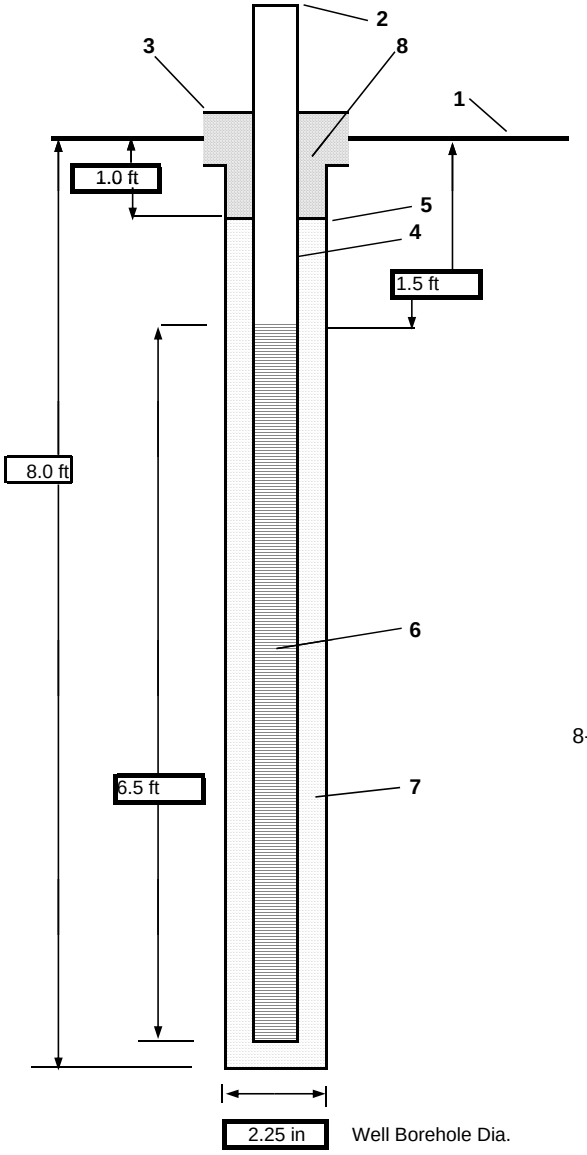
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 12.6 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 10.93 ft START : 12/17/13 @ 09:30 END : 12/17/13 @ 10:45 LOGGER : M. Murphy



1- Ground elevation at well 12.6 ft

2- Top of Well Casing elevation 16.02 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-83	SHEET 1 OF 1

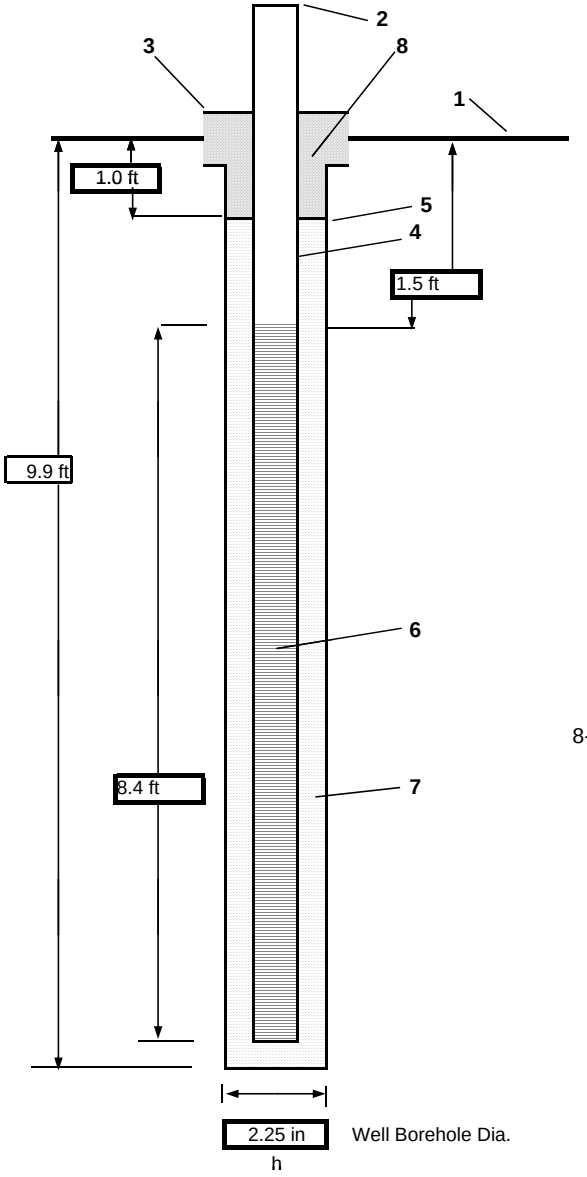
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 9.7 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 7.98 ft START : 12/17/13 @ 10:00 END : 12/17/13 @ 11:35 LOGGER : M. Murphy



1- Ground elevation at well 9.7 ft

2- Top of Well Casing elevation 13.53 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-84	SHEET 1 OF 1

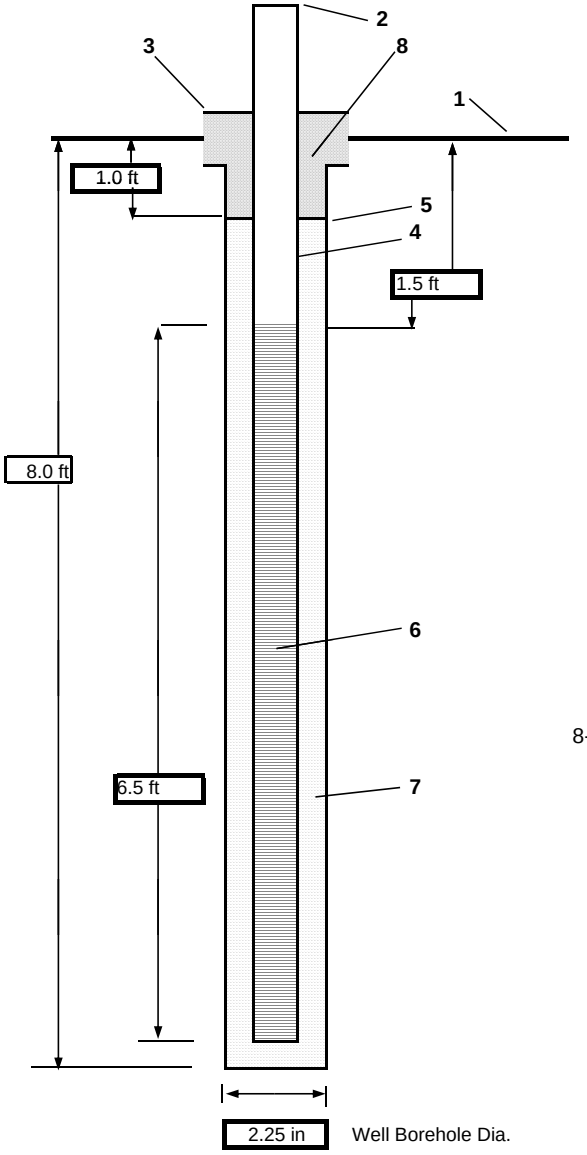
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 5.4 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 4.67 ft START : 12/17/13 @ 11:40 END : 12/17/13 @ 12:30 LOGGER : M. Murphy



1- Ground elevation at well 5.4 ft

2- Top of Well Casing elevation 8.77 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-85	SHEET 1 OF 1

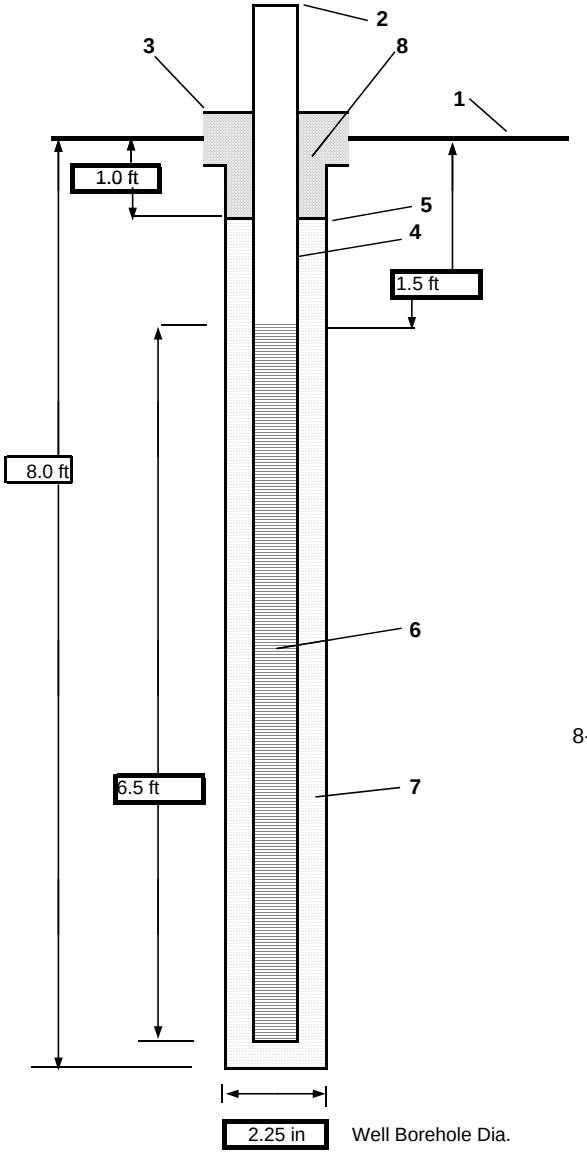
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 4.2 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.44 ft START : 12/17/13 @ 13:15 END : 12/17/13 @ 14:30 LOGGER : M. Murphy



1- Ground elevation at well 4.2 ft

2- Top of Well Casing elevation 7.49 ft

3- Wellhead protection type Bentonite Seal

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-86	SHEET 1 OF 1

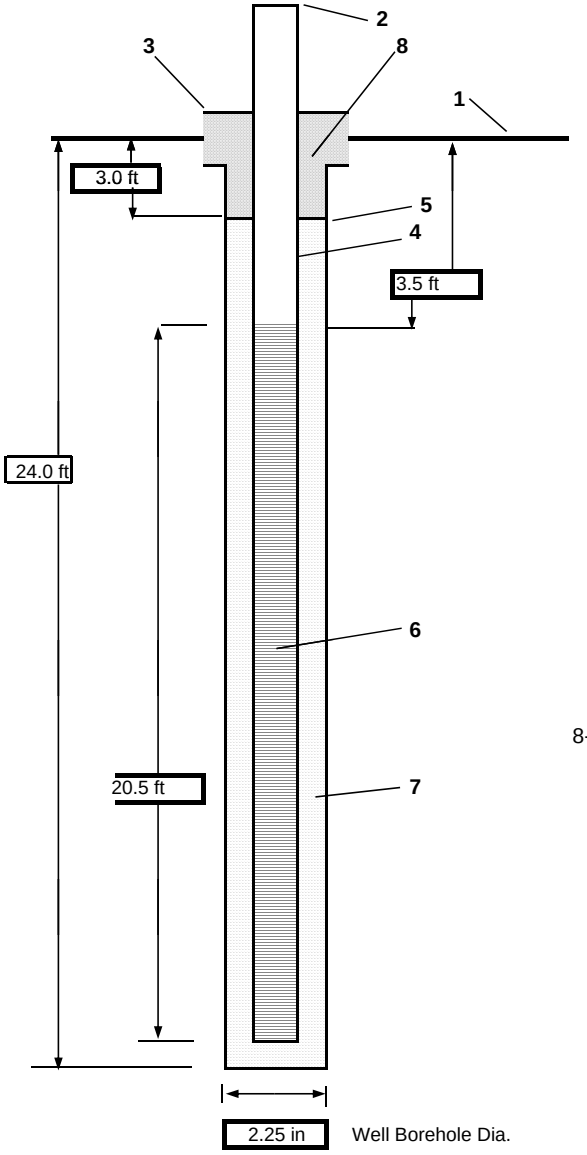
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 20.8 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 20.35 ft START : 1/8/14 @ 15:00 END : 1/8/14 @ 16:00 LOGGER : M. Murphy



1- Ground elevation at well 20.8 ft

2- Top of Well Casing elevation 23.99 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-87	SHEET 1 OF 1

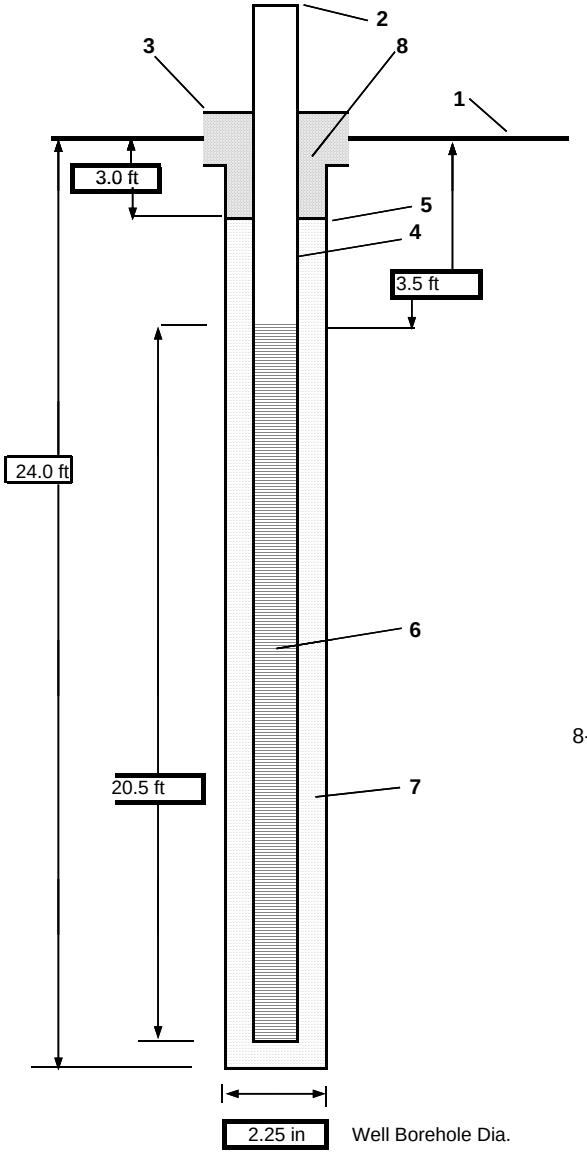
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 21.0 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 21.22 ft START : 1/8/14 @ 09:20 END : 1/8/14 @ 11:30 LOGGER : M. Murphy



1- Ground elevation at well 21.0 ft

2- Top of Well Casing elevation 24.14 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-88	SHEET 1 OF 1

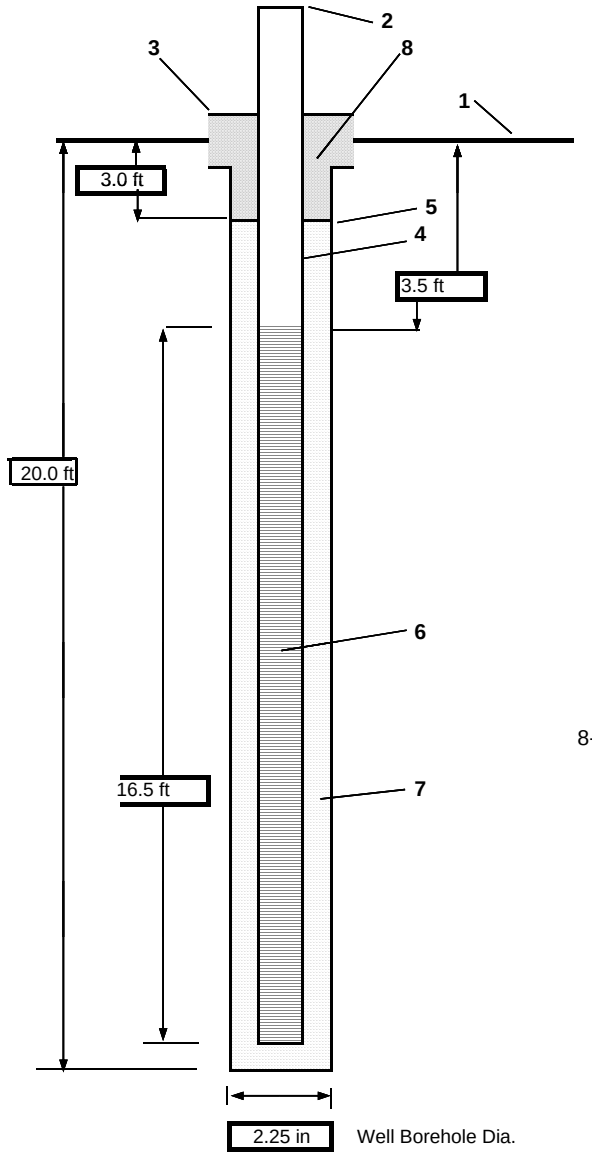
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 19.1 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 17.53 ft START : 12/19/13 @ 13:30 END : 12/19/13 @ 15:00 LOGGER : M. Murphy



1- Ground elevation at well 19.1 ft

2- Top of Well Casing elevation 22.47 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-89	SHEET 1 OF 1

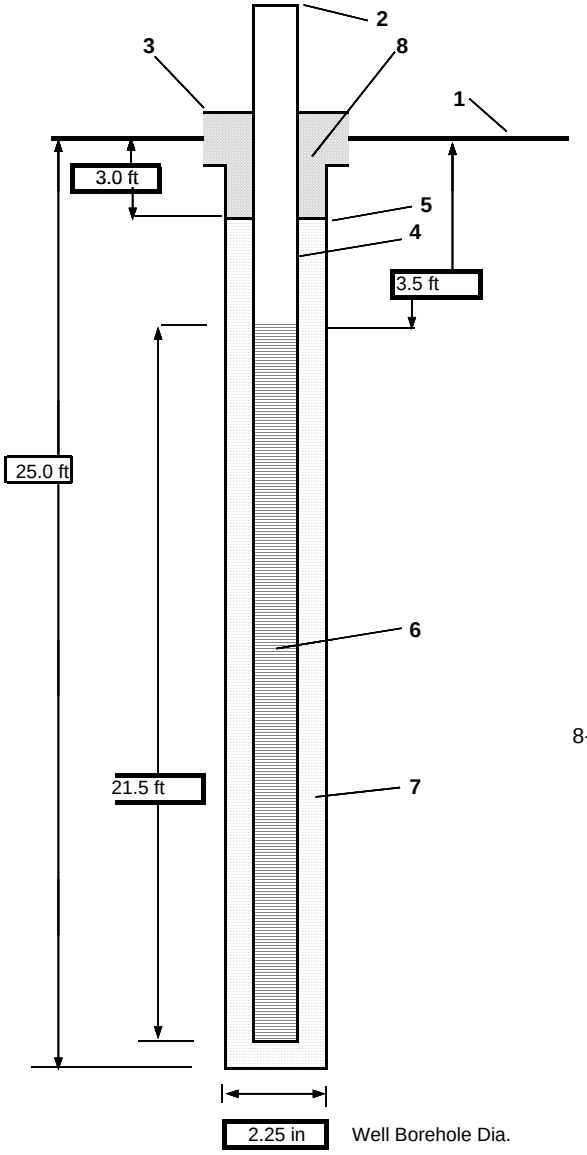
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 18.2 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 18.30 ft START : 12/19/13 @ 11:20 END : 12/19/13 @ 13:00 LOGGER : M. Murphy



1- Ground elevation at well 18.2 ft

2- Top of Well Casing elevation 21.81 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-90	SHEET 1 OF 1

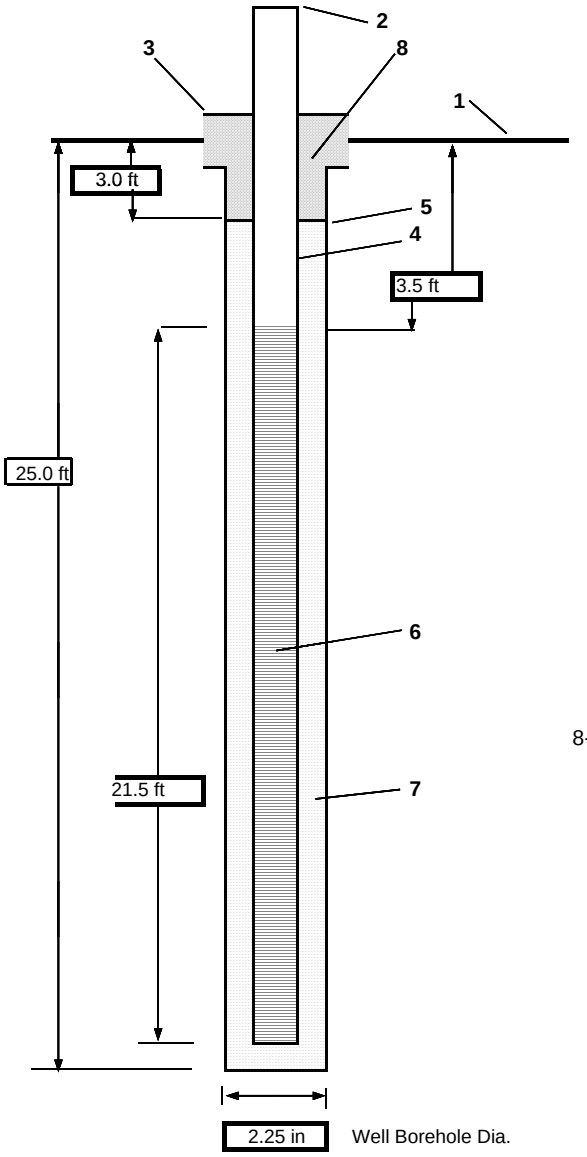
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 16.6 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 15.71 ft START : 12/11/13 @ 13:00 END : 12/11/13 @ 15:00 LOGGER : M. Murphy



1- Ground elevation at well 16.6 ft

2- Top of Well Casing elevation 19.69 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-91	SHEET 1 OF 1

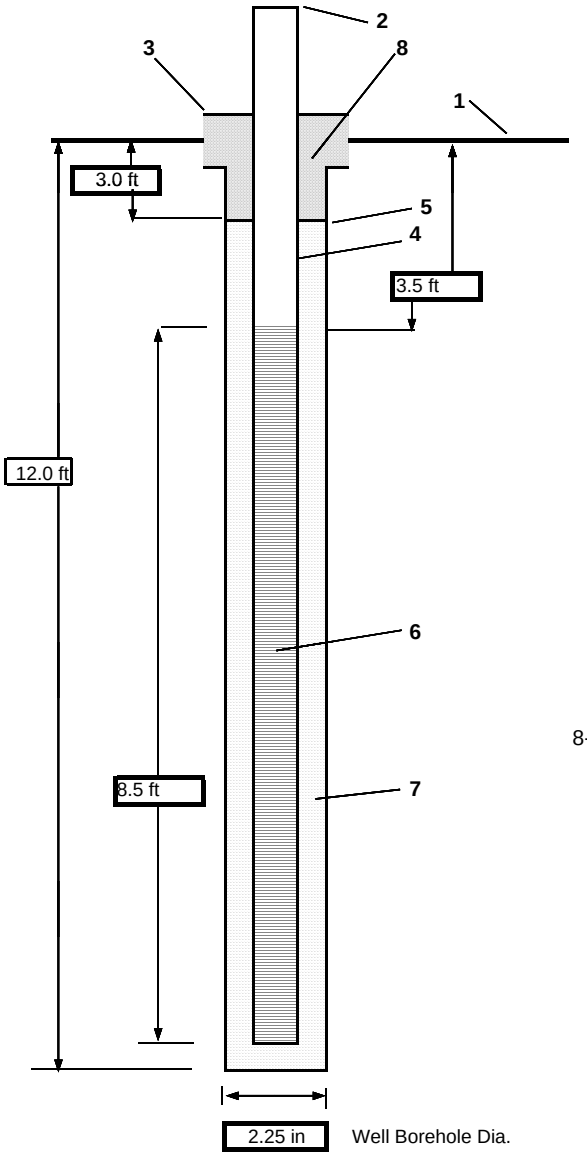
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 5.4 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 6.53 ft START : 12/19/13 @ 10:00 END : 12/19/13 @ 11:00 LOGGER : M. Murphy



1- Ground elevation at well 5.4 ft

2- Top of Well Casing elevation 8.73 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

PROJECT NUMBER	BORING NUMBER	
480159.02.02.02	PZ-92	SHEET 1 OF 1

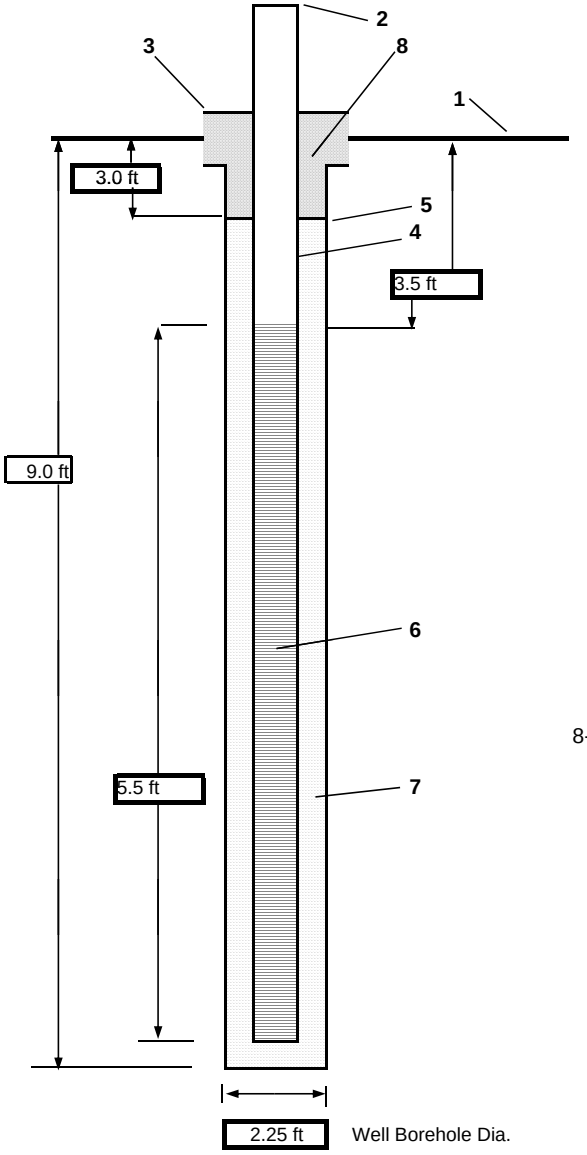
Temporary Piezometer Completion Diagram

PROJECT Diamond Head Oil Superfund Site - OU1 PDI LOCATION: Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)

ELEVATION : 5.2 ft Drilling Contractor: Environmental Field Services

DRILLING METHOD AND EQUIPMENT USED : Track Mounted Geoprobe 6620DT - 2-inch diameter macrocore

Water Level (BTC): 3.94 ft START : 12/19/13 @ 09:10 END : 12/19/13 @ 09:55 LOGGER : M. Murphy



1- Ground elevation at well 5.2 ft

2- Top of Well Casing elevation 7.56 ft

3- Wellhead protection type 5-in Steel Stickup Casing
Cement Grout

4- Diameter/type of well casing 1" dia. Sch. 40 PVC, flush thread

5- Diameter/type of isolation casing NONE

6- Type/slot size of screen 1" dia, Sch. 40 PVC, flush thread
0.020" (20-slot) machine slotted screen

7- Type screen filter #0 Filpro filter sand
a) Quantity used

8- Grout
a) Grout mix used Granular Bentonite
b) Method of placement Gravity feed
c) Quantity of well casing grout

Development method None

Comments

Appendix E
Soil Boring Logs and Piezometer Construction Diagrams

Section 3

Temporary Piezometer Well Records

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318352

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594272 Northing (Y): 698136
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 19, 2013
DATE WELL COMPLETED: December 19, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-31

WELL CONSTRUCTION

Total Depth Drilled (ft.): 25 Finished Well Depth (ft.): 25 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	25	2		
Casing	0	3	1	PVC	40
Screen	3	25	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	25	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 20 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 7822DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 15: Red Brown SM - Silty sands, sand-silt mixtures Landfill Materials
15 - 25: Black SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318352

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594285 Northing (Y): 698169
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-31

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Approved by the authority of:
Bob Martin
Commissioner

Terry D. Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318352

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
If the use of the well is to be changed a well permit for the proposed use of the well shall be submitted for review and approval. [N.J.A.C. 7:9D-1]
If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
In the event that this well is not constructed the well driller shall notify the Bureau of Water Systems and Well Permitting of the permit cancellation. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the Cancellation notification shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Permit Cancellation : by the expiration date of this permit.[N.J.A.C. 7:9D-1]
In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318353

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594294 Northing (Y): 698092
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 19, 2013
DATE WELL COMPLETED: December 19, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-36

WELL CONSTRUCTION

Total Depth Drilled (ft.): 25 Finished Well Depth (ft.): 25 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	25	2		
Casing	0	3	1	PVC	40
Screen	3	25	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	25	2	1	#0 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 20 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 15: Dark Brown SM - Silty sands, sand-silt mixtures Landfill materials
15 - 25: Black SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318353

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594304 Northing (Y): 698098
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-36

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Diameter (in.): 1

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head
Well Info
Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Approved by the authority of:
Bob Martin
Commissioner

Terry D. Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318353

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
If the use of the well is to be changed a well permit for the proposed use of the well shall be submitted for review and approval. [N.J.A.C. 7:9D-1]
If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
In the event that this well is not constructed the well driller shall notify the Bureau of Water Systems and Well Permitting of the permit cancellation. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the Cancellation notification shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Permit Cancellation : by the expiration date of this permit.[N.J.A.C. 7:9D-1]
In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318354

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594325 Northing (Y): 698019
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 19, 2013
DATE WELL COMPLETED: December 19, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-42

WELL CONSTRUCTION

Total Depth Drilled (ft.): 25 Finished Well Depth (ft.): 25 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	25	2		
Casing	0	3	1	PVC	40
Screen	3	25	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	25	2	1	#0 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 22 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 20: Brown SM - Silty sands, sand-silt mixtures Landfill Materials
20 - 25: Red Brown SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318354

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594325 Northing (Y): 698022
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-42

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Diameter (in.): 1

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Terry D. Pilawski

Approved by the authority of:
Bob Martin
Commissioner

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318354

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
If the use of the well is to be changed a well permit for the proposed use of the well shall be submitted for review and approval. [N.J.A.C. 7:9D-1]
If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
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In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318355

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594352 Northing (Y): 697916
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 9, 2014
DATE WELL COMPLETED: January 9, 2014

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-48

WELL CONSTRUCTION

Total Depth Drilled (ft.): 28 Finished Well Depth (ft.): 28 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	28	2		
Casing	0	4	1	PVC	40
Screen	4	28	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	28	2	1	#0 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 22 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 7: Dark Brown SM - Silty sands, sand-silt mixtures Landfill Materials
7 - 20: Black SM - Silty sands, sand-silt mixtures Landfill Materials
20 - 28: Black SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318355

WELL PERMIT

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Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594361 Northing (Y): 697926
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-48

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Diameter (in.): 1

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Approved by the authority of:
Bob Martin
Commissioner

Terry D. Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318355

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
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If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
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The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318356

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594373 Northing (Y): 697876
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 10, 2014
DATE WELL COMPLETED: January 10, 2014

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-54

WELL CONSTRUCTION

Total Depth Drilled (ft.): 25 Finished Well Depth (ft.): 25 Well Surface: Flush Mount

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	25	2		
Casing	0	3.5	1	PVC	40
Screen	3.5	25	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	25	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 21 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 15: Dark Brown SM - Silty sands, sand-silt mixtures Landfill Materials
15 - 22: Dark Brown SC - Clayey sands, sand-clay mixtures Landfiell Materials
22 - 25: Black/Gray SW - Well-graded sands and gravelly sands, little or no fines

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318356

WELL PERMIT

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Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594396 Northing (Y): 697845
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-54

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Diameter (in.): 1

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Approved by the authority of:
Bob Martin
Commissioner

Terry D. Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318356

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
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This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318357

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594391 Northing (Y): 697759
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 20, 2013
DATE WELL COMPLETED: December 20, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-60

WELL CONSTRUCTION

Total Depth Drilled (ft.): 28 Finished Well Depth (ft.): 28 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	28	2		
Casing	0	4	1	PVC	40
Screen	4	28	1	Pvc	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	28	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 23 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 5: Brown SP - Poorly graded sands and gravelly sands, little or no fines Landfill Materials
5 - 15: Dark Brown SM - Silty sands, sand-silt mixtures Landfill Materials
15 - 22: Gray Brown SC - Clayey sands, sand-clay mixtures
22 - 28: Brown SM - Silty sands, sand-silt mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
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Well Permit Number
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Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

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Facility Name: Diamond Head Oil Superfund Site

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County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594396 Northing (Y): 697760
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-60

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Diameter (in.): 1

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Approved by the authority of:
Bob Martin
Commissioner

Terry D. Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
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Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

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If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
In the event that this well is not constructed the well driller shall notify the Bureau of Water Systems and Well Permitting of the permit cancellation. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the Cancellation notification shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Permit Cancellation : by the expiration date of this permit.[N.J.A.C. 7:9D-1]
In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318358

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594393 Northing (Y): 697680
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 9, 2014
DATE WELL COMPLETED: January 9, 2014

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-66

WELL CONSTRUCTION

Total Depth Drilled (ft.): 24 Finished Well Depth (ft.): 24 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	24	2		
Casing	0	4	1	PVC	40
Screen	4	24	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	24	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 20 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 10: Brown SM - Silty sands, sand-silt mixtures Landfill Materials
10 - 20: Brown SC - Clayey sands, sand-clay mixtures Landfill Materials
20 - 22: Black SP - Poorly graded sands and gravelly sands, little or no fines
22 - 24: Black SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318358

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594396 Northing (Y): 697675
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-66

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Approved by the authority of:
Bob Martin
Commissioner

Terry D. Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318358

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
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The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318359

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594353 Northing (Y): 697607
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 10, 2014
DATE WELL COMPLETED: January 10, 2014

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-71

WELL CONSTRUCTION

Total Depth Drilled (ft.): 25 Finished Well Depth (ft.): 25 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	25	2		
Casing	0	4	1	PVC	40
Screen	4	25	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	25	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 20 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 15: Brown SM - Silty sands, sand-silt mixtures Landfill Materials
15 - 20: Black SC - Clayey sands, sand-clay mixtures Landfill Materials
20 - 25: Gray Black SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318359

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594374 Northing (Y): 697589
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-71

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Terry D. Pilawski

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

Approved by the authority of:
Bob Martin
Commissioner

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318359

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
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This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318360

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594287 Northing (Y): 697518
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 18, 2013
DATE WELL COMPLETED: December 18, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-75

WELL CONSTRUCTION

Total Depth Drilled (ft.): 24 Finished Well Depth (ft.): 24 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	24	2		
Casing	0	4	1	PVC	40
Screen	4	24	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	24	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 15 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 12: Red Brown SM - Silty sands, sand-silt mixtures Landfill Materials
12 - 20: Gray Brown SW - Well-graded sands and gravelly sands, little or no fines
20 - 24: Black SW - Well-graded sands and gravelly sands, little or no fines

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318360

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 594289 Northing (Y): 697508
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-75

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head
Well Info
Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Terry D. Pilawski

Approved by the authority of:
Bob Martin
Commissioner

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318360

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
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This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318361

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593911 Northing (Y): 697207
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 8, 2014
DATE WELL COMPLETED: January 8, 2014

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-87

WELL CONSTRUCTION

Total Depth Drilled (ft.): 24 Finished Well Depth (ft.): 24 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	24	2		
Casing	0	4	1	PVC	40
Screen	4	24	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	24	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 18 ft. below land surface
Water Level Measure Tool: tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 13: Brown SM - Silty sands, sand-silt mixtures Landfill Materials
13 - 17: Black SM - Silty sands, sand-silt mixtures Landfill Materials
17 - 24: Black SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318361

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593909 Northing (Y): 697193
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-87

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head
Well Info
Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Terry D. Pilawski

Approved by the authority of:
Bob Martin
Commissioner

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318361

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
If the use of the well is to be changed a well permit for the proposed use of the well shall be submitted for review and approval. [N.J.A.C. 7:9D-1]
If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
In the event that this well is not constructed the well driller shall notify the Bureau of Water Systems and Well Permitting of the permit cancellation. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the Cancellation notification shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Permit Cancellation : by the expiration date of this permit.[N.J.A.C. 7:9D-1]
In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318362

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593834 Northing (Y): 697155
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 19, 2013
DATE WELL COMPLETED: December 19, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-88

WELL CONSTRUCTION

Total Depth Drilled (ft.): 20 Finished Well Depth (ft.): 20 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	20	2		
Casing	0	4	1	PVC	40
Screen	4	20	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	20	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 17 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 16: Brown SM - Silty sands, sand-silt mixtures Landfill Materials
16 - 18: Gray Brown SM - Silty sands, sand-silt mixtures Landfill Materials
18 - 20: Brown/Gray PT - Peat, muck, and other highly organic soils

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318362

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593840 Northing (Y): 697144
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-88

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head
Well Info
Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Terry D. Pilawski

Approved by the authority of:
Bob Martin
Commissioner

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318362

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
If the use of the well is to be changed a well permit for the proposed use of the well shall be submitted for review and approval. [N.J.A.C. 7:9D-1]
If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
In the event that this well is not constructed the well driller shall notify the Bureau of Water Systems and Well Permitting of the permit cancellation. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the Cancellation notification shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Permit Cancellation : by the expiration date of this permit.[N.J.A.C. 7:9D-1]
In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318363

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593775 Northing (Y): 697105
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 19, 2013
DATE WELL COMPLETED: December 19, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-89

WELL CONSTRUCTION

Total Depth Drilled (ft.): 25 Finished Well Depth (ft.): 25 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	25	2		
Casing	0	4	1	PVC	40
Screen	4	25	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	25	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 18 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 5: Red Brown SM - Silty sands, sand-silt mixtures Landfill Materials
5 - 15: Black SC - Clayey sands, sand-clay mixtures landfill Materials
15 - 25: Gray Brown SM - Silty sands, sand-silt mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318363

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593770 Northing (Y): 697095
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-89

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Diameter (in.): 1

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head
Well Info
Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Approved by the authority of:
Bob Martin
Commissioner

Terry D. Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318363

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
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For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
If the use of the well is to be changed a well permit for the proposed use of the well shall be submitted for review and approval. [N.J.A.C. 7:9D-1]
If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
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In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318364

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593683 Northing (Y): 697048
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 18, 2013
DATE WELL COMPLETED: December 18, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-90

WELL CONSTRUCTION

Total Depth Drilled (ft.): 25 Finished Well Depth (ft.): 25 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	25	2		
Casing	0	4	1	PVC	40
Screen	4	25	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	25	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 15 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 20: Black SM - Silty sands, sand-silt mixtures Landfill Materials
20 - 25: Gray Brown SM - Silty sands, sand-silt mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318364

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593701 Northing (Y): 697046
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-90

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Terry D. Pilawski

Approved by the authority of:
Bob Martin
Commissioner

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318364

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
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In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
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The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
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This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318365

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593617 Northing (Y): 696980
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 19, 2013
DATE WELL COMPLETED: December 19, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-91

WELL CONSTRUCTION

Total Depth Drilled (ft.): 12 Finished Well Depth (ft.): 12 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	12	2		
Casing	0	3.5	1	PVC	40
Screen	3.5	12	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	12	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 6 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 5: Black SC - Clayey sands, sand-clay mixtures Landfill Materials
5 - 10: Black SM - Silty sands, sand-silt mixtures Landfill Materials
10 - 12: Yellow/Brown SM - Silty sands, sand-silt mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318365

WELL PERMIT

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Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593631 Northing (Y): 696998
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-91

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Terry D. Pilawski

Approved by the authority of:
Bob Martin
Commissioner

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318365

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
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New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318366

MONITORING WELL RECORD

PROPERTY OWNER: STATE OF NJ DOT STATE OF NJ DOT

Company/Organization: State of NJ DOT

Address: 1035Parkway Ave Trenton, New Jersey 08625

WELL LOCATION: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593557 Northing (Y): 696931
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 19, 2013
DATE WELL COMPLETED: December 19, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-92

WELL CONSTRUCTION

Total Depth Drilled (ft.): 9 Finished Well Depth (ft.): 9 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	9	2		
Casing	0	3.5	1	PVC	40
Screen	3.5	9	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	9	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 4 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 6: Brown/Gray SM - Silty sands, sand-silt mixtures
6 - 8: Black SC - Clayey sands, sand-clay mixtures
8 - 9: Brown PT - Peat, muck, and other highly organic soils

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318366

WELL PERMIT

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Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: STATE OF NJ DOT STATE OF NJ DOT

Organization: State of NJ DOT

Address: 1035Parkway Ave

City: Trenton State: New Jersey Zip Code: 08625

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund Site

Address: 468-536 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 2.01 Block: 285

Easting (X): 593574 Northing (Y): 696945
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-92

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head
Well Info
Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Terry D. Pilawski

Approved by the authority of:
Bob Martin
Commissioner

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318366

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

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New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318367

MONITORING WELL RECORD

PROPERTY OWNER: HUDSON MEADOWS URBAN RENEWAL CORP HUDSON MEADOWS URBAN RENEWAL CORP

Company/Organization: Hudson Meadows Urban Renewal Corp

Address: 525 RIverside Ave Lyndhurst, New Jersey 07071

WELL LOCATION: Diamond Head Oil Superfund site

Address: 308-324 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 3 Block: 285

Easting (X): 594114 Northing (Y): 697371
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 8, 2014
DATE WELL COMPLETED: January 8, 2014

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-77

WELL CONSTRUCTION

Total Depth Drilled (ft.): 25 Finished Well Depth (ft.): 25 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	25	2		
Casing	0	4	1	PVC	40
Screen	4	25	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	25	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 20 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 15: Dark Brown GC - Clayey gravels, gravel-sand-clay mixtures Landfill Materials
15 - 20: Black/Gray SP - Poorly graded sands and gravelly sands, little or no fines
20 - 25: Dark Gray SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318367

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Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: HUDSON MEADOWS URBAN RENEWAL CORP HUDSON MEADOWS URBAN RENEWAL CORP

Organization: Hudson Meadows Urban Renewal Corp

Address: 525 RIverside Ave

City: Lyndhurst State: New Jersey Zip Code: 07071

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund site

Address: 308-324 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 3 Block: 285

Easting (X): 594141 Northing (Y): 697420
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-77

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Regulatory Program Requiring Wells/Borings: Superfund

Diameter (in.): 1

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head
Well Info
Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Approved by the authority of:
Bob Martin
Commissioner

Terry D. Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

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Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
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DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
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This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318368

MONITORING WELL RECORD

PROPERTY OWNER: HUDSON MEADOWS URBAN RENEWAL CORP HUDSON MEADOWS URBAN RENEWAL CORP

Company/Organization: Hudson Meadows Urban Renewal Corp

Address: 525 RIverside Ave Lyndhurst, New Jersey 07071

WELL LOCATION: Diamond Head Oil Superfund site

Address: 308-324 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 3 Block: 285

Easting (X): 594062 Northing (Y): 697329
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: December 19, 2013
DATE WELL COMPLETED: December 19, 2013

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-78

WELL CONSTRUCTION

Total Depth Drilled (ft.): 24 Finished Well Depth (ft.): 24 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	24	2		
Casing	0	4	1	PVC	40
Screen	4	24	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	24	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 21 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 15: Gray Brown SM - Silty sands, sand-silt mixtures Landfill Materials
15 - 21: Black SM - Silty sands, sand-silt mixtures
21 - 24: Black/Brown SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318368

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: HUDSON MEADOWS URBAN RENEWAL CORP HUDSON MEADOWS URBAN RENEWAL CORP

Organization: Hudson Meadows Urban Renewal Corp

Address: 525 RIverside Ave

City: Lyndhurst State: New Jersey Zip Code: 07071

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund site

Address: 308-324 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 3 Block: 285

Easting (X): 594056 Northing (Y): 697335
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-78

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Diameter (in.): 1

Regulatory Program Requiring Wells/Borings: Superfund

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head Well Info Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Approved by the authority of:
Bob Martin
Commissioner

Terry D. Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318368

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
If the use of the well is to be changed a well permit for the proposed use of the well shall be submitted for review and approval. [N.J.A.C. 7:9D-1]
If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
In the event that this well is not constructed the well driller shall notify the Bureau of Water Systems and Well Permitting of the permit cancellation. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the Cancellation notification shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Permit Cancellation : by the expiration date of this permit.[N.J.A.C. 7:9D-1]
In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318369

MONITORING WELL RECORD

PROPERTY OWNER: HUDSON MEADOWS URBAN RENEWAL CORP HUDSON MEADOWS URBAN RENEWAL CORP

Company/Organization: Hudson Meadows Urban Renewal Corp

Address: 525 RIverside Ave Lyndhurst, New Jersey 07071

WELL LOCATION: Diamond Head Oil Superfund site

Address: 308-324 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 3 Block: 285

Easting (X): 593982 Northing (Y): 697256
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 8, 2014
DATE WELL COMPLETED: January 8, 2014

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-86

WELL CONSTRUCTION

Total Depth Drilled (ft.): 24 Finished Well Depth (ft.): 24 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	3	5		
Borehole	3	24	2		
Casing	0	4	1	PVC	40
Screen	4	24	1	PVC	0.02

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	3	5	1	8		3
Gravel Pack	3	24	2	1	#1 Sand		

Grouting Method: Gravity method Drilling Method: Direct Push Probe

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 19 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Peristalic Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 6620DT
Health and Safety Plan Submitted? No

ATTACHMENTS:

GEOLOGIC LOG
0 - 15: Gray/Brown SM - Silty sands, sand-silt mixtures Landfill Materials
15 - 17: Black SC - Clayey sands, sand-clay mixtures Landfill Materials
17 - 24: Black/Grahy SC - Clayey sands, sand-clay mixtures

ADDITIONAL INFORMATION:

Driller of Record: Thomas Wysocki, MONITORING LICENSE # 0024439 Company: ENVIRONMENTAL FIELD SERVICE

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318369

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: THOMAS WYSOCKI, MONITORING LICENSE # 0024439

Permit Issued to: ENVIRONMENTAL FIELD SERVICE

Company Address: 2 KNOLL LN MARLTON, NJ 08053

PROPERTY OWNER

Name: HUDSON MEADOWS URBAN RENEWAL CORP HUDSON MEADOWS URBAN RENEWAL CORP

Organization: Hudson Meadows Urban Renewal Corp

Address: 525 RIverside Ave

City: Lyndhurst State: New Jersey Zip Code: 07071

PROPOSED WELL LOCATION

Facility Name: Diamond Head Oil Superfund site

Address: 308-324 Harrison Ave

County: Hudson Municipality: Kearny Town Lot: 3 Block: 285

Easting (X): 593979 Northing (Y): 697241
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PZ-86

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: PIEZOMETER

Other Use(s):

Diameter (in.): 1

Regulatory Program Requiring Wells/Borings: Superfund

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Direct Push Probe

Attachments: Diamond Head Well - a.pdf
amond Head
Well Info
Email.pdf

SPECIFIC CONDITIONS/REQUIREMENTS

Terry D. Pilawski

Approval Date: December 16, 2013
Expiration Date: December 16, 2014

Approved by the authority of:
Bob Martin
Commissioner

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Wells
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201318369

WELL PERMIT

DEVIATION INFORMATION	
Purpose:	
Unusual Conditions:	
Reason for Deviation:	
Proposed Well Construction	

GENERAL CONDITIONS/REQUIREMENTS
A copy of this permit shall be kept at the worksite / on the property and shall be exhibited upon request. [N.J.A.C. 7:9D-1]
A well record must be submitted by the well driller to the Bureau of Water Systems and Well Permitting. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the well record shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Record: within ninety (90) days after the well is completed.[N.J.A.C. 7:9D-1]
All well drilling/pump installation activities shall comply with N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
For this permit to remain valid, the well approved in this permit shall be constructed within one year of the effective date of the permit. [N.J.A.C. 7:9D-1]
If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Bureau of Water Systems and Well Permitting. [N.J.A.C. 7:9D-1]
If the use of the well is to be changed a well permit for the proposed use of the well shall be submitted for review and approval. [N.J.A.C. 7:9D-1]
If you or a future property owner intend to redesignate this well as a Category 1 well (domestic, non-public, community water supply or public non-community water supply wells), the well must be constructed as a Category 1 well per the Well Construction and Abandonment Regulations at N.J.A.C. 7:0D-1.1 et seq. In addition, if the current or future property owner intends to have this well redesignated as a community water supply well, the well must be constructed by a Master well driller, which would include having a Master well driller on-site at all times during construction of the well, as specified in the Well Construction and Abandonment Regulations. Otherwise, the New Jersey Department of Environmental Protection will not allow the well to be redesignated, and a new well would have to be installed. [N.J.A.C. 7:9D-1.7((a))1i]
In accepting this permit the Property Owner and Driller agree to abide by the following terms and conditions [N.J.A.C. 7:9D-1]
In the event that this well is not constructed the well driller shall notify the Bureau of Water Systems and Well Permitting of the permit cancellation. Unless prior written approval is obtained from the Bureau of Water Systems and Well Permitting the Cancellation notification shall be submitted electronically through the New Jersey Department of Environmental Protection's Regulatory Services Portal Submit Well Permit Cancellation : by the expiration date of this permit.[N.J.A.C. 7:9D-1]
In the event this well is abandoned, the Owner or Well driller shall assume full responsibility for having the well decommissioned in a manner satisfactory to the New Jersey Department of Environmental Protection in accordance with the provisions of N.J.A.C. 7:9D-1 et seq. [N.J.A.C. 7:9D-1]
The granting of this permit shall not be construed in any way to affect the title or ownership of property, and shall not make the New Jersey Department of Environmental Protection or the State a party in any suit or question of ownership of property. [N.J.A.C. 7:9D-1]
The issuance of this permit shall not be deemed to affect in any way action by the New Jersey Department of Environmental Protection on any future application. [N.J.A.C. 7:9D-1]
This permit conveys no rights, either expressed, or implied to divert water. [N.J.A.C. 7:9D-1]
This permit does not waive the obtaining of Federal or other State or local Government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained. [N.J.A.C. 7:9D-1]
This permit is NONTRANSFERABLE [N.J.A.C. 7:9D]
This well shall not be used for the supply of potable / drinking water. [N.J.A.C. 7:9D-1]

Appendix E
Soil Boring Logs and Piezometer Construction Diagrams

Section 4

Temporary Piezometer Form B's

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318352
2. Site Well Number (As shown on application or plans): PZ 31
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44′ 58.04″ Longitude: West 74° 07′ 52.69″
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 698,136 feet East 594,272 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 25.02
   Elevation Top of Outer casing: 26.01 Elevation of ground: 22.1
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

Professional Land Surveyor's Signature: R. E. V Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318353
2. Site Well Number (As shown on application or plans): PZ 36
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44' 57.60" Longitude: West 74° 07' 52.41"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 698,092 feet East 594,294 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 26.87
   Elevation Top of Outer casing: 27.21 Elevation of ground: 23.8
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

Professional Land Surveyor's Signature: Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318354
2. Site Well Number (As shown on application or plans): PZ 42
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44′ 56.88″ Longitude: West 74° 07′ 52.00″
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 698,019 feet East 594,325 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 26.54
   Elevation Top of Outer casing: 27.22 Elevation of ground: 23.7
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

Professional Land Surveyor's Signature: Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318355
2. Site Well Number (As shown on application or plans): PZ 48
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44' 55.86" Longitude: West 74° 07' 51.66"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,916 feet East 594,352 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 24.23
   Elevation Top of Outer casing: 28.50 Elevation of ground: 24.7
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

Professional Land Surveyor's Signature: Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318356
2. Site Well Number (As shown on application or plans): PZ 54
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44' 55.46" Longitude: West 74° 07' 51.39"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,876 feet East 594,373 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 27.71
   Elevation Top of Outer casing: 27.98 Elevation of ground: 24.1
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

Professional Land Surveyor's Signature: Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318357
2. Site Well Number (As shown on application or plans): PZ 60
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44′ 54.31″ Longitude: West 74° 07′ 51.17″
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,759 feet East 594,391 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 28.07
   Elevation Top of Outer casing: 28.32 Elevation of ground: 24.9
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

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New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
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SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318358
2. Site Well Number (As shown on application or plans): PZ 66
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44' 53.53" Longitude: West 74° 07' 51.14"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,680 feet East 594,393 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 27.72
   Elevation Top of Outer casing: 28.68 Elevation of ground: 24.7
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

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New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

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SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318359
2. Site Well Number (As shown on application or plans): PZ 71
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44' 52.80" Longitude: West 74° 07' 51.67"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,607 feet East 594,353 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 26.90
   Elevation Top of Outer casing: 27.50 Elevation of ground: 23.8
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
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Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
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SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318360
2. Site Well Number (As shown on application or plans): PZ 75
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44′ 51.93″ Longitude: West 74° 07′ 52.53″
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,518 feet East 594,287 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 26.82
   Elevation Top of Outer casing: 26.92 Elevation of ground: 23.7
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

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SEAL

Professional Land Surveyor's Signature: R. E. Va Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
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SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 308-324 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 3

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318367
2. Site Well Number (As shown on application or plans): PZ 77
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44' 50.48" Longitude: West 74° 07' 54.79"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,371 feet East 594,114 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 25.11
   Elevation Top of Outer casing: 25.69 Elevation of ground: 21.7
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

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Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 308 - 324 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 3

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318368
2. Site Well Number (As shown on application or plans): PZ 78
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44′ 50.07″ Longitude: West 74° 07′ 55.47″
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,329 feet East 594,062 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 26.14
   Elevation Top of Outer casing: 26.60 Elevation of ground: 22.7
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

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Professional Land Surveyor's Signature: Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 308 - 324 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 3

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318369
2. Site Well Number (As shown on application or plans): PZ 86
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44′ 49.35″ Longitude: West 74° 07′ 56.51″
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,256 feet East 593,982 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 23.99
   Elevation Top of Outer casing: 24.66 Elevation of ground: 20.8
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

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Professional Land Surveyor's Signature: Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
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Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318361
2. Site Well Number (As shown on application or plans): PZ 87
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44' 48.87" Longitude: West 74° 07' 57.43"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,207 feet East 593,911 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 24.14
   Elevation Top of Outer casing: 24.65 Elevation of ground: 21.0
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

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Professional Land Surveyor's Signature: Date: 02-24-14
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Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
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New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
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SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318362
2. Site Well Number (As shown on application or plans): PZ 88
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44' 48.3.6" Longitude: West 74° 07' 58.44"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,155 feet East 593,834 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 22.47
   Elevation Top of Outer casing: 22.65 Elevation of ground: 19.1
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
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New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

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SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318363
2. Site Well Number (As shown on application or plans): PZ 89
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44′ 47.87″ Longitude: West 74° 07′ 59.21″
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,105 feet East 593,775 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 21.81
   Elevation Top of Outer casing: 21.93 Elevation of ground: 18.2
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
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Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318364
2. Site Well Number (As shown on application or plans): PZ 90
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44' 47.31" Longitude: West 74° 08' 00.40"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 697,048 feet East 593,683 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 19.69
   Elevation Top of Outer casing: 20.66 Elevation of ground: 16.6
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

Professional Land Surveyor's Signature: Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

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Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318365
2. Site Well Number (As shown on application or plans): PZ 91
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44′ 46.64″ Longitude: West 74° 08′ 01.26″
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 696,980 feet East 593,617 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 8.73
   Elevation Top of Outer casing: 9.31 Elevation of ground: 5.4
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

Professional Land Surveyor's Signature: Date: 02-24-14
Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Diamond Head Oil Superfund Site
List all AKAs:
Street Address: 468 - 536 Harrison Avenue
Municipality: Kearny Town (Township, Borough or City)
County: Hudson Zip Code: 07032
Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner State of NJ DOT
2. Well Location (Street Address) 468 - 536 Harrison Avenue
3. Well Location (Municipal Block and Lot) Block# 285 Lot # 2.01

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201318366
2. Site Well Number (As shown on application or plans): PZ 92
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 44′ 46.16″ Longitude: West 74° 08′ 02.04″
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 696,931 feet East 593,557 feet
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 7.56
   Elevation Top of Outer casing: 7.90 Elevation of ground: 5.2
   Check One: ☒ NAVD 88 ☐ NGVD 29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   Elevations are referenced to NAVD 1988, the Horizontal datum is the NJSPCS, NAD 1983 based on an NGS OPUS solution: 8344153.090, dated 06/02/09. Base Stations used: NJI2 (PID AJ3348),NJMT (PID DH3768), and LAMT (PID AJ4872)
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Surveyor's Name: Robert E. Vargo License Number: GS43261
Firm Name: Vargo Associates Certificate Authorization #: 24GA28021200
Mailing Address: 2771 Delsea Drive
City/Town: Franklinville State: NJ Zip Code: 08322
Phone Number: 856-694-1716 Ext.: 110 Fax: 856-694-3102

Appendix E
Soil Boring Logs and Piezometer Construction Diagrams

Section 5

Well Abandonment Form – PZ-15

Service ID: 372092

This document has not yet been reviewed and approved or denied by the NJ DEP. Deficiencies in submittal information or actual construction may result in denial.

WELL DECOMMISSIONING SUBMITTAL PDF

PROPERTY OWNER: Town of Kearny Town of Kearny

Organization: Town of Kearny

Address: 402 Kearny Ave, Kearny (Hudson), New Jersey 07032

WELL LOCATION: Diamond Head Superfund Site

Well Location Description: 650' S of Harrison ave, 250' W of property line

Address: 1401 HARRISON AVE.

County: Hudson Municipality: Kearny Town Lot: 15 Block: 285

Easting(X): 594312 Northing(Y): 697730 Coordinate System: NJ State Plane (NAD83) - USFEET

Method: GPS Point of Reference: Well

GPS Manufacturer: Surveyor Name:

GPS Model: Surveyor License #:

Accuracy: 3 Accuracy units: Feet

WELL USE: Piezometer **DATE WELL**

Other Use(s): **DECOMMISSIONED:** 01/16/2014

Reason for Decommissioning: No longer in use

Was a New Well Drilled? No New Well Permit Number:

WELL DECOMMISSIONING INFORMATION

Permit Number: 2600068098

Local ID: PZ-15 Drilling Company: ENVIRONMENTAL FIELD SERVICE

Finished Well Depth (ft.): 15 Address: 2 Knoll Ln, Marlton (Burlington), New Jersey 08053

Formation Type: Unconsolidated Driller Name and Lic.: Thomas Wysocki, 0024439

Well Search Completed? No

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating/Screen Slot # (lbs/sch no.)
Borehole(s)				N/A	N/A
Casing(s)	0	2	2	PVC	40
Screen(s)	2	15	2	pvc	.02

MATERIALS USED

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	15	2	0	8		3
Gravel Pack							

PENDING APPROVAL

Grouting Method: Pressure method (Tremie Pipe)

ADDITIONAL INFORMATION

Obstructions: No

Authorization Official:

Obstruction Type:

Authorization Number:

Alternative Decomm. Method? No

Authorization Date:

Method Used:

ATTACHMENTS:

PENDING APPROVAL

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-03 PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
2600068098

WELL DECOMMISSIONING REPORT

PROPERTY OWNER: TOWN OF KEARNY TOWN OF KEARNY

Company/Organization: Town of Kearny

Address: 402 Kearny Ave Kearny, New Jersey 07032

WELL LOCATION: Diamond Head Superfund Site

Address: 1401 HARRISON AVE.

County: Hudson Municipality: Kearny Town Lot: 15 Block: 285

Easting (X): 594312 Northing (Y): 697730
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL DECOMMISSIONED: January 16, 2014

WELL USE: PIEZOMETER

Other Use(s):

Local ID: PZ-15

Reason for Decommissioning: No longer in use

Finished Well Depth (ft.): 15

Was a New Well Drilled? N

Formation Type: Unconsolidated

New Well Permit Number:

WELL DECOMMISSIONING INFORMATION

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole					
Casing	0	2	2	PVC	40
Screen	2	15	2	pvc	.02

MATERIALS USED

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	15	2	0	8		3
Sand/Gravel							

ADDITIONAL INFORMATION

Obstructions: No

Obstruction Type:

Alternative Decomm. Method? No

Authorization Official:

Authorization Number:

Authorization Date:

Method Used

ATTACHMENTS:

Sealing Driller: Thomas Wysocki
MONITORING
LICENSE # 0024439

Company: ENVIRONMENTAL FIELD SERVICE
2 KNOLL LN
Marlton (Burlington), NJ 08053

SERIAL # 017518

DWR 133M (10/96)

Mail to

NJDEP
Bureau Water Allocation
CN 426
Trenton, NJ 08625-0426

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

MONITORING WELL PERMIT

VALID ONLY AFTER APPROVAL BY THE D.E.P.

Permit No. 26WW68098 26WW68099 26WW68100

COORD #: 26.13.7 23

Owner USEPA
Address 290 BROADWAY 19TH FLOOR
NEW YORK, N.Y. 10007
Name of Facility DIAMOND HEAD SUPER FUND SITE
Address 1401 HARRISON AVE.
KEARNY, N.J. 07032

Driller NICHOLAS C. POST
Address 1239 CONCORD DR.
BRICK, N.J. 08724

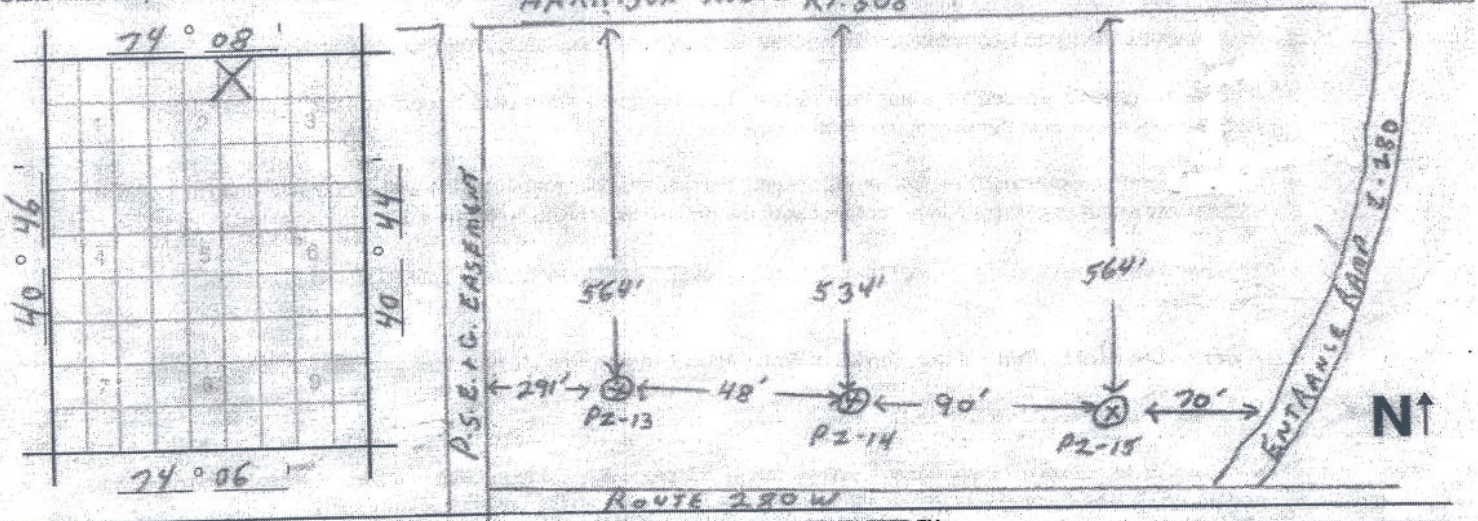
Diameter of Well(s) 2 Inches	Proposed Depth of Well(s) 20 Feet
# of Wells Applied for (max. 10) 3	Will pumping equipment be installed? YES ☐ NO ☒
Type of Well (see reverse) MONITORING	If Yes, give pump capacity cumulative GPM

LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
14 + 3	285	KEARNY	HUDSON

Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.

State Atlas Map No. 26



FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT. PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- ☐ Spill Site
- ☐ ISRA Site
- ☒ CERCLA (Superfund) Site
- ☐ RCRA Site
- ☐ Underground Storage Tank Site
- ☐ Operational Ground Water Permit Site
- ☐ Pretreatment and Residuals Site
- ☐ Water and Hazardous Waste Enforcement Case
- ☐ Water Supply Aquifer Test Observation Well
- ☐ Other (explain)

CASE I.D. Number NJD092226000

This Space for Approval Stamp

WELL PERMIT APPROVED
N.J.D.E.P.
JUN 3 2003
BUREAU OF WATER ALLOCATION

FOR D.E.P. USE
- ☐ Issuance of this permit is subject to the conditions attached. (see next page)
- ☐ For monitoring purposes only
- ☐

☒ The well(s) may not be completed with more than 25 feet of total screen or uncased borehole.

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS AND REGULATIONS PERTAINING TO THIS PERMIT.

In compliance with N.J.S.A. 58:4A-14, application is made for a permit to drill a well as described above.

Date 6/2/03 Signature of Driller Nicholas C. Post Registration No. JD-1231

Signature of Owner Andrew B. [signature] / CH2M HILL ON Behalf of USEPA

COPIES: Water Allocation — White Health Dept. — Yellow Owner — Blue Driller — White

1/16/14

594197
697653

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit Number
2600068098

Atlas Sheet Coordinates
2613723

OWNER IDENTIFICATION U.S.E.P.A.

Address 290 BROADWAY 19TH FLOOR

City NEW YORK State New York Zip Code 10007

WELL LOCATION - If not the same as owner please give address Owner's Well No. PZ-15

County Hudson Municipality Kearny Town Lot No. 14 & 3 Block No. 285

Address 1401 HARRISON AVE.

WELL USE Monitoring

DATE WELL STARTED 6-10-03

DATE WELL COMPLETED 6-10-03

WELL CONSTRUCTION

Total Depth Drilled 15 ft.

Finished Well Depth 15 ft.

Borehole Diameter:

Top 6 in.

Bottom 6 in.

Well was finished: ☐ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface .3 ft.

Steel protective casing installed? ☐ Yes ☐ No

Static Water Level after drilling 1 ft.

Water Level was Measured Using TAPE

Well was developed for 1 3/4 hours

at 3 gpm

Method of development SUBMERSIBLE

Pump Capacity 5 gpm

Pump Type WHALE

Drilling Fluid WATER Type of Rig ROTO SONIC

Health and Safety Plan Submitted? ☒ Yes ☐ No

Level of Protection used on site (circle one) None D C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	2	2	P.V.C.	SCH. 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used)	2	15	2	P.V.C.	SCH 40 SLOT 0.020
Blank Casings (No. Used)					
Tail Piece	NONE				
Gravel Pack	1	15	6	GLOBAL #5	350 LBS.
Grout	0	1	6	Neat Cement Bentonite	10 lbs 1/2 lbs

Grouting Method PRESSURE PUMP

Drilling Method ROTO SONIC

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-2 BACKFILL
2-4 BROWN SANDY CLAY
4-10 BROWN + BLACK SANDY CLAY
10-14 BLACKISH SILTY SAND
14-15 ORGANIC PEAT

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company POST NICHOLAS

Well Driller (Print) NICHOLAS C. POST

Driller's Signature Nicholas C. Post

Registration No. JA-1231 Date 6/28/03

ORIGINAL: DEP *COPIES: DRILLER* *OWNER* *HEALTH DEPARTMENT*

Appendix F
Groundwater Sampling Field Data Sheets

Contents

1. Groundwater Sampling Field Data Sheets

Appendix F
Groundwater Sampling Field Data Sheets

Section 1
Groundwater Sampling Field Data Sheets

Diamond Head Oil Superfund Site
Low-Flow Groundwater Sampling: Field Data Sheet

Well Number: ~~MW-15 S~~ MW-01S		Site: Diamond Head Oil Superfund Site / Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)	
Field Crew: MM		Date: 1/22/14	Project #: 480159.02.02.0
Well Depth (ft.): 20.00	Purge Methodology:	Diameter / Gal. Per Foot	Diameter / Gal. Per Foot
DTW (ft.): 6.04	Grundfos 2"	2" .163	5" 1.020
Water Column (ft.): 13.96	Submersible Pump	3" .367	6" 1.469
Well Diameter (in.): 4"		4" .653	8" 2.611
Gal. per ft.: 0.653	Water Quality Meter:		
Well Volume (gal.): 9.12	Horiba U-22 w/ flow cell		
Depth of Screen (ft.):	Horiba U-52 w/ flow cell		

Field Parameters

	Time	DTW (tic)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/l)	Turbidity (NTU)	Color/Odor
	Stabilization	< 0.3'	Purge at 200-500		+/- 0.1		+/- 3 %	+/- 10 mV	+/- 10%	+/- 10%	
Initial	1250	6.50	400	—	5.70	10.38	7.95	109	2.85	65.8	white-cloudy / no odor
1 VOL.	1255	6.70	300	0.6	5.69	11.08	8.22	96	2.33	62.1	" "
2 VOL.	1300	6.74	300	1.1	5.69	11.10	8.24	88	2.02	60.15	" "
3 VOL.	1305	6.80	300	1.6	5.70	11.08	8.24	74	1.75	58.25	" "
4 VOL.	1310	6.85	300	2.1	5.70	11.02	8.25	63	1.57	56.77	" "
5 VOL.	1315	6.88	300	2.6	5.70	11.13	8.23	40	1.46	55.08	" "
6 VOL.	1320	6.85	300	3.1	5.69	11.15	8.23	26	1.41	53.25	" "
7 VOL.	1325	6.85	300	3.6	5.69	11.16	8.23	7	1.30	52.91	" "
8 VOL.	1330	6.85	300	4.1	5.69	11.20	8.23	1	1.22	50.01	" "
9 VOL.	1335	6.85	300	4.6	5.69	11.19	8.24	-15	1.19	48.63	" "
10 VOL.	1340	6.85	300	5.2	5.69	11.23	8.24	-24	1.16	42.96	" "
Post-Purge	1345	6.85	300	5.7	5.68	11.26	8.23	-36	1.10	40.65	" "

Remarks: Pump Intake Depth: 15.0'

Control Box Setting (Hz): Development: 60 Hz (start) →

Sampling: (Sample at 100-250 ml/min)

PID - 0.0

Ferrous Iron > 3.30 mg/L - over range

SAMPLING

Depth to Water Before Sampling: 6.85

Sample Methodology: Low flow

Sample Name: ~~MW01S~~ MW-01S-4 / BB314 QC Sample: NONE

Sample Date/Time: 1/22/14

Sampler / Signature: Michael Murphy / [signature]

Filtered Metals Collected: Y / N Filter Size: 0.45 micron

Sample Observations: clear / no odor - slight green tint - Foamy

Parameters: VOC, SVOC, Metals, Diss Metals, Cyanide, MNA parameters

Diamond Head Oil Superfund Site
Low-Flow Groundwater Sampling: Field Data Sheet

Well Number:	MW-1S	Site:	Diamond Head Oil Superfund Site / Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)
Field Crew:	MM	Date:	1/22/14 Project #:

Well Depth (ft.):	See	Purge Methodology:	Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
DTW (ft.):	page	Grundfos 2"	2"	.163	5"	1.020
Water Column (ft.):	1	Submersible Pump	3"	.367	6"	1.469
Well Diameter (in.):			4"	See	8"	2.611
Gal. per ft.:		Water Quality Meter:		page 1		
Well Volume (gal.):		Horiba U-22 w/ flow cell				
Depth of Screen (ft.):		Horiba U-52 w/ flow cell				

Field Parameters

	Time	DTW (tic)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/l)	Turbidity (NTU)	Color/Odor
	Stabilization	< 0.3'	Purge at 200-500		+/- 0.1		+/- 3 %	+/- 10 mV	+/- 10%	+/- 10%	
Initial	1350	6.85	300	6.2	5.68	11.36	8.22	-43	1.08	39.05	" "
1 VOL.	1355	6.85	300	6.7	5.68	11.40	8.22	-50	1.08	36.45	" "
2 VOL.	1400	6.85	300	7.2	5.67	11.56	8.23	-60	1.06	34.42	clear / no odor
3 VOL.	1405	6.85	300	7.7	5.67	11.45	8.28	-65	1.03	33.16	clear / no odor
4 VOL.	1410	6.85	300	8.2	5.67	11.30	8.33	-72	1.00	32.51	clear / no odor
5 VOL.	1415	6.85	300	8.7	5.67	11.38	8.34	-75	0.98	25.45	" "
6 VOL.	1420	6.85	300	9.2	5.66	11.44	8.35	-79	0.97	21.52	" "
7 VOL.	1425	6.85	300	9.7	5.66	11.40	8.36	-80	0.97	21.01	" "
8 VOL.	1430	6.85	300	10.2	5.65	11.38	8.39	-85	0.96	20.46	" "
9 VOL.	1435	6.85	300	-	collect	Sample					
10 VOL.											
Post-Purge	1540	6.90	300	—	5.65	10.45	8.36	-50	2.45	11.25	" "

Remarks: Pump Intake Depth: Control Box Setting (Hz): Development: Sampling: (Sample at 100-250 ml/min)

See page 1

SAMPLING

Depth to Water Before Sampling:

Sample Methodology:

Sample Name: QC Sample:

Sample Date/Time:

Sampler / Signature:

Filtered Metals Collected: Y / N Filter Size:

Sample Observations:

Parameters:

Diamond Head Oil Superfund Site
Low-Flow Groundwater Sampling: Field Data Sheet

Well Number: MW-25	Site: Diamond Head Oil Superfund Site / Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)
Field Crew: MM	Date: 2/4/14 Project #: 480159

Well Depth (ft.): 13.80	Purge Methodology:	Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
DTW (ft.): 4.19	Grundfos 2"	2"	.163	5"	1.020
Water Column (ft.): 9.61	Submersible Pump	3"	.367	6"	1.469
Well Diameter (in.): 4"		4"	.653	8"	2.611
Gal. per ft.: 0.653	Water Quality Meter:				
Well Volume (gal.): 6.28	Horiba U-22 w/ flow cell				
Depth of Screen (ft.):	Horiba U-52 w/ flow cell				

Field Parameters

	Time	DTW (tic)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/l)	Turbidity (NTU)	Color/Odor
	Stabilization	< 0.3'	Purge at 200-500		+/- 0.1		+/- 3 %	+/- 10 mV	+/- 10%	+/- 10%	
Initial	1015	4.55	250	—	6.63	6.81	0.971	243	2.30	3.34	clear / no odor
1 VOL.	1020	4.62	250	0.3	6.70	6.66	0.971	235	2.28	3.50	" "
2 VOL.	1025	4.70	250	0.6	6.83	6.63	0.967	219	2.15	2.95	" "
3 VOL.	1030	4.79	250	0.9	6.90	6.76	0.958	205	1.91	2.70	" "
4 VOL.	1035	4.83	250	1.2	6.95	6.45	0.959	200	1.75	2.25	
5 VOL.	1040	4.85	250	1.5	7.01	6.13	0.962	190	2.17	2.50	
6 VOL.	1045	4.87	250	1.8	7.04	6.00	0.961	184	2.08	2.35	
7 VOL.	1050	4.88	250	2.1	7.05	6.00	0.958	180	1.91	2.05	
8 VOL.	1055	4.90	250	2.4	7.08	6.22	0.954	173	1.91	2.11	
9 VOL.	1100	4.93	250	2.7	7.10	6.25	0.953	172	1.90	1.98	" "
10 VOL.	1105	4.93	250	- collect		sample					
Post-Purge	1515	5.70	250	—	7.31	10.95	0.748	101	0.31	2.15	" "

Remarks: Pump Intake Depth: 12' btl

Control Box Setting (Hz): ~50 Hz

Development:

Sampling: (Sample at 100-250 ml/min) ~50 Hz

Ferrous Iron 0.02 mg/L

PID 0.0 ppm

SAMPLING

Depth to Water Before Sampling: 4.93' btic

Sample Methodology: Low Flow Sample Procedure

Sample Name: MW-25-4 QC Sample: NONE

Sample Date/Time: 2/4/14 1105

Sampler / Signature: Michael Murphy / [signature]

Filtered Metals Collected: Y / N Filter Size: 0.45 micron

Sample Observations: Clear - no odor

Parameters: TAL Full, TAL Full, MNA parameters, TPO, GRO, DRO

CH2MHILL

PROJECT NUMBER	WELL NUMBER MW-35
480159	SHEET 1 OF

LOW FLOW SAMPLING LOG

Well Number: MW-35
Site: Diamond Head Oil Superfund Site
Field Crew: MM
Date:

Well Depth (ft): 13.98
DTW (ft): 4.91
Water Column (ft): 9.07
Well Diameter (in): 4
Gal. Per ft: 0.653
Well volume (gal): 5.92
Depth of Screen (ft): —

Purge Methodology: Low flow w/ 2" Grundfos pump + Teflon lined tubing

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. (Surface) (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1341	4.51	250	—	6.52	8.14	1.71	39	0.77	13.21	clear - no odor
1 VOL.	1346	4.53	250	0.3	6.52	8.13	1.73	3	0.53	13.30	" "
2 VOL.	1351	4.54	250	0.6	6.57	8.54	2.00	-26	0.48	13.20	clear - slight petro-like odo
3 VOL.	1356	4.58	250	0.9	6.56	8.78	1.90	-39	0.40	12.12	" "
4 VOL.	1401	4.59	250	1.2	6.56	8.87	1.92	-53	0.37	12.05	" "
5 VOL.	1406	4.60	250	1.5	6.57	8.94	1.94	-64	0.35	11.85	" "
6 VOL.	1411	4.63	250	1.8	6.58	9.04	1.98	-72	0.33	11.62	" "
7 VOL.	1416	4.64	250	2.1	6.58	9.00	2.00	-78	0.34	11.05	" "
8 VOL.	1421	4.68	250	2.4	6.60	9.04	1.98	-88	0.27	10.58	" "
9 VOL.	1426	4.69	250	2.7	6.62	9.00	2.01	-94	0.34	10.24	" "
10 VOL.	1431	4.80	250	3.0	6.64	9.08	2.00	-102	0.33	10.01	" "
11 VOL.	1436	4.84	250	3.3	6.66	8.98	2.02	-110	0.34	9.48	" "
12 VOL.	1441	4.89	250	3.6	6.67	8.96	2.03	-118	0.32	9.35	" "
13 VOL.	1446	4.90	250	3.9	6.70	9.04	2.04	-131	0.36	9.20	" "
14 VOL.	1451	4.96	250	4.2	6.72	9.16	2.04	-145	0.31	9.05	" "
15 VOL.	1456	5.03	250	4.5	6.73	9.14	2.05	-164	0.29	8.98	" "
16 VOL.	1501	5.08	250	4.8	6.75	9.22	2.05	-180	0.33	8.75	" "
17 VOL.	1506	5.13	250	5.1	6.76	9.23	2.05	-201	0.33	8.60	" "
18 VOL.	1511	5.52	250	5.4	6.78	9.30	2.04	-219	.28	7.90	" "
19 VOL.	1516	5.61	250	5.7	6.80	9.24	2.03	-234	.29	8.09	" "
20 VOL.	1521	5.63	250	6.0	6.82	9.19	2.04	-244	.34	7.91	

Remarks: Pump intake depth ~11.5' btc

Depth to product = 4.51' BTIC

Ferrous Iron 2.24 mg/L

Sampling

Depth to Water Before Sampling: 5.69' btc
Depth sample was acquired: ~11.5
Sample Methodology: Low flow w/ 2" Grundfos pump + Teflon lined tubing
Sample Date/Time: 2/7/14 1541
Signed Sampler: Michael Murphy
Filtered Metals Collected: (Y) N
Filter Size: 0.45
Sample Observations: clear - petro-like odor - slight grey tint
Parameters: TCL Full Suite / TAL + MNA

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Diamond Head Oil Superfund Site
Low-Flow Groundwater Sampling: Field Data Sheet

Well Number: MW-03	Site: Diamond Head Oil Superfund Site / Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)
Field Crew:	Date: 2/7/17 Project #:

Well Depth (ft.): See
DTW (ft.): page
Water Column (ft.): 1
Well Diameter (in.):
Gal. per ft.:
Well Volume (gal.):
Depth of Screen (ft.):

Purge Methodology:
Grundfos 2"
Submersible Pump

Water Quality Meter:
Horiba U-22 w/ flow cell
Horiba U-52 w/ flow cell

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	.163	5"	1.020
3"	.367	6"	1.469
4"	.653	8"	2.611

Field Parameters

	Time	DTW (tic)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/l)	Turbidity (NTU)	Color/Odor
	Stabilization	< 0.3'	Purge at 200-500		+/- 0.1		+/- 3 %	+/- 10 mV	+/- 10%	+/- 10%	
Initial	1526	5.65	225	6.3	6.82	9.31	2.04	-249	.22	7.12	petro like
1 VOL.	1531	5.67	225	6.6	6.84	9.32	2.02	-254	0.28	7.10	" "
2 VOL.	1536	5.69	225	6.9	6.84	9.20	2.03	-257	0.29	7.08	" "
3 VOL.	1541	5.69	225	— collect		sample					
4 VOL.											
5 VOL.											
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
Post Purge	1650	6.01	225	—	6.75	6.50	2.04	-240	0.40	8.90	" "

Remarks: Pump Intake Depth: Control Box Setting (Hz): Development: Sampling: (Sample at 100-250 ml/min)

See page 1

SAMPLING

Depth to Water Before Sampling:
Sample Methodology:
Sample Name: QC Sample:
Sample Date/Time:
Sampler / Signature:
Filtered Metals Collected: Y / N Filter Size:
Sample Observations:
Parameters:

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PROJECT NUMBER	WELL NUMBER
430159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-45
Field Crew: MM
Site: Diamond Head
Date: 1/20/14

Well Depth (ft): 19.70
DTW (ft): 12.78
Water Column (ft): 6.92
Well Diameter (in): 4"
Gal. Per ft: 0.653
Well volume (gal): 4.52
Depth of Screen (ft): —

Purge Methodology: Low Flow Sample Procedure Grundfos Pump w/ Teflon Tubing Horiba U-52 Lamotte 2020we

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1435	*NR	200	—	6.21	9.76	3.92	25	1.42	13.3	clear - trace solids - no odor
1 VOL.	1440	*NR	250	0.4	6.26	11.20	3.90	11	1.56	11.51	clear - no odor
2 VOL.	1445	*NR	250	0.8	6.26	10.89	3.92	11	1.54	9.50	" "
3 VOL.	1450	~~*NR~~ 13.75	~~300~~ 120	1.0	6.25	11.29	3.95	10	2.02	9.58	" "
4 VOL.	1455	*NR	~~300~~ 120	1.2	6.25	10.70	3.95	8	1.69	9.76	" "
5 VOL.	1500	13.95	120	1.4	6.25	10.53	3.96	8	1.45	8.87	" "
6 VOL.	1505	*NR	120	1.6	6.26	10.56	3.96	6	1.32	9.01	" "
7 VOL.	1510	14.15	120	1.8	6.26	10.01	3.96	7	1.35	9.25	" "
8 VOL.	1515	14.15	120	— collect sample							
9 VOL.				— pump rate slows to ~ 50 ml/min							
10 VOL.				during sampling							
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.	— No Post Reading due to poor well production										

Remarks: Depth to pump Intake 17' bgs

PID 0.0 ppm

Control Box

Ferrous Iron - >3.30 mg/L

Sampling

Depth to Water Before Sampling: ~14.15 bhc

Depth sample was acquired:

Sample Methodology: Low Flow Sample Procedure

Sample Date/Time: 1/20/14

Signed Sampler: Michael Murphy / MM

Filtered Metals Collected: (Y) / N Filter Size: 0.45 micron

Sample Observations: clear, no odors

Parameters: Full TAL, CULL TCL, MNA parameters

* NR - water level / interface probe not operational while pump is on - possibly resulting from some electrical interference
- pump is periodically disconnected from power source to get a DTW reading
- Flow through cell is closed to prevent backflow !

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PROJECT NUMBER	WELL NUMBER
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-5S
Field Crew: mm
Well Depth (ft): 22.45
DTW (ft): 14.11
Water Column (ft): 8.34
Well Diameter (in): 4"
Gal. Per ft: 0.653
Well volume (gal): 5.44
Depth of Screen (ft): —

Purge Methodology: Low Flow Sample Procedure
Grundfos Pump / w teflon tubing
Horiba U-52
Lanotte 2020we

Site: Diamond Head, Kearny, NJ
Date: 1/28/14

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1100	14.25	200	—	5.92	9.74	3.45	119	2.54	44.4	cloudy - no odor
1 VOL.	1105	* NR	150	0.4	6.07	10.73	3.43	72	2.43	40.5	" "
2 VOL.	1110	* NR	100	0.6	6.09	11.01	3.43	62	2.69	30.4	clear - no odor
3 VOL.	1115	* NR	100	0.8	6.11	11.49	3.42	55	2.52	31.5	" "
4 VOL.	1120	* NR	80	1.0	6.11	12.36	3.42	51	1.86	28.3	" "
5 VOL.	1125	* NR	80	1.2	6.12	12.55	3.40	45	1.51	27.4	" "
6 VOL.	1130	* NR	100	1.4	6.12	12.76	3.38	39	0.47	29.3	" "
7 VOL.	1135	* NR	100	1.6	6.12	12.85	3.37	35	0.44	28.4	" "
8 VOL.	1140	- pump stops working - trouble shoot control box									
9 VOL.	1153	- resume pumping									
10 VOL.	1155	* NR	150	2.0	6.17	13.84	3.40	28	0.39	29.6	" "
11 VOL.	1200	* NR	100	2.2	6.18	13.88	3.40	26	0.34	30.9	" "
12 VOL.	1205	* NR	75	2.3	6.20	13.99	3.38	20	0.32	28.5	" "
13 VOL.	1210	* NR	75	2.4	6.21	13.84	3.41	19	0.31	28.6	" "
14 VOL.	1215	* NR	50	2.5	6.22	13.53	3.40	18	0.30	28.3	" "
15 VOL.	1220	* NR	50	- collect sample							
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.	NO post readings taken due to insufficient volume										

Remarks: Depth to pump intake 19.5' btic

Control box ~ 90 - 150 Hz

Ferrous Iron, Not collected due to volume

Sampling

Depth to Water Before Sampling: * NR
Depth sample was acquired:
Sample Methodology: Low Flow Sample procedure
Sample Date/Time: 1/28/14 1220
Signed Sampler: Michael Murphy / M. M
Filtered Metals Collected: (Y) / N
Filter Size: 0.45 micron
Sample Observations: clear / no odor
Parameters: TAL Full / TCL Full / Sulfides

* NR - water level meter not working / malfunction during pumping
well does not appear to produce water very well, water reaches pump intake during sampling of SVOCs, allow to recharge and resume sampling once well has recharged, only able to collect

Diamond Head Oil Superfund Site
Low-Flow Groundwate Sampling: Field Data Sheet

Well Number: MW-6S	Site: Diamond Head Oil Superfund Site / Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)
Field Crew: D. Reamer	Date: 1/22/2014 Project #: 480159

Well Depth (ft.): 13.23
DTW (ft.): 7.13
Water Column (ft.): 6.10
Well Diameter (in.): 4
Gal. per ft.: 0.653
Well Volume (gal.): 3.98
Depth of Screen (ft.): –

Purge Methodology:
Grundfos 2"
Submersible Pump

Water Quality Meter:
Horiba U-22 w/ flow cell
Horiba U-52 w/ flow cell

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	.163	5"	1.020
3"	.367	6"	1.469
4"	.653	8"	2.611

Field Parameters

	Time	DTW (tic)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/l)	Turbidity (NTU)	Color/Odor
	Stabilization	< 0.3'	Purge at 200-500		+/- 0.1		+/- 3 %	+/- 10 mV	+/- 10%	+/- 10%	
Initial	1240	NA'	250	0.5	~~9.27~~ 5.76 DR	9.27	13.4	-96	0.65	16.4	clear / no odor
1 VOL.	1247	NA'	250	1.0	5.79	9.53	13.4	-106	0.51	13.1	" / slight organic odor
2 VOL.	1252	NA'	250	1.3	5.80	9.67	13.2	-106	0.46	14.5	" / "
3 VOL.	1258	NA'	250	1.6	5.82	9.36	12.8	-103	0.48	11.2	" / "
4 VOL.	1303	NA'	250	2.0	5.83	9.11	12.2	-95	0.37	9.72	" / "
5 VOL.	1308	NA'	250	2.4	5.84	8.78	11.8	-85	0.52	6.70	" / no odor
6 VOL.	1318	NA'	200	3.0	5.88	8.11	11.8	-72	0.99	5.65	" / no odor
7 VOL.	1323	NA'	200	3.3	5.87	8.09	11.5	-67	0.98	6.05	" / no odor
8 VOL.	1328	NA'	200	3.6	5.87	7.86	11.4	-57	0.92	6.69	" / no odor
9 VOL.	1333	NA'	200	3.9	5.86	7.92	11.5	-52	1.06	6.28	" / no odor
10 VOL.	1338	NA'	200	4.3	5.86	7.89	11.7	-49	1.12	6.42	" / no odor
Post-Purge	1534	NA'	200	5.0 + sample	5.75	8.51	11.8	-44	2.55	10.58	" / "

Remarks: Pump Intake Depth: ~10' BTIC Control Box Setting (Hz): ~~Development:~~ 53.30 Sampling: (Sample at 100-250 ml/min) 200ml/min

→ NA' - Two water level meters not working, possibly due to cold (~11°F) temperature. water level appears to be steady around 9.1' BTIC based on feel of tape.
→ Between 1308 + 1318 - Flushed bubbles from tubing + Horiba U-52

Ferrous Iron
> 3.30 mg/L - over range

SAMPLING

Depth to Water Before Sampling: NA'
Sample Methodology: low flow w/ 2" Grundfos pump + teflon tubing
Sample Name: MW-06S-4 / BB3Y5 QC Sample: None
Sample Date/Time: 1/22/2014 1350
Sampler / Signature: David Reamer / [signature]
Filtered Metals Collected: Y N Filter Size: 0.45
Sample Observations: Clear / no odor
Parameters: TCL / TAC Full / MNA parameters

Diamond Head Oil Superfund Site
Low-Flow Groundwater Sampling: Field Data Sheet

Well Number: MW-65	Site: Diamond Head Oil Superfund Site / Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)
Field Crew:	Date: 1/22/2014 Project #: 480159

Well Depth (ft.):	Purge Methodology:	Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
DTW (ft.):	Grundfos 2"	2"	.163	5"	1.020
Water Column (ft.):	Submersible Pump	3"	.367	6"	1.469
Well Diameter (in.):		4"	.653	8"	2.611
Gal. per ft.:	Water Quality Meter:				
Well Volume (gal.):	Horiba U-22 w/ flow cell				
Depth of Screen (ft.):	Horiba U-52 w/ flow cell				

SEE Page 1

Field Parameters

	Time	DTW (tic)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/l)	Turbidity (NTU)	Color/Odor
	Stabilization	< 0.3'	Purge at 200-500		+/- 0.1		+/- 3 %	+/- 10 mV	+/- 10%	+/- 10%	
Initial	1343	NA'	200	4.7	5.86	7.90	11.5	-47	1.14	6.39	Clear/none
1 VOL.	1348	NA'	200	5.1	5.85	4.02	11.5	-46	1.18	6.51	"/"
2 VOL.											
3 VOL.											
4 VOL.											
5 VOL.											
6 VOL.											
7 VOL.											
8 VOL.											
9 VOL.											
10 VOL.											
Post-Purge	See page 1										

Remarks: Pump Intake Depth: Control Box Setting (Hz): Development: Sampling: (Sample at 100-250 ml/min)

SEE Page 1

SAMPLING

Depth to Water Before Sampling:

Sample Methodology:

Sample Name: QC Sample:

Sample Date/Time: SEE Page 1

Sampler / Signature:

Filtered Metals Collected: Y / N Filter Size:

Sample Observations:

Parameters:

CH2MHILL

PROJECT NUMBER	WELL NUMBER MW-7S
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-7S
Field Crew: David Reamer
Well Depth (ft): 15.16
DTW (ft): 5.04
Water Column (ft): 10.12
Well Diameter (in): 4
Gal. Per ft: 0.653
Well volume (gal): 6.61
Depth of Screen (ft): –

Purge Methodology: Low flow w/ 2" Grundfos Pump + Teflon lined tubing

Site: Diamond Head Oil Superfund Site
Date: 1/31/14

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Con. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1010	6.12	400	1.0	7.14	6.79	0.813	170	12.22	9.61	Clear/no odor
1 VOL.	1015	6.45	250	1.25	7.16	5.95	0.831	158	4.90	8.67	"/"
2 VOL.	1020	6.68	300	1.75	7.26	6.84	0.825	131	0.96	5.55	"/"
3 VOL.	1030	7.08	400	2.5	7.26	6.32	0.831	97	0.79	7.01	"/"
4 VOL.	1035	7.61	500	3.2	7.34	6.74	0.834	47	0.65	7.12	"/"
5 VOL.	1040	7.83	200	3.6	7.43	6.29	0.839	10	0.62	6.42	"/"
6 VOL.	1045	7.90	125	3.9	7.42	5.58	0.850	0	0.60	4.83	"/"
7 VOL.	– stopped pumping due to low recovery									~~4.89~~	1102
Resume pumping 8 VOL.	1055	8.04	125	4.0	7.38	6.99	0.810	-9	0.66	4.89	"/"
9 VOL.	1100	8.09	125	4.1	7.43	6.21	0.844	-14	0.75	4.75	"/"
10 VOL.	1102 – stopped pump due to low recovery. Unable to sustain										
11 VOL.	flow without significant drawdown. Consulted with										
12 VOL.	Andy Judd + FTL. Pumping to stop and allow for										
13 VOL.	recovery of the water level										
14 VOL.	1400 – Recovery within 80% of original water level.										
15 VOL.	Begin collecting sample.										
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:
Ferrous Iron = 0.00 mg/L

Sampling

Depth to Water Before Sampling: 5.43
Depth sample was acquired: ~10' BTIC
Sample Methodology: Low flow w/ 2" Grundfos pump + Teflon lined tubing
Sample Date/Time: 1/31/14
Signed Sampler: [signature]
Filtered Metals Collected: Y / N
Filter Size: 0.45
Sample Observations: clear / no odor
Parameters: TCL Full suite / TAL metals / MNA

CH2MHILL

PROJECT NUMBER 480159

WELL NUMBER MW-09S

SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-09S

Site: Diamond Head Oil Superfund Site

Field Crew: David Reamer

Date: 2-4-2014

Well Depth (ft): 16.21

DTW (ft): 8.07

Water Column (ft): 8.14

Well Diameter (in): 4

Gal. Per ft: 0.653

Well volume (gal): 5.3

Depth of Screen (ft): –

Purge Methodology: Low flow w/ 2" Grundfos pump and Teflon tubing

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1008	8.32	350	0.25	6.19	8.16	1.96	119	0.72	25.9	clear / no odor
1 VOL.	1023	8.72	350	0.75	6.61	8.99	1.92	56	0.61	20.9	clear / no odor
2 VOL.	1028	8.93	250	1.25	6.69	9.22	1.97	42	0.55	18.8	" / "
3 VOL.	1033	9.07	~140	1.4	6.75	8.55	1.98	29	0.52	13.1	" / "
4 VOL.	1038	9.09	~40	1.5	6.78	8.64	1.97	21	0.55	12.8	" / "
5 VOL.	1043	9.11	~40	1.5	6.80	8.63	1.54	17	0.63	11.6	" / "
6 VOL.	1048	9.11	<40	1.75	6.83	8.29	1.95	15	0.61	11.8	" / "
7 VOL.	– Pumping stopped at 1051. Recovery unable to keep up										
8 VOL.	with a rate of > 40ml/min. Allowing to recover and then will collect sample										
9 VOL.	1232	8.72									
10 VOL.	1545	8.32	– Collect sample								
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:

Ferrous iron = over range (>3.30 mg/L)

Water level meter = Horiba U-52 + Camotte 2020we

Sampling

Depth to Water Before Sampling: 8.32

Depth sample was acquired: 13' BTIC

Sample Methodology: Low flow w/ 2" Grundfos pump & teflon tubing

Sample Date/Time: 2-4-14 @ 1545

Signed Sampler: [signature]

Filtered Metals Collected: (Y) / N

Filter Size: 0.45

Sample Observations: clear / no odor

Parameters: TCL + TAL + MNA

CH2MHILL

PROJECT NUMBER	WELL NUMBER MW-10S
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-10S
Site: Diamond Head Oil Superfund Site
Field Crew: D. Reamer
Date: 1-23-14

Well Depth (ft): 12.12
DTW (ft): 5.51
Water Column (ft): 6.61
Well Diameter (in): 4
Gal. Per ft: 0.653
Well volume (gal): 4.32
Depth of Screen (ft): -

Purge Methodology: Low flow w/ 2" Grundfos pump and Teflon Tubing

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1058	5.15	300	0.5	7.01	7.51	10.2	-39	0.76	12.34	slight yellow/no odor
1 VOL.	1103	5.18	300	1.7	7.06	7.90	10.0	-61	0.59	10.48	"/"
2 VOL.	1108	5.18	300	2.5	7.12	6.83	9.52	-59	0.77	11.80	"/"
3 VOL.	1113	5.18	250	2.9	7.16	6.58	8.91	-48	1.15	8.99	"/"
4 VOL.	1118	5.19	500	3.3	7.27	6.59	7.31	-24	2.37	4.40	"/"
5 VOL.	1123	5.19	400	3.9	7.33	6.14	6.86	-19	2.80	3.11	"/"
6 VOL.	1128	5.19	400	4.3	7.36	6.02	6.54	-15	3.09	2.71	"/"
7 VOL.	1133	5.19	400	4.9	7.40	5.80	6.22	-11	3.30	2.83	~~"/~~ @ clear/no odor
8 VOL.	1138	5.19	400	5.3	7.42	5.74	6.15	-9	3.41	2.70	"/"
9 VOL.	1143	5.19	400	5.6	7.43	5.70	6.10	-4	3.57	2.91	"/"
Post Purge + Sample → 10 VOL.	1240	5.18	200	6.0	7.41	5.25	6.28	10	4.52	4.72	"/"
11 VOL.											
12 VOL.	Ferrous Iron = 1.14 mg/L										
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:
- Solinst Interface Probe Model 122 - SN 122005354-1
- Horiba U-52 water quality meter - SN 82N24YT8
- LaMotte 2020we Turbidity meter SN 1071 2511

Control Box Purge: 43.6 Hz
Sample: ~250 ml/min

Sampling

Depth to Water Before Sampling: 5.19
Depth sample was acquired: ~10' BTIC
Sample Methodology: low flow w/ teflon tubing
Sample Date/Time: 1/23/14 1145
Signed Sampler: David Reamer
Filtered Metals Collected: (Y) N
Filter Size: 0.45
Sample Observations: - clear/no odor
Parameters: TCL/TAL full suite + MNA

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159.	SHEET OF

LOW FLOW SAMPLING LOG

Well Number:	MW-10D	Site:	Diamond Head Superfund
Field Crew:	MM	Date:	1/23/14
Well Depth (ft):	31.25	Purge Methodology:	Low Flow Sample Procedure - Grundfos pump - Horiba U-52 Lamotte 2020 WQ
DTW (ft):	8.90		
Water Column (ft):			
Well Diameter (in):	4"		
Gal. Per ft:	0.653		
Well volume (gal):			
Depth of Screen (ft):			

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1105	NR*	300	—	6.46	10.58	2.95	-73	8.56	13.1	gray - clear - slight odor
1 VOL.	1110	NR*	300	0.5	6.51	11.21	2.94	-89	2.86	8.37	clear - no odor
2 VOL.	1115	NR*	300	1.0	6.53	11.35	2.94	-95	2.12		" "
3 VOL.	1120	NR*	300	1.5	6.54	11.51	2.94	-99	2.02	2.47	" "
4 VOL.	1125	NR*	300	2.0	6.55	11.49	2.95	-101	2.00	2.07	" "
5 VOL.	1130	NR*	300	2.5	6.55	11.57	2.95	-102	1.71	2.05	" "
6 VOL.	1135	NR*	300	3.0	6.55	11.57	2.96	-105	1.76	2.00	" "
7 VOL.	1140	NR*	300	3.5	6.55	11.56	2.96	-107	1.70	1.98	" "
8 VOL.	1145	NR*	250	- collect		sample					
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
Post 20 VOL.	1225	NR*	250	—	6.54	8.56	2.91	-89	4.44	1.75	" "

Remarks:

Pump Intake 30'

PID - 0.0ppm

NR - No Reading for water level - equipment malfunction - likely frozen due to below freezing temp

Ferrous Iron 1.88 mg/L

Sampling

Depth to Water Before Sampling:	*NR*
Depth sample was acquired:	30'
Sample Methodology:	Low Flow Sample Procedure
Sample Date/Time:	1/23/14 1145
Signed Sampler:	Michael Murphy / [signature]
Filtered Metals Collected:	(Y) / N
Filter Size:	0.45 Micron
Sample Observations:	clear - no odor
Parameters:	Full TAL / Full TCL / MNA Parameters

Diamond Head Oil Superfund Site
Low-Flow Groundwater Sampling: Field Data Sheet

Well Number: MW-11S	Site: Diamond Head Oil Superfund Site / Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)
Field Crew: MM	Date: 2/6/14 Project #: 480159

Well Depth (ft.): 15.65
DTW (ft.): 4.05
Water Column (ft.): 11.60
Well Diameter (in.): 4"
Gal. per ft.: 0.653
Well Volume (gal.): 7.58
Depth of Screen (ft.): —

Purge Methodology: Grundfos 2" Submersible Pump

Water Quality Meter: Horiba U-22 w/ flow cell; Horiba U-52 w/ flow cell

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	.163	5"	1.020
3"	.367	6"	1.469
4"	.653	8"	2.611

Field Parameters

	Time	DTW (tic)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/l)	Turbidity (NTU)	Color/Odor
	Stabilization	< 0.3'	Purge at 200-500		+/- 0.1		+/- 3 %	+/- 10 mV	+/- 10%	+/- 10%	
Initial	1055	4.30	200	—	6.05	6.06	0.782	202	9.58	16.5	clear - solids - no odor
1 VOL.	1100	4.45	200	0.3	6.38	5.46	0.786	191	8.08	9.65	" " "
2 VOL.	1105	4.53	200	0.6	6.50	5.25	0.790	185	7.86	4.12	clear - no odor
3 VOL.	1110	4.60	200	0.9	6.73	5.13	0.792	179	7.67	3.83	" "
4 VOL.	1115	4.80	200	1.2	6.83	6.41	0.779	169	7.78	3.04	" "
5 VOL.	1120	4.86	200	1.5	6.88	5.50	0.782	167	7.71	2.86	" "
6 VOL.	1125	4.91	200	1.8	6.90	5.00	0.784	161	7.62	2.45	" "
7 VOL.	1130	4.95	200	2.1	6.95	4.97	0.782	158	7.49	2.22	" "
8 VOL.	1135	4.95	200	2.4	- collect	sample +	duplicate				
9 VOL.											
10 VOL.											
Post-Purge	1505	5.10	200	—	7.11	9.52	0.749	151	2.35	1.80	" " "

Remarks: Pump Intake Depth: 14' btc

Control Box Setting (Hz): ~50 Hz

Development:

Sampling: (Sample at 100-250 ml/min) ~50 Hz

PID: 0.5 ppm

Ferrous Iron: 0.00 mg/L

SAMPLING

Depth to Water Before Sampling: 4.93
Sample Methodology: Low Flow Sample Procedure
Sample Name: MW-11S-4 QC Sample: Duplicate
Sample Date/Time: 2/6/14 1135
Sampler / Signature: Michael Murphy / M-
Filtered Metals Collected: (Y) / N Filter Size: 0.45 micron
Sample Observations: Clear - no odor
Parameters: TAL Full, TCL Full, MNA parameters, TTO, DRO/GRO

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-11D
Site: Diamond Head
Field Crew: MM
Date: 1/31/14

Well Depth (ft): 33.53
DTW (ft): 10.85
Water Column (ft):
Well Diameter (in): 4"
Gal. Per ft: 0.653
Well volume (gal):
Depth of Screen (ft):

Purge Methodology: Low Flow Sample Procedure Horiba U-52 Lamotte 2020 WQ

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1003	10.90	220	—	5.60	7.83	5.33	64	10.43	6.59	clear - no odor - brown tint
1 VOL.	1008	10.90	220	0.3	5.89	7.91	5.30	29	9.72	5.50	" "
2 VOL.	1013	10.90	220	0.6	5.98	9.17	5.35	17	8.48	4.61	" "
3 VOL.	1018	10.90	250	1.0	6.10	10.13	5.30	-2	7.49	5.11	" "
4 VOL.	1023	10.90	250	1.4	6.16	10.26	5.31	-12	6.67	4.25	" "
5 VOL.	1028	10.90	250	1.8	6.19	10.39	5.33	-19	6.03	3.85	" "
6 VOL.	1033	10.90	220	2.1	6.22	10.01	5.31	-23	6.01	2.45	" "
7 VOL.	1038	10.90	220	2.4	6.26	9.52	5.35	-27	5.51	3.01	" "
8 VOL.	1043	10.90	220	2.7	6.28	8.61	5.38	-31	5.08	2.64	" "
9 VOL.	1048	10.90	220	3.0	6.31	8.78	5.42	-34	4.68	3.15	" "
10 VOL.	1053	10.90	220	3.3	6.32	8.85	5.42	-37	4.25	3.08	" "
11 VOL.	1058	10.90	220	3.6	6.34	8.99	5.42	-39	4.01	1.75	" "
12 VOL.	1103	10.90	220	3.9	6.35	9.16	5.42	-42	3.75	2.25	" "
13 VOL.	1108	10.90	220	4.2	6.36	8.94	5.39	-44	3.63	2.05	" "
14 VOL.	1113	10.90	220	4.5	6.37	8.88	5.41	-45	3.53	1.96	" "
15 VOL.	1118	10.90	220	— collect sample							
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.	1232	10.90	220	—	6.49	7.79	5.45	-40	0.42	2.75	" "

Remarks: 31' bhz pump intake

Pump Hz - ~70 Hz

Ferrous Iron - >3.30 mg/L - over range

Sampling

Depth to Water Before Sampling: 10.90
Depth sample was acquired:
Sample Methodology: Low Flow Sample Procedure
Sample Date/Time: 1/31/14 1118
Signed Sampler: Michael Murphy / [signature]
Filtered Metals Collected: Y / N
Filter Size: 0.45 micron
Sample Observations: Clear - no odor - slight brown tint
Parameters: Full TAL / Full TCL / MNA Parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER MW-12S
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-12S
Site: Diamond Head Oil Superfund Site
Field Crew: David Reamer
Date: 2-7-2014

Well Depth (ft): 17.14
DTW (ft): 5.65
Water Column (ft): 11.49
Well Diameter (in): 4
Gal. Per ft: 0.653
Well volume (gal): 7.50
Depth of Screen (ft): —

Purge Methodology: Low flow w/ 2" Grundfos pump and Teflon lined tubing

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)*	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1345	6.10	250	0	6.60	6.83	0.749	43	1.60	6.53	Clear / no odor
1 VOL.	1350	6.24	200	0.3	6.80	7.30	0.744	21	0.92	4.42	" / "
2 VOL.	1355	6.42	300	0.5	6.89	7.39	0.744	15	0.84	4.17	" / "
3 VOL.	1400	6.45	275	0.75	7.01	7.69	0.743	5	0.76	4.04	" / "
4 VOL.	1405	6.52	275	1.0	7.08	7.58	0.751	-2	0.68	—	" / "
5 VOL.	1410	6.54	275	1.5	7.11	7.65	0.760	-8	0.63	4.63	" / "
6 VOL.	1415	6.51	275	2.0	7.14	7.64	0.769	-15	0.58	4.61	" / "
7 VOL.	1420	6.51	275	2.5	7.20	7.69	0.780	-23	0.57	4.85	" / "
8 VOL.	1425	6.51	275	3.0	7.19	7.75	0.789	-27	0.55	4.55	" / "
9 VOL.	1430	6.51	275	3.5	7.26	7.63	0.800	-33	0.55	4.63	" / "
10 VOL.	1435 - collect Sample @ ~200 ml/min										
11 VOL.	Ferrous Iron = 0.52 mg/L										
12 VOL.											
13 VOL.											
Post Purge Reading 14 VOL.	1555	6.53	200	6.0	7.65	7.89	1.10	-110	0.86	7.78	" / "
15 VOL.				plus	sample	volume					
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks: * DTW measurements collected during purge measured to top of product. Difficult to gauge exact top of product due to thick nature of NAPL.
Depth to product: 5.56

Sampling

Depth to Water Before Sampling: 6.51
Depth sample was acquired: ~15 ft BTIC
Sample Methodology: Low flow w/ 2" Grundfos Pump + Teflon lined tubing
Sample Date/Time: 2-7-14 @ 1435
Signed Sampler: [signature]
Filtered Metals Collected: (Y) / N
Filter Size: 0.45
Sample Observations: Clear / no odor
Parameters: TCL full suite / TAL Metals / MNA parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159	MW-13S
	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-13S
Site: Diamond Head O.U. Superfund Site
Field Crew: David Reamer
Date: 2-7-14
Well Depth (ft): ~~4.20~~ 17.45
DTW (ft): 4.85
Water Column (ft): 12.6
Well Diameter (in): 4
Gal. Per ft: 0.653
Well volume (gal): 8.23
Depth of Screen (ft): –
Purge Methodology: Low flow w/ 2" Grundfos pump + Teflon lined tubing.

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc) *	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. (Surface) (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	0930	4.67	~300	0.25	6.28	5.94	1.13	104	3.64	20.3	clear / slight sheen / petro like odor
1 VOL.	0935	4.85	~200	0.4	6.45	6.03	1.15	44	1.74	21.8	" / "
2 VOL.	0940	4.87	~175	0.5	6.50	6.31	1.16	13	3.10	7.59	" / "
3 VOL.	0950	4.87	150	0.6	6.65	5.47	1.18	-19	1.45	–	" / "
4 VOL.	0955	5.04	275	~1.0	6.63	6.25	1.17	-22	0.81	6.26	" / "
5 VOL.	1005	5.02	175	2.0	6.69	6.22	1.18	-39	1.32	–	" / "
6 VOL.	1015	5.12	200	2.5	6.68	6.80	1.17	-45	0.57	7.35	" / "
7 VOL.	1020	5.14	200	2.75	6.71	6.76	1.17	-49	0.57	6.80	" / "
8 VOL.	1025	5.20	250	3.0	6.72	6.99	1.16	-50	0.54	6.76	" / "
9 VOL.	Sample collected at 1030 @ ~200 mL/min										
10 VOL.	Ferrous iron = over 3.30 mg/L (over range)										
11 VOL.											
12 VOL.											
13 VOL.	1201	5.86	200	6	6.47	7.96	1.25	6	1.41	7.02	clear / slight petro like odor
14 VOL.				plus sample volume					dropping		
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:
* DTW measured during purge to top of product. Difficult to gauge exact top of product due to thick nature of NAPL and NAPL on walls of well riser.
Depth to product: 4.20
Pump coated w/ ice prior to placing in well.

Sampling

Depth to Water Before Sampling: 5.20
Depth sample was acquired: 15' BTIC
Sample Methodology: Low flow w/ 2" Grundfos pump + Teflon lined tubing
Sample Date/Time: 2-7-14 1030
Signed Sampler: [signature]
Filtered Metals Collected: (Y) / N
Filter Size: 0.45
Sample Observations: clear / slight petro like odor
Parameters: TCL Full Suite + TAL metals w/ PNA parameters

Diamond Head Oil Superfund Site
Low-Flow Groundwater Sampling: Field Data Sheet

Well Number: MW-13D		Site: Diamond Head Oil Superfund Site / Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)	
Field Crew: M.M.		Date: 1/30/14	Project #: 480159
Well Depth (ft.): 32.44	Purge Methodology:	Diameter / Gal. Per Foot	Diameter / Gal. Per Foot
DTW (ft.): 11.29'	Grundfos 2"	2" .163	5" 1.020
Water Column (ft.): 21.15'	Submersible Pump	3" .367	6" 1.469
Well Diameter (in.): 4"		4" .653	8" 2.611
Gal. per ft.: ~~13.81~~ 0.653	Water Quality Meter:		
Well Volume (gal.): 13.81	Horiba U-22 w/ flow cell		
Depth of Screen (ft.): —	Horiba U-52 w/ flow cell		

Field Parameters

	Time	DTW (tic)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/l)	Turbidity (NTU)	Color/Odor
	Stabilization	< 0.3'	Purge at 200-500		+/- 0.1		+/- 3 %	+/- 10 mV	+/- 10%	+/- 10%	
Initial	1445	11.35	250	—	7.58	11.43	5.11	-113	12.43	6.96	clear - no odor
1 VOL.	1450	11.35	250	0.4	7.09	12.11	5.30	-78	9.71	5.92	" "
2 VOL.	1455	11.35	250	0.8	6.96	12.17	5.29	-82	8.75	6.42	" "
3 VOL.	1500	11.35	250	1.2	6.89	12.10	5.27	-85	7.30	4.19	" "
4 VOL.	1505	11.35	250	1.6	6.84	12.08	5.26	-87	6.50	3.30	" "
5 VOL.	1510	11.35	250	2.0	6.80	11.95	5.24	-89	6.23	4.01	" "
6 VOL.	1515	11.35	250	2.4	6.79	11.92	5.22	-90	5.73	3.84	" "
7 VOL.	1520	11.35	250	2.8	6.78	12.03	5.11	-90	5.26	4.25	" "
8 VOL.	1525	11.35	250	3.2	6.76	11.92	5.10	-90	4.86	3.36	" "
9 VOL.	1530	11.35	250	3.6	6.75	11.73	5.08	-90	4.65	4.07	" "
10 VOL.	1535	11.35	250	4.0	6.75	11.43	5.06	-91	4.45	3.85	" "
Post-Purge	1540	11.35	250	4.4	6.74	11.15	5.06	-91	4.30	4.50	" "

Remarks: Pump Intake Depth: 31'

Control Box Settings (Hz): Development: Sampling: (Sample at 100-250 ml/min)

1545 - collect sample

Ferrous Iron > 3.30 mg/L - over range

Post 1630 - 11.35 250 - 6.69 10.56 5.34 -89 5.01 3.65 " "

SAMPLING

Depth to Water Before Sampling: 11.35

Sample Methodology: Low Flow Sample procedure

Sample Name: MW-13D-4 QC Sample: None

Sample Date/Time: 1/30/14 1545

Sampler / Signature: Michael Murphy / [signature]

Filtered Metals Collected: (Y) N Filter Size: 0.45 micron

Sample Observations: Clear - no odor - slight brown tint

Parameters: Full TAL / Full TCL / MNA parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER MW-14S
480159	SHEET 1 OF

LOW FLOW SAMPLING LOG

Well Number: MW-14S
Field Crew: MM
Well Depth (ft): 19.11
DTW (ft): 5.37
Water Column (ft): 13.74
Well Diameter (in): 4
Gal. Per ft: 0.653
Well volume (gal): 8.97
Depth of Screen (ft): —

Purge Methodology: Low flow w/ 2" Grundfos pump and Teflon lined tubing

Site: Diamond Head 0.1 Superfund Site
Date: 2/7/14

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	907	5.65	300	—	5.82	6.72	1.13	214	4.95	6.38	clear - no odor
1 VOL.	0912	5.85	250	0.5	6.26	7.60	1.10	199	3.73	5.96	" "
2 VOL.	0917	6.00	225	0.8	6.45	7.40	1.10	185	3.60	4.75	" "
3 VOL.	0922	6.06	200	1.0	6.59	7.18	1.09	172	3.41	3.12	" "
4 VOL.	0927	6.38	200	1.3	6.70	7.89	1.09	160	2.99	2.98	" "
5 VOL.	0932	6.51	200	1.5	6.75	7.71	1.09	154	2.70	2.86	" "
6 VOL.	0937	6.60	200	1.7	6.83	7.65	1.09	144	2.57	2.75	" "
7 VOL.	0942	6.78	200	1.9	6.83	8.11	1.10	142	2.41	2.50	" "
8 VOL.	0947	6.78	200	—	collect sample						
9 VOL.											
10 VOL.											
11 VOL.											
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
Post 20 VOL.	1115	9.20	200	—	6.91	10.19	1.15	105	1.20	1.80	" "

Remarks:

Depth to product: ~~NA~~ Not measured
Depth to pump intake = ~17' btic
Control box = ~60 Hz

Ferrous Iron
0.07 mg/L

Sampling

Depth to Water Before Sampling: 6.78' btic
Depth sample was acquired: ~17' BTIC
Sample Methodology: low flow w/ 2" Grundfos pump + Teflon lined tubing
Sample Date/Time: 2/7/14 0947
Signed Sampler: Michael Murphy
Filtered Metals Collected: (Y) N
Filter Size: 0.45
Sample Observations: clear - no odor
Parameters: TCL Full Suite / TAL metals / MNA parameters / TTO / GRO / DRO / TPH

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159.	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-15S
Site: Diamond Head
Field Crew: MM
Date: 1/24/14

Well Depth (ft): 14.70
DTW (ft): 6.85
Water Column (ft): 7.85
Well Diameter (in): 4"
Gal. Per ft: 0.653
Well volume (gal): 5.2
Depth of Screen (ft): —

Purge Methodology: Low Flow Sample Procedure
Grundfos Pump
Horiba U-52
Lamotte 2020e

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1013	7.15	300	—	6.59	10.66	5.21	82	2.17	4.64	clear / no odor
1 VOL.	1018	7.15	300	0.5	6.81	10.51	5.05	79	1.67	3.95	" "
2 VOL.	1023	7.15	300	1.0	6.84	10.45	5.03	78	1.50	3.86	" "
3 VOL.	1028	7.15	300	1.5	6.85	10.27	4.94	70	1.36	3.74	" "
4 VOL.	1033	7.15	300	2.0	6.85	9.96	4.78	52	1.27	3.60	" "
5 VOL.	1038	7.15	300	2.5	6.85	9.85	4.75	42	1.21	3.30	" "
6 VOL.	1043	7.15	300	3.0	6.84	9.70	4.76	35	1.16	3.15	" "
7 VOL.	1048	7.15	300	3.5	6.84	9.78	4.78	31	1.11	2.95	" "
8 VOL.	1053	7.15	300	4.0	6.84	9.78	4.78	28	1.07	2.76	" "
9 VOL.	1158	7.15	300	4.5	6.84	9.88	4.79	23	1.03	2.65	" "
10 VOL.	1103	7.15	300	5.0	6.83	9.89	4.79	19	1.01	2.58	" "
11 VOL.	1108	7.15	300	5.5	6.83	9.77	4.81	18	0.99	2.44	" "
12 VOL.	1113	7.15	300	6.0	6.83	9.80	4.82	17	0.97	2.36	" "
13 VOL.	1118	7.15	250	—	collect sample						
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
post 20 VOL.	1245	7.05	250	—	6.82	7.75	4.82	41	1.80	2.45	" "

Remarks:
Pump Intake 13.1' btic
PID 0.0
Control Box ~60 Hz
Ferrous Iron 0.51 mg/L

Sampling

Depth to Water Before Sampling: 7.15
Depth sample was acquired: 13.1' btic
Sample Methodology: Low Flow Sample Procedure
Sample Date/Time: 1/24/14 1118
Signed Sampler: Michael Murphy /
Filtered Metals Collected: Y N
Filter Size: 0.45 micron
Sample Observations: Clear / no odor
Parameters: TAL Full / TCL Full / MNA Parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159	SHEET 1 OF MW-15D

LOW FLOW SAMPLING LOG

Well Number: MW-15D
Field Crew: D. Reimer
Well Depth (ft): 33.56
DTW (ft): 10.08
Water Column (ft): 23.48
Well Diameter (in): 4
Gal. Per ft: 0.653
Well volume (gal): 15.3
Depth of Screen (ft): —

Purge Methodology: low flow w/ 2" Grundfos pump and Teflon tubing

Site: Diamond Head Oil Superfund Site
Date: 1-24-14

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1012	NA'	300	0.2	6.63	9.48	5.46	26	2.35	2.78	slightly yellow / no odor
1 VOL.	1027	NA'	450	2.0	6.68	11.17	4.10	-50	0.69	2.74	" / "
2 VOL.	1032	NA'	350	2.6	6.68	11.24	3.77	-54	0.52	2.67	" / "
3 VOL.	1037	NA'	350	3.1	6.70	11.18	3.61	-57	0.48	2.08	" / "
4 VOL.	1042	NA'	350	3.5	6.70	11.22	3.50	-58	0.52	2.22	" / "
5 VOL.	1047	NA'	350	3.9	6.71	10.96	3.45	-60	0.62	1.81	" / "
6 VOL.	1052	NA'	300	4.2	6.73	9.63	3.52	-60	0.52	1.52	" / "
7 VOL.	1057	NA'	300	4.6	6.73	11.46	3.60	-63	0.39	2.93	" / "
8 VOL.	1102	NA'	300	5.0	6.72	11.30	3.55	-62	0.40	2.84	" / "
9 VOL.	1107	NA'	300	5.4	6.71	12.32	3.27	-63	0.47	2.97	" / "
10 VOL.	1112	NA'	300	5.8	6.70	11.85	3.24	-62	0.46	2.79	" / "
11 VOL.	1117	NA'	300	6.2	6.68	11.40	3.18	-60	0.49	2.84	" / "
12 VOL.	1120	collect	sample	at	~250 ml/min						
13 VOL.	Ferrous iron = 2.72 mg/L										
post sample → 14 VOL.	1312	NA'	250	7.0	6.71	12.12	3.56	-33	0.87	1.38	" / "
15 VOL.				↑							
16 VOL.				plus							
17 VOL.				sample							
18 VOL.				volume							
19 VOL.											
20 VOL.											

H_2: 63.4

Remarks:
NA' - Solinst Oil/water indicator probe not working properly; possibly due to near zero temperature. water level stable as Grundfos frequency is stable.
Horiba U-52 SN: 82N2YYT8 / LaMotte 2020we SN 1071-2511

Sampling

Depth to Water Before Sampling: NA'
Depth sample was acquired: ~30 ft BTIC
Sample Methodology: Low flow w/ teflon tubing
Sample Date/Time: 1/24/2014 @ 1120
Signed Sampler: David Reimer
Filtered Metals Collected: (Y) / N
Filter Size: 0.45
Sample Observations: W/ MS/MSD volume
Parameters: TAL/TCL + MNA

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159	MW-17S
	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-17S
Field Crew: David Reamer
Well Depth (ft): 12.73
DTW (ft): 4.36
Water Column (ft): 8.37
Well Diameter (in): 4
Gal. Per ft: 0.653
Well volume (gal): 5.47
Depth of Screen (ft): -

Purge Methodology: Low flow w/ 2" Grundfos Pump + Teflon Tubing

Site: Diamond Head Oil Superfund Site
Date: 1-29-14

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1107	4.56	280	0.25	5.30	6.19	3.02	204	2.95	13.26	clear/no odor
1 VOL.	1112	4.77	325	0.5	5.66	7.48	3.04	173	1.12	9.49	" / "
2 VOL.	1117	4.87	325	0.75	5.79	7.33	3.06	157	0.94	10.51	" / "
3 VOL.	1122	5.06	~240	1.1	5.89	8.43	3.06	142	0.81	9.61	" / "
4 VOL.	1127	5.33	~170	1.5	5.98	8.84	3.07	128	0.70	8.26	" / "
5 VOL.	1132	5.54	300	1.8	6.05	8.97	3.07	117	0.66	9.22	" / "
6 VOL.	1137	5.67	200	2.0	6.07	8.75	3.08	114	0.65	7.27	" / "
7 VOL.	1142	5.78	150	2.3	6.10	8.89	3.08	108	0.63	8.04	" / "
8 VOL.	1147	5.90	240	2.5	6.13	8.54	3.09	102	0.61	6.24	" / "
9 VOL.	1152	6.08	225	2.75	6.15	8.98	3.09	96	0.60	6.00	" / "
10 VOL.	1157	6.25	~110	3.0	6.18	8.80	3.10	90	0.57	5.57	" / "
1212 on 11 VOL.	~~1202~~	6.54	~75	3.3	6.23	8.84	3.11	74	0.53	5.68	" / "
12 VOL.	1217	6.57	~50	3.4	6.25	8.42	3.12	70	0.51	5.49	" / "
13 VOL.	1222	6.80	~150	3.6	6.25	8.49	3.08	66	0.50	5.23	" / "
14 VOL.	1225 - collected sample at ~100 mL/min										
15 VOL.		Ferrous iron = 2.27 mg/L									
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.									* dropping		
20 VOL.	1405	8.01	300	4.0	6.31	11.28	3.04	95	1.51	4.07	" / "

Remarks: * plus sample
Water level meter - Solinst Interface meter - model 122/SN 122 007415-1

Sampling

Depth to Water Before Sampling: 6.80
Depth sample was acquired: ~10' BTIC
Sample Methodology: Low flow w/ Grundfos 2" pump + Teflon tubing
Sample Date/Time: 1-29-14 @ 1223
Signed Sampler: [signature]
Filtered Metals Collected: Y N
Filter Size: 0.45
Sample Observations: Clear / no odor
Parameters: TCL + TAL + MNA

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159	SHEET OF

LOW FLOW SAMPLING LOG

Well Number: MW-18S
Site: Diamond
Field Crew: MM
Date: 1/29/14

Well Depth (ft): 15.37
DTW (ft): 7.98
Water Column (ft): 7.39
Well Diameter (in): 2"
Gal. Per ft: 0.163
Well volume (gal): 1.20
Depth of Screen (ft):

Purge Methodology: Low Flow Sample Procedure Grundfos Pump w/ Teflon Tubing Horiba U-52 Lamotte 2020 we

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1128	8.05	220	—	6.51	4.69	3.67	-52	6.29	19.91	trace solids
1 VOL.	1133	NR	200	0.3	6.63	5.80	3.60	-75	5.40	16.50	" "
2 VOL.	1138	8.50	100	0.6	6.70	6.77	3.51	-103	4.85	20.16	" "
3 VOL.	1143	-Missed	readings								
4 VOL.	1148	NR	100	1.2	7.10	8.58	3.46	-114	7.68	13.22	
5 VOL.	1153	8.52	100	1.5	7.10	9.45	3.44	-121	7.31	12.98	" "
6 VOL.	1158	8.54	100	1.8	7.11	10.37	3.38	-123	5.19	12.54	" "
7 VOL.	1203	8.54	100	2.1	7.12	10.94	3.38	-133	5.34	9.86	clear - no odor
8 VOL.	1208	8.54	120	2.4	7.13	10.94	3.38	-134	5.01	7.15	" "
9 VOL.	1213	8.54	120	2.7	7.14	10.96	3.37	-136	4.77	6.35	" "
10 VOL.	1218	8.54	120	3.0	7.14	11.10	3.38	-139	4.25	6.01	" "
11 VOL.	1223	8.54	120	3.2	7.15	11.32	3.40	-142	3.91	5.40	" "
12 VOL.	1228	8.54	120	3.4	7.16	11.25	3.39	-144	3.73	4.59	" "
13 VOL.	1233	8.54	120	3.6	7.17	11.50	3.36	-146	3.89	3.83	" "
14 VOL.	1239	8.55	120	~~3.8~~	collect sample						
15 VOL.				MM							
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
Post ~~20 VOL.~~	1355	8.55	120	—	7.22	9.36	3.50	-110	0.99	4.50	" "

Remarks: Pump Intake 13.5' btc ~70 - H_2 - control box

Ferrous Iron >3.30 mg/L over range

PID 0.0 ppm

Sampling

Depth to Water Before Sampling: 8.55' btc
Depth sample was acquired:
Sample Methodology: Low Flow Sample Procedure
Sample Date/Time: 1/29/14 1239
Signed Sampler: Michael Murphy / [signature]
Filtered Metals Collected: (Y) N
Filter Size: 0.45 micron
Sample Observations: clear - no odor
Parameters: TAL Full / TCL Full / MNA Parameters

Diamond Head Oil Superfund Site
Low-Flow Groundwater Sampling: Field Data Sheet

Well Number: MW-19S	Site: Diamond Head Oil Superfund Site / Harrison Ave., Kearny, NJ 07032-4310 (Hudson Co.)
Field Crew: Mm	Date: 1/30/14 Project #: Y80159

Well Depth (ft.): 32.35	Purge Methodology:	Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
DTW (ft.): 27.15	Grundfos 2"	2"	.163	5"	1.020
Water Column (ft.): 5.20'	Submersible Pump	3"	.367	6"	1.469
Well Diameter (in.): 2"		4"	.653	8"	2.611
Gal. per ft.: 0.163	Water Quality Meter:				
Well Volume (gal.): 0.85	Horiba U-22 w/ flow cell				
Depth of Screen (ft.): —	Horiba U-52 w/ flow cell				

Field Parameters

	Time	DTW (tic)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/l)	Turbidity (NTU)	Color/Odor
	Stabilization	< 0.3'	Purge at 200-500		+/- 0.1		+/- 3 %	+/- 10 mV	+/- 10%	+/- 10%	
Initial	1100	27.25	300	—	6.38	12.96	3.88	-104	4.74	28.5	cloudy - no odor
1 VOL.	1105	27.35	250	0.4	6.62	13.41	3.79	-116	3.16	29.1	" "
2 VOL.	1110	27.45	250	0.8	6.70	13.39	3.78	-119	2.38	34.1	" "
3 VOL.	1115	27.45	250	1.2	6.72	15.41	3.74	-122	1.99	39.4	" "
4 VOL.	1120	27.45	250	1.6	6.73	15.93	3.75	-124	1.80	31.6	" "
5 VOL.	1125	27.45	250	2.0	6.73	15.87	3.74	-126	1.67	26.5	" "
6 VOL.	1130	27.45	250	2.4	6.74	15.89	3.76	-127	1.55	23.4	
7 VOL.	1135	27.50	250	2.8	6.75	16.01	3.77	-128	1.40	21.4	" "
8 VOL.	1140	27.55	250	3.2	6.77	16.80	3.76	-113	1.78	19.6	clear no odor
9 VOL.	1143	27.35	250	3.6	6.76	16.21	3.76	-114	1.65	17.5	" "
10 VOL.	1150	27.35	250	4.0	6.75	15.59	3.75	-115	1.54	18.6	" "
Post-Purge	1155	27.55	250	4.5	6.74	15.41	3.76	-118	1.44	17.6	" "

Remarks: Pump Intake Depth: 30.5 Control Box Setting (Hz): Development: 111 Hz Sampling: (Sample at 100-250 ml/min)

PID 0.0ppm

Ferrous Iron > 3.30 mg/L - over range

SAMPLING

Depth to Water Before Sampling: 27.55

Sample Methodology: Low Flow Sample Procedure - Grundfos Pump w/ Teflon tubing

Sample Name: ~~1/30/14~~ MW-19S - X QC Sample: None

Sample Date/Time: 1/30/14 1200

Sampler / Signature: Michael Murphy / [signature]

Filtered Metals Collected: (Y) / N Filter Size: 0.45 micron

Sample Observations: clear - no odor

Parameters: TAL Full / TCL Full / MNA parameters

1200 - 27.55 - 250 - collect Sample

Post

1310 27.55 250 6.78 16.30 3.77 -107 1.00 9.85 clear / no odor

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-205
Field Crew: MM
Well Depth (ft): 30.35
DTW (ft): 24.50
Water Column (ft): 5.85
Well Diameter (in): 2"
Gal. Per ft: 0.163
Well volume (gal): 0.95
Depth of Screen (ft): —

Purge Methodology: Low Flow Sample Procedure
Grundfos Pwr/Teflon tubing
Horiba U-52
Lamotte 2020 wre

Site: Diamond Head Super Fund
Date: 1/27/14

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1410	24.80	300	—	6.90	12.29	4.44	-98	0.87	43.10	cloudy / none
1 VOL.	1415	24.80	300	0.5	6.88	12.57	4.46	-106	0.72	804	white - cloudy - no odor
2 VOL.	1420	24.82	300	1.0	6.89	13.49	4.48	-116	0.60	837	" "
3 VOL.	1425	24.80	300	1.5	6.89	14.00	4.50	-123	0.61	662	" "
4 VOL.	1430	24.80	300	2.0	6.89	14.02	4.51	-124	0.61	604	" "
5 VOL.	1435	24.80	300	2.5	6.89	14.09	4.52	-128	0.61	580	" "
6 VOL.	1440	24.80	300	3.0	6.90	14.11	4.52	-130	0.61	42.9	" "
7 VOL.	1445	24.80	300	3.5	6.90	14.07	4.52	-133	0.63	37.3	" "
8 VOL.	1450	24.81	300	4.0	6.90	14.00	4.53	-134	0.60	33.3	" "
9 VOL.	1455	24.80	300	4.5	6.91	14.00	4.54	-135	0.61	28.3	clear - no odor
10 VOL.	1500	24.80	300	5.0	6.90	13.88	4.54	-135	0.61	26.1	" "
11 VOL.	1505	24.80	300	5.5	6.91	13.80	4.55	-136	0.61	24.15	" "
12 VOL.	1510	24.80	300	6.0	6.90	13.72	4.56	-137	0.61	22.83	" "
13 VOL.	1515	24.80	300	6.5	6.91	13.42	4.56	-138	0.61	20.13	" "
14 VOL.	1520	24.80	300	7.0	6.91	13.49	4.53	-137	0.61	19.67	" "
15 VOL.	1525	24.80	300	7.5	6.90	13.36	4.55	-138	0.61	18.16	" "
16 VOL.	1530	24.80	250	- collect sample							
17 VOL.											
18 VOL.											
19 VOL.											
Post 20 VOL.	1700	24.60	250	—	6.84	13.10	4.73	-125	0.74	13.96	" "

Remarks:
Pump Intake
28.5' btoc

PID - 0.1ppm

120 Hz
Ferrous
>3.30 mg/L - over Range

Sampling

Depth to Water Before Sampling: 24.80
Depth sample was acquired: 28.5' bgs
Sample Methodology: Low Flow Sample Procedure
Sample Date/Time: 1/27/14 1530
Signed Sampler: Michael Murphy / M. M
Filtered Metals Collected: (Y) / N
Filter Size: 0.45 micron
Sample Observations: clear - no odor
Parameters: Full TAL / FULL TCL / MNA Parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER MW-21S
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-21S
Field Crew: D. Reamer
Well Depth (ft): 9.31
DTW (ft): 4.82
Water Column (ft): 4.49
Well Diameter (in): ~~0.163~~ 2" (**)
Gal. Per ft: 0.163
Well volume (gal): 0.73
Depth of Screen (ft): —

Purge Methodology: ~ Low flow w/ 2" Grundfos pump + Teflon tubing

Site: Diamond Head Superfund Site
Date: 1-27-2014

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1017	5.74	400	0.25	7.06	7.45	4.48	-11	1.26	46	D. Brown / organic like odor
1 VOL.	1022	5.74	300	1.0	7.06	7.63	4.47	-19	0.77	14.0	light brown / no odor
2 VOL.	1027	5.74	400	1.4	7.10	8.09	4.54	-32	0.64	15.1	" / "
3 VOL.	1032	5.74	400	2.0	7.09	8.06	4.53	-35	0.59	8.23	" / "
4 VOL.	1037	5.75	400	2.5	7.10	8.24	4.56	-40	0.50	9.76	"tea color" / foam / no odor
5 VOL.	1042	5.74	400	3.0	7.14	8.58	4.65	-48	0.48	6.61	" / " / "
6 VOL.	1047	5.74	400	3.5	7.12	8.44	4.61	-47	0.52	6.59	" / " / "
7 VOL.	1052	5.73	400	4.0	7.12	8.46	4.66	-47	0.48	6.27	" / " / "
8 VOL.	1057	Collected sample at ~275 mL/min									
9 VOL.		Ferrous iron = 1.48 mg/L									
10 VOL.	1227	5.74	400	5.0	7.10	9.95	4.14	-2	0.89	9.04	" / " / "
11 VOL.				+ plus	sample						
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

post sample

Remarks: Horiba Water quality meter; model U-52 w/ SN 82N2YYT8
LaMotte Turbidity meter 2020we SN 3722-3913
** pumping stopped for ~20 minutes while collecting dissolved metal sample. Filters kept clogging, visible sediment present.

Sampling

Depth to Water Before Sampling: 5.73
Depth sample was acquired: ~7' BTIC
Sample Methodology: Low flow w/ teflon tubing
Sample Date/Time: 1/27/14 1057
Signed Sampler: [signature]
Filtered Metals Collected: (Y) N
Filter Size: 0.45 um
Sample Observations: tea like color + foamy water / similar to appearance in 2009
Parameters: TCL / TAL / MNA parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER MW-23S
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-23S
Site: Diamond Head Oil Superfund Site
Field Crew: D. Reamer
Date: 1-28-2014

Well Depth (ft): 8.51
DTW (ft): 3.09
Water Column (ft): 5.51
Well Diameter (in): 2
Gal. Per ft: 0.163
Well volume (gal): ~~0.89~~ 0.90
Depth of Screen (ft): –

Purge Methodology: Low flow w/ Grundfos 2" pump and Teflon lined tubing

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.61

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500	1.5	0.1	1 C	3%	10 mV	10%	10%	
INT.	1030	3.09	400	~~0.5~~	5.61	6.15	1.55	-31	0.98	13.57	clear / no odor
1 VOL.	1035	3.09	400	2.0	5.67	6.42	1.61	-42	1.10	7.67	" / "
2 VOL.	1040	3.09	400	3.0	5.75	6.80	1.67	-53	1.18	3.55	" / "
3 VOL.	1050	3.09	400	4.0	5.82	6.93	1.71	-63	1.24	2.62	" / "
4 VOL.	1055	3.09	400	4.5	5.87	7.08	1.74	-67	1.23	2.49	" / "
5 VOL.	1100	3.09	400	5.0	5.90	7.14	1.76	-70	1.25	2.36	" / "
6 VOL.	1105 – collect sample. Ferrous iron = >3.30 mg/L (over range)										
7 VOL.	collected duplicate sample D-4-01-28-14-01										
8 VOL.											
9 VOL.	~~1243~~										
10 VOL.	1243	3.05	250	6.0	5.95	7.32	1.87	-48	1.98	5.68	" / "
11 VOL.				↑					Redropping		
12 VOL.				plus sample							
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:
- Water level meter - Solinst Model 122 / SN-122 007415-1 Control Box = 53.60 m
- Water quality meter - Horiba U-52 - S.N. - VPRH4257
- Turbidity meter - LaMotte 2020we - SN 1071-2511

Sampling

Depth to Water Before Sampling: 3.09
Depth sample was acquired: ~6.5' BTIC
Sample Methodology: Low flow w/ 2" Grundfos Pump + Teflon tubing
Sample Date/Time: 1-28-2014 @ 1105
Signed Sampler: [signature]
Filtered Metals Collected: (Y) N
Filter Size: 0.45
Sample Observations: Clear / no odor / no foam
Parameters: TCL full suite / TAL metals / MNA parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159	MW-24S
	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-24S
Site: Diamond Head Oil Superfund Site
Field Crew: D. Reamer
Date: 1-28-2014

Well Depth (ft): 8.65
DTW (ft): 2.60
Water Column (ft): 6.05
Well Diameter (in): 2
Gal. Per ft: 0.163
Well volume (gal): 0.99
Depth of Screen (ft): —

Purge Methodology: low flow w/ 2" Grundfos Pump + Teflon tubing

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1335	NA'	320	0.25	6.36	4.56	0.779	-20	1.06	6.87	Clear/no odor
1 VOL.	1340	NA'	320	0.75	6.40	4.88	0.753	-48	0.74	4.33	"/"
2 VOL.	1345	~5.1	300	1.0	6.43	5.16	0.756	-62	0.67	3.17	"/"
3 VOL.	1355	~5.1	350	1.75	6.54	6.15	0.733	+94	0.49	2.46	"/"
4 VOL.	1400	~5.1	325	2.1	6.59	6.20	0.735	-102	.47	1.85	clear/no odor
5 VOL.	1405	~5.1	300	2.6	6.64	6.29	.739	-111	.43	2.40	clear/no odor
6 VOL.	1410	~5.1	325	3.0	6.65	6.34	.745	-113	.42	2.42	clear/none
7 VOL.	1415	~5.1	325	3.5	6.68	6.46	.757	-117	.41	2.16	clear/none
8 VOL.	1420	Collect Sam					at @ ~250 mL/min				
9 VOL.		Ferrous Iron = 1.42 mg/L									
10 VOL.											
11 VOL.	1533	~5.1	300	~5	6.67	5.24	0.884	-55	-56	2.40	"/"
12 VOL.				↑ plus sample volume							
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Remarks:
NA' = water level indicator not working properly, possibly due to near 0°F temperatures,
water level indicator - Solinst Model 122 / SN-122 007 415-1
- water quality meter - Horiba ~~USL~~ - SN-YPR H4 2J7
- Turbidity meter - LaMotte 2020 we - SN 1071-2511

Sampling

Depth to Water Before Sampling: ~5.1
Depth sample was acquired: ~6' BTIC
Sample Methodology: low flow w/ 2" Grundfos pump and teflon tubing
Sample Date/Time: 1-28-2014 @ 1420
Signed Sampler: [signature]
Filtered Metals Collected: (Y) N
Filter Size: 0.45
Sample Observations: Clear/no odor
Parameters: TCL Full Suite / TAL Metals / MNA Parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: MW-25S
Site: Diamond Head, Kearny, NJ
Field Crew: MM
Date: 1/27/14

Well Depth (ft): ~~8.83~~ 21.40
DTW (ft): 13.70
Water Column (ft): 7.70
Well Diameter (in): 2"
Gal. Per ft: 0.163
Well volume (gal): 1.26
Depth of Screen (ft): —

Purge Methodology: Low Flow Sample Procedure
Grundfos pump w/ Teflon tubing
Horiba U-52
Camotte 2020we

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1053	14.71	300	—	6.34	12.52	3.71	-45	1.51	53.82	Cloudy, no odor
1 VOL.	1058	14.72	300	0.5	6.70	13.61	3.69	-97	1.20	48.10	" "
2 VOL.	1103	14.72	300	1.0	6.83	14.79	3.73	-123	0.86	43.53	" "
3 VOL.	1108	14.72	300	1.5	6.89	14.91	3.73	-136	0.80	33.88	" "
4 VOL.	1113	14.72	300	2.0	6.94	15.37	3.71	-145	0.78	22.16	Clear - no odor
5 VOL.	1118	14.72	300	2.5	6.95	15.31	3.73	-149	0.79	15.66	" "
6 VOL.	1123	14.72	300	3.0	6.97	15.50	3.74	-153	0.79	13.80	" "
7 VOL.	1128	14.72	300	3.5	6.98	15.61	3.74	-155	0.79	12.60	" "
8 VOL.	1133	14.72	300	4.0	6.99	15.75	3.74	-157	0.79	9.88	" "
9 VOL.	1138	14.72	300	4.5	6.99	15.78	3.73	-158	0.79	9.01	" "
10 VOL.	1143	14.72	300	5.0	7.00	15.82	3.73	-160	0.77	8.45	" "
11 VOL.	1148	14.72	250	— collect	sample.						
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
POST VOL.	1304	14.60	250	—	6.97	11.10	3.76	-127	1.05	7.77	" "

Remarks:
Depth to pump intake
18.0' btic

Pump Rate
~ 70 Hz

Ferrous Iron = >3.30 mg/L
- over range

PID - 0.0

Sampling

Depth to Water Before Sampling: 14.72
Depth sample was acquired: 18' btic
Sample Methodology: Low Flow Sample Procedure
Sample Date/Time: 1/27/14 1148
Signed Sampler: Michael Murphy / [signature]
Filtered Metals Collected: Y N
Filter Size: 0.45 micron
Sample Observations: clear - no odor
Parameters: TAL Full / TCL Full / MNA parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER MW-26S
480159	SHEET 1 OF

LOW FLOW SAMPLING LOG

Well Number: MW-26S
Site: Diamond Head Oil Superfund Site
Field Crew: David Reamer
Date: 1-30-14

Well Depth (ft): 16.45
DTW (ft): 6.45
Water Column (ft): 10.00
Well Diameter (in): 2
Gal. Per ft: 0.163
Well volume (gal): 1.63
Depth of Screen (ft): –

Purge Methodology: Low flow w/ 2" Grundfos pump + Teflon lined tubing

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. (Surface) (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1000	6.67	425	0.25	5.46	9.74	9.36	200	0.70	630	light brown/no odor
1 VOL.	1005	6.69	400	1.0	5.87	10.63	8.86	109	0.64	182	cloudy/no odor
2 VOL.	* Pump Regen RES Fault error, Resident pump										
3 VOL.	1012	6.72	450	1.25	6.06	10.76	8.30	55	0.80	84.1	" / "
4 VOL.	*1020 – Regen RES Power error. Unable to pump, waiting to replace										
5 VOL.	Pump. Trouble shoot w/ Pine Env. tech and continued to										
6 VOL.	receive error. Ultimately replaced pump and control box										
7 VOL.	1118	6.73	450	4.0	6.39	10.78	8.76	-8	0.64	148	cloudy/no odor
8 VOL.	1123	6.73	450	4.5	6.41	10.82	8.64	-17	0.57	55	" / "
9 VOL.	1128	6.73	450	5.0	6.43	11.00	8.67	-24	0.52	38.1	slightly cloudy/no odor
10 VOL.	1135	6.73	450	6.0	6.44	10.98	8.72	-29	0.48	34.6	" / "
11 VOL.	1140	6.73	450	6.5	6.46	11.12	8.72	-33	0.45	33.3	" / "
12 VOL.	1145	6.74	450	7.0	6.45	11.29	8.72	-37	0.44	31.1	" / "
13 VOL.	1150 – collect sample at ~250 mL/min										
14 VOL.	Ferrous iron = >3.30 mg/L										
15 VOL.											
16 VOL.	– Duplicate sample collected										
17 VOL.											
18 VOL.											
19 VOL.											
Post sample 20 VOL.	1340	6.73	250	7 plus sample	6.63	10.91	8.49	-51	1.60+	4.65	clear/no odor

Remarks:
- water level meter – Solinst Model 122 SN – 122 607415-1
- water quality meter – Horiba U-52 SN YPRH42J7
- Turbidity meter – LaMotte 2020we SN

Sampling

Depth to Water Before Sampling: 6.74
Depth sample was acquired: ~~14' BTIC~~ 11.25' BTIC (DR)
Sample Methodology: Low w/ 2" Grundfos Pump + Teflon lined tubing
Sample Date/Time: 1-30-14 @ 1150
Signed Sampler: [signature]
Filtered Metals Collected: (Y) N Filter Size: 0.45
Sample Observations: cloudy / no odor
Parameters: TCL full suite / TAL metals / MNA parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER PZ-14
480159	SHEET 1 OF

LOW FLOW SAMPLING LOG

Well Number: PZ-14
Field Crew: Bylas
Well Depth (ft): 18.85
DTW (ft): 7.31
Water Column (ft): 11.54
Well Diameter (in): 2
Gal. Per ft: 0.163
Well volume (gal): 1.88
Depth of Screen (ft):

Purge Methodology: Low flow w/ 2" Grundfos pump and Teflon lined tubing

Site: Diamond Head Oil Superfund Site
Date: 2/10/14

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Ocor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	0930	6.91	250	—	5.57	5.08	2.84	-45	.99	226	Black globules/petro-like
1 VOL.	0935	7.26	250	.3	6.59	5.50	2.79	-120	.54	382	" "
2 VOL.	0940	7.28	250	.6	7.00	5.91	2.77	-153	.52	237	" "
3 VOL.	0945	7.31	225	1.0	7.34	6.39	2.70	-183	.56	26.79	" "
4 VOL.	0950	7.33	225	1.3	7.56	6.73	2.67	-203	.59	23.34	clear/petro-like
5 VOL.	0955	7.34	225	1.6	7.79	6.67	2.62	-228	.67	19.76	" "
6 VOL.	1000	7.35	200	1.9	7.83	6.89	2.60	-239	.69	20.43	" "
7 VOL.	1005	7.37	200	2.2	7.94	6.96	2.55	-259	.79	18.53	" "
8 VOL.	1010	7.38	200	2.5	7.99	6.99	2.55	-266	.81	18.78	" "
9 VOL.	1015	7.40	200	2.8	8.07	6.94	2.50	-285	.93	17.09	" "
10 VOL.	1020	7.41	200	3.1	8.16	7.06	2.49	-301	1.07	16.70	" "
11 VOL.	1025	7.43	200	3.4	8.18	7.23	2.48	-305	1.10	16.45	" "
12 VOL.	1030	7.43	200	3.7	8.23	7.12	2.46	-320	1.22	16.10	" "
13 VOL.	1035	7.43	200	4.0	8.31	6.90	2.45	-321	1.35	15.90	" "
14 VOL.	1040	7.44	200	4.3	8.32	7.16	2.44	-336	1.43	15.72	" "
15 VOL.	1045	7.44	200	4.6	8.34	7.04	2.43	-339	1.49	15.60	
16 VOL.	1050	collect		sample							
17 VOL.											
18 VOL.											
19 VOL.											
post 20 VOL.	1155	7.71	200	—	8.39	6.68	2.47	-224	5.49	16.77	

Remarks:

pump depth -16.0'

DTN - 7.05

Fe+ - 0.02 mg/L

Sampling

Depth to Water Before Sampling: 7.44
Depth sample was acquired: ~16.0' BTIC
Sample Methodology: Low flow w/ Teflon lined tubing + a 2" Grundfos pump
Sample Date/Time: 2/10/14 1050
Signed Sampler:
Filtered Metals Collected: Y N
Filter Size: 0.45
Sample Observations:
Parameters: TTO VOCs + TTO SVOCs + BTO PCBs + Pesticides + Select MNA parameters

CH2MHILL

PROJECT NUMBER 480159

WELL NUMBER PZ-16

SHEET 1 OF

LOW FLOW SAMPLING LOG

Well Number: PZ-16

Field Crew: MM

Well Depth (ft): 14.71

DTW (ft): 3.02

Water Column (ft): 11.69

Well Diameter (in): 2

Gal. Per ft: 0.163

Well volume (gal): 1.91

Depth of Screen (ft): —

Purge Methodology: Low flow w/ 2" Grundfos pump + Teflon lined tubing

Site: Diamond Head Oil Superfund site

Date: 2/10/14

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cond. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1007	3.30	300	—	6.23	3.05	0.963	208	12.40	23.5	slight sheen - petro-like
1 VOL.	1012	3.70	300	0.5	6.96	2.65	0.968	174	11.72	5.66	clear - no odor
2 VOL.	1017	3.70	300	1.0	7.19	2.17	0.997	151	10.66	4.99	" "
3 VOL.	1022	3.70	300	1.5	7.32	2.23	0.999	132	9.54	4.25	" "
4 VOL.	1027	3.70	300	2.0	7.40	2.30	1.000	116	8.68	3.50	" "
5 VOL.	1032	3.70	300	2.5	7.42	2.36	0.997	102	7.81	2.51	" "
6 VOL.	1037	3.70	300	3.0	7.47	2.41	0.990	89	6.95	2.26	" "
7 VOL.	1042	3.70	300	3.5	7.48	2.47	0.986	82	6.37	2.15	" "
8 VOL.	1047	3.70	300	4.0	7.55	2.53	0.976	70	5.73	2.08	" "
9 VOL.	1052	3.70	300	4.5	7.63	2.48	0.968	60	5.15	2.01	" "
10 VOL.	1057	3.70	300	5.0	7.71	2.54	0.960	50	4.65	1.96	" "
11 VOL.	1102	3.70	300	5.5	7.77	2.67	0.952	41	4.18	1.85	" "
12 VOL.	1107	3.70	300	6.0	7.85	2.66	0.942	34	3.76	1.82	" "
13 VOL.	1112	3.70	300	6.5	7.91	2.58	0.935	26	3.33	1.85	" "
14 VOL.	1117	3.70	300	7.0	7.95	2.75	0.928	17	3.01	1.66	" "
15 VOL.	1122	3.70	300	7.5	8.02	2.69	0.920	13	2.65	1.75	" "
16 VOL.	1127	3.70	300	8.0	8.02	2.80	0.915	12	2.52	1.60	" "
17 VOL.	1132	3.70	300	8.5	8.07	2.77	0.910	8	2.44	1.98	" "
18 VOL.	1137	3.70	250	- Collect Sample							
19 VOL.											
20 VOL.	1205	3.65	250	—	8.11	3.30	0.908	15	3.81	26.5	" "

Remarks:

Control Box - ~ 50 Hz

Pump @ 12'

Ferrous Iron - 0.00 mg/L

DTW - 2.97

Sampling

Depth to Water Before Sampling: 3.7

Depth sample was acquired: ~12' BTIC

Sample Methodology: Low flow w/ Teflon Lined Tubing + a 2" Grundfos pump

Sample Date/Time: 2/10/14 1137

Signed Sampler: Michael Murphy / [signature]

Filtered Metals Collected: (Y) N

Filter Size: 0.45

Sample Observations: Clear - no odor

Parameters: TTO VOCs, SVOCs, Pesticides, PCBs + Select MNA parameters

CH2MHILL

PROJECT NUMBER	WELL NUMBER PZ-17
480159	SHEET 1 OF 1

LOW FLOW SAMPLING LOG

Well Number: PZ-17
Site: Diamond Head Oil Superfund Site
Field Crew: David Reamer
Date: 2-4-2014

Well Depth (ft): 3.16.10
DTW (ft): 3.99
Water Column (ft): 12.13
Well Diameter (in): 2
Gal. Per ft: 0.163
Well volume (gal): 1.98
Depth of Screen (ft): --

Purge Methodology: low flow w/ 2" Grundfos pump and Teflon tubing

Diameter	Gal. Per Foot	Diameter	Gal. Per Foot
2"	0.163	5"	1.02
3"	0.367	6"	1.469
4"	0.653	8"	2.611

Field Parameters

	Time	DTW (toc)	Flow Rate (ml/min)	Total Volume (gal)	pH (Std. Units)	Temp (C)	Cor. (mS/cm)	ORP (mV)	D.O. [Surface] (mg/L)	Turbidity (NTU)	Color/Odor
	Stabilization	<0.3'	300-500		0.1	1 C	3%	10 mV	10%	10%	
INT.	1305	3.99	350	0	6.09	6.73	1.85	96	10.08	109	gray / no odor
1 VOL.	1315	4.00	350	1.0	6.59	5.26	1.68	109	8.24	111	" / "
2 VOL.	1320	4.00	300	1.5	6.54	5.44	1.69	112	7.52	17.2	clear / no odor
3 VOL.	1325	4.00	300	2.0	6.53	5.42	1.69	113	7.67	12.7	" / "
4 VOL.	1335	3.99	300	3.0	6.45	5.63	1.72	122	7.68	5.9	" / "
5 VOL.	1340	3.99	300	3.5	6.43	5.65	1.72	125	7.58	5.6	" / "
6 VOL.	1345	3.98	300	4.0	6.42	5.62	1.72	127	7.59	5.7	" / "
7 VOL.	1350	- collected	sample			~~5.43~~	OK				
8 VOL.	1438	3.99	250	4.5	6.45	5.43	1.74	137	8.08	4.7	" / "
9 VOL.				* plus sample							
10 VOL.											
11 VOL.		Ferrous iron		= 1.06 mg/L							
12 VOL.											
13 VOL.											
14 VOL.											
15 VOL.											
16 VOL.											
17 VOL.											
18 VOL.											
19 VOL.											
20 VOL.											

Post Purge + Sampling

Remarks: Water quality meter - Horiba U-52 + LaMotte 2020we Turbidity meter

Sampling

Depth to Water Before Sampling: 3.99
Depth sample was acquired: ~13' BTIC
Sample Methodology: Low flow w/ 2" Grundfos pump + Teflon tubing
Sample Date/Time: 2/4/14 @ 1350
Signed Sampler: [signature]
Filtered Metals Collected: (Y) / N
Filter Size: 0.45
Sample Observations: clear / no odor
Parameters: TTO VOCs, TTO SVOCs, TSS, BOD, TPH-DRO, GRO, ORO

Appendix G
Data Quality Evaluation

Contents

1. Data Quality Evaluation

Appendix G
Data Quality Evaluation

Section 1
Data Quality Evaluation

SECTION 1 - Introduction

This data quality evaluation report contains an assessment of the quality and usability of analytical data from monitoring well groundwater, piezometer groundwater, subsurface soil, sludge, unknown material, soil investigation-derived waste, and wastewater collected during the 2013-2014 United States Environmental Protection Agency (USEPA) Pre-Design Investigation (PDI) at the Diamond Head Oil Superfund Site in Kearny, New Jersey. This PDI was performed by CH2M HILL, on behalf of the U.S. Army Corps of Engineers. The analytical work was conducted in accordance with the "Operable Unit 1 Pre-Design Investigation Uniform Federal Policy Quality Assurance Project Plan (UFP – QAPP)" (CH2M HILL; September, 2013). This report focuses on the subcontract laboratory data as opposed to the data generated through the USEPA Division of Environmental Science and Assessment (DESA) and Contract Laboratory Program (CLP).

This data quality evaluation includes the following types of samples which were collected and analyzed:

- Monitoring Well Groundwater
    - Sample ID starts with "MW-".
    - Analyzed for ions (chloride, nitrate, nitrite, and sulfate), sulfide, and biological oxygen demand (BOD).
- Piezometer Groundwater
    - Sample ID starts with "PZ-".
    - Analyzed for BOD.
- Subsurface Soil
    - Sample ID starts with "SB-PZ".
    - For waste characterization purposes, subsurface soil samples were analyzed for one or more of Toxicity Characteristic Leaching Procedure Volatile Organic Compounds (TCLP VOCs), TCLP metals, Reactivity to Cyanide, Reactivity to Sulfide, Corrosivity (pH), and ignitability.
    - For confirmation (of field samples results) purposes, subsurface soil samples were analyzed for pH.
- Sludge
    - Sample ID starts with "SL-SL-" or "SL-TP-".
    - Analyzed for reactivity, corrosivity, and ignitability (RCI).
- Unknown Material
    - Sample ID starts with "UM-TP-".
    - Analyzed for RCI.
- Soil Investigation-Derived Waste (IDW)
    - Sample ID is IDW-SO-01-4.
    - Analyzed for Full TCLP and RCI.
- Waste Water
    - Sample ID is WW-02-4
    - Analyzed for RCI.

1.1 Analytical Laboratories and Analytical Methods

Empirical Laboratories, LLC performed all sample analyses relevant to this data quality evaluation. The analytical methods used were as follows:

- Standard method 4500-S2 F for sulfide analysis in monitoring well groundwater.
- SW-846 Chapter 7 method 7.3.4.2 for analysis of reactive sulfide.
- EPA method 300.0 for analysis of ions in monitoring well groundwater.
- Standard method 5210B for BOD analysis in monitoring well groundwater and piezometer groundwater.
- SW-846 method 1010 for analysis of ignitability.
- SW-846 method 1311 for TCLP leaching of subsurface soil and soil IDW followed by:
    - SW-846 method 8260 for analysis of VOCs in leachate.
    - SW-846 method 8270 for analysis of semivolatile organic compounds (SVOCs) in leachate
    - SW-846 method 8081 for analysis of pesticides in leachate.
    - SW-846 method 8151 for analysis of herbicides in leachate.
    - SW-846 method 6010 and 7470 for analysis of metals and mercury in leachate.
- SW-846 9012 for analysis of reactive cyanide.
- SW-846 9040 for analysis of corrosivity and pH.

SECTION 2 - Field Sample Collection

Eleven sample delivery groups (SDGs) of analytical data were evaluated for data quality. They are 1401095, 1403128, DH-2013-01, DH-2013-02, DH-2013-03, DH-2014-01, DH-2014-02, DH-2014-03, DH-2014-04, DH-2014-05, and DH-2014-06. Table 1 lists the SDGs, sample IDs, and analyses which were reported.

In accordance with the UFP-QAPP, samples of these types did not require field QC samples such as field duplicates, matrix spike/matrix spike duplicates (MS/MSDs), equipment blanks, and trip blanks. MS/MSDs may have been performed by the laboratory if required by the analysis method.

SECTION 3 – Data Review and Validation Process

3.1 Data Validation Definition

All analytical data described above (analyses performed at Empirical Laboratories, LLC) from this investigation were validated as described in the project UFP-QAPP. One hundred percent of these analytical results were validated.

In general, data validation was performed in the following manner:

1. The case narratives were read.
2. Any issues identified in the case narratives were further investigated.
3. Duplicate results were resolved such that only one result per constituent per sample is presented to the data user.
4. Validation qualifiers, if required, were from the applicable Region II SOPs.

Validation qualifiers, if applicable, supersede laboratory qualifiers. Qualifiers were not "standardized" if a QC exceedance was not noted.

3.2 Data Validation Findings by SDG

1. SDG DH-2013-01:
    a. Three samples had insufficient volume for ignitability. The laboratory requested and received additional volume. The analyses were performed outside holding time.
        i. Affected samples are SL-TP-20-01-4, UM-TP-15-01-4, and UM-TP-19-01-4. These were H3-qualified by the laboratory which means "received outside holding time".
        ii. The QAPP-specified holding time is 14 days. These samples were analyzed within 77 days from collection. All associated results are 'did not flash' (i.e. similar to "nondetect").
        iii. Therefore, related results (ignitability in SL-TP-20-01-4, UM-TP-15-01-4, and UM-TP-19-01-4) were R-qualified as "rejected" due to holding time (HT).
    b. Corrosivity was received outside holding time for 13 samples.
        i. Some corrosivity results are H3-qualified by the laboratory which simply means "received outside holding time". The QAPP specifies a holding time of "ASAP", therefore no additional flags are necessary because no QAPP exceedance has occurred.
        ii. Relevant samples are UM-TP-02-01-4, UM-TP-07-01-4, UM-TP-07-02-4, SL-TP-02-01-4, SL-TP-05-01-4, UM-TP-05/06-01-4, UM-TP-05-01-4, UM-TP-06-01-4, SL-TP-20-01-4, UM-TP-15-01-4, UM-TP-19-01-4, SL-SL-01-4, and SL-SL-02-4.
    c. %R and %RPD outside control limits for cyanide in MS/MSD. Unspiked parent concentration is much greater than the spike.
        i. Some Cyanide results are N* or UN* qualified by the laboratory. The * signifies a QA/QC exceedance. The N signifies that there was a MS, MSD, and/or MS/MSD exceedance.
        ii. Relevant samples are UM-TP-02-01-4, UM-TP-07-01-4, UM-TP-07-02-4 (detection), SL-TP-02-01-4 (detection), SL-TP-05-01-4, UM-TP-05/06-01-4 (detection), UM-TP-05-01-4 (detection).
        iii. MS and MSD were performed on UM-TP-05/06-01-4. The sample concentration was 20.31mg/kg. The spike amounts were 3.512mg/kg and 3.547mg/kg, respectively. The MS and MSD %R were -309% and -232%, respectively. LCS/LCSDs were within acceptable limits. The recovery exceedance is not meaningful because the unspiked sample concentration was > 4X the spike amount. However, the MS/MSD was characterized by 24.4%RPD which exceeds the 20% limit. This is likely related to sample heterogeneity. Therefore, the parent sample result (cyanide in UM-TP-05/06-01-4) was J-qualified as "estimated" due to matrix duplicate precision (MDP).

2. SDG DH-2013-02
    a. Insufficient volume for reactive sulfide in SB-PZ-69-00-09-4, SB-PZ-75-00-19-4, and SB-PZ-78-00-21-4.
        i. Additional volume was not available; therefore the analysis was not performed. No further data validation action is necessary based on this, but it should be understood that a potential data gap exists, as it was not possible to perform a planned analysis.
    b. Insufficient volume for %Solids in SB-PZ-75-00-19-4. The %Solids result is from another laboratory (for the same sample).
        i. No further action necessary based on this. The %Solids value is simply used to adjust the soil results where necessary.
3. SDG DH-2013-03
    a. Corrosivity received outside holding time for all samples.
        i. Some corrosivity results are H3-qualified which simply means "received outside holding time". The QAPP specifies a holding time of "ASAP", therefore no additional flags are necessary (there is no QAPP exceedance).
        ii. All samples in this SDG are relevant.
4. SDG DH-2014-01
    a. There were no comments in the case narrative relevant to QC issues.
5. SDG DH-2014-02
    a. There were no comments in the case narrative relevant to QC issues.
6. SDG 1401095
    a. 4A02305-ICV5 (initial calibration verification) with a negative bias on column 2 for Chlordane.
        i. Column 1 was acceptable therefore no further action was deemed necessary or taken.
    b. 4B03602-ICV1 (initial calibration verification) with a negative bias on both columns for Toxaphene.
        i. Chlordane was characterized by -32.8 %D on column 1 and -31.9 %D on column 2, both of which exceed the 20% limit. Because this may indicate a potential low bias, related nondetect results (TCLP Toxaphene in IDW-SO-01-4) were UJ-qualified as "nondetect, estimated reporting limit" due to low recovery in initial calibration verification (ICV).
    c. 4B03604-CCV7 (continuing calibration verification) with a positive bias on column 2 for Toxaphene.
        i. There are no associated detections therefore no further action was deemed necessary or taken.
    d. Corrosivity received outside holding time for one sample.
        i. One corrosivity results is H3-qualified which simply means "received outside holding time". The QAPP specifies a holding time of "ASAP", therefore no additional flags are necessary (there is no QAPP exceedance).
        ii. Relevant sample is IDW-SO-01-4.

7. SDG DH-2014-03
    a. MW-01S-4 was received frozen.
        i. Although not ideal, because this can break containers and cause samples to be received “not intact”, this should have no effect on these analyses. No further action was deemed necessary or taken.
    b. Two samples were received near to the holding time expiration (48 hour) for nitrate and nitrite. MW-06S-4 was analyzed within 53 hours and 52 minutes and MW-01S-4 was analyzed within 53 hours and 42 minutes.
        i. It is very difficult to meet holding time when they are as short as 48 hours. The samples were shipped on the day after collection and were received the day after that.
        ii. Although holding time was exceeded, it is a slight exceedance (not outside 2X holding time). Samples were properly-preserved and integrity is not questionable.
        iii. Related results were J/UJ-qualified due to holding time exceedance (HT). Nitrate in MW-06S-4 and MW-01S-4 was J-qualified and Nitrite in MW-06S-4 and MW-01S-4 was UJ-qualified.
    c. 4B04416-CCV2 (continuing calibration verification) with positive bias for nitrite.
        i. Relevant results are UX-qualified.
        ii. There are no associated detections, therefore no further action was deemed necessary or taken.
8. SDG DH-2014-04
    a. 4B04108-CCV1 with positive bias for nitrite. 4B04110-CCV1 with positive bias for nitrite. 4B04110-CCV2 with positive bias for nitrite and nitrate. 4B04111-CCV2 (all continuing calibration verifications) with positive bias for nitrite.
        i. Relevant results are UX-qualified.
        ii. There are no associated detections, therefore no further action was deemed necessary or taken.
    b. 4B04416-CCV2 (continuing calibration verification) with positive bias for nitrite.
        i. Relevant results are UX-qualified.
        ii. There are no associated detections, therefore no further action was deemed necessary or taken.
9. SDG DH-2014-05
    a. MW-02S-4, MW-09S-4, and PZ-17-4 are B1-qualified to indicate that BOD blank concentration is nondetect but D.O. depletion exceeds 0.20mg/L.
        i. The laboratory was contacted for clarification. The associated blank (not the sample) is affected because D.O. depletion exceeds 0.20mg/L. It is a method requirement that data must be qualified when this occurs. This phenomenon occurs due to conditions in the laboratory (such as temperature changes over the course of the test).
        ii. Per the method, “the D.O. uptake in 5d must not be more than 0.20mg/L and preferably not more than 0.10mg/L, before making seed corrections. If the

dilution water blank exceeds 0.20mg/L, discard all data for tests using this dilution water or clearly identify such samples in data records.

iii. Excessive D.O. depletion suggests a potential bias in the blank which may also indicate a potential bias in the associated samples, which were treated to the same conditions. However, a bias would easily be evident based on the LCS results, which were characterized by acceptable recovery. Blank subtraction is not performed for this analysis.

iv. Because there is no significant effect on the data, no further action (i.e. qualification) was deemed necessary or taken. The "B1" qualifier is an indicator of a QC issue affecting the blank, as opposed to blank contamination.

b. 4B05509-CCV1 (continuing calibration verification) with positive bias for nitrite.

i. Relevant results are UX-qualified.

ii. There are no associated detections, therefore no further action was deemed necessary or taken.

10. SDG DH-2014-06

a. There were no comments in the case narrative.

11. SDG 1403128 (water RCI)

a. Corrosivity received outside holding time for all samples.

i. Some corrosivity results are H3-qualified which simply means "received outside holding time". The QAPP specifies a holding time of "ASAP", therefore no additional flags are necessary (there is no QAPP exceedance).

ii. All samples in this SDG are relevant.

3.2 Overall Data Validation Findings

Table 2 presents the results which were qualified during data validation. The data validation qualifiers supersede the laboratory qualifiers.

Field QC samples such as equipment rinseate blanks, ambient field blanks, trip blanks, field duplicates, and client-designated MS/MSDs were not necessary for these samples, the analysis of which generated screening and IDW data.

SECTION 4 – Summary of Precision Accuracy, Representativeness, Comparability, and Completeness (PARCC)

The quality of the field sampling effort and laboratory results was evaluated for compliance with project data quality objectives by reviewing overall precision, accuracy, representativeness, comparability, and completeness. Procedures used to assess these criteria are in accordance with the analytical methods and the UFP-QAPP.

4.1 Precision

QA/QC with respect to precision was within control with the following exceptions:

A cyanide MS/MSD was performed on a sample where the unspiked concentration was much greater than the spike amount. When this occurs, recovery exceedances are not relevant and do not suggest an

accuracy issue. However, a demonstration of precision is expected. Because precision was out of limits, qualification was necessary, and this is likely indicative of matrix heterogeneity. Because results were J-qualified as "estimated" (and not rejected) due to precision, precision had an impact on the data usability, but not a severe one, and the results are available as qualified.

4.2 Accuracy

QA/QC with respect to accuracy/bias was within control with the following exceptions:

Several calibration (initial calibration verification and continuing calibration verification) exceedances were noted. Potential positive biases associated only with nondetect results do not affect the data and do not result in qualification. Potential negative biases associated with nondetect results are UJ-qualified as "nondetect, estimated reporting limit" because the reporting limit may be higher. This is not a significant impact on accuracy because the data are not rejected and are still available for use by the project team. Potential positive biases and potential negative biases associated with detected results are J-qualified as "estimated" because the results may be higher or lower, respectively. This is not a significant impact on accuracy because the data are not rejected and are still available for use by the project team.

4.3 Representativeness

QA/QC with respect to representativeness was within control with the following exceptions:

Where holding times were noted as exceeded but qualification was not necessary, there is no impact on representativeness as approved UFP-QAPP limits were met. Where holding times were slightly exceeded and data qualification was necessary, there is an impact on representativeness, but not a severe impact, and the data are usable as qualified. Where holding times were grossly exceeded and it was necessary to reject data, there is a severe impact on representativeness and those affected data are not available for use. However, because holding time exceedances affect only the samples for which holding times were exceeded, and because the project team does not use the rejected data, there is no impact on the data set which is actually used by the project team (aside from completeness, discussed below).

Results of samples are representative of the site at the time of sample collection. Samples were properly-preserved, shipped, and stored. Blank contamination was not noted for this data set.

4.4 Comparability

All results were reported in typical and preferred units. Analytical and UFP-QAPP protocols were adhered-to. Collection and analytical techniques followed standard, approved, documented procedures.

For the most part, reporting limits evaluation is not necessary for screening data such as these, where the purpose is not to demonstrate absence of a contaminant at less than a screening level. In fact, nondetect results are not necessarily expected (such as for nitrate and nitrite). However, for IDW results, the laboratory must demonstrate absence of contaminants at less than criteria such as TCLP limits, if the project team can come to the conclusion that waste is not hazardous (etc.). Reporting limits were reviewed and were determined appropriate for such determinations.

4.5 Completeness

All results are available to the project team for use with the exception of the rejected results. As the relevant data set consisted of 521 distinct results and only three of them were rejected, the data set is 99.4% complete. Therefore, the UFP-QAPP completeness goal of ">90% of results not rejected by the data validator" was met. It is not uncommon for a small amount of rejected data in any large environmental project.

The three rejected results consisted of ignitability in SL-TP-20-01-4, UM-TP-15-01-4, and UM-TP-19-01-4. Rejection was due to gross holding time exceedances as a result of the laboratory running out of volume for analysis, requesting more, receiving it, and eventually performing the analysis. As there were 33 analyses performed for ignitability and three of them were rejected, the ignitability data subset is 93.9% complete, and again, the UFP-QAPP completeness goal was met.

Reactive sulfide was planned but not performed for SB-PZ-69-00-09-4, SB-PZ-75-00-19-4, and SB-PZ-78-00-21-4. The data gap was a result of the laboratory running out of volume for analysis and requesting more, but additional volume was not available. When this occurred, the project team carefully examined the issue and determined that they could work around the data gap. Resampling was not necessary. As there were 30 analyses performed for reactive sulfide but 33 were planned, the reactive sulfide data subset is 93.9% complete, and a typical completeness goal of 90% would be met.

Rejected results are not available for use to the project team. All non-rejected results are available for use to the project, qualified as applicable.

SECTION 5 – Conclusions

The data generated from analysis of these samples are of sufficient quality and quantity necessary to accomplish the project objectives. Samples were collected and analyzed as required by the project UFP-QAPP. The sample results are believed to be representative of the site conditions at the time of collection, and are comparable to other data sets of high quality.

Table DQE-1
SDG, Sample ID's, Analysis Performed
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

SDG	Sample ID	Type	Full TCLP & RCI	RCI	Reactivity to Cyanide	Reactivity to Sulfide	Ignitability	Corrosivity	TCLPV & TCLPM	Sulfide	Ions	BOD
1401095	IDW-SO-01-4	IDW Soil	X									
1403128	WW-02-4	Waste Water		X								
DH-2013-01	SL-SL-01-4	Sludge		X								
DH-2013-01	SL-SL-02-4	Sludge		X								
DH-2013-01	SL-TP-02-01-4	Sludge		X								
DH-2013-01	SL-TP-05-01-4	Sludge		X								
DH-2013-01	SL-TP-20-01-4	Sludge		X								
DH-2013-01	UM-TP-02-01-4	Unknown Material		X								
DH-2013-01	UM-TP-05/06-01-4	Unknown Material		X								
DH-2013-01	UM-TP-05-01-4	Unknown Material		X								
DH-2013-01	UM-TP-06-01-4	Unknown Material		X								
DH-2013-01	UM-TP-07-01-4	Unknown Material		X								
DH-2013-01	UM-TP-07-02-4	Unknown Material		X								
DH-2013-01	UM-TP-15-01-4	Unknown Material		X								
DH-2013-01	UM-TP-19-01-4	Unknown Material		X								
DH-2013-02	SB-PZ-46-00-09-4	Subsurface Soil			X	X	X					
DH-2013-02	SB-PZ-52-00-08-4	Subsurface Soil			X	X	X					
DH-2013-02	SB-PZ-61-00-12.8-4	Subsurface Soil			X	X	X					
DH-2013-02	SB-PZ-62-00-10-4	Subsurface Soil			X	X	X					
DH-2013-02	SB-PZ-63-00-09-4	Subsurface Soil			X	X	X					
DH-2013-02	SB-PZ-67-00-8.2-4	Subsurface Soil			X	X	X					
DH-2013-02	SB-PZ-68-00-09-4	Subsurface Soil			X	X	X					
DH-2013-02	SB-PZ-69-00-09-4	Subsurface Soil			X		X					
DH-2013-02	SB-PZ-75-00-19-4	Subsurface Soil			X		X					
DH-2013-02	SB-PZ-78-00-21-4	Subsurface Soil			X		X					
DH-2013-03	SB-PZ-23-02-03.3-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-24-01.7-02.7-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-25-00.9-02.2-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-26-06-08-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-27-02.5-03-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-28-02-03.1-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-29-00-02.8-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-30-02-02.9-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-31-20-22-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-32-02-02.8-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-33-01-02-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-34-00.6-03.5-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-36-22-22.9-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-37-00-02-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-38-00-02-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-42-10-12-4	Subsurface Soil						X				

Table DQE-1
SDG, Sample ID's, Analysis Performed
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

SDG	Sample ID	Type	Full TCLP & RCI	RCI	Reactivity to Cyanide	Reactivity to Sulfide	Ignitability	Corrosivity	TCLPV & TCLPM	Sulfide	Ions	BOD
DH-2013-03	SB-PZ-43-00-01.7-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-46-05-06-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-49-05-06-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-52-04-05-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-52-06-06.4-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-60-06-08-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-61-12-12.8-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-62-02-03.3-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-62-05-06-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-62-09-10-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-63-06-08-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-63-08-08.9-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-67-06-07.7-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-68-04-05-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-69-07.5-08.5-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-75-15-16-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-75-16-17-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-78-10-12-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-80-05-06-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-81-05-06-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-82-05-06-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-83-15-16-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-84-02-02.9-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-85-00-0.9-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-88-06-07.2-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-89-02-03.4-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-90-08-09-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-91-02-03.4-4	Subsurface Soil						X				
DH-2013-03	SB-PZ-92-00-02-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-40-05-06-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-45-00-02-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-45-05-06-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-47-05-06-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-51-05-06-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-53-05-06-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-55-10-11-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-56-00-10-4	Subsurface Soil		X					X			
DH-2014-01	SB-PZ-57-00-07.2-4	Subsurface Soil		X					X			
DH-2014-01	SB-PZ-58-00-02-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-58-02-02.5-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-58-05-06-4	Subsurface Soil						X				

Table DQE-1
SDG, Sample ID's, Analysis Performed
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

SDG	Sample ID	Type	Full TCLP & RCI	RCI	Reactivity to Cyanide	Reactivity to Sulfide	Ignitability	Corrosivity	TCLPV & TCLPM	Sulfide	Ions	BOD
DH-2014-01	SB-PZ-58-06-07.5-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-64-00-06.2-4	Subsurface Soil		X					X			
DH-2014-01	SB-PZ-70-00-09-4	Subsurface Soil		X					X			
DH-2014-01	SB-PZ-70-06-08-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-72-00-07-4	Subsurface Soil		X					X			
DH-2014-01	SB-PZ-72-06-08-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-73-00-05.7-4	Subsurface Soil		X					X			
DH-2014-01	SB-PZ-76-00-07.4-4	Subsurface Soil		X					X			
DH-2014-01	SB-PZ-76-06-08-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-77-20-22-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-79-05-06-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-86-12-13.5-4	Subsurface Soil						X				
DH-2014-01	SB-PZ-87-16-17-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-35-05-05.7-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-39-01.5-03.1-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-39-05-06-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-39-06-07.6-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-41-06-06.5-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-44-00-02-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-48-10-12-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-50-02-02.6-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-54-16-18-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-59-05-06-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-65-00-07.7-4	Subsurface Soil		X					X			
DH-2014-02	SB-PZ-66-20-22-4	Subsurface Soil						X				
DH-2014-02	SB-PZ-71-15-16-4	Subsurface Soil						X				
DH-2014-03	MW-01S-4	MW GW								X	X	X
DH-2014-03	MW-06S-4	MW GW								X	X	X
DH-2014-03	MW-10D-4	MW GW								X	X	X
DH-2014-03	MW-10S-4	MW GW								X	X	X
DH-2014-03	MW-15D-4	MW GW								X	X	X
DH-2014-03	MW-15S-4	MW GW								X	X	X
DH-2014-04	MW-04S-4	MW GW								X	X	X
DH-2014-04	MW-05S-4	MW GW								X		
DH-2014-04	MW-13D-4	MW GW								X	X	X
DH-2014-04	MW-13D-4	MW GW								X	X	X
DH-2014-04	MW-17S-4	MW GW								X	X	X
DH-2014-04	MW-18S-4	MW GW								X	X	X
DH-2014-04	MW-19S-4	MW GW								X	X	X
DH-2014-04	MW-20S-4	MW GW								X	X	X
DH-2014-04	MW-21S-4	MW GW								X	X	X

Table DQE-1
SDG, Sample ID's, Analysis Performed
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

SDG	Sample ID	Type	Full TCLP & RCI	RCI	Reactivity to Cyanide	Reactivity to Sulfide	Ignitability	Corrosivity	TCLPV & TCLPM	Sulfide	Ions	BOD
DH-2014-04	MW-23S-4	MW GW								X	X	X
DH-2014-04	MW-24S-4	MW GW								X	X	X
DH-2014-04	MW-25S-4	MW GW								X	X	X
DH-2014-04	MW-26S-4	MW GW								X	X	X
DH-2014-05	MW-02S-4	MW GW								X	X	X
DH-2014-05	MW-07S-4	MW GW								X	X	X
DH-2014-05	MW-09S-4	MW GW								X	X	X
DH-2014-05	MW-11D-4	MW GW								X	X	X
DH-2014-05	MW-11S-4	MW GW								X	X	X
DH-2014-05	PZ-17-4	PZ GW										X
DH-2014-06	MW-03S-4	MW GW								X	X	X
DH-2014-06	MW-12S-4	MW GW								X	X	X
DH-2014-06	MW-13S-4	MW GW								X	X	X
DH-2014-06	MW-14S-4	MW GW								X	X	X
DH-2014-06	PZ-14-4	PZ GW										X
DH-2014-06	PZ-16-4	PZ GW										X

IDW: Investigation-Derived Waste
MW GW: Monitoring Well Groundwater
PZ GW : Piezometer Groundwater
TCLPV & TCPLM: TCLP leaching followed by analysis for metals and volatiles.

Full TCLP & RCI: Reactivity to cyanide and sulfide, corrosivity, ignitability, and TCLP leaching followed by analysis for VOCs, SVOCs, pesticides, herbicides, and metals.
RCI: Reactivity to cyanide and sulfide, corrosivity, and ignability.

Ions: (Cl, NO_3, NO_2, SO_4)
BOD: Biological Oxygen Demand

Table DQE-2
Results Qualified During Data Evaluation
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit 1

SDG	Sample ID	Method	CAS #[1]	Analyte	Result	Units	Lab Flag	DV Flag	Reason Code
1401095	IDW-SO-01-4	SW-846 1311, 8081	8001-35-2	TCLP Toxaphene	0.005	mg/l	UY	UJ	ICV
DH-2014-03	MW-06S-4	EPA 300.0	14797-55-8	Nitrate	0.368	mg/l	H1	J	HT
DH-2014-03	MW-01S-4	EPA 300.0	14797-65-0	Nitrite	1	mg/l	H1U	UJ	HT
DH-2014-03	MW-06S-4	EPA 300.0	14797-65-0	Nitrite	1	mg/l	H1U	UJ	HT
DH-2014-03	MW-01S-4	EPA 300.0	14797-55-8	Nitrate	4.67	mg/l	H1	J	HT
DH-2013-01	UM-TP-05/06-01-4	SW-846 9012	57-12-5	Cyanide	20.3	mg/kg	N	J	MDP
DH-2013-01	SL-TP-20-01-4	SW-846 1010	IGNITB	Ignitability	158	°F	>;H3	R	HT
DH-2013-01	UM-TP-15-01-4	SW-846 1010	IGNITB	Ignitability	158	°F	>;H3	R	HT
DH-2013-01	UM-TP-19-01-4	SW-846 1010	IGNITB	Ignitability	158	°F	>;H3	R	HT

UJ: Nondetect, estimated reporting limit.
J: Estimated.
R: Rejected
[1]Some CAS numbers may be contractor-specific.

ICV: Initial Calibration Verification
HT: Holding Time
MDP: Matrix Duplicate Precision

Appendix H
Analytical Results - Contract Laboratory Program Analyses

Contents

1. Test Pits – Unknown Materials – Analytical Results
2. Test Pits – Sludge – Analytical Results
3. NJDOT Berm Soil Borings – Analytical Results
4. Groundwater – Analytical Results

Appendix H
Analytical Results - Contract Laboratory Program Analyses

Section 1

Test Pits - Unknown Materials – Analytical Results

Appendix
Unknown Materials
2013
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		TP-02	TP-05	TP-05/06	TP-06	TP-07	TP-07
Sample ID		UM-TP-02-01-4	UM-TP-05-01-4	UM-TP-05/06-01-4	UM-TP-06-01-4	UM-TP-07-01-4	UM-TP-07-02-4
Sample Date		11/12/2013	11/13/2013	11/13/2013	11/13/2013	11/12/2013	11/12/2013
Sample Interval		7 - 7.5 FT	3 - 3.5 FT	N/A	6 - 6.5 FT	3 - 3.5 FT	6 - 7 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Acetone	67-64-1	830 U	13 U	610 U	23 U	1300 U	11 U
Benzene	71-43-2	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Bromoform	75-25-2	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Bromomethane	74-83-9	410 UJ	6.6 UJ	310 U	12 UJ	640 U	5.4 UJ
Carbon disulfide	75-15-0	410 UJ	6.6 UJ	310 U	12 UJ	640 U	5.4 UJ
Carbon tetrachloride	56-23-5	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Chlorobenzene	108-90-7	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Chlorobromomethane	74-97-5	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Chloroethane	75-00-3	410 UJ	6.6 UJ	310 U	12 UJ	640 U	5.4 UJ
Chloroform	67-66-3	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Chloromethane	74-87-3	410 UJ	6.6 UJ	310 U	12 UJ	640 U	5.4 UJ
Cyclohexane	110-82-7	410 U	6.6 U	310 U	12 U	640 U	5.4 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dibromochloromethane	124-48-1	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dibromoethane-1,2	106-93-4	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichlorobenzene-1,2	95-50-1	410 U	6.6 U	160 J	12 U	470 J	5.4 U
Dichlorobenzene-1,3	541-73-1	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichlorobenzene-1,4	106-46-7	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichlorobromomethane	75-27-4	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichlorodifluoromethane	75-71-8	410 UJ	6.6 UJ	310 U	12 UJ	640 U	5.4 UJ
Dichloroethane-1,1	75-34-3	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichloroethane-1,2	107-06-2	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichloroethene-1,2 trans	156-60-5	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichloroethylene-1,1	75-35-4	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichloroethylene-1,2 cis	156-59-2	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichloropropane-1,2	78-87-5	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichloropropene-1,3 cis	10061-01-5	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dichloropropene-1,3 trans	10061-02-6	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Dioxane, 1,4-	123-91-1	8300 R	130 R	6100 R	230 R	13000 R	110 R
Ethylbenzene	100-41-4	270 J	6.6 U	310 U	12 U	680	5.4 U

Appendix
Unknown Materials
2013
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		TP-02	TP-05	TP-05/06	TP-06	TP-07	TP-07
Sample ID		UM-TP-02-01-4	UM-TP-05-01-4	UM-TP-05/06-01-4	UM-TP-06-01-4	UM-TP-07-01-4	UM-TP-07-02-4
Sample Date		11/12/2013	11/13/2013	11/13/2013	11/13/2013	11/12/2013	11/12/2013
Sample Interval		7 - 7.5 FT	3 - 3.5 FT	N/A	6 - 6.5 FT	3 - 3.5 FT	6 - 7 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Hexanone-2	591-78-6	830 U	13 U	610 U	23 U	1300 U	11 U
Isopropylbenzene	98-82-8	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Methyl acetate	79-20-9	470	6.6 U	310 U	12 U	290 J	5.4 U
Methyl cyclohexane	108-87-2	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Methyl ethyl ketone (2-butanone)	78-93-3	830 U	13 U	610 U	23 U	1300 U	11 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	830 U	13 U	610 U	23 U	1300 U	11 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Methylene chloride	75-09-2	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Styrene	100-42-5	410 U	6.6 U	310 U	12 U	280 J	5.4 U
Tetrachloroethane-1,1,2,2	79-34-5	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Tetrachloroethylene	127-18-4	410 U	6.6 U	310 U	12 U	370 J	5.4 U
Toluene	108-88-3	270 J	6.6 U	150 J	12 U	1300	5.4 U
Trichlorobenzene-1,2,3	87-61-6	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Trichlorobenzene-1,2,4	120-82-1	410 U	6.6 U	310 U	12 U	1200	5.4 U
Trichloroethane-1,1,1	71-55-6	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Trichloroethane-1,1,2	79-00-5	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Trichloroethylene	79-01-6	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Trichlorofluoromethane	75-69-4	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Vinyl chloride	75-01-4	410 U	6.6 U	310 U	12 U	640 U	5.4 U
Xylene-o	95-47-6	480	6.6 U	220 J	12 U	1300	5.4 U
Xylenes, m & p	179601-23-1	1100	6.6 U	440	12 U	2600	5.4 U
Semivolatile Organic Compounds (ug/kg)							
Acenaphthene	83-32-9	110	97	170	160	540 J	180
Acenaphthylene	208-96-8	42	250	47	50	310	84
Acetophenone	98-86-2	240 U	280 U	200 U	440 U	350 U	210 U
Anthracene	120-12-7	79	640 J	320	540	1600 J	320
Atrazine	1912-24-9	240 U	280 U	200 U	440 U	350 U	210 U
Benzaldehyde	100-52-7	240 U	280 U	200 U	440 U	350 U	210 U

Appendix
Unknown Materials
2013
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		TP-02	TP-05	TP-05/06	TP-06	TP-07	TP-07
Sample ID		UM-TP-02-01-4	UM-TP-05-01-4	UM-TP-05/06-01-4	UM-TP-06-01-4	UM-TP-07-01-4	UM-TP-07-02-4
Sample Date		11/12/2013	11/13/2013	11/13/2013	11/13/2013	11/12/2013	11/12/2013
Sample Interval		7 - 7.5 FT	3 - 3.5 FT	N/A	6 - 6.5 FT	3 - 3.5 FT	6 - 7 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Benzo(a)anthracene	56-55-3	200	1900 J	880 J	550	3700 J	450
Benzo(a)pyrene	50-32-8	62	1100 J	530 J	320	810 J	320
Benzo(b)fluoranthene	205-99-2	100	1400 J	870 J	460	1600 J	380
Benzo(g,h,I)perylene	191-24-2	55	650 J	340	170	510 J	210
Benzo(k)fluoranthene	207-08-9	24	490 J	160	190	310	110
Biphenyl	92-52-4	120 J	280 U	100 J	440 U	590	210 U
Bromophenyl-4 Phenyl Ether	101-55-3	240 UJ	280 U	200 U	440 U	350 U	210 U
Butylbenzyl phthalate	85-68-7	240 U	280 U	200 U	440 U	350 U	210 U
Caprolactam	105-60-2	240 U	280 U	200 U	440 U	350 U	210 U
Carbazole	86-74-8	240 UJ	100 J	55 J	440 U	170 J	210 U
Chloroaniline-4	106-47-8	240 U	280 U	200 U	440 U	350 U	210 U
Chloronaphthalene-2	91-58-7	240 U	280 U	200 U	440 U	350 U	210 U
Chlorophenol-2	95-57-8	240 U	280 U	200 U	440 U	350 U	210 U
Chlorophenyl-4 phenyl ether	7005-72-3	240 UJ	280 U	200 U	440 U	350 U	210 U
Chrysene	218-01-9	180	1300 J	530 J	430	1600 J	430
Cresol-4,6-dinitro-ortho	534-52-1	470 U	540 U	390 U	860 U	670 U	410 U
Cresol-o	95-48-7	240 U	280 U	200 U	440 U	350 U	210 U
Cresol-p	106-44-5	240 U	280 U	200 U	91 J	350 U	210 U
Cresol-parachloro-meta	59-50-7	240 U	280 U	200 UJ	440 U	350 U	210 U
Dibenzo(a,h)anthracene	53-70-3	24 U	140	44	88 J	110	39
Dibenzofuran	132-64-9	240 UJ	280 U	200 U	440 U	440	210 U
Dichlorobenzidine-3,3	91-94-1	240 U	280 U	200 U	440 U	350 U	210 U
Dichlorophenol-2,4	120-83-2	240 U	280 U	200 UJ	440 U	350 U	210 U
Dimethylphenol-2,4	105-67-9	240 U	280 UJ	200 U	440 UJ	350 U	210 U
Dinitrophenol-2,4	51-28-5	470 UJ	540 U	390 U	860 UJ	670 UJ	410 U
Dinitrotoluene-2,4	121-14-2	240 U	280 U	200 U	440 U	350 U	210 U
Dinitrotoluene-2,6	606-20-2	240 U	280 U	200 U	440 U	350 U	210 U
Ether, bis(2-chloroethyl)	111-44-4	240 U	280 U	200 U	440 U	350 U	210 U
Ether, bis-chloroisopropyl	108-60-1	240 U	280 U	200 U	440 U	350 U	210 U
Fluoranthene	206-44-0	290	2100 J	1100 J	1400 J	7000 J	550

Appendix
Unknown Materials
2013
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		TP-02	TP-05	TP-05/06	TP-06	TP-07	TP-07
Sample ID		UM-TP-02-01-4	UM-TP-05-01-4	UM-TP-05/06-01-4	UM-TP-06-01-4	UM-TP-07-01-4	UM-TP-07-02-4
Sample Date		11/12/2013	11/13/2013	11/13/2013	11/13/2013	11/12/2013	11/12/2013
Sample Interval		7 - 7.5 FT	3 - 3.5 FT	N/A	6 - 6.5 FT	3 - 3.5 FT	6 - 7 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Fluorene	86-73-7	210	170	210	190	790 J	120
Hexachlorobenzene	118-74-1	240 U	280 U	200 U	440 U	350 U	210 U
Hexachlorobutadiene	87-68-3	240 U	280 U	200 UJ	440 U	350 U	210 U
Hexachlorocyclopentadiene	77-47-4	240 U	280 U	200 U	440 U	350 U	210 U
Hexachloroethane	67-72-1	240 U	280 U	200 U	440 U	350 U	210 U
Indeno(1,2,3-cd)pyrene	193-39-5	44	750 J	350	160	530 J	200
Isophorone	78-59-1	240 U	280 U	200 U	440 U	350 U	210 U
Methane, bis(2-chloroethoxy)	111-91-1	240 U	280 U	200 U	440 U	350 U	210 U
Methylnaphthalene-2	91-57-6	5000 J	250	1700 J	160	7200 J	290
Naphthalene	91-20-3	2000 J	130	600 J	210	4500 J	240
Nitroaniline-2	88-74-4	470 UJ	540 U	390 U	860 UJ	670 UJ	410 U
Nitroaniline-3	99-09-2	470 UJ	540 U	390 U	860 UJ	670 UJ	410 U
Nitroaniline-4	100-01-6	470 UJ	540 U	390 U	860 UJ	670 UJ	410 U
Nitrobenzene	98-95-3	240 U	280 U	200 U	440 U	350 U	210 U
Nitrophenol-2	88-75-5	240 U	280 U	200 U	440 U	350 U	210 U
Nitrophenol-4	100-02-7	470 UJ	540 U	390 U	860 UJ	670 UJ	410 U
Nitroso-di-n-propyl-amine-N	621-64-7	240 U	280 U	200 U	440 U	350 U	210 U
Nitrosodiphenylamine-n	86-30-6	240 U	280 U	200 U	440 U	350 U	210 U
PCP (Pentachlorophenol)	87-86-5	48 U	54 U	39 U	17 U	68 U	45 J
Phenanthrene	85-01-8	870 J	2200 J	1900 J	1600 J	6700 J	820 J
Phenol	108-95-2	250	280 U	53 J	140 J	350 U	210 U
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	240 U	280 U	110 J	440 U	510	54 J
Phthalate, diethyl	84-66-2	240 U	280 U	200 U	440 U	350 U	210 U
Phthalate, dimethyl	131-11-3	240 U	280 U	200 U	440 U	350 U	210 U
Phthalate, di-n-butyl	84-74-2	240 U	280 U	200 U	440 U	350 U	210 U
Phthalate, di-n-octyl	117-84-0	240 U	280 U	200 U	440 U	350 U	210 U
Pyrene	129-00-0	760 J	2100 J	900 J	1200 J	5900 J	740 J
Tetrachlorobenzene-1,2,4,5	95-94-3	240 U	280 U	200 UJ	440 U	350 U	210 U
Tetrachlorophenol-2,3,4,6	58-90-2	240 U	280 U	200 UJ	440 U	350 U	210 U
Trichlorophenol-2,4,5	95-95-4	240 U	280 U	200 UJ	440 U	350 U	210 U

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Station ID		TP-02	TP-05	TP-05/06	TP-06	TP-07	TP-07
Sample ID		UM-TP-02-01-4	UM-TP-05-01-4	UM-TP-05/06-01-4	UM-TP-06-01-4	UM-TP-07-01-4	UM-TP-07-02-4
Sample Date		11/12/2013	11/13/2013	11/13/2013	11/13/2013	11/12/2013	11/12/2013
Sample Interval		7 - 7.5 FT	3 - 3.5 FT	N/A	6 - 6.5 FT	3 - 3.5 FT	6 - 7 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Trichlorophenol-2,4,6	88-06-2	240 U	280 U	200 UJ	440 U	350 U	210 U
Pesticides and PCBs (ug/kg)							
Aldrin	309-00-2	2.4 U	2.7 U	2 UJ	4.4 U	3.5 U	2.1 U
BHC, alpha	319-84-6	2.4 U	2.7 U	2 R	4.4 U	3.5 U	2.1 U
BHC, beta	319-85-7	2.4 U	2.7 U	2.2 J-	4.4 U	3.7 R	2.1 U
BHC, delta	319-86-8	2.4 U	2.7 U	2 UJ	4.4 U	3.5 U	2.1 U
BHC, gamma (Lindane)	58-89-9	2.4 U	2.7 U	2.7 J-	4.4 U	3.5 U	2.1 U
Chlordane - alpha	5103-71-9	2.4 U	2.7 U	2 UJ	4.4 U	3.5 U	2.1 U
Chlordane - gamma	5566-34-7	2.4 U	2.7 U	2 UJ	4.4 U	3.5 U	2.1 U
DDD-4,4	72-54-8	4.7 U	5.3 U	3.8 UJ	8.5 U	12 R	4.2 U
DDE-4,4	72-55-9	4.7 U	5.3 U	3.8 UJ	8.5 U	8.5 R	4.2 U
DDT-4,4	50-29-3	7.9	12 NJ	7.3 J-	8.5 U	74 J	5.8
Dieldrin	60-57-1	4.7 U	5.3 U	3.8 UJ	8.5 U	13 R	4.2 U
Endosulfan I (alpha)	959-98-8	2.4 U	2.7 U	2 UJ	4.4 U	3.5 U	2.1 U
Endosulfan II (beta)	33213-65-9	4.7 U	5.3 U	3.8 UJ	8.5 U	6.7 U	4.2 U
Endosulfan Sulfate	1031-07-8	4.7 U	5.3 U	3.8 UJ	8.5 U	6.7 U	4.2 U
Endrin	72-20-8	4.7 U	5.3 U	3.8 UJ	8.5 U	7.2	4.2 U
Endrin Aldehyde	7421-93-4	4.7 U	5.3 U	3.8 UJ	8.5 U	20 NJ	4.2 U
Endrin ketone	53494-70-5	4.7 U	5.3 U	3.8 UJ	8.5 U	6.7 U	4.2 U
Heptachlor	76-44-8	2.5	2.7 U	2.3 J-	4.4 U	3.5 U	2.1 U
Heptachlor Epoxide	1024-57-3	3.1 NJ	2.7 U	3.7 NJ	4.4 U	3.5 U	2.1 U
Methoxychlor	72-43-5	24 U	27 U	20 UJ	44 U	35 U	21 U
PCB-Aroclor 1016	12674-11-2	320	50 J	290	50 J	450	32 J
PCB-Aroclor 1221	11104-28-2	47 U	53 U	38 U	86 U	67 U	41 U
PCB-Aroclor 1232	11141-16-5	47 U	53 U	38 U	86 U	67 U	41 U
PCB-Aroclor 1242	53469-21-9	47 U	53 U	38 U	86 U	67 U	41 U
PCB-Aroclor 1248	12672-29-6	47 U	53 U	38 U	86 U	67 U	41 U
PCB-Aroclor 1254	11097-69-1	47 U	53 U	38 U	86 U	67 U	41 U
PCB-Aroclor 1260	11096-82-5	140 NJ	350	190	86 U	2500	130 J

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Station ID		TP-02	TP-05	TP-05/06	TP-06	TP-07	TP-07
Sample ID		UM-TP-02-01-4	UM-TP-05-01-4	UM-TP-05/06-01-4	UM-TP-06-01-4	UM-TP-07-01-4	UM-TP-07-02-4
Sample Date		11/12/2013	11/13/2013	11/13/2013	11/13/2013	11/12/2013	11/12/2013
Sample Interval		7 - 7.5 FT	3 - 3.5 FT	N/A	6 - 6.5 FT	3 - 3.5 FT	6 - 7 FT
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/kg)							
PCB-Aroclor 1262	37324-23-5	47 U	53 U	38 U	86 U	67 U	41 U
PCB-Aroclor 1268	11100-14-4	47 U	53 U	38 U	86 U	67 U	41 U
Toxaphene	8001-35-2	240 U	270 U	200 UJ	440 U	350 U	210 U
Metals (ug/kg)							
Aluminum	7429-90-5	12400000	145000000	13000000	227000000 J	157000000 J	34600000
Antimony	7440-36-0	26300	5000 J	8600	6200 J	35900 J	59400
Arsenic	7440-38-2	11200	1600 U	1600	1900 J	2100 UJ	1300 U
Barium	7440-39-3	282000	32700 U	45400	50400 UJ	57200 J	50700
Beryllium	7440-41-7	910 U	820 U	590 U	1300 UJ	1500 J	2100
Cadmium	7440-43-9	970	820 J	590 U	1300 UJ	1000 J	3000
Calcium	7440-70-2	165000000	22400000	55500000	12600000 J	60500000 J	72200000
Chromium	7440-47-3	7090000	2120000	3580000	1710000 J	9280000 J	8670000
Cobalt	7440-48-4	5200 J	37000	10100	16300 J	101000 J	258000
Copper	7440-50-8	21300	27500	18200	10900 J	75300 J	286000
Cyanide	57-12-5	8700	2300	9300	2600 J	1200 J	1900
Iron	7439-89-6	9210000	23900000	10800000	12000000 J	56300000 J	93900000
Lead	7439-92-1	2120000	59500	42400	66600 J	89100 J	136000
Magnesium	7439-95-4	6970000	14700000	5270000	5780000 J	30700000 J	73400000
Manganese	7439-96-5	240000	257000	187000	97600 J	464000 J	839000
Mercury	7439-97-6	85 J	12400	350	140 J	160 J	160
Nickel	7440-02-0	11600	134000	28300	79100 J	331000 J	709000
Potassium	7440-09-7	907000 U	818000 U	586000 U	1260000 UJ	1040000 UJ	647000 U
Selenium	7782-49-2	1300 J	1700 J	840 J	1500 J	7300 UJ	4500 U
Silver	7440-22-4	1800 U	1600 U	1200 U	2500 UJ	2100 UJ	1300 U
Sodium	7440-23-5	3090000	818000 U	711000	2090000 J	2830000 J	4730000
Thallium	7440-28-0	1400 J	4100 U	340 J	6300 UJ	5200 UJ	3200 U
Vanadium	7440-62-2	290000	700000	224000	542000 J	1290000 J	1670000
Zinc	7440-66-6	70500	113000	48300	90400 J	262000 J	698000

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Station ID		TP-15	TP-19
Sample ID		UM-TP-15-01-4	UM-TP-19-01-4
Sample Date		11/14/2013	11/14/2013
Sample Interval		6 - 6.5 FT	3 - 3.5 FT
Chemical Name	**CAS Number**		
Volatile Organic Compounds (ug/kg)			
Acetone	67-64-1	4600	30
Benzene	71-43-2	470 U	5.4 U
Bromoform	75-25-2	470 U	5.4 UJ
Bromomethane	74-83-9	470 UJ	5.4 U
Carbon disulfide	75-15-0	470 UJ	5.4 U
Carbon tetrachloride	56-23-5	470 U	5.4 U
Chlorobenzene	108-90-7	470 U	5.4 U
Chlorobromomethane	74-97-5	470 U	5.4 UJ
Chloroethane	75-00-3	470 UJ	5.4 U
Chloroform	67-66-3	230 J	34 J-
Chloromethane	74-87-3	470 UJ	5.4 U
Cyclohexane	110-82-7	470 U	5.4 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	470 U	5.4 R
Dibromochloromethane	124-48-1	470 U	5.4 UJ
Dibromoethane-1,2	106-93-4	470 U	5.4 U
Dichlorobenzene-1,2	95-50-1	470 U	5.4 U
Dichlorobenzene-1,3	541-73-1	470 U	5.4 U
Dichlorobenzene-1,4	106-46-7	470 U	5.4 U
Dichlorobromomethane	75-27-4	470 U	5.4 U
Dichlorodifluoromethane	75-71-8	470 UJ	5.4 U
Dichloroethane-1,1	75-34-3	470 U	5.4 UJ
Dichloroethane-1,2	107-06-2	470 U	5.4 U
Dichloroethene-1,2 trans	156-60-5	470 U	5.4 U
Dichloroethylene-1,1	75-35-4	470 U	5.4 U
Dichloroethylene-1,2 cis	156-59-2	470 U	5.4 U
Dichloropropane-1,2	78-87-5	470 U	5.4 U
Dichloropropene-1,3 cis	10061-01-5	470 U	5.4 U
Dichloropropene-1,3 trans	10061-02-6	470 U	5.4 U
Dioxane, 1,4-	123-91-1	9500 R	110 R
Ethylbenzene	100-41-4	470 U	5.4 U

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Station ID		TP-15	TP-19
Sample ID		UM-TP-15-01-4	UM-TP-19-01-4
Sample Date		11/14/2013	11/14/2013
Sample Interval		6 - 6.5 FT	3 - 3.5 FT
Chemical Name	**CAS Number**		
Volatile Organic Compounds (ug/kg)			
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	470 U	5.4 U
Hexanone-2	591-78-6	950 U	11 U
Isopropylbenzene	98-82-8	470 U	5.4 U
Methyl acetate	79-20-9	470 U	5.4 U
Methyl cyclohexane	108-87-2	470 U	5.4 U
Methyl ethyl ketone (2-butanone)	78-93-3	710 J	11 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	3200	11 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	470 U	5.4 U
Methylene chloride	75-09-2	470 U	5.4 U
Styrene	100-42-5	470 U	5.4 U
Tetrachloroethane-1,1,2,2	79-34-5	470 U	5.4 R
Tetrachloroethylene	127-18-4	470 U	5.4 U
Toluene	108-88-3	240 J	5.4 U
Trichlorobenzene-1,2,3	87-61-6	470 U	5.4 U
Trichlorobenzene-1,2,4	120-82-1	470 U	5.4 U
Trichloroethane-1,1,1	71-55-6	470 U	5.4 U
Trichloroethane-1,1,2	79-00-5	470 U	5.4 U
Trichloroethylene	79-01-6	470 U	7.2
Trichlorofluoromethane	75-69-4	470 U	4.5 J
Vinyl chloride	75-01-4	470 U	5.4 U
Xylene-o	95-47-6	470 U	5.4 U
Xylenes, m & p	179601-23-1	270 J	5.4 U
Semivolatile Organic Compounds (ug/kg)			
Acenaphthene	83-32-9	8.4	110
Acenaphthylene	208-96-8	13	71
Acetophenone	98-86-2	100 J	220 U
Anthracene	120-12-7	21	96
Atrazine	1912-24-9	260 U	220 U
Benzaldehyde	100-52-7	260 U	220 U

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Station ID		TP-15	TP-19
Sample ID		UM-TP-15-01-4	UM-TP-19-01-4
Sample Date		11/14/2013	11/14/2013
Sample Interval		6 - 6.5 FT	3 - 3.5 FT
Chemical Name	**CAS Number**		
Semivolatile Organic Compounds (ug/kg)			
Benzo(a)anthracene	56-55-3	36	200
Benzo(a)pyrene	50-32-8	39	190
Benzo(b)fluoranthene	205-99-2	64 J	230
Benzo(g,h,I)perylene	191-24-2	31	190
Benzo(k)fluoranthene	207-08-9	15	82
Biphenyl	92-52-4	260 U	220 U
Bromophenyl-4 Phenyl Ether	101-55-3	260 U	220 U
Butylbenzyl phthalate	85-68-7	260 U	220 U
Caprolactam	105-60-2	260 U	220 U
Carbazole	86-74-8	260 U	220 U
Chloroaniline-4	106-47-8	260 U	220 U
Chloronaphthalene-2	91-58-7	260 U	220 U
Chlorophenol-2	95-57-8	260 U	220 UJ
Chlorophenyl-4 phenyl ether	7005-72-3	260 U	220 U
Chrysene	218-01-9	28	200
Cresol-4,6-dinitro-ortho	534-52-1	510 U	420 U
Cresol-o	95-48-7	1900	220 U
Cresol-p	106-44-5	8600	190 J
Cresol-parachloro-meta	59-50-7	260 U	220 UJ
Dibenzo(a,h)anthracene	53-70-3	7.4	48
Dibenzofuran	132-64-9	260 U	220 U
Dichlorobenzidine-3,3	91-94-1	260 U	220 U
Dichlorophenol-2,4	120-83-2	260 U	220 UJ
Dimethylphenol-2,4	105-67-9	6200	220 U
Dinitrophenol-2,4	51-28-5	510 U	420 UJ
Dinitrotoluene-2,4	121-14-2	260 U	220 U
Dinitrotoluene-2,6	606-20-2	260 U	220 U
Ether, bis(2-chloroethyl)	111-44-4	260 U	220 U
Ether, bis-chloroisopropyl	108-60-1	260 U	220 U
Fluoranthene	206-44-0	57	180

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Station ID		TP-15	TP-19
Sample ID		UM-TP-15-01-4	UM-TP-19-01-4
Sample Date		11/14/2013	11/14/2013
Sample Interval		6 - 6.5 FT	3 - 3.5 FT
Chemical Name	**CAS Number**		
Semivolatile Organic Compounds (ug/kg)			
Fluorene	86-73-7	11	40
Hexachlorobenzene	118-74-1	260 U	220 U
Hexachlorobutadiene	87-68-3	260 U	220 UJ
Hexachlorocyclopentadiene	77-47-4	260 U	220 U
Hexachloroethane	67-72-1	260 U	220 U
Indeno(1,2,3-cd)pyrene	193-39-5	30	160
Isophorone	78-59-1	260 U	220 UJ
Methane, bis(2-chloroethoxy)	111-91-1	260 U	220 U
Methylnaphthalene-2	91-57-6	270	200
Naphthalene	91-20-3	140	84
Nitroaniline-2	88-74-4	510 U	420 UJ
Nitroaniline-3	99-09-2	510 U	420 UJ
Nitroaniline-4	100-01-6	510 U	420 UJ
Nitrobenzene	98-95-3	260 U	220 U
Nitrophenol-2	88-75-5	260 U	220 UJ
Nitrophenol-4	100-02-7	510 U	420 UJ
Nitroso-di-n-propyl-amine-N	621-64-7	260 U	220 U
Nitrosodiphenylamine-n	86-30-6	260 U	220 U
PCP (Pentachlorophenol)	87-86-5	10 U	8.5 U
Phenanthrene	85-01-8	84	280
Phenol	108-95-2	6600	480
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	260 U	220 U
Phthalate, diethyl	84-66-2	260 U	220 U
Phthalate, dimethyl	131-11-3	260 U	220 U
Phthalate, di-n-butyl	84-74-2	260 U	220 U
Phthalate, di-n-octyl	117-84-0	260 U	220 U
Pyrene	129-00-0	63	330
Tetrachlorobenzene-1,2,4,5	95-94-3	260 U	220 UJ
Tetrachlorophenol-2,3,4,6	58-90-2	260 U	220 UJ
Trichlorophenol-2,4,5	95-95-4	260 U	220 UJ

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Station ID		TP-15	TP-19
Sample ID		UM-TP-15-01-4	UM-TP-19-01-4
Sample Date		11/14/2013	11/14/2013
Sample Interval		6 - 6.5 FT	3 - 3.5 FT
Chemical Name	**CAS Number**		
Semivolatile Organic Compounds (ug/kg)			
Trichlorophenol-2,4,6	88-06-2	260 U	220 UJ
Pesticides and PCBs (ug/kg)			
Aldrin	309-00-2	2.6 UJ	2.2 U
BHC, alpha	319-84-6	2.6 UJ	2.2 U
BHC, beta	319-85-7	2.6 UJ	2.2 U
BHC, delta	319-86-8	2.6 UJ	2.2 U
BHC, gamma (Lindane)	58-89-9	2.6 UJ	2.2 U
Chlordane - alpha	5103-71-9	2.6 UJ	2.2 U
Chlordane - gamma	5566-34-7	2.6 UJ	2.2 U
DDD-4,4	72-54-8	5.1 UJ	4.2 U
DDE-4,4	72-55-9	5.1 UJ	4.2 U
DDT-4,4	50-29-3	5.1 UJ	4.2 U
Dieldrin	60-57-1	5.1 UJ	4.2 U
Endosulfan I (alpha)	959-98-8	2.6 UJ	2.2 U
Endosulfan II (beta)	33213-65-9	5.1 UJ	4.2 U
Endosulfan Sulfate	1031-07-8	5.1 UJ	4.2 U
Endrin	72-20-8	5.1 UJ	4.2 U
Endrin Aldehyde	7421-93-4	5.1 UJ	4.2 U
Endrin ketone	53494-70-5	5.1 UJ	4.2 U
Heptachlor	76-44-8	2.6 UJ	2.2 U
Heptachlor Epoxide	1024-57-3	2.6 UJ	2.2 U
Methoxychlor	72-43-5	26 UJ	22 U
PCB-Aroclor 1016	12674-11-2	51 U	69
PCB-Aroclor 1221	11104-28-2	51 U	42 U
PCB-Aroclor 1232	11141-16-5	51 U	42 U
PCB-Aroclor 1242	53469-21-9	51 U	42 U
PCB-Aroclor 1248	12672-29-6	51 U	42 U
PCB-Aroclor 1254	11097-69-1	51 U	42 U
PCB-Aroclor 1260	11096-82-5	51 U	61 J

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Station ID		TP-15	TP-19
Sample ID		UM-TP-15-01-4	UM-TP-19-01-4
Sample Date		11/14/2013	11/14/2013
Sample Interval		6 - 6.5 FT	3 - 3.5 FT
Chemical Name	**CAS Number**		
Pesticides and PCBs (ug/kg)			
PCB-Aroclor 1262	37324-23-5	51 U	42 U
PCB-Aroclor 1268	11100-14-4	51 U	42 U
Toxaphene	8001-35-2	260 UJ	220 U
Metals (ug/kg)			
Aluminum	7429-90-5	8470000	11100000
Antimony	7440-36-0	9300 U	7800 U
Arsenic	7440-38-2	20000	2000
Barium	7440-39-3	375000	75100
Beryllium	7440-41-7	770 U	650 U
Cadmium	7440-43-9	4300	850
Calcium	7440-70-2	4590000	314000000
Chromium	7440-47-3	109000	14800
Cobalt	7440-48-4	8400	2100 J
Copper	7440-50-8	215000	12700
Cyanide	57-12-5	770 U	1500
Iron	7439-89-6	18200000	1090000
Lead	7439-92-1	608000	50600
Magnesium	7439-95-4	3080000	6390000
Manganese	7439-96-5	271000	104000
Mercury	7439-97-6	10 J	600
Nickel	7440-02-0	54600	15100
Potassium	7440-09-7	1710000	651000 U
Selenium	7782-49-2	1800 J	530 J
Silver	7440-22-4	1700	1300 U
Sodium	7440-23-5	1080000	651000 U
Thallium	7440-28-0	3900 U	3300 U
Vanadium	7440-62-2	26600	49300
Zinc	7440-66-6	798000	130000

Appendix H
Analytical Results - Contract Laboratory Program Analyses

Section 2

Test Pits - Sludge – Analytical Results

Appendix
Sludge
2013
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		SL-01	SL-02	SL-02	TP-02	TP-05	TP-20
Sample ID		SL-SL-01-4	SL-SL-02-4	SL-SL-02-4-D	SL-TP-02-01-4	SL-TP-05-01-4	SL-TP-20-01-4
Sample Date		11/15/2013	11/15/2013	11/15/2013	11/12/2013	11/13/2013	11/14/2013
Sample Interval		0.5 - 1.5 FT	0.5 - 1.5 FT	0.5 - 1.5 FT	8 - 8.5 FT	7.5 - 8 FT	12 - 13 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Acetone	67-64-1	3800 U	4500 U	15000 U	1700 U	1400 U	2600 U
Benzene	71-43-2	1600 J	2300	8200	860 U	710 U	970 J
Bromoform	75-25-2	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Bromomethane	74-83-9	1900 U	2300 U	7400 U	860 UJ	710 U	1300 U
Carbon disulfide	75-15-0	1900 U	2300 U	7400 U	860 UJ	710 U	1300 U
Carbon tetrachloride	56-23-5	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Chlorobenzene	108-90-7	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Chlorobromomethane	74-97-5	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Chloroethane	75-00-3	1900 U	2300 U	7400 U	860 UJ	710 U	1300 U
Chloroform	67-66-3	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Chloromethane	74-87-3	1900 U	2300 U	7400 U	860 UJ	710 U	1300 U
Cyclohexane	110-82-7	1600 J	2100 J	5600 J	860 U	710 U	1200 J
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dibromochloromethane	124-48-1	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dibromoethane-1,2	106-93-4	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichlorobenzene-1,2	95-50-1	1900	3700	14000	1500	290 J	3500
Dichlorobenzene-1,3	541-73-1	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichlorobenzene-1,4	106-46-7	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichlorobromomethane	75-27-4	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichlorodifluoromethane	75-71-8	1900 U	2300 U	7400 U	860 UJ	710 U	1300 U
Dichloroethane-1,1	75-34-3	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichloroethane-1,2	107-06-2	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichloroethene-1,2 trans	156-60-5	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichloroethylene-1,1	75-35-4	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichloroethylene-1,2 cis	156-59-2	1900 U	2300 U	7400 U	860 U	710 U	2400
Dichloropropane-1,2	78-87-5	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichloropropene-1,3 cis	10061-01-5	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dichloropropene-1,3 trans	10061-02-6	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Dioxane, 1,4-	123-91-1	38000 R	45000 R	150000 R	17000 R	14000 R	26000 R
Ethylbenzene	100-41-4	7600	9800	34000	2200	520 J	7100

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Diamond Head Oil Superfund Site - Operable Unit

Station ID		SL-01	SL-02	SL-02	TP-02	TP-05	TP-20
Sample ID		SL-SL-01-4	SL-SL-02-4	SL-SL-02-4-D	SL-TP-02-01-4	SL-TP-05-01-4	SL-TP-20-01-4
Sample Date		11/15/2013	11/15/2013	11/15/2013	11/12/2013	11/13/2013	11/14/2013
Sample Interval		0.5 - 1.5 FT	0.5 - 1.5 FT	0.5 - 1.5 FT	8 - 8.5 FT	7.5 - 8 FT	12 - 13 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Hexanone-2	591-78-6	3800 U	4500 U	15000 U	1700 U	1400 U	2600 U
Isopropylbenzene	98-82-8	1100 J	1400 J	5000 J	700 J	710 U	1200 J
Methyl acetate	79-20-9	1900 U	2300 U	7400 U	820 J	830	1300 U
Methyl cyclohexane	108-87-2	2800	3500	8800	600 J	710 U	2600
Methyl ethyl ketone (2-butanone)	78-93-3	3800 U	4500 U	15000 U	1700 U	1400 U	2600 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	3800 U	4500 U	15000 U	1700 U	1400 U	4300
Methyl tertiary butyl ether (MTBE)	1634-04-4	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Methylene chloride	75-09-2	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Styrene	100-42-5	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Tetrachloroethane-1,1,2,2	79-34-5	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Tetrachloroethylene	127-18-4	1100 J	2200 J	6500 J	860 U	710 U	1300 U
Toluene	108-88-3	29000	29000	100000	2700	1000	16000
Trichlorobenzene-1,2,3	87-61-6	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Trichlorobenzene-1,2,4	120-82-1	1900 U	2300 U	7400 U	860 U	900	1300 U
Trichloroethane-1,1,1	71-55-6	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Trichloroethane-1,1,2	79-00-5	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Trichloroethylene	79-01-6	3600	6900	24000	860 U	710 U	1300 U
Trichlorofluoromethane	75-69-4	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Vinyl chloride	75-01-4	1900 U	2300 U	7400 U	860 U	710 U	1300 U
Xylene-o	95-47-6	13000	18000	63000	4400	900	14000
Xylenes, m & p	179601-23-1	31000	40000	130000	9300	2000	30000
Semivolatile Organic Compounds (ug/kg)							
Acenaphthene	83-32-9	4200 J	4500 J	2400	16000 J	11000 J	850 J
Acenaphthylene	208-96-8	3600 J	5100 U	3400	2700 J	3800 J	2200 J
Acetophenone	98-86-2	100000 J+	73000 J+	76000 J+	420 U	350 U	14000
Anthracene	120-12-7	2400 J	1400 J	3300	2200 J	20000 J	3100 J
Atrazine	1912-24-9	4600 U	5100 U	6700 U	420 R	350 U	420 U
Benzaldehyde	100-52-7	4600 U	5100 U	6700 U	420 U	350 U	420 U

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Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		SL-01	SL-02	SL-02	TP-02	TP-05	TP-20
Sample ID		SL-SL-01-4	SL-SL-02-4	SL-SL-02-4-D	SL-TP-02-01-4	SL-TP-05-01-4	SL-TP-20-01-4
Sample Date		11/15/2013	11/15/2013	11/15/2013	11/12/2013	11/13/2013	11/14/2013
Sample Interval		0.5 - 1.5 FT	0.5 - 1.5 FT	0.5 - 1.5 FT	8 - 8.5 FT	7.5 - 8 FT	12 - 13 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Benzo(a)anthracene	56-55-3	4600 U	5100 U	8500	20000 J	47000 J	7800 J
Benzo(a)pyrene	50-32-8	4600 U	5100 U	1300 U	9900 J	19000 J	5200 J
Benzo(b)fluoranthene	205-99-2	4600 U	5100 U	1300 U	13000 J	26000 J	6500 J
Benzo(g,h,I)perylene	191-24-2	2400 J	2400 J	2400	4300 J	6000 J	1600 J
Benzo(k)fluoranthene	207-08-9	4600 U	5100 U	1300 U	3200 J	6100 J	2400 J
Biphenyl	92-52-4	7900	7500	9200	3300 J+	210 J	1300
Bromophenyl-4 Phenyl Ether	101-55-3	4600 U	5100 U	6700 U	420 R	350 U	420 U
Butylbenzyl phthalate	85-68-7	4600 U	5100 U	6700 U	420 U	350 R	420 U
Caprolactam	105-60-2	4600 U	5100 U	6700 U	420 U	350 U	420 U
Carbazole	86-74-8	4600 U	5100 U	6700 U	420 R	220 J	420 U
Chloroaniline-4	106-47-8	4600 U	5100 U	6700 U	420 U	350 U	420 U
Chloronaphthalene-2	91-58-7	4600 U	5100 U	6700 U	420 R	350 U	420 U
Chlorophenol-2	95-57-8	4600 U	5100 U	6700 U	420 U	350 U	420 U
Chlorophenyl-4 phenyl ether	7005-72-3	4600 U	5100 U	6700 U	420 R	350 U	420 U
Chrysene	218-01-9	4600 U	3900 J	7100	14000 J	27000 J	5000 J
Cresol-4,6-dinitro-ortho	534-52-1	9000 U	9900 U	13000 U	820 R	680 U	810 U
Cresol-o	95-48-7	23000	12000	17000	1000	99 J	2300
Cresol-p	106-44-5	89000	45000	59000	2600	600	10000
Cresol-parachloro-meta	59-50-7	4600 U	5100 U	6700 U	420 U	350 U	420 U
Dibenzo(a,h)anthracene	53-70-3	4600 U	5100 U	1300 U	2000 J	2200 J	420
Dibenzofuran	132-64-9	2700 J	2700 J	6700 U	1400 J+	350 U	620
Dichlorobenzidine-3,3	91-94-1	4600 U	5100 U	6700 U	420 U	350 R	420 U
Dichlorophenol-2,4	120-83-2	4600 U	5100 U	6700 U	420 U	350 U	420 U
Dimethylphenol-2,4	105-67-9	20000	18000	27000	420 UJ	480 J	6700 J
Dinitrophenol-2,4	51-28-5	9000 U	9900 U	13000 U	820 R	680 U	810 U
Dinitrotoluene-2,4	121-14-2	4600 U	5100 U	6700 U	420 R	350 U	420 U
Dinitrotoluene-2,6	606-20-2	4600 U	5100 U	6700 U	420 R	350 U	420 U
Ether, bis(2-chloroethyl)	111-44-4	4600 U	5100 U	6700 U	420 U	350 U	420 U
Ether, bis-chloroisopropyl	108-60-1	4600 U	5100 U	6700 U	420 U	350 U	420 U
Fluoranthene	206-44-0	6600	5800	7500	46000 J	62000 J	14000 J

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Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		SL-01	SL-02	SL-02	TP-02	TP-05	TP-20
Sample ID		SL-SL-01-4	SL-SL-02-4	SL-SL-02-4-D	SL-TP-02-01-4	SL-TP-05-01-4	SL-TP-20-01-4
Sample Date		11/15/2013	11/15/2013	11/15/2013	11/12/2013	11/13/2013	11/14/2013
Sample Interval		0.5 - 1.5 FT	0.5 - 1.5 FT	0.5 - 1.5 FT	8 - 8.5 FT	7.5 - 8 FT	12 - 13 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Fluorene	86-73-7	7400	6700	8200	6800 J	4700 J	1500 J
Hexachlorobenzene	118-74-1	4600 U	5100 U	6700 U	420 R	350 U	420 U
Hexachlorobutadiene	87-68-3	4600 U	5100 U	6700 U	420 U	350 U	420 U
Hexachlorocyclopentadiene	77-47-4	4600 U	5100 U	6700 U	420 R	350 U	420 U
Hexachloroethane	67-72-1	4600 U	5100 U	6700 U	420 U	350 U	420 U
Indeno(1,2,3-cd)pyrene	193-39-5	4600 U	5100 U	1300 U	4400 J	8100 J	1800 J
Isophorone	78-59-1	4600 U	5100 U	6700 U	420 U	350 U	420 U
Methane, bis(2-chloroethoxy)	111-91-1	4600 U	5100 U	6700 U	420 U	350 U	420 U
Methylnaphthalene-2	91-57-6	210000	180000	340000 J	58000 J	5600 J	45000 J
Naphthalene	91-20-3	160000	130000	200000 J	29000 J	5500 J	27000 J
Nitroaniline-2	88-74-4	9000 U	9900 U	13000 U	820 R	680 U	810 U
Nitroaniline-3	99-09-2	9000 U	9900 U	13000 U	820 R	680 U	810 U
Nitroaniline-4	100-01-6	9000 U	9900 U	13000 U	820 R	680 U	810 U
Nitrobenzene	98-95-3	4600 U	5100 U	6700 U	420 U	350 U	420 U
Nitrophenol-2	88-75-5	4600 U	5100 U	6700 U	420 U	350 U	420 U
Nitrophenol-4	100-02-7	9000 U	9900 U	13000 U	820 R	680 U	810 U
Nitroso-di-n-propyl-amine-N	621-64-7	4600 U	5100 U	6700 U	420 U	350 U	420 U
Nitrosodiphenylamine-n	86-30-6	4600 U	5100 U	6700 U	420 R	350 U	420 U
PCP (Pentachlorophenol)	87-86-5	9000 U	9900 U	2600 U	160 U	140 U	160 U
Phenanthrene	85-01-8	24000	20000	32000 J	45000 J	81000 J	11000 J
Phenol	108-95-2	95000 J+	44000 J+	56000 J+	1300 J+	270 J	4600 J+
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	4600 U	5100 U	6700 U	420 U	350 R	420 U
Phthalate, diethyl	84-66-2	4600 U	5100 U	6700 U	420 R	350 U	420 U
Phthalate, dimethyl	131-11-3	4600 U	5100 U	6700 U	420 R	350 U	420 U
Phthalate, di-n-butyl	84-74-2	4600 U	5100 U	6700 U	420 U	350 U	420 U
Phthalate, di-n-octyl	117-84-0	4600 U	5100 U	6700 U	420 U	350 U	420 U
Pyrene	129-00-0	9700	8600	26000 J	38000 J	71000 J	13000 J
Tetrachlorobenzene-1,2,4,5	95-94-3	4600 U	5100 U	6700 U	420 R	350 U	420 U
Tetrachlorophenol-2,3,4,6	58-90-2	4600 U	5100 U	6700 U	420 R	350 U	420 U
Trichlorophenol-2,4,5	95-95-4	4600 U	5100 U	6700 U	420 R	350 U	420 U

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Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		SL-01	SL-02	SL-02	TP-02	TP-05	TP-20
Sample ID		SL-SL-01-4	SL-SL-02-4	SL-SL-02-4-D	SL-TP-02-01-4	SL-TP-05-01-4	SL-TP-20-01-4
Sample Date		11/15/2013	11/15/2013	11/15/2013	11/12/2013	11/13/2013	11/14/2013
Sample Interval		0.5 - 1.5 FT	0.5 - 1.5 FT	0.5 - 1.5 FT	8 - 8.5 FT	7.5 - 8 FT	12 - 13 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Trichlorophenol-2,4,6	88-06-2	4600 U	5100 U	6700 U	420 R	350 U	420 U
Pesticides and PCBs (ug/kg)							
Aldrin	309-00-2	51 UJ	51 UJ	3.4 UJ	4.2 UJ	3.5 U	2.1 UJ
BHC, alpha	319-84-6	51 UJ	51 UJ	4.1 J-	6.9 NJ	5.3 J	2.1 UJ
BHC, beta	319-85-7	100 NJ	76 R	3.4 UJ	4.2 U	3.5 U	4.3 J-
BHC, delta	319-86-8	51 UJ	51 UJ	3.4 UJ	4.2 U	3.5 U	2.1 UJ
BHC, gamma (Lindane)	58-89-9	73 J	72 J	9.7 R	4.2 UJ	3.5 U	2.1 UJ
Chlordane - alpha	5103-71-9	51 UJ	51 UJ	3.4 UJ	4.2 U	3.5 U	4.2 J-
Chlordane - gamma	5566-34-7	51 UJ	51 UJ	7.3 R	15 J	7.7 J	2.1 UJ
DDD-4,4	72-54-8	99 UJ	99 UJ	6.5 UJ	8.1 U	6.8 U	86 J
DDE-4,4	72-55-9	99 UJ	99 UJ	7.3 R	46	19 J	13 R
DDT-4,4	50-29-3	210 J	250 J	38 J-	54 J	20 J	34 J-
Dieldrin	60-57-1	99 UJ	99 UJ	6.5 UJ	8.1 UJ	6.8 U	7.9 R
Endosulfan I (alpha)	959-98-8	51 UJ	51 UJ	3.4 UJ	4.2 U	3.5 U	2.2 R
Endosulfan II (beta)	33213-65-9	99 UJ	99 UJ	14 NJ	8.1 U	6.8 U	4.1 UJ
Endosulfan Sulfate	1031-07-8	99 UJ	99 UJ	6.5 UJ	19 R	11 NJ	13 J-
Endrin	72-20-8	99 UJ	99 UJ	6.5 UJ	8.1 UJ	6.8 U	4.1 UJ
Endrin Aldehyde	7421-93-4	99 UJ	110 J	14 J-	18 J	6.8 U	14 J-
Endrin ketone	53494-70-5	99 UJ	99 UJ	6.5 UJ	8.1 U	6.8 U	4.1 UJ
Heptachlor	76-44-8	51 UJ	51 UJ	3.4 UJ	4.2 U	3.5 U	2.1 UJ
Heptachlor Epoxide	1024-57-3	61 J	69 J	8.6 J-	8.1 R	3.5 U	2.7 R
Methoxychlor	72-43-5	510 UJ	510 UJ	34 UJ	42 U	35 U	21 UJ
PCB-Aroclor 1016	12674-11-2	11000 J+	7800 J+	11000	750 J	510 J+	280 J+
PCB-Aroclor 1221	11104-28-2	990 U	990 U	320 U	81 U	68 U	40 U
PCB-Aroclor 1232	11141-16-5	990 U	990 U	320 U	81 U	68 U	40 U
PCB-Aroclor 1242	53469-21-9	990 U	990 U	320 U	81 U	68 U	40 U
PCB-Aroclor 1248	12672-29-6	990 U	990 U	320 U	81 U	68 U	40 U
PCB-Aroclor 1254	11097-69-1	990 U	990 U	320 U	81 U	68 U	40 U
PCB-Aroclor 1260	11096-82-5	9300 NJ	8300 NJ	7800 J	460 NJ	1200 J+	1400 J+

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Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		SL-01	SL-02	SL-02	TP-02	TP-05	TP-20
Sample ID		SL-SL-01-4	SL-SL-02-4	SL-SL-02-4-D	SL-TP-02-01-4	SL-TP-05-01-4	SL-TP-20-01-4
Sample Date		11/15/2013	11/15/2013	11/15/2013	11/12/2013	11/13/2013	11/14/2013
Sample Interval		0.5 - 1.5 FT	0.5 - 1.5 FT	0.5 - 1.5 FT	8 - 8.5 FT	7.5 - 8 FT	12 - 13 FT
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/kg)							
PCB-Aroclor 1262	37324-23-5	990 U	990 U	320 U	81 U	68 U	40 U
PCB-Aroclor 1268	11100-14-4	990 U	990 U	320 U	81 U	68 U	40 U
Toxaphene	8001-35-2	5100 UJ	5100 UJ	340 UJ	420 U	350 U	210 UJ
Metals (ug/kg)							
Aluminum	7429-90-5	205000 J-	255000 J-	231000 J-	13900000 J	24500000 J	6550000
Antimony	7440-36-0	1900 J-	1000	2000	80600 J	12600 UJ	7600 U
Arsenic	7440-38-2	2200 J-	2100 J-	2400 J-	40400 J	57800 J	14300
Barium	7440-39-3	3590000 J-	4390000 J-	4650000 J-	1240000 J	391000 J	286000
Beryllium	7440-41-7	500 U	500 U	500 U	1100 UJ	1200 J	630 U
Cadmium	7440-43-9	9100 J-	11000	10600	57200 J	16700 J	3100
Calcium	7440-70-2	1890000 J-	2340000 J-	1970000 J-	4950000 J	11000000 J	3430000
Chromium	7440-47-3	50600 J-	62200	53700	14700000 J	1770000 J	78400
Cobalt	7440-48-4	5000 U	5000 U	5000 U	12900 J	31900 J	7400
Copper	7440-50-8	161000 J-	156000	172000	628000 J	642000 J	151000
Cyanide	57-12-5	170 J	440 J	400 J	1100 UJ	1000 UJ	630 U
Iron	7439-89-6	2500000 J-	2910000 J-	2760000 J-	25700000 J	40400000 J	14100000
Lead	7439-92-1	21600000 J-	29200000 J-	26500000 J-	29900000 J	998000 J	454000
Magnesium	7439-95-4	500000 U	500000 U	500000 U	4480000 J	13200000 J	2380000
Manganese	7439-96-5	27100 J-	32100 J-	31500 J-	294000 J	477000 J	207000
Mercury	7439-97-6	100 U	140	180	11100 J	12200 J	2100
Nickel	7440-02-0	10000 J-	10000 J-	11600 J-	89400 J	174000 J	41400
Potassium	7440-09-7	500000 U	500000 U	500000 U	2910000 J	2910000 J	1350000
Selenium	7782-49-2	3500 U	3500 U	3500 U	1700 J	3400 J	1200 J
Silver	7440-22-4	490 J-	640 J-	580 J-	5600 J	7300 J	1500
Sodium	7440-23-5	7970000 J-	6230000 J-	8010000 J-	11900000 J	6450000 J	780000
Thallium	7440-28-0	2500 U	2500 U	2500 U	3600 J	5200 UJ	3200 U
Vanadium	7440-62-2	4700 J-	4600 J-	5400 J-	37300 J	201000 J	20600
Zinc	7440-66-6	2820000 J-	2650000 J-	2960000 J-	1820000 J	2260000 J	571000

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Sludge
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Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		**TP-20**
Sample ID		**SL-TP-20-01-4-D**
Sample Date		**11/14/2013**
Sample Interval		**12 - 13 FT**
Chemical Name	**CAS Number**	
Volatile Organic Compounds (ug/kg)		
Acetone	67-64-1	2800 U
Benzene	71-43-2	940 J
Bromoform	75-25-2	1400 U
Bromomethane	74-83-9	1400 U
Carbon disulfide	75-15-0	1400 U
Carbon tetrachloride	56-23-5	1400 U
Chlorobenzene	108-90-7	1400 U
Chlorobromomethane	74-97-5	1400 U
Chloroethane	75-00-3	1400 U
Chloroform	67-66-3	1400 U
Chloromethane	74-87-3	1400 U
Cyclohexane	110-82-7	1400
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	1400 U
Dibromochloromethane	124-48-1	1400 U
Dibromoethane-1,2	106-93-4	1400 U
Dichlorobenzene-1,2	95-50-1	6000
Dichlorobenzene-1,3	541-73-1	1400 U
Dichlorobenzene-1,4	106-46-7	760 J
Dichlorobromomethane	75-27-4	1400 U
Dichlorodifluoromethane	75-71-8	1400 U
Dichloroethane-1,1	75-34-3	1400 U
Dichloroethane-1,2	107-06-2	1400 U
Dichloroethene-1,2 trans	156-60-5	1400 U
Dichloroethylene-1,1	75-35-4	1400 U
Dichloroethylene-1,2 cis	156-59-2	5200
Dichloropropane-1,2	78-87-5	1400 U
Dichloropropene-1,3 cis	10061-01-5	1400 U
Dichloropropene-1,3 trans	10061-02-6	1400 U
Dioxane, 1,4-	123-91-1	28000 R
Ethylbenzene	100-41-4	12000

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Diamond Head Oil Superfund Site - Operable Unit

Station ID		**TP-20**
Sample ID		**SL-TP-20-01-4-D**
Sample Date		**11/14/2013**
Sample Interval		**12 - 13 FT**
Chemical Name	**CAS Number**	
Volatile Organic Compounds (ug/kg)		
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	1400 U
Hexanone-2	591-78-6	2800 U
Isopropylbenzene	98-82-8	2000
Methyl acetate	79-20-9	570 J
Methyl cyclohexane	108-87-2	3300
Methyl ethyl ketone (2-butanone)	78-93-3	2800 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	6200
Methyl tertiary butyl ether (MTBE)	1634-04-4	1400 U
Methylene chloride	75-09-2	1400 U
Styrene	100-42-5	1400 U
Tetrachloroethane-1,1,2,2	79-34-5	1400 U
Tetrachloroethylene	127-18-4	1400 U
Toluene	108-88-3	23000
Trichlorobenzene-1,2,3	87-61-6	1400 U
Trichlorobenzene-1,2,4	120-82-1	1400 U
Trichloroethane-1,1,1	71-55-6	1400 U
Trichloroethane-1,1,2	79-00-5	1400 U
Trichloroethylene	79-01-6	1400 U
Trichlorofluoromethane	75-69-4	1400 U
Vinyl chloride	75-01-4	1400 UJ
Xylene-o	95-47-6	22000
Xylenes, m & p	179601-23-1	49000
Semivolatile Organic Compounds (ug/kg)		
Acenaphthene	83-32-9	700
Acenaphthylene	208-96-8	2000 J
Acetophenone	98-86-2	13000
Anthracene	120-12-7	3600 J
Atrazine	1912-24-9	430 U
Benzaldehyde	100-52-7	430 U

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Sludge
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Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		**TP-20**
Sample ID		**SL-TP-20-01-4-D**
Sample Date		**11/14/2013**
Sample Interval		**12 - 13 FT**
Chemical Name	**CAS Number**	
Semivolatile Organic Compounds (ug/kg)		
Benzo(a)anthracene	56-55-3	7400 J
Benzo(a)pyrene	50-32-8	3900 J
Benzo(b)fluoranthene	205-99-2	6200 J
Benzo(g,h,I)perylene	191-24-2	1500 J
Benzo(k)fluoranthene	207-08-9	1500 J
Biphenyl	92-52-4	1600
Bromophenyl-4 Phenyl Ether	101-55-3	430 U
Butylbenzyl phthalate	85-68-7	430 U
Caprolactam	105-60-2	430 U
Carbazole	86-74-8	430 U
Chloroaniline-4	106-47-8	430 U
Chloronaphthalene-2	91-58-7	430 U
Chlorophenol-2	95-57-8	430 U
Chlorophenyl-4 phenyl ether	7005-72-3	430 U
Chrysene	218-01-9	4800 J
Cresol-4,6-dinitro-ortho	534-52-1	830 U
Cresol-o	95-48-7	2300
Cresol-p	106-44-5	10000
Cresol-parachloro-meta	59-50-7	430 U
Dibenzo(a,h)anthracene	53-70-3	410
Dibenzofuran	132-64-9	700
Dichlorobenzidine-3,3	91-94-1	430 U
Dichlorophenol-2,4	120-83-2	430 U
Dimethylphenol-2,4	105-67-9	6500
Dinitrophenol-2,4	51-28-5	830 U
Dinitrotoluene-2,4	121-14-2	430 U
Dinitrotoluene-2,6	606-20-2	430 U
Ether, bis(2-chloroethyl)	111-44-4	430 U
Ether, bis-chloroisopropyl	108-60-1	430 U
Fluoranthene	206-44-0	12000 J

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Sludge
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Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		**TP-20**
Sample ID		**SL-TP-20-01-4-D**
Sample Date		**11/14/2013**
Sample Interval		**12 - 13 FT**
Chemical Name	**CAS Number**	
Semivolatile Organic Compounds (ug/kg)		
Fluorene	86-73-7	1400 J
Hexachlorobenzene	118-74-1	430 U
Hexachlorobutadiene	87-68-3	430 U
Hexachlorocyclopentadiene	77-47-4	430 U
Hexachloroethane	67-72-1	430 U
Indeno(1,2,3-cd)pyrene	193-39-5	1800 J
Isophorone	78-59-1	430 U
Methane, bis(2-chloroethoxy)	111-91-1	430 U
Methylnaphthalene-2	91-57-6	56000 J
Naphthalene	91-20-3	34000 J
Nitroaniline-2	88-74-4	830 U
Nitroaniline-3	99-09-2	830 U
Nitroaniline-4	100-01-6	830 U
Nitrobenzene	98-95-3	430 U
Nitrophenol-2	88-75-5	430 U
Nitrophenol-4	100-02-7	830 U
Nitroso-di-n-propyl-amine-N	621-64-7	430 U
Nitrosodiphenylamine-n	86-30-6	430 U
PCP (Pentachlorophenol)	87-86-5	170 U
Phenanthrene	85-01-8	11000 J
Phenol	108-95-2	4800
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	430 U
Phthalate, diethyl	84-66-2	430 U
Phthalate, dimethyl	131-11-3	430 U
Phthalate, di-n-butyl	84-74-2	430 U
Phthalate, di-n-octyl	117-84-0	430 U
Pyrene	129-00-0	12000 J
Tetrachlorobenzene-1,2,4,5	95-94-3	430 U
Tetrachlorophenol-2,3,4,6	58-90-2	430 U
Trichlorophenol-2,4,5	95-95-4	430 U

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Station ID		**TP-20**
Sample ID		**SL-TP-20-01-4-D**
Sample Date		**11/14/2013**
Sample Interval		**12 - 13 FT**
Chemical Name	**CAS Number**	
Semivolatile Organic Compounds (ug/kg)		
Trichlorophenol-2,4,6	88-06-2	430 U
Pesticides and PCBs (ug/kg)		
Aldrin	309-00-2	2.1 U
BHC, alpha	319-84-6	2.1 U
BHC, beta	319-85-7	4.4 J
BHC, delta	319-86-8	2.1 U
BHC, gamma (Lindane)	58-89-9	2.1 U
Chlordane - alpha	5103-71-9	5.8
Chlordane - gamma	5566-34-7	14 J
DDD-4,4	72-54-8	70 J
DDE-4,4	72-55-9	16 R
DDT-4,4	50-29-3	37 J
Dieldrin	60-57-1	8.3 R
Endosulfan I (alpha)	959-98-8	3.8 R
Endosulfan II (beta)	33213-65-9	4.2 U
Endosulfan Sulfate	1031-07-8	17 NJ
Endrin	72-20-8	4.2 U
Endrin Aldehyde	7421-93-4	12 J
Endrin ketone	53494-70-5	4.2 U
Heptachlor	76-44-8	3.2
Heptachlor Epoxide	1024-57-3	2.2 R
Methoxychlor	72-43-5	21 U
PCB-Aroclor 1016	12674-11-2	370 J+
PCB-Aroclor 1221	11104-28-2	41 U
PCB-Aroclor 1232	11141-16-5	41 U
PCB-Aroclor 1242	53469-21-9	41 U
PCB-Aroclor 1248	12672-29-6	41 U
PCB-Aroclor 1254	11097-69-1	41 U
PCB-Aroclor 1260	11096-82-5	1400 J+

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Diamond Head Oil Superfund Site - Operable Unit

Station ID		**TP-20**
Sample ID		**SL-TP-20-01-4-D**
Sample Date		**11/14/2013**
Sample Interval		**12 - 13 FT**
Chemical Name	**CAS Number**	
Pesticides and PCBs (ug/kg)		
PCB-Aroclor 1262	37324-23-5	41 U
PCB-Aroclor 1268	11100-14-4	41 U
Toxaphene	8001-35-2	210 U
Metals (ug/kg)		
Aluminum	7429-90-5	22100000
Antimony	7440-36-0	709000
Arsenic	7440-38-2	1300 U
Barium	7440-39-3	44700
Beryllium	7440-41-7	650 U
Cadmium	7440-43-9	650 U
Calcium	7440-70-2	243000000
Chromium	7440-47-3	22900000
Cobalt	7440-48-4	361000
Copper	7440-50-8	14500
Cyanide	57-12-5	650 U
Iron	7439-89-6	42700000
Lead	7439-92-1	11500
Magnesium	7439-95-4	28900000
Manganese	7439-96-5	834000
Mercury	7439-97-6	3100
Nickel	7440-02-0	551000
Potassium	7440-09-7	646000 U
Selenium	7782-49-2	4500 U
Silver	7440-22-4	1300 U
Sodium	7440-23-5	1370000
Thallium	7440-28-0	6700
Vanadium	7440-62-2	236000
Zinc	7440-66-6	135000

Appendix H
Analytical Results - Contract Laboratory Program Analyses

Section 3

NJDOT Berm Soil Borings – Analytical Results

Appendix 2
Berms
2009 and 2013
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		PZ-36	PZ-36	PZ-36	PZ-36	PZ-48	PZ-48
Sample ID		SB-PZ-36-00-05-4	SB-PZ-36-10-15-4	SB-PZ-36-10-15-4-D	SB-PZ-36-20-21.6-4	SB-PZ-48-00-03.2-4	SB-PZ-48-10-15-4
Sample Date		12/12/2013	12/12/2013	12/12/2013	12/12/2013	01/09/2014	01/09/2014
Sample Interval		0 - 0.5 FT	10 - 15 FT	10 - 15 FT	20 - 21.6 FT	0 - 3.2 FT	10 - 15 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Acetone	67-64-1	13 U	1100 U	1000 U	770 U	14 U	300
Benzene	71-43-2	6.7 U	550 UJ	500 UJ	160 J	7.1 U	160 J
Bromoform	75-25-2	6.7 U	550 U	500 U	390 U	7.1 U	710 U
Bromomethane	74-83-9	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Carbon disulfide	75-15-0	6.7 U	550 U	500 U	390 U	7.1 U	6.2 J
Carbon tetrachloride	56-23-5	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Chlorobenzene	108-90-7	6.7 U	240 J	200 J	390 U	7.1 U	24
Chlorobromomethane	74-97-5	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Chloroethane	75-00-3	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Chloroform	67-66-3	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Chloromethane	74-87-3	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Cyclohexane	110-82-7	6.7 U	550 U	500 U	390 U	7.1 U	25 J
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	6.7 U	550 U	500 U	390 U	7.1 U	710 U
Dibromochloromethane	124-48-1	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dibromoethane-1,2	106-93-4	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichlorobenzene-1,2	95-50-1	6.7 U	550 U	2100	860	7.1 U	75 J+
Dichlorobenzene-1,3	541-73-1	6.7 U	550 U	500 U	390 U	7.1 U	710 U
Dichlorobenzene-1,4	106-46-7	6.7 U	550 U	230 J	390 U	7.1 U	56 J+
Dichlorobromomethane	75-27-4	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichlorodifluoromethane	75-71-8	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichloroethane-1,1	75-34-3	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichloroethane-1,2	107-06-2	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichloroethene-1,2 trans	156-60-5	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichloroethylene-1,1	75-35-4	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichloroethylene-1,2 cis	156-59-2	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichloropropane-1,2	78-87-5	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichloropropene-1,3 cis	10061-01-5	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dichloropropene-1,3 trans	10061-02-6	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Dioxane, 1,4-	123-91-1	130 R	11000 R	10000 R	7700 R	140 R	200 R
Ethylbenzene	100-41-4	6.7 U	370 J	2900	1100	7.1 U	250 J+

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2009 and 2013
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Diamond Head Oil Superfund Site - Operable Unit

Station ID		PZ-36	PZ-36	PZ-36	PZ-36	PZ-48	PZ-48
Sample ID		SB-PZ-36-00-05-4	SB-PZ-36-10-15-4	SB-PZ-36-10-15-4-D	SB-PZ-36-20-21.6-4	SB-PZ-48-00-03.2-4	SB-PZ-48-10-15-4
Sample Date		12/12/2013	12/12/2013	12/12/2013	12/12/2013	01/09/2014	01/09/2014
Sample Interval		0 - 0.5 FT	10 - 15 FT	10 - 15 FT	20 - 21.6 FT	0 - 3.2 FT	10 - 15 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Hexanone-2	591-78-6	13 U	1100 U	1000 U	770 U	14 U	20 U
Isopropylbenzene	98-82-8	6.7 U	250 J	880	410	7.1 U	65 J+
Methyl acetate	79-20-9	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Methyl cyclohexane	108-87-2	6.7 U	550 U	950	340 J	7.1 U	23 J
Methyl ethyl ketone (2-butanone)	78-93-3	13 U	1100 U	1000 U	770 U	14 U	110
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	13 U	1100 U	1000 U	770 U	14 U	20 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Methylene chloride	75-09-2	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Styrene	100-42-5	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Tetrachloroethane-1,1,2,2	79-34-5	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Tetrachloroethylene	127-18-4	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Toluene	108-88-3	6.7 U	550 U	690	320 J	7.1 U	16 J+
Trichlorobenzene-1,2,3	87-61-6	6.7 U	550 U	500 U	390 U	7.1 U	710 U
Trichlorobenzene-1,2,4	120-82-1	6.7 U	550 U	500 U	280 J	7.1 U	710 U
Trichloroethane-1,1,1	71-55-6	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Trichloroethane-1,1,2	79-00-5	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Trichloroethylene	79-01-6	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Trichlorofluoromethane	75-69-4	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Vinyl chloride	75-01-4	6.7 U	550 U	500 U	390 U	7.1 U	9.9 U
Xylene-o	95-47-6	6.7 U	400 J	5600	2600	7.1 U	480 J+
Xylenes, m & p	179601-23-1	6.7 U	990	9000	2700	7.1 U	530 J+
Semivolatile Organic Compounds (ug/kg)							
Acenaphthene	83-32-9	110	2100	1900	1600	130 J	2500
Acenaphthylene	208-96-8	380 J	870	790	460	230	1100 J
Acetophenone	98-86-2	210 U	260 U	220 U	200 U	220 U	1000
Anthracene	120-12-7	350 J	1300	1400 J-	1200 J	240 J	2600 J
Atrazine	1912-24-9	210 U	260 U	220 U	200 U	220 U	310 U
Benzaldehyde	100-52-7	210 U	260 U	220 U	200 U	220 U	310 U

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Diamond Head Oil Superfund Site - Operable Unit

Station ID		PZ-36	PZ-36	PZ-36	PZ-36	PZ-48	PZ-48
Sample ID		SB-PZ-36-00-05-4	SB-PZ-36-10-15-4	SB-PZ-36-10-15-4-D	SB-PZ-36-20-21.6-4	SB-PZ-48-00-03.2-4	SB-PZ-48-10-15-4
Sample Date		12/12/2013	12/12/2013	12/12/2013	12/12/2013	01/09/2014	01/09/2014
Sample Interval		0 - 0.5 FT	10 - 15 FT	10 - 15 FT	20 - 21.6 FT	0 - 3.2 FT	10 - 15 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Benzo(a)anthracene	56-55-3	860 J	2800	3100 J-	1800	1200 J	8600 J-
Benzo(a)pyrene	50-32-8	940	2700	2300	1500	900 J	3600 J-
Benzo(b)fluoranthene	205-99-2	920 J	1900 J	1600 J	1200 J	1300 J	6400 J-
Benzo(g,h,I)perylene	191-24-2	960	1900	1300	1000	850	1600
Benzo(k)fluoranthene	207-08-9	560	1600	1500	970	340	1300 J-
Biphenyl	92-52-4	210 U	220 J	120 J	72 J	220 UJ	160 J
Bromophenyl-4 Phenyl Ether	101-55-3	210 U	260 U	220 U	200 U	220 UJ	310 U
Butylbenzyl phthalate	85-68-7	77 J	260 U	220 U	390	45 J	310 U
Caprolactam	105-60-2	210 U	260 U	220 U	200 U	220 UJ	310 U
Carbazole	86-74-8	67 J	110 J	85 J	75 J	45 J	130 J
Chloroaniline-4	106-47-8	210 U	260 U	220 U	200 U	220 U	310 U
Chloronaphthalene-2	91-58-7	210 U	260 U	220 U	200 U	220 U	310 U
Chlorophenol-2	95-57-8	210 U	260 U	220 U	200 U	220 U	310 U
Chlorophenyl-4 phenyl ether	7005-72-3	210 U	260 U	220 U	200 U	220 UJ	310 U
Chrysene	218-01-9	1100	4000 J	1800 J	2400	1100 J-	3500 J-
Cresol-4,6-dinitro-ortho	534-52-1	400 UJ	500 UJ	420 UJ	400 UJ	430 U	610 U
Cresol-o	95-48-7	210 U	260 U	220 U	200 U	220 U	310 U
Cresol-p	106-44-5	210 U	260 U	220 U	200 U	220 U	310 U
Cresol-parachloro-meta	59-50-7	210 U	260 U	220 U	200 U	220 U	310 U
Dibenzo(a,h)anthracene	53-70-3	240 J	880 J	470 J	340 J	300	610
Dibenzofuran	132-64-9	210 U	250 J	210 J	150 J	220 UJ	310 J
Dichlorobenzidine-3,3	91-94-1	210 U	260 U	220 U	200 U	220 U	310 U
Dichlorophenol-2,4	120-83-2	210 U	260 U	220 U	200 U	220 U	310 U
Dimethylphenol-2,4	105-67-9	210 U	260 U	220 U	200 U	220 U	310 U
Dinitrophenol-2,4	51-28-5	400 UJ	500 UJ	420 UJ	400 UJ	430 U	610 U
Dinitrotoluene-2,4	121-14-2	210 U	260 U	220 U	200 U	220 U	310 U
Dinitrotoluene-2,6	606-20-2	210 U	260 U	220 U	200 U	220 U	310 U
Ether, bis(2-chloroethyl)	111-44-4	210 U	260 U	220 U	200 U	220 U	310 U
Ether, bis-chloroisopropyl	108-60-1	210 U	260 U	220 U	200 U	220 U	310 U
Fluoranthene	206-44-0	1200 J	3100 J	3100 J-	2400 J	1300 J	7400 J-

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Diamond Head Oil Superfund Site - Operable Unit

Station ID		PZ-36	PZ-36	PZ-36	PZ-36	PZ-48	PZ-48
Sample ID		SB-PZ-36-00-05-4	SB-PZ-36-10-15-4	SB-PZ-36-10-15-4-D	SB-PZ-36-20-21.6-4	SB-PZ-48-00-03.2-4	SB-PZ-48-10-15-4
Sample Date		12/12/2013	12/12/2013	12/12/2013	12/12/2013	01/09/2014	01/09/2014
Sample Interval		0 - 0.5 FT	10 - 15 FT	10 - 15 FT	20 - 21.6 FT	0 - 3.2 FT	10 - 15 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Fluorene	86-73-7	110	1000	830	840	120 J	1400
Hexachlorobenzene	118-74-1	210 U	260 U	220 U	200 U	220 U	310 U
Hexachlorobutadiene	87-68-3	210 U	260 U	220 U	200 U	220 U	310 U
Hexachlorocyclopentadiene	77-47-4	210 UJ	260 UJ	220 UJ	200 UJ	220 U	310 U
Hexachloroethane	67-72-1	210 U	260 U	220 U	200 U	220 U	310 U
Indeno(1,2,3-cd)pyrene	193-39-5	640 J	1400	1000	750 J	690	1400
Isophorone	78-59-1	210 U	260 U	220 U	200 U	220 U	310 U
Methane, bis(2-chloroethoxy)	111-91-1	210 U	260 U	220 U	200 U	220 U	310 U
Methylnaphthalene-2	91-57-6	59	1900	1700	1800	110 J-	4200 J
Naphthalene	91-20-3	77	1200	930	860	88 J-	2200 J
Nitroaniline-2	88-74-4	400 U	500 U	420 U	400 U	430 U	610 U
Nitroaniline-3	99-09-2	400 U	500 U	420 U	400 U	430 U	610 U
Nitroaniline-4	100-01-6	400 U	500 U	420 U	400 U	430 U	610 U
Nitrobenzene	98-95-3	210 U	260 U	220 U	200 U	220 U	310 U
Nitrophenol-2	88-75-5	210 U	260 U	220 U	200 U	220 U	310 U
Nitrophenol-4	100-02-7	400 U	500 U	420 U	400 U	430 U	610 U
Nitroso-di-n-propyl-amine-N	621-64-7	210 U	260 U	220 U	200 U	220 U	310 U
Nitrosodiphenylamine-n	86-30-6	210 U	260 U	220 U	200 U	220 U	310 U
PCP (Pentachlorophenol)	87-86-5	8.2 U	10 U	8.5 U	8 U	44 UJ	62 U
Phenanthrene	85-01-8	850	5000 J	4600	4700	940 J	12000 J
Phenol	108-95-2	210 U	260 U	220 U	200 U	220 U	310 U
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	1100	45000	8100	7700	230 J-	26000
Phthalate, diethyl	84-66-2	210 U	260 U	220 U	200 U	220 UJ	310 U
Phthalate, dimethyl	131-11-3	210 U	260 U	220 U	200 U	220 UJ	310 U
Phthalate, di-n-butyl	84-74-2	59 J	260 U	220 U	200 U	62 J	100 J
Phthalate, di-n-octyl	117-84-0	210 U	260 U	220 U	200 U	220 UJ	790
Pyrene	129-00-0	1600	6600	5500	4700	1600 J-	6200
Tetrachlorobenzene-1,2,4,5	95-94-3	210 U	260 U	220 U	200 U	220 U	310 U
Tetrachlorophenol-2,3,4,6	58-90-2	210 U	260 U	220 U	200 U	220 U	310 U
Trichlorophenol-2,4,5	95-95-4	210 U	260 U	220 U	200 U	220 U	310 U

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Station ID		PZ-36	PZ-36	PZ-36	PZ-36	PZ-48	PZ-48
Sample ID		SB-PZ-36-00-05-4	SB-PZ-36-10-15-4	SB-PZ-36-10-15-4-D	SB-PZ-36-20-21.6-4	SB-PZ-48-00-03.2-4	SB-PZ-48-10-15-4
Sample Date		12/12/2013	12/12/2013	12/12/2013	12/12/2013	01/09/2014	01/09/2014
Sample Interval		0 - 0.5 FT	10 - 15 FT	10 - 15 FT	20 - 21.6 FT	0 - 3.2 FT	10 - 15 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Trichlorophenol-2,4,6	88-06-2	210 U	260 U	220 U	200 U	220 U	310 U
Pesticides and PCBs (ug/kg)							
Aldrin	309-00-2	7.9 J+	2.5 U	2.2 U	2 U	2.2 UJ	3.2 U
BHC, alpha	319-84-6	5 J+	2.5 U	2.2 U	2.6	2.2 UJ	3.2 U
BHC, beta	319-85-7	2.1 U	8 R	11 R	6.9 NJ	2.2 UJ	17 R
BHC, delta	319-86-8	2.1 U	2.5 U	2.2 U	2 U	2.2 UJ	3.2 U
BHC, gamma (Lindane)	58-89-9	2.1 U	27 NJ	19 J+	4.6 NJ	2.2 UJ	9.6 R
Chlordane - alpha	5103-71-9	13 J	2.5 U	2.2 U	9 J	2.2 UJ	4.6 J
Chlordane - gamma	5566-34-7	3.4 R	11 R	15 R	9.3 R	2.2 UJ	44 J
DDD-4,4	72-54-8	36 NJ	67 J+	61 NJ	57 J	5.2 R	37
DDE-4,4	72-55-9	16 J+	28 R	34 J+	18 NJ	4.3 UJ	18 J
DDT-4,4	50-29-3	58 R	64 NJ	31 NJ	37 NJ	9.5 J-	33
Dieldrin	60-57-1	26 R	12 R	14 R	11 J	5.4 NJ	6.1 U
Endosulfan I (alpha)	959-98-8	2.1 U	2.5 U	2.2 U	2 U	2.2 UJ	3.2 U
Endosulfan II (beta)	33213-65-9	4 U	4.9 U	4.2 U	4 U	4.3 UJ	6.1 U
Endosulfan Sulfate	1031-07-8	6.7 R	61 J+	65 J+	16 NJ	4.5 J-	6.1 U
Endrin	72-20-8	4 U	6.9 R	5.1 R	4 U	4.3 UJ	6.1 U
Endrin Aldehyde	7421-93-4	18 NJ	25 J+	25 NJ	11 NJ	4.3 UJ	9.4 J
Endrin ketone	53494-70-5	14 R	39 J+	4.2 U	4 U	4.3 UJ	6.1 U
Heptachlor	76-44-8	2.3 NJ	33 R	2.2 U	18 NJ	2.2 UJ	9.2 R
Heptachlor Epoxide	1024-57-3	9.8 NJ	33 R	2.2 U	2.2 R	2.2 UJ	3.2 U
Methoxychlor	72-43-5	21 U	25 U	22 U	20 U	22 UJ	32 U
PCB-Aroclor 1016	12674-11-2	40 U	660	1300 J+	420 J	54	2000
PCB-Aroclor 1221	11104-28-2	40 U	49 U	42 U	40 U	43 U	61 U
PCB-Aroclor 1232	11141-16-5	40 U	49 U	42 U	40 U	43 U	61 U
PCB-Aroclor 1242	53469-21-9	40 U	49 U	42 U	40 U	43 U	61 U
PCB-Aroclor 1248	12672-29-6	40 U	49 U	42 U	40 U	43 U	61 U
PCB-Aroclor 1254	11097-69-1	40 U	49 U	42 U	40 U	220 NJ	1900 J
PCB-Aroclor 1260	11096-82-5	490 J+	430 NJ	780 NJ	330 J	300	1300 J

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Station ID		PZ-36	PZ-36	PZ-36	PZ-36	PZ-48	PZ-48
Sample ID		SB-PZ-36-00-05-4	SB-PZ-36-10-15-4	SB-PZ-36-10-15-4-D	SB-PZ-36-20-21.6-4	SB-PZ-48-00-03.2-4	SB-PZ-48-10-15-4
Sample Date		12/12/2013	12/12/2013	12/12/2013	12/12/2013	01/09/2014	01/09/2014
Sample Interval		0 - 0.5 FT	10 - 15 FT	10 - 15 FT	20 - 21.6 FT	0 - 3.2 FT	10 - 15 FT
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/kg)							
PCB-Aroclor 1262	37324-23-5	40 U	49 U	42 U	40 U	43 U	61 U
PCB-Aroclor 1268	11100-14-4	40 U	49 U	42 U	40 U	43 U	61 U
Toxaphene	8001-35-2	210 U	250 U	220 U	200 U	220 UJ	320 U
Metals (ug/kg)							
Aluminum	7429-90-5	8670000	10600000	11000000	6260000	7160000	8650000
Antimony	7440-36-0	1400 J	9500 U	9500 U	7600 U	6100	2300 J
Arsenic	7440-38-2	15800	24400 J	56900 J	14200	28900	30400
Barium	7440-39-3	283000	475000	389000	182000	289000	470000
Beryllium	7440-41-7	660 U	790 U	790 U	640 U	290 J	380 J
Cadmium	7440-43-9	5400	6200 J	15100 J	2500	6200	5800
Calcium	7440-70-2	6060000	8920000	9040000	5700000	7040000	5190000
Chromium	7440-47-3	83400	261000	248000	109000	100000	197000
Cobalt	7440-48-4	8100	10100	16800	6400 U	9300	8200
Copper	7440-50-8	261000	269000 J	483000 J	150000	212000	451000
Cyanide	57-12-5	1300	1200	970	870	1400	540 J
Iron	7439-89-6	28000000	24300000 J	107000000 J	12800000	75800000	27900000
Lead	7439-92-1	733000	3110000 J	1460000 J	897000	1090000	1700000
Magnesium	7439-95-4	1970000	3700000	3530000	2020000	1770000	2630000
Manganese	7439-96-5	202000	235000 J	436000 J	135000	345000	920000 J
Mercury	7439-97-6	2100	5500	6300	2100	1600	10200 J
Nickel	7440-02-0	48700	77000	114000	29400	58600	64600
Potassium	7440-09-7	1090000	1350000	1480000	1110000	802000	1060000
Selenium	7782-49-2	4600 U	5500 U	5500 U	4500 U	3300 U	3500 U
Silver	7440-22-4	1300 U	2400	2200	1400	620 J	4000
Sodium	7440-23-5	1230000	1370000	1370000	716000	1370000	1290000
Thallium	7440-28-0	3300 U	4000 U	4000 U	3200 U	2400 U	2500 U
Vanadium	7440-62-2	40600	62900	43300	21700	42300	35600
Zinc	7440-66-6	743000	934000	926000	336000	1510000	1790000 J

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Station ID		PZ-48	PZ-48	PZ-66	PZ-66	PZ-66	PZ-66
Sample ID		SB-PZ-48-10-15-4-D	SB-PZ-48-20-22-4	SB-PZ-66-00-02.5-4	SB-PZ-66-05-10-4	SB-PZ-66-10-15-4	SB-PZ-66-20.5-21.6-4
Sample Date		01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014
Sample Interval		10 - 15 FT	20 - 22 FT	0 - 2.5 FT	5 - 10 FT	10 - 15 FT	20.5 - 21.6 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Acetone	67-64-1	910 U	600 U	11 U	190	140	11 J
Benzene	71-43-2	340 J	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Bromoform	75-25-2	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Bromomethane	74-83-9	460 U	300 UJ	5.7 U	6.7 U	6.4 U	5.7 U
Carbon disulfide	75-15-0	460 U	300 UJ	5.7 U	6.7 U	2.7 J	5.7 U
Carbon tetrachloride	56-23-5	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Chlorobenzene	108-90-7	460 U	270 J	5.7 U	6.7 U	4.4 J	5.7 U
Chlorobromomethane	74-97-5	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Chloroethane	75-00-3	460 U	300 UJ	5.7 U	6.7 U	6.4 U	5.7 U
Chloroform	67-66-3	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Chloromethane	74-87-3	460 U	300 UJ	5.7 U	6.7 U	6.4 U	5.7 U
Cyclohexane	110-82-7	460 U	300 U	5.7 U	6.7 U	9.4 J+	5.7 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dibromochloromethane	124-48-1	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dibromoethane-1,2	106-93-4	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichlorobenzene-1,2	95-50-1	600	310	5.7 U	4.8 J	9	6.2
Dichlorobenzene-1,3	541-73-1	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichlorobenzene-1,4	106-46-7	330 J	390	5.7 U	6.7 U	5.5 J	5.7 U
Dichlorobromomethane	75-27-4	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichlorodifluoromethane	75-71-8	460 U	300 UJ	5.7 U	6.7 U	6.4 U	5.7 U
Dichloroethane-1,1	75-34-3	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichloroethane-1,2	107-06-2	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichloroethene-1,2 trans	156-60-5	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichloroethylene-1,1	75-35-4	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichloroethylene-1,2 cis	156-59-2	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichloropropane-1,2	78-87-5	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichloropropene-1,3 cis	10061-01-5	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dichloropropene-1,3 trans	10061-02-6	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Dioxane, 1,4-	123-91-1	9100 R	6000 R	110 R	130 R	130 R	110 R
Ethylbenzene	100-41-4	1600	390	5.7 U	6.7 U	6.4 U	5.7 U

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Station ID		PZ-48	PZ-48	PZ-66	PZ-66	PZ-66	PZ-66
Sample ID		SB-PZ-48-10-15-4-D	SB-PZ-48-20-22-4	SB-PZ-66-00-02.5-4	SB-PZ-66-05-10-4	SB-PZ-66-10-15-4	SB-PZ-66-20.5-21.6-4
Sample Date		01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014
Sample Interval		10 - 15 FT	20 - 22 FT	0 - 2.5 FT	5 - 10 FT	10 - 15 FT	20.5 - 21.6 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Hexanone-2	591-78-6	910 U	600 U	11 U	13 U	13 U	11 U
Isopropylbenzene	98-82-8	640	350	5.7 U	6.7 U	27	5.7 U
Methyl acetate	79-20-9	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Methyl cyclohexane	108-87-2	460 U	200 J	5.7 U	6.7 U	15 J+	5.7 U
Methyl ethyl ketone (2-butanone)	78-93-3	910 U	600 U	11 U	13 U	56	11 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	910 U	600 U	11 U	13 U	13 U	11 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Methylene chloride	75-09-2	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Styrene	100-42-5	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Tetrachloroethane-1,1,2,2	79-34-5	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Tetrachloroethylene	127-18-4	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Toluene	108-88-3	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Trichlorobenzene-1,2,3	87-61-6	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Trichlorobenzene-1,2,4	120-82-1	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Trichloroethane-1,1,1	71-55-6	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Trichloroethane-1,1,2	79-00-5	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Trichloroethylene	79-01-6	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Trichlorofluoromethane	75-69-4	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Vinyl chloride	75-01-4	460 U	300 U	5.7 U	6.7 U	6.4 U	5.7 U
Xylene-o	95-47-6	4200	840	5.7 U	6.7 U	4.6 J	5.7 U
Xylenes, m & p	179601-23-1	3900	1400	5.7 U	6.7 U	8.8	5.7 U
Semivolatile Organic Compounds (ug/kg)							
Acenaphthene	83-32-9	1200	580	140 J	650	710	210
Acenaphthylene	208-96-8	430 J	160	540 J-	750 J	390 J	77 J
Acetophenone	98-86-2	240 U	400	59 J	420	230 U	190 U
Anthracene	120-12-7	850	300 J	270 J-	1100 J	710 J	160
Atrazine	1912-24-9	240 U	190 U	200 U	230 U	230 U	190 U
Benzaldehyde	100-52-7	240 U	190 U	200 U	230 U	230 U	190 U

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Station ID		PZ-48	PZ-48	PZ-66	PZ-66	PZ-66	PZ-66
Sample ID		SB-PZ-48-10-15-4-D	SB-PZ-48-20-22-4	SB-PZ-66-00-02.5-4	SB-PZ-66-05-10-4	SB-PZ-66-10-15-4	SB-PZ-66-20.5-21.6-4
Sample Date		01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014
Sample Interval		10 - 15 FT	20 - 22 FT	0 - 2.5 FT	5 - 10 FT	10 - 15 FT	20.5 - 21.6 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Benzo(a)anthracene	56-55-3	3400 J-	1600 J	1400 J	2700 J-	1700 J-	240
Benzo(a)pyrene	50-32-8	1600 J-	1000 J	1300 J-	2100 J-	1000 J-	210 J-
Benzo(b)fluoranthene	205-99-2	2500 J-	2000 J	2100 J	4000 J-	1800 J-	260
Benzo(g,h,I)perylene	191-24-2	910 J-	640	1400 J-	1400	810 J-	140 J
Benzo(k)fluoranthene	207-08-9	860 J-	570	780 J-	920	600	67 J
Biphenyl	92-52-4	270 J-	160 J	200 UJ	230 U	65 J	190 UJ
Bromophenyl-4 Phenyl Ether	101-55-3	240 UJ	190 U	200 U	230 U	230 U	190 UJ
Butylbenzyl phthalate	85-68-7	240 UJ	190 U	200 UJ	230 U	230 U	190 UJ
Caprolactam	105-60-2	240 UJ	190 U	200 UJ	230 U	230 U	190 UJ
Carbazole	86-74-8	120 J	140 J	200 U	87 J	83 J	190 UJ
Chloroaniline-4	106-47-8	240 U	190 U	200 U	230 U	230 U	190 U
Chloronaphthalene-2	91-58-7	240 U	190 U	200 U	230 U	230 U	190 U
Chlorophenol-2	95-57-8	240 U	190 U	200 U	230 U	230 U	190 U
Chlorophenyl-4 phenyl ether	7005-72-3	240 UJ	190 U	200 U	230 U	230 U	190 UJ
Chrysene	218-01-9	1900 J-	1200 J-	1400 J	2500 J-	1200 J-	220 J-
Cresol-4,6-dinitro-ortho	534-52-1	470 U	370 U	380 U	450 U	450 U	360 U
Cresol-o	95-48-7	240 U	85 J	200 U	230 U	230 U	190 U
Cresol-p	106-44-5	240 U	74 J	200 U	230 U	230 U	190 U
Cresol-parachloro-meta	59-50-7	240 U	190 U	200 U	230 U	230 U	190 U
Dibenzo(a,h)anthracene	53-70-3	310 J-	220	490 J-	430	260	53 J
Dibenzofuran	132-64-9	300 J-	160 J	78 J	86 J	140 J	65 J
Dichlorobenzidine-3,3	91-94-1	240 U	190 U	200 U	230 U	230 U	190 U
Dichlorophenol-2,4	120-83-2	240 U	190 U	200 U	230 U	230 U	190 U
Dimethylphenol-2,4	105-67-9	240 U	190 U	200 U	230 U	230 U	190 U
Dinitrophenol-2,4	51-28-5	470 U	370 U	380 U	450 U	450 U	360 U
Dinitrotoluene-2,4	121-14-2	240 U	190 U	200 U	230 U	230 U	190 U
Dinitrotoluene-2,6	606-20-2	240 U	190 U	200 U	230 U	230 U	190 U
Ether, bis(2-chloroethyl)	111-44-4	240 U	190 U	200 U	230 U	230 U	190 U
Ether, bis-chloroisopropyl	108-60-1	240 U	190 U	200 U	230 U	230 U	190 U
Fluoranthene	206-44-0	3000 J-	1600 J	1200 J	3100 J-	2100 J-	180

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Station ID		PZ-48	PZ-48	PZ-66	PZ-66	PZ-66	PZ-66
Sample ID		SB-PZ-48-10-15-4-D	SB-PZ-48-20-22-4	SB-PZ-66-00-02.5-4	SB-PZ-66-05-10-4	SB-PZ-66-10-15-4	SB-PZ-66-20.5-21.6-4
Sample Date		01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014
Sample Interval		10 - 15 FT	20 - 22 FT	0 - 2.5 FT	5 - 10 FT	10 - 15 FT	20.5 - 21.6 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Fluorene	86-73-7	820 J	460	130 J	430	480	170
Hexachlorobenzene	118-74-1	240 U	190 U	200 U	230 U	230 U	190 U
Hexachlorobutadiene	87-68-3	240 U	190 U	200 U	230 U	230 U	190 U
Hexachlorocyclopentadiene	77-47-4	240 U	190 U	200 U	230 U	230 U	190 U
Hexachloroethane	67-72-1	240 U	190 U	200 U	230 U	230 U	190 U
Indeno(1,2,3-cd)pyrene	193-39-5	790 J-	630 J	1200 J-	1200	590	96 J
Isophorone	78-59-1	240 U	190 U	200 U	230 U	230 U	190 U
Methane, bis(2-chloroethoxy)	111-91-1	240 U	190 U	200 U	230 U	230 U	190 U
Methylnaphthalene-2	91-57-6	3700 J	2000 J	100 J-	290 J	1300 J	2000 J
Naphthalene	91-20-3	2600	1600	92 J	330 J	230	77
Nitroaniline-2	88-74-4	470 U	370 U	380 U	450 U	450 U	360 U
Nitroaniline-3	99-09-2	470 U	370 U	380 U	450 U	450 U	360 U
Nitroaniline-4	100-01-6	470 U	370 U	380 U	450 U	450 U	360 U
Nitrobenzene	98-95-3	240 U	190 U	200 U	230 U	230 U	190 U
Nitrophenol-2	88-75-5	240 U	190 U	200 U	230 U	230 U	190 U
Nitrophenol-4	100-02-7	470 U	370 U	380 U	450 U	450 U	360 U
Nitroso-di-n-propyl-amine-N	621-64-7	240 U	190 U	200 U	230 U	230 U	190 U
Nitrosodiphenylamine-n	86-30-6	240 U	190 U	200 U	230 U	230 U	190 U
PCP (Pentachlorophenol)	87-86-5	47 UJ	38 U	39 UJ	45 U	46 U	37 U
Phenanthrene	85-01-8	3300	1900 J	630	1900 J	2900 J	240
Phenol	108-95-2	240 U	190 U	200 U	230 U	230 U	190 U
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	22000	5800	320 J-	2100	2700	4200
Phthalate, diethyl	84-66-2	240 UJ	190 U	200 UJ	230 U	230 U	190 UJ
Phthalate, dimethyl	131-11-3	240 UJ	190 U	200 UJ	230 U	230 U	190 UJ
Phthalate, di-n-butyl	84-74-2	100 J	84 J	200 UJ	51 J	230 U	120 J
Phthalate, di-n-octyl	117-84-0	800 J-	130 J	200 UJ	230 U	230 U	190 UJ
Pyrene	129-00-0	2700 J-	1800 J	1700 J-	3300 J-	2000 J-	420 J-
Tetrachlorobenzene-1,2,4,5	95-94-3	60 J	190 U	200 U	230 U	230 U	190 U
Tetrachlorophenol-2,3,4,6	58-90-2	240 U	190 U	200 U	230 U	230 U	190 U
Trichlorophenol-2,4,5	95-95-4	240 U	190 U	200 U	230 U	230 U	190 U

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Station ID		PZ-48	PZ-48	PZ-66	PZ-66	PZ-66	PZ-66
Sample ID		SB-PZ-48-10-15-4-D	SB-PZ-48-20-22-4	SB-PZ-66-00-02.5-4	SB-PZ-66-05-10-4	SB-PZ-66-10-15-4	SB-PZ-66-20.5-21.6-4
Sample Date		01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014
Sample Interval		10 - 15 FT	20 - 22 FT	0 - 2.5 FT	5 - 10 FT	10 - 15 FT	20.5 - 21.6 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Trichlorophenol-2,4,6	88-06-2	240 U	190 U	200 U	230 U	230 U	190 U
Pesticides and PCBs (ug/kg)							
Aldrin	309-00-2	2.4 UJ	20 U	4.5 J-	3.4 NJ	2.3 UJ	1.9 U
BHC, alpha	319-84-6	2.4 UJ	20 U	2 UJ	2.3 U	2.3 UJ	1.9 U
BHC, beta	319-85-7	9.9 NJ	34	3.5 R	4.1 R	14 R	4.4 NJ
BHC, delta	319-86-8	2.4 UJ	20 U	4.4 R	2.3 U	2.3 UJ	7.2 NJ
BHC, gamma (Lindane)	58-89-9	2.8 R	20 U	12 NJ	3.8 R	3.3 R	1.9 U
Chlordane - alpha	5103-71-9	2.4 UJ	20 U	2 UJ	9.7 NJ	2.3 UJ	2.6 NJ
Chlordane - gamma	5566-34-7	2.4 UJ	20 U	2 UJ	18 NJ	2.3 UJ	3.3 R
DDD-4,4	72-54-8	23 NJ	38 U	5.5 R	16 R	7.3 R	4.8 R
DDE-4,4	72-55-9	16 J-	67 J	3.8 UJ	18	13 J-	3.7 U
DDT-4,4	50-29-3	31 J-	230	5.6 R	21 J	11 NJ	8.9
Dieldrin	60-57-1	4.7 UJ	65 NJ	3.8 UJ	4.5 U	4.5 UJ	5.3 J
Endosulfan I (alpha)	959-98-8	2.4 UJ	20 U	2 UJ	2.3 U	2.3 UJ	1.9 U
Endosulfan II (beta)	33213-65-9	4.7 UJ	38 U	3.8 UJ	5.3 NJ	4.9 J-	3.7 U
Endosulfan Sulfate	1031-07-8	4.8 J-	38 U	3.8 UJ	4.5 U	4.5 UJ	3.7 U
Endrin	72-20-8	4.7 UJ	38 U	3.8 UJ	4.5 U	4.5 UJ	3.7 U
Endrin Aldehyde	7421-93-4	6.4 J-	38 U	3.8 UJ	4.5 U	4.5 UJ	3.7 U
Endrin ketone	53494-70-5	4.7 UJ	38 U	3.8 UJ	4.5 U	4.5 UJ	3.7 U
Heptachlor	76-44-8	8.8 R	20 U	2 UJ	3.9 R	6.2 R	3.9 NJ
Heptachlor Epoxide	1024-57-3	15 NJ	98 NJ	15 J-	7.3 R	2.3 UJ	1.9 U
Methoxychlor	72-43-5	24 UJ	200 U	20 UJ	23 U	23 UJ	19 U
PCB-Aroclor 1016	12674-11-2	2400 J	580	140 NJ	500	1200	480
PCB-Aroclor 1221	11104-28-2	47 U	38 U	38 U	45 U	45 U	37 U
PCB-Aroclor 1232	11141-16-5	47 U	38 U	38 U	45 U	45 U	37 U
PCB-Aroclor 1242	53469-21-9	47 U	38 U	38 U	45 U	45 U	37 U
PCB-Aroclor 1248	12672-29-6	47 U	38 U	38 U	45 U	45 U	37 U
PCB-Aroclor 1254	11097-69-1	3300	540	220 J	480 NJ	450 J	320 J
PCB-Aroclor 1260	11096-82-5	2000 J	200 NJ	88 NJ	390	320 J	260 J

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Station ID		PZ-48	PZ-48	PZ-66	PZ-66	PZ-66	PZ-66
Sample ID		SB-PZ-48-10-15-4-D	SB-PZ-48-20-22-4	SB-PZ-66-00-02.5-4	SB-PZ-66-05-10-4	SB-PZ-66-10-15-4	SB-PZ-66-20.5-21.6-4
Sample Date		01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/09/2014
Sample Interval		10 - 15 FT	20 - 22 FT	0 - 2.5 FT	5 - 10 FT	10 - 15 FT	20.5 - 21.6 FT
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/kg)							
PCB-Aroclor 1262	37324-23-5	47 U	38 U	38 U	45 U	45 U	37 U
PCB-Aroclor 1268	11100-14-4	47 U	38 U	38 U	45 U	45 U	37 U
Toxaphene	8001-35-2	240 UJ	2000 U	200 UJ	230 U	230 UJ	190 U
Metals (ug/kg)							
Aluminum	7429-90-5	9590000	8670000	9330000	9220000	7520000	1730000
Antimony	7440-36-0	2500 J	520 J	1300 J	3000 J	2900 J	4900 U
Arsenic	7440-38-2	26600	21100	18600	32900	25600	1600
Barium	7440-39-3	370000	270000	161000	584000	714000	36200
Beryllium	7440-41-7	350 J	470	390 J	480 J	260 J	110 J
Cadmium	7440-43-9	8200	6600	1200	7100	6900	410 U
Calcium	7440-70-2	3930000	4750000	2880000	5470000	6520000	1710000
Chromium	7440-47-3	205000 J	167000	90700	233000	163000	15800
Cobalt	7440-48-4	6800	9800	6500	9600	8000	1800 J
Copper	7440-50-8	358000	268000	158000	616000	335000	6000
Cyanide	57-12-5	390 J	480 J	360 J	510 J	670 J	550 U
Iron	7439-89-6	22900000	25500000	21700000	29000000	38500000	5270000
Lead	7439-92-1	2220000	584000	255000	1780000	2560000	63300
Magnesium	7439-95-4	2880000	3670000	2400000	3230000	2330000	830000
Manganese	7439-96-5	195000 J	308000	289000	239000	291000	81400
Mercury	7439-97-6	6100 J	1200	1600	4700	3100	36 J
Nickel	7440-02-0	61900	64700	26800	73500	63800	5500
Potassium	7440-09-7	1140000	1200000	748000	1100000	914000	337000 J
Selenium	7782-49-2	580 J	3100 U	2700 J	420 J	3400 U	2900 U
Silver	7440-22-4	3100	2700	1300	4400	4500	80 J
Sodium	7440-23-5	1300000	1290000	314000 J	301000 J	881000	107000 J
Thallium	7440-28-0	2700 U	2200 U	2300 U	2400 U	2500 U	2000 U
Vanadium	7440-62-2	32300	35100	43800	43300	31000	7100
Zinc	7440-66-6	770000 J	729000	172000	975000	1080000	24300

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Sample ID		SB-PZ-77-00-02.5-4	SB-PZ-77-05-09.2-4	SB-PZ-77-21-22.3-4	SB-PZ-87-00-02-4	SB-PZ-87-02-03.2-4	SB-PZ-87-05-07.2-4
Sample Date		01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014
Sample Interval		0 - 2.5 FT	5 - 9.2 FT	21 - 22.3 FT	0 - 2 FT	2 - 3.2 FT	5 - 7.2 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Acetone	67-64-1	12 U	190	34	10 U	15 U	6.5 J
Benzene	71-43-2	6.1 U	8.6 J	15	5.1 U	7.6 U	6.6 U
Bromoform	75-25-2	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Bromomethane	74-83-9	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 UJ
Carbon disulfide	75-15-0	6.1 U	3.7 J	2.7 J	5.1 U	7.6 U	6.6 UJ
Carbon tetrachloride	56-23-5	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Chlorobenzene	108-90-7	6.1 U	4.2 J	12	5.1 U	7.6 U	6.6 U
Chlorobromomethane	74-97-5	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Chloroethane	75-00-3	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 UJ
Chloroform	67-66-3	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Chloromethane	74-87-3	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 UJ
Cyclohexane	110-82-7	6.1 U	7.2 U	43 J+	5.1 U	7.6 U	6.6 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dibromochloromethane	124-48-1	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dibromoethane-1,2	106-93-4	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dichlorobenzene-1,2	95-50-1	6.1 U	3.4 J	22	5.1 U	7.6 U	6.6 U
Dichlorobenzene-1,3	541-73-1	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dichlorobenzene-1,4	106-46-7	6.1 U	7.2 U	4.3 J	5.1 U	7.6 U	6.6 U
Dichlorobromomethane	75-27-4	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dichlorodifluoromethane	75-71-8	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 UJ
Dichloroethane-1,1	75-34-3	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dichloroethane-1,2	107-06-2	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dichloroethene-1,2 trans	156-60-5	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dichloroethylene-1,1	75-35-4	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dichloroethylene-1,2 cis	156-59-2	6.1 U	7.2 U	13	5.1 U	7.6 U	6.6 U
Dichloropropane-1,2	78-87-5	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dichloropropene-1,3 cis	10061-01-5	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dichloropropene-1,3 trans	10061-02-6	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Dioxane, 1,4-	123-91-1	120 R	140 R	120 R	100 R	150 R	130 R
Ethylbenzene	100-41-4	6.1 U	7.2 U	11	5.1 U	7.6 U	6.6 U

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Station ID		PZ-77	PZ-77	PZ-77	PZ-87	PZ-87	PZ-87
Sample ID		SB-PZ-77-00-02.5-4	SB-PZ-77-05-09.2-4	SB-PZ-77-21-22.3-4	SB-PZ-87-00-02-4	SB-PZ-87-02-03.2-4	SB-PZ-87-05-07.2-4
Sample Date		01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014
Sample Interval		0 - 2.5 FT	5 - 9.2 FT	21 - 22.3 FT	0 - 2 FT	2 - 3.2 FT	5 - 7.2 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Hexanone-2	591-78-6	12 U	14 U	12 U	10 U	15 U	13 U
Isopropylbenzene	98-82-8	6.1 U	16	2.4 J	5.1 U	7.6 U	4.5 J
Methyl acetate	79-20-9	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Methyl cyclohexane	108-87-2	6.1 U	5.7 J	16 J+	5.1 U	7.6 U	6.6 U
Methyl ethyl ketone (2-butanone)	78-93-3	12 U	80	12 U	10 U	15 U	13 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	12 U	14 U	12 U	10 U	15 U	13 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Methylene chloride	75-09-2	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Styrene	100-42-5	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Tetrachloroethane-1,1,2,2	79-34-5	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Tetrachloroethylene	127-18-4	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Toluene	108-88-3	6.1 U	7.2 U	30	5.1 U	7.6 U	6.6 U
Trichlorobenzene-1,2,3	87-61-6	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Trichlorobenzene-1,2,4	120-82-1	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Trichloroethane-1,1,1	71-55-6	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Trichloroethane-1,1,2	79-00-5	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Trichloroethylene	79-01-6	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Trichlorofluoromethane	75-69-4	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Vinyl chloride	75-01-4	6.1 U	7.2 U	5.9 U	5.1 U	7.6 U	6.6 U
Xylene-o	95-47-6	6.1 U	12	14	5.1 U	7.6 U	6.6 U
Xylenes, m & p	179601-23-1	6.1 U	7.2 J	29	5.1 U	7.6 U	6.6 U
Semivolatile Organic Compounds (ug/kg)							
Acenaphthene	83-32-9	180 J	690	240	190	1200	1700
Acenaphthylene	208-96-8	820 J-	380 J-	160	480 J	2300 J-	830 J
Acetophenone	98-86-2	81 J	190 J	1400	160 J	460	570
Anthracene	120-12-7	440 J-	490	160	370	2300 J-	1600 J
Atrazine	1912-24-9	210 U	240 U	200 U	190 U	240 U	250 U
Benzaldehyde	100-52-7	210 U	240 U	200 U	190 U	210 J	250 U

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Station ID		PZ-77	PZ-77	PZ-77	PZ-87	PZ-87	PZ-87
Sample ID		SB-PZ-77-00-02.5-4	SB-PZ-77-05-09.2-4	SB-PZ-77-21-22.3-4	SB-PZ-87-00-02-4	SB-PZ-87-02-03.2-4	SB-PZ-87-05-07.2-4
Sample Date		01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014
Sample Interval		0 - 2.5 FT	5 - 9.2 FT	21 - 22.3 FT	0 - 2 FT	2 - 3.2 FT	5 - 7.2 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Benzo(a)anthracene	56-55-3	2300 J	1400 J	240	2200 J	8800 J-	7500 J-
Benzo(a)pyrene	50-32-8	1600 J-	1100 J	180	1700 J-	7300 J-	2100 J-
Benzo(b)fluoranthene	205-99-2	2800 J	1700 J	290	2700 J	11000 J-	4300 J-
Benzo(g,h,I)perylene	191-24-2	1700 J-	830	160 J	1700 J-	5100 J-	1500 J-
Benzo(k)fluoranthene	207-08-9	1100 J-	500	110 J	730 J-	3400 J-	1400 J-
Biphenyl	92-52-4	210 UJ	240 U	190 J	190 U	110 J	150 J
Bromophenyl-4 Phenyl Ether	101-55-3	210 U	240 U	200 UJ	190 U	240 U	250 U
Butylbenzyl phthalate	85-68-7	54 J	240 U	200 UJ	66 J	240 U	250 U
Caprolactam	105-60-2	210 UJ	240 U	200 UJ	190 U	240 U	250 U
Carbazole	86-74-8	210 U	62 J	200 UJ	54 J	200 J	240 J
Chloroaniline-4	106-47-8	210 U	240 U	200 U	190 U	240 U	250 U
Chloronaphthalene-2	91-58-7	210 U	240 U	200 U	190 U	240 U	250 U
Chlorophenol-2	95-57-8	210 U	240 U	200 U	190 U	240 U	250 U
Chlorophenyl-4 phenyl ether	7005-72-3	210 U	240 U	200 UJ	190 U	240 U	250 U
Chrysene	218-01-9	1900 J-	1300 J-	280 J-	2100 J-	6900 J-	2900 J-
Cresol-4,6-dinitro-ortho	534-52-1	420 U	470 U	390 U	380 U	460 U	490 U
Cresol-o	95-48-7	210 U	240 U	200 U	190 U	240 U	250 U
Cresol-p	106-44-5	210 U	240 U	190 J	190 U	240 U	250 U
Cresol-parachloro-meta	59-50-7	210 U	240 U	200 U	190 U	240 U	250 U
Dibenzo(a,h)anthracene	53-70-3	600 J-	280	51 J	480 J-	1400 J-	500 J-
Dibenzofuran	132-64-9	210 U	93 J	100 J	49 J	200 J	310
Dichlorobenzidine-3,3	91-94-1	210 U	240 U	200 U	190 U	240 U	250 U
Dichlorophenol-2,4	120-83-2	210 U	240 U	200 U	190 U	240 U	250 U
Dimethylphenol-2,4	105-67-9	210 U	240 U	200 U	190 U	240 U	250 U
Dinitrophenol-2,4	51-28-5	420 U	470 U	390 U	380 U	460 U	490 U
Dinitrotoluene-2,4	121-14-2	210 U	240 U	200 U	190 U	240 U	250 U
Dinitrotoluene-2,6	606-20-2	210 U	240 U	200 U	190 U	240 U	250 U
Ether, bis(2-chloroethyl)	111-44-4	210 U	240 U	200 U	190 U	240 U	250 U
Ether, bis-chloroisopropyl	108-60-1	210 U	240 U	200 U	190 U	240 U	250 U
Fluoranthene	206-44-0	2000 J	1500 J-	330	1700 J-	6300 J-	5400 J-

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Station ID		PZ-77	PZ-77	PZ-77	PZ-87	PZ-87	PZ-87
Sample ID		SB-PZ-77-00-02.5-4	SB-PZ-77-05-09.2-4	SB-PZ-77-21-22.3-4	SB-PZ-87-00-02-4	SB-PZ-87-02-03.2-4	SB-PZ-87-05-07.2-4
Sample Date		01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014
Sample Interval		0 - 2.5 FT	5 - 9.2 FT	21 - 22.3 FT	0 - 2 FT	2 - 3.2 FT	5 - 7.2 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Fluorene	86-73-7	180 J-	440	310	180	1100	1200
Hexachlorobenzene	118-74-1	210 U	240 U	200 U	190 U	240 U	250 U
Hexachlorobutadiene	87-68-3	210 U	240 U	200 U	190 U	240 U	250 U
Hexachlorocyclopentadiene	77-47-4	210 U	240 U	200 U	190 U	240 U	250 U
Hexachloroethane	67-72-1	210 U	240 U	200 U	190 U	240 U	250 U
Indeno(1,2,3-cd)pyrene	193-39-5	1400 J-	690	110 J	1300 J-	3400 J-	1200 J-
Isophorone	78-59-1	210 U	240 U	200 U	190 U	240 U	250 U
Methane, bis(2-chloroethoxy)	111-91-1	210 U	240 U	200 U	190 U	240 U	250 U
Methylnaphthalene-2	91-57-6	110 J-	530 J-	4600 J	120 J-	810 J-	2500 J
Naphthalene	91-20-3	120 J-	170 J	2800 J	120 J-	640	660 J
Nitroaniline-2	88-74-4	420 U	470 U	390 U	380 U	460 U	490 U
Nitroaniline-3	99-09-2	420 U	470 U	390 U	380 U	460 U	490 U
Nitroaniline-4	100-01-6	420 U	470 U	390 U	380 U	460 U	490 U
Nitrobenzene	98-95-3	210 U	240 U	200 U	190 U	240 U	250 U
Nitrophenol-2	88-75-5	210 U	240 U	200 U	190 U	240 U	250 U
Nitrophenol-4	100-02-7	420 U	470 U	390 U	380 U	460 U	490 U
Nitroso-di-n-propyl-amine-N	621-64-7	210 U	240 U	200 U	190 U	240 U	250 U
Nitrosodiphenylamine-n	86-30-6	210 U	240 U	200 U	190 U	240 U	250 U
PCP (Pentachlorophenol)	87-86-5	42 UJ	48 UJ	39 U	38 UJ	47 UJ	50 U
Phenanthrene	85-01-8	1100	1500	800	1100	5500 J-	4700 J
Phenol	108-95-2	210 U	200 U	200 U	190 U	210 U	250 U
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	120 J	1500	200 UJ	850	6800	150000
Phthalate, diethyl	84-66-2	210 UJ	240 U	200 UJ	190 U	240 U	250 U
Phthalate, dimethyl	131-11-3	210 UJ	240 U	200 UJ	190 U	240 U	250 U
Phthalate, di-n-butyl	84-74-2	43 J	50 J	82 J	76 J	120 J	250 U
Phthalate, di-n-octyl	117-84-0	210 UJ	240 U	200 UJ	190 U	170 J	760
Pyrene	129-00-0	2500 J-	2200 J-	510	2600 J-	9500 J-	4300 J-
Tetrachlorobenzene-1,2,4,5	95-94-3	210 U	240 U	200 U	190 U	240 U	250 U
Tetrachlorophenol-2,3,4,6	58-90-2	210 U	240 U	200 U	190 U	240 U	250 U
Trichlorophenol-2,4,5	95-95-4	210 U	240 U	200 U	190 U	240 U	250 U

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Station ID		PZ-77	PZ-77	PZ-77	PZ-87	PZ-87	PZ-87
Sample ID		SB-PZ-77-00-02.5-4	SB-PZ-77-05-09.2-4	SB-PZ-77-21-22.3-4	SB-PZ-87-00-02-4	SB-PZ-87-02-03.2-4	SB-PZ-87-05-07.2-4
Sample Date		01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014
Sample Interval		0 - 2.5 FT	5 - 9.2 FT	21 - 22.3 FT	0 - 2 FT	2 - 3.2 FT	5 - 7.2 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Trichlorophenol-2,4,6	88-06-2	210 U	240 U	200 U	190 U	240 U	250 U
Pesticides and PCBs (ug/kg)							
Aldrin	309-00-2	2.2 UJ	2.4 U	2 U	2 U	2.4 UJ	26 U
BHC, alpha	319-84-6	2.3 NJ	4.9 R	2 U	2 U	10 R	26 U
BHC, beta	319-85-7	18 J-	8.5 R	2 U	2 U	18 R	26 U
BHC, delta	319-86-8	2.2 UJ	3.4 R	2 U	2 U	2.6 R	26 U
BHC, gamma (Lindane)	58-89-9	10 J-	11 R	4 R	7.2	19 R	26 U
Chlordane - alpha	5103-71-9	2.2 UJ	2.4 U	2 U	2 U	14 R	26 U
Chlordane - gamma	5566-34-7	2.2 UJ	2.4 U	2 U	2 U	2.4 UJ	27 R
DDD-4,4	72-54-8	8.7 R	19 NJ	3.9 U	7.3 R	30 R	50 U
DDE-4,4	72-55-9	4.6 NJ	12 NJ	3.9 U	3.9 U	46 J-	50 U
DDT-4,4	50-29-3	7.4 J-	8.8 J	8.6 NJ	5.1 NJ	42 J-	50 U
Dieldrin	60-57-1	4.2 UJ	4.7 U	4.6	3.9 U	4.6 UJ	50 U
Endosulfan I (alpha)	959-98-8	2.2 UJ	2.4 U	2 U	2 U	2.4 UJ	26 U
Endosulfan II (beta)	33213-65-9	4.2 UJ	4.7 U	4.8	3.9 U	7.7 J-	50 U
Endosulfan Sulfate	1031-07-8	4.2 UJ	4.7 U	3.9 U	3.9 U	4.6 UJ	50 U
Endrin	72-20-8	4.2 UJ	4.7 U	3.9 U	3.9 U	4.6 UJ	50 U
Endrin Aldehyde	7421-93-4	4.2 UJ	4.7 U	4 J	3.9 U	7.4 R	360
Endrin ketone	53494-70-5	5.5 J-	4.7 U	3.9 U	4.2 NJ	6.5 R	50 U
Heptachlor	76-44-8	4.4 J-	2.4 U	2 U	2 U	14 R	26 U
Heptachlor Epoxide	1024-57-3	25 J-	2.4 U	2.3	2 U	19 R	26 U
Methoxychlor	72-43-5	22 UJ	24 U	20 U	20 U	24 UJ	260 U
PCB-Aroclor 1016	12674-11-2	600 NJ	320	300	230 J	1600 J	1200
PCB-Aroclor 1221	11104-28-2	42 U	47 U	39 U	39 U	46 U	50 U
PCB-Aroclor 1232	11141-16-5	42 U	47 U	39 U	39 U	46 U	50 U
PCB-Aroclor 1242	53469-21-9	42 U	47 U	39 U	39 U	46 U	50 U
PCB-Aroclor 1248	12672-29-6	42 U	47 U	39 U	39 U	46 U	50 U
PCB-Aroclor 1254	11097-69-1	400	370 NJ	290 NJ	190 J	1900 J	1100
PCB-Aroclor 1260	11096-82-5	120 NJ	390	260	150	920 J	270 NJ

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Station ID		PZ-77	PZ-77	PZ-77	PZ-87	PZ-87	PZ-87
Sample ID		SB-PZ-77-00-02.5-4	SB-PZ-77-05-09.2-4	SB-PZ-77-21-22.3-4	SB-PZ-87-00-02-4	SB-PZ-87-02-03.2-4	SB-PZ-87-05-07.2-4
Sample Date		01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014	01/08/2014
Sample Interval		0 - 2.5 FT	5 - 9.2 FT	21 - 22.3 FT	0 - 2 FT	2 - 3.2 FT	5 - 7.2 FT
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/kg)							
PCB-Aroclor 1262	37324-23-5	42 U	47 U	39 U	39 U	46 U	50 U
PCB-Aroclor 1268	11100-14-4	42 U	47 U	39 U	39 U	46 U	50 U
Toxaphene	8001-35-2	220 UJ	240 U	200 U	200 U	240 UJ	2600 U
Metals (ug/kg)							
Aluminum	7429-90-5	7570000	9450000	3910000	7000000	8590000	11400000
Antimony	7440-36-0	1300 J	880 J	750 J	2100 J	4200 J	2900 J
Arsenic	7440-38-2	21600	34400	8800	17300	28800	36400
Barium	7440-39-3	201000	357000	245000	213000	617000	620000
Beryllium	7440-41-7	340 J	510	240 J	350 J	350 J	410 J
Cadmium	7440-43-9	1800	8200	1800	2100	9900	7300
Calcium	7440-70-2	5310000	4630000	2810000	7980000	6650000	13100000
Chromium	7440-47-3	107000	234000	65700	99500	175000	306000
Cobalt	7440-48-4	6500	9100	3800 J	5600	8200	9500
Copper	7440-50-8	177000	392000	98200	161000	354000	422000
Cyanide	57-12-5	330 J	180 J	620 U	410 J	1100	410 J
Iron	7439-89-6	16800000	25700000	11700000	17100000	45000000	40700000
Lead	7439-92-1	346000	755000	764000	489000	1360000	1480000
Magnesium	7439-95-4	2050000	3060000	1600000	1680000	2280000	3260000
Manganese	7439-96-5	298000	250000	253000	225000	346000	356000
Mercury	7439-97-6	2000	4100	170	1900	4600	9100
Nickel	7440-02-0	35300	71800	25500	34400	67000	74700
Potassium	7440-09-7	835000	1110000	642000	721000	853000	1260000
Selenium	7782-49-2	3200 U	480 J	3100 U	3200 U	3500 U	3800 U
Silver	7440-22-4	1500	3900	1200	1200	4000	17900
Sodium	7440-23-5	270000 J	680000	306000 J	229000 J	585000	974000
Thallium	7440-28-0	2300 U	2500 U	2200 U	2300 U	2500 U	2700 U
Vanadium	7440-62-2	27500	38700	14400	25600	39700	45200
Zinc	7440-66-6	271000	908000	338000	334000	1030000	880000

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Station ID		PZ-87	PZ-90	PZ-90	PZ-90	SB-52-Berm	SB-52-Berm
Sample ID		SB-PZ-87-10-17.4-4	SB-PZ-90-01-02.5-4	SB-PZ-90-02.5-10-4	SB-PZ-90-10-20-4	SB-52-13.5-14.4-3	SB-52-16.3-17.3-3
Sample Date		01/08/2014	12/11/2013	12/11/2013	12/11/2013	05/28/2009	05/28/2009
Sample Interval		10 - 17.4 FT	1 - 2.5 FT	2.5 - 10 FT	10 - 20 FT	13.5 - 14.5 FT	16.3 - 17.3 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Acetone	67-64-1	42	190	980 U	1100 U	1100 U	730 R
Benzene	71-43-2	24 J+	6.4 U	490 UJ	560 UJ	110 J	360 R
Bromoform	75-25-2	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Bromomethane	74-83-9	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Carbon disulfide	75-15-0	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Carbon tetrachloride	56-23-5	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Chlorobenzene	108-90-7	38	6.4 U	490 U	330 J	270 J	64 J
Chlorobromomethane	74-97-5	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Chloroethane	75-00-3	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Chloroform	67-66-3	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Chloromethane	74-87-3	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Cyclohexane	110-82-7	7.6 U	6.4 U	490 U	560 U	540 UJ	220 J
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dibromochloromethane	124-48-1	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dibromoethane-1,2	106-93-4	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dichlorobenzene-1,2	95-50-1	7.6 U	6.4 U	330 J	560 U	540 UJ	360 UJ
Dichlorobenzene-1,3	541-73-1	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dichlorobenzene-1,4	106-46-7	3.5 J	6.4 U	320 J	680	340 J	360 R
Dichlorobromomethane	75-27-4	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dichlorodifluoromethane	75-71-8	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dichloroethane-1,1	75-34-3	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dichloroethane-1,2	107-06-2	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dichloroethene-1,2 trans	156-60-5	7.6 U	6.4 U	490 U	560 U	540 U	360 R
Dichloroethylene-1,1	75-35-4	7.6 U	6.4 U	490 U	560 U	540 U	360 R
Dichloroethylene-1,2 cis	156-59-2	7.6 U	6.4 U	490 U	560 U	540 U	360 R
Dichloropropane-1,2	78-87-5	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dichloropropene-1,3 cis	10061-01-5	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Dichloropropene-1,3 trans	10061-02-6	7.6 U	6.4 U	490 U	560 U	94 J	360 R
Dioxane, 1,4-	123-91-1	150 R	130 R	9800 R	11000 R	11000 R	7300 R
Ethylbenzene	100-41-4	3.9 J	6.4 U	490 U	560 U	590 J	400 J

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Station ID		PZ-87	PZ-90	PZ-90	PZ-90	SB-52-Berm	SB-52-Berm
Sample ID		SB-PZ-87-10-17.4-4	SB-PZ-90-01-02.5-4	SB-PZ-90-02.5-10-4	SB-PZ-90-10-20-4	SB-52-13.5-14.4-3	SB-52-16.3-17.3-3
Sample Date		01/08/2014	12/11/2013	12/11/2013	12/11/2013	05/28/2009	05/28/2009
Sample Interval		10 - 17.4 FT	1 - 2.5 FT	2.5 - 10 FT	10 - 20 FT	13.5 - 14.5 FT	16.3 - 17.3 FT
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Hexanone-2	591-78-6	15 U	13 U	980 U	1100 U	440 J	730 R
Isopropylbenzene	98-82-8	3.9 J	6.4 U	240 J	560 U	840 J	180 J
Methyl acetate	79-20-9	7.6 U	6.4 U	490 U	760	190 J	360 R
Methyl cyclohexane	108-87-2	7.6 U	6.4 U	490 U	560 U	540 UJ	620 J
Methyl ethyl ketone (2-butanone)	78-93-3	15 U	13 U	980 U	1100 U	1100 U	730 R
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	15 U	13 U	980 U	1100 U	1100 U	730 R
Methyl tertiary butyl ether (MTBE)	1634-04-4	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Methylene chloride	75-09-2	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Styrene	100-42-5	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Tetrachloroethane-1,1,2,2	79-34-5	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Tetrachloroethylene	127-18-4	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Toluene	108-88-3	7.6 U	6.4 U	490 U	1100	540 UJ	360 R
Trichlorobenzene-1,2,3	87-61-6	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Trichlorobenzene-1,2,4	120-82-1	7.6 U	6.4 U	490 U	560 U	540 UJ	41 J
Trichloroethane-1,1,1	71-55-6	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Trichloroethane-1,1,2	79-00-5	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Trichloroethylene	79-01-6	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Trichlorofluoromethane	75-69-4	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Vinyl chloride	75-01-4	7.6 U	6.4 U	490 U	560 U	540 UJ	360 R
Xylene-o	95-47-6	5.3 J	6.4 U	220 J	350 J	540 UJ	510 J
Xylenes, m & p	179601-23-1	5.1 J	6.4 U	700	720	540 UJ	710 J
Semivolatile Organic Compounds (ug/kg)							
Acenaphthene	83-32-9	460	17 J	970	1200	14000	9100
Acenaphthylene	208-96-8	240	28 J	480	600	1300 U	1100
Acetophenone	98-86-2	240 U	190 U	230 U	240 U	1300 U	1100 U
Anthracene	120-12-7	480	47	1100	900 J	6900	4800
Atrazine	1912-24-9	240 U	190 U	230 U	240 U	1300 U	1100 U
Benzaldehyde	100-52-7	240 U	190 U	230 U	240 U	1300 U	1100 U

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Station ID		PZ-87	PZ-90	PZ-90	PZ-90	SB-52-Berm	SB-52-Berm
Sample ID		SB-PZ-87-10-17.4-4	SB-PZ-90-01-02.5-4	SB-PZ-90-02.5-10-4	SB-PZ-90-10-20-4	SB-52-13.5-14.4-3	SB-52-16.3-17.3-3
Sample Date		01/08/2014	12/11/2013	12/11/2013	12/11/2013	05/28/2009	05/28/2009
Sample Interval		10 - 17.4 FT	1 - 2.5 FT	2.5 - 10 FT	10 - 20 FT	13.5 - 14.5 FT	16.3 - 17.3 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Benzo(a)anthracene	56-55-3	1900 J	110	2000	1600	6300	4600
Benzo(a)pyrene	50-32-8	1200 J	130	2200	1700	5700	4500
Benzo(b)fluoranthene	205-99-2	1800 J	120	1900 J	1100 J	5300	4900
Benzo(g,h,I)perylene	191-24-2	910 J	110	1700	1300	2800	2500
Benzo(k)fluoranthene	207-08-9	950	83	1600	1400	2200	1800
Biphenyl	92-52-4	48 J	190 U	72 J	55 J	360 J	360 J
Bromophenyl-4 Phenyl Ether	101-55-3	240 U	190 U	230 U	240 U	1300 U	1100 U
Butylbenzyl phthalate	85-68-7	240 U	44 J	280 J-	240 U	1300 U	1100 U
Caprolactam	105-60-2	240 U	190 U	230 UJ	240 U	1300 U	1100 U
Carbazole	86-74-8	130 J	190 U	150 J	170 J	560 J	300 J
Chloroaniline-4	106-47-8	240 U	190 U	230 U	240 U	1300 U	1100 U
Chloronaphthalene-2	91-58-7	240 U	190 U	230 U	240 U	1300 U	1100 U
Chlorophenol-2	95-57-8	240 U	190 U	230 U	240 U	1300 U	1100 U
Chlorophenyl-4 phenyl ether	7005-72-3	240 U	190 U	230 U	240 U	1300 U	1100 U
Chrysene	218-01-9	1400 J-	130 J	3100	2600	6500	5000
Cresol-4,6-dinitro-ortho	534-52-1	480 U	370 UJ	460 UJ	460 UJ	2400 U	2100 U
Cresol-o	95-48-7	240 U	190 U	230 U	240 U	1300 U	1100 U
Cresol-p	106-44-5	240 U	190 U	230 U	240 U	1300 U	1100 U
Cresol-parachloro-meta	59-50-7	240 U	190 U	230 U	240 U	1300 U	1100 U
Dibenzo(a,h)anthracene	53-70-3	280 J	28	540 J	430 J	1300 U	1100 U
Dibenzofuran	132-64-9	140 J	190 U	180 J	410	1400	880 J
Dichlorobenzidine-3,3	91-94-1	240 U	190 U	230 U	240 U	1300 U	1100 U
Dichlorophenol-2,4	120-83-2	370	190 U	230 U	240 U	1300 U	1100 U
Dimethylphenol-2,4	105-67-9	240 U	190 U	230 U	240 U	1300 U	1100 U
Dinitrophenol-2,4	51-28-5	480 U	370 UJ	460 UJ	460 UJ	2400 U	2100 U
Dinitrotoluene-2,4	121-14-2	240 U	190 U	230 U	240 U	1300 U	1100 U
Dinitrotoluene-2,6	606-20-2	240 U	190 U	230 U	240 U	1300 U	1100 U
Ether, bis(2-chloroethyl)	111-44-4	240 U	190 U	230 U	240 U	1300 U	1100 U
Ether, bis-chloroisopropyl	108-60-1	240 U	190 U	230 U	240 U	1300 U	1100 U
Fluoranthene	206-44-0	1900 J-	210	3400	2600	12000	8400

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Station ID		PZ-87	PZ-90	PZ-90	PZ-90	SB-52-Berm	SB-52-Berm
Sample ID		SB-PZ-87-10-17.4-4	SB-PZ-90-01-02.5-4	SB-PZ-90-02.5-10-4	SB-PZ-90-10-20-4	SB-52-13.5-14.4-3	SB-52-16.3-17.3-3
Sample Date		01/08/2014	12/11/2013	12/11/2013	12/11/2013	05/28/2009	05/28/2009
Sample Interval		10 - 17.4 FT	1 - 2.5 FT	2.5 - 10 FT	10 - 20 FT	13.5 - 14.5 FT	16.3 - 17.3 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Fluorene	86-73-7	380	22	600	740	7300	4900
Hexachlorobenzene	118-74-1	240 U	190 U	230 U	240 U	1300 U	1100 U
Hexachlorobutadiene	87-68-3	240 U	190 U	230 U	240 U	1300 U	1100 U
Hexachlorocyclopentadiene	77-47-4	240 U	190 UJ	230 UJ	240 UJ	1300 U	1100 U
Hexachloroethane	67-72-1	240 U	190 U	230 U	240 U	1300 U	1100 U
Indeno(1,2,3-cd)pyrene	193-39-5	820 J	82	1200	1000	2800	2300
Isophorone	78-59-1	240 U	190 U	230 U	240 U	1300 U	1100 U
Methane, bis(2-chloroethoxy)	111-91-1	240 U	190 U	230 U	240 U	1300 U	1100 U
Methylnaphthalene-2	91-57-6	440	5.3	1200	1100	7400	5200
Naphthalene	91-20-3	290	7	560	570	13000	8200
Nitroaniline-2	88-74-4	480 U	370 U	460 U	460 U	2400 U	2100 U
Nitroaniline-3	99-09-2	480 U	370 U	460 U	460 U	2400 U	2100 U
Nitroaniline-4	100-01-6	480 U	370 U	460 U	460 U	2400 U	2100 U
Nitrobenzene	98-95-3	240 U	190 U	230 U	240 U	1300 U	1100 U
Nitrophenol-2	88-75-5	240 U	190 U	230 U	240 U	1300 U	1100 U
Nitrophenol-4	100-02-7	480 U	370 U	460 U	460 U	2400 U	2100 U
Nitroso-di-n-propyl-amine-N	621-64-7	240 U	190 U	230 U	240 U	1300 U	1100 U
Nitrosodiphenylamine-n	86-30-6	240 U	190 U	230 U	540	1300 U	1100 U
PCP (Pentachlorophenol)	87-86-5	48 U	7.6 U	9.2 U	9.3 U	2400 U	2100 U
Phenanthrene	85-01-8	1600	140	3500	2900	15000	17000
Phenol	108-95-2	240 U	190 U	230 U	240 U	1300 U	1100 U
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	3400	110 J	34000	710000	13000	3700
Phthalate, diethyl	84-66-2	240 U	190 U	230 UJ	240 U	1300 U	1100 U
Phthalate, dimethyl	131-11-3	240 U	190 U	230 UJ	240 U	1300 U	1100 U
Phthalate, di-n-butyl	84-74-2	58 J	190 U	230 UJ	240 U	1300 U	1100 U
Phthalate, di-n-octyl	117-84-0	240 U	190 U	230 UJ	240 U	240 J	1100 U
Pyrene	129-00-0	2200 J-	200	5600	3100	14000	9500
Tetrachlorobenzene-1,2,4,5	95-94-3	240 U	190 U	230 U	240 U	1300 U	1100 U
Tetrachlorophenol-2,3,4,6	58-90-2	240 U	190 U	230 U	240 U	1300 U	1100 U
Trichlorophenol-2,4,5	95-95-4	240 U	190 U	230 U	240 U	1300 U	1100 U

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Station ID		PZ-87	PZ-90	PZ-90	PZ-90	SB-52-Berm	SB-52-Berm
Sample ID		SB-PZ-87-10-17.4-4	SB-PZ-90-01-02.5-4	SB-PZ-90-02.5-10-4	SB-PZ-90-10-20-4	SB-52-13.5-14.4-3	SB-52-16.3-17.3-3
Sample Date		01/08/2014	12/11/2013	12/11/2013	12/11/2013	05/28/2009	05/28/2009
Sample Interval		10 - 17.4 FT	1 - 2.5 FT	2.5 - 10 FT	10 - 20 FT	13.5 - 14.5 FT	16.3 - 17.3 FT
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Trichlorophenol-2,4,6	88-06-2	240 U	190 U	230 U	240 U	1300 U	1100 U
Pesticides and PCBs (ug/kg)							
Aldrin	309-00-2	2.4 U	1.9 U	2.3 U	2.4 U	11 JN	8.1 JN
BHC, alpha	319-84-6	2.4 U	1.9 U	4.9 NJ	2.8 R	2.5 UJ	2.1 UJ
BHC, beta	319-85-7	2.4 U	1.9 U	8.7 NJ	2.7 R	15 J	8.6 JN
BHC, delta	319-86-8	2.4 U	1.9 U	2.3 U	2.4 U	2.5 UJ	2.1 R
BHC, gamma (Lindane)	58-89-9	6.1 NJ	1.9 U	8.6 R	9.7 NJ	2.5 UJ	2.1 UJ
Chlordane - alpha	5103-71-9	2.4 U	1.9 U	6.1 R	8.1 NJ	2.5 R	2.1 UJ
Chlordane - gamma	5566-34-7	2.4 U	2.3 R	2.3 U	2.4 U	NA	NA
DDD-4,4	72-54-8	20 NJ	40 J	26 J+	24 J+	77 J	31 J
DDE-4,4	72-55-9	7.1 J	16 NJ	33 R	18 R	5 UJ	4.4 UJ
DDT-4,4	50-29-3	5.5 NJ	8.9 R	61 R	42 R	5 UJ	16 JN
Dieldrin	60-57-1	4.8 U	3.8 U	24 R	22 R	5 UJ	4.4 UJ
Endosulfan I (alpha)	959-98-8	2.4 U	1.9 U	2.3 U	2.4 U	2.5 UJ	2.1 UJ
Endosulfan II (beta)	33213-65-9	4.8 U	3.8 U	4.5 U	7.8 R	17 J	12 J
Endosulfan Sulfate	1031-07-8	4.8 U	3.8 U	14 R	4.6 U	8.8 J	4.4 UJ
Endrin	72-20-8	4.8 U	3.8 U	4.5 U	4.6 U	5 UJ	4.4 UJ
Endrin Aldehyde	7421-93-4	4.8 U	3.8 U	16 R	12 NJ	5 UJ	5.5 J
Endrin ketone	53494-70-5	4.8 U	3.8 U	31	4.6 U	5 UJ	2.3 J
Heptachlor	76-44-8	2.9 R	1.9 U	37 J	9.9 R	5.5 J	3.5 JN
Heptachlor Epoxide	1024-57-3	2.4 U	1.9 U	38 NJ	21 J	3.6 R	2.2 R
Methoxychlor	72-43-5	24 U	19 U	23 U	24 U	25 UJ	21 UJ
PCB-Aroclor 1016	12674-11-2	270	37 U	1300 J+	500 J+	48 U	41 U
PCB-Aroclor 1221	11104-28-2	48 U	37 U	46 U	46 U	48 U	41 U
PCB-Aroclor 1232	11141-16-5	48 U	37 U	46 U	46 U	48 U	41 U
PCB-Aroclor 1242	53469-21-9	48 U	37 U	46 U	46 U	490 NJ	670 R
PCB-Aroclor 1248	12672-29-6	48 U	37 U	46 U	46 U	48 U	41 U
PCB-Aroclor 1254	11097-69-1	650 J	37 U	46 U	46 U	48 U	41 U
PCB-Aroclor 1260	11096-82-5	190 J	37 U	1100 J+	1100 J+	190 J	150

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Sample ID		SB-PZ-87-10-17.4-4	SB-PZ-90-01-02.5-4	SB-PZ-90-02.5-10-4	SB-PZ-90-10-20-4	SB-52-13.5-14.4-3	SB-52-16.3-17.3-3
Sample Date		01/08/2014	12/11/2013	12/11/2013	12/11/2013	05/28/2009	05/28/2009
Sample Interval		10 - 17.4 FT	1 - 2.5 FT	2.5 - 10 FT	10 - 20 FT	13.5 - 14.5 FT	16.3 - 17.3 FT
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/kg)							
PCB-Aroclor 1262	37324-23-5	48 U	37 U	46 U	46 U	48 U	41 U
PCB-Aroclor 1268	11100-14-4	48 U	37 U	46 U	46 U	48 U	41 U
Toxaphene	8001-35-2	240 U	190 U	230 U	240 U	250 R	210 R
Metals (ug/kg)							
Aluminum	7429-90-5	9970000	12100000	10800000	9400000	6210000	1910000
Antimony	7440-36-0	6100 U	1600 J	250 J	9200 U	9200 U	7200 U
Arsenic	7440-38-2	39100	3600	25800	14200	14000	3200
Barium	7440-39-3	396000	64400	532000 J	275000	200000 J	48100 J
Beryllium	7440-41-7	560	570 U	700 U	770 U	300 J	600 U
Cadmium	7440-43-9	3700	800	6100	10600	2300	600
Calcium	7440-70-2	8860000	1020000	5300000	10600000	3880000	1380000
Chromium	7440-47-3	281000	19600	152000 J	94900	107000	24800
Cobalt	7440-48-4	7500	6700	10300	7700	6400 J	3800 J
Copper	7440-50-8	331000	25900	351000	220000	233000	42600
Cyanide	57-12-5	360 J	570 U	750	810	NA	NA
Iron	7439-89-6	36400000	14700000	33200000	42300000	17900000	7500000
Lead	7439-92-1	860000	52900	885000 J	1460000	300000	79700
Magnesium	7439-95-4	3270000	2130000	2740000	1800000	2030000	841000
Manganese	7439-96-5	310000	435000	320000 J	279000	163000	71300
Mercury	7439-97-6	4800	120	5100	3500	3300	220
Nickel	7440-02-0	58400	15400	76200	54400	32800	13400
Potassium	7440-09-7	1240000	1010000	1190000	885000	602000 J	313000 J
Selenium	7782-49-2	830 J	4000 U	4900 U	5400 U	5300 U	4200 U
Silver	7440-22-4	4500	1100 U	4200	780 J	1800	1200 U
Sodium	7440-23-5	459000 J	567000 U	695000 U	766000 U	763000 U	599000 U
Thallium	7440-28-0	2500 U	2800 U	3500 U	3800 U	3800 U	3000 U
Vanadium	7440-62-2	40100	26800	38400	22100	22300	7700
Zinc	7440-66-6	494000	88500	927000	726000	331000	79500

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Station ID		SB-53-Berm	SB-54-Berm	SB-55-Berm	SB-55-Berm	SB-56-Berm	SB-56-Berm
Sample ID		**SB-53-13.5-14.5-3**	**SB-54-13.5-14.5-3**	**SB-55-17.5-18.5-3**	**SB-55-2.2-3.2-3**	**SB-56-6.4-7.4-3**	**SB-56-15.5-16.5-3**
Sample Date		**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/22/2009**	**05/29/2009**
Sample Interval		**13.5 - 14.5 FT**	**13.5 - 14.5 FT**	**17.5 - 18.5 FT**	**2.2 - 3.2 FT**	**6.4 - 7.4 FT**	**15.5 - 16.5 FT**
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Acetone	67-64-1	28	660 UJ	1300 U	880 R	1900 U	1800 U
Benzene	71-43-2	6.1 U	270 J	150 J	320 J	330 J	410 J
Bromoform	75-25-2	6.1 UJ	330 R	660 UJ	440 R	960 UJ	920 U
Bromomethane	74-83-9	6.1 U	330 R	660 UJ	440 R	960 U	920 U
Carbon disulfide	75-15-0	11	330 R	660 UJ	1100 J	960 U	920 U
Carbon tetrachloride	56-23-5	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Chlorobenzene	108-90-7	1.2 J	40 J	660 UJ	6400 J	250 J	730 J
Chlorobromomethane	74-97-5	6.1 UJ	330 R	660 UJ	440 R	960 UJ	920 U
Chloroethane	75-00-3	6.1 U	330 R	660 UJ	440 R	960 U	920 U
Chloroform	67-66-3	25 J	330 UJ	660 UJ	440 R	960 UJ	920 U
Chloromethane	74-87-3	6.1 U	330 R	660 UJ	440 R	960 U	920 U
Cyclohexane	110-82-7	28	460 J	840 J	440 R	960 UJ	520 J
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	6.1 UJ	330 R	660 R	440 R	960 U	920 U
Dibromochloromethane	124-48-1	6.1 UJ	330 R	660 UJ	440 R	960 UJ	920 U
Dibromoethane-1,2	106-93-4	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Dichlorobenzene-1,2	95-50-1	22 J	1200 J	1900 J	8000 J	4400 J	4200
Dichlorobenzene-1,3	541-73-1	1.3 J	56 J	99 J	79 J	350 J	560 J
Dichlorobenzene-1,4	106-46-7	5.3 J	150 J	200 J	540 J	770 J	1400
Dichlorobromomethane	75-27-4	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Dichlorodifluoromethane	75-71-8	6.1 U	330 R	660 UJ	440 R	960 U	920 U
Dichloroethane-1,1	75-34-3	6.1 UJ	330 R	660 UJ	440 R	960 UJ	920 U
Dichloroethane-1,2	107-06-2	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Dichloroethene-1,2 trans	156-60-5	6.1 U	330 R	660 UJ	440 R	960 U	920 U
Dichloroethylene-1,1	75-35-4	6.1 U	330 R	660 UJ	440 R	960 U	920 U
Dichloroethylene-1,2 cis	156-59-2	6.1 U	330 R	660 UJ	990 J	960 U	920 U
Dichloropropane-1,2	78-87-5	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Dichloropropene-1,3 cis	10061-01-5	6.1 U	330 R	660 UJ	440 R	270 J	920 U
Dichloropropene-1,3 trans	10061-02-6	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Dioxane, 1,4-	123-91-1	120 R	6600 R	13000 R	8800 R	19000 R	18000 R
Ethylbenzene	100-41-4	6.1 UJ	2300 J	3000 J	3000 J	7000 J	9000

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Station ID		SB-53-Berm	SB-54-Berm	SB-55-Berm	SB-55-Berm	SB-56-Berm	SB-56-Berm
Sample ID		**SB-53-13.5-14.5-3**	**SB-54-13.5-14.5-3**	**SB-55-17.5-18.5-3**	**SB-55-2.2-3.2-3**	**SB-56-6.4-7.4-3**	**SB-56-15.5-16.5-3**
Sample Date		**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/22/2009**	**05/29/2009**
Sample Interval		**13.5 - 14.5 FT**	**13.5 - 14.5 FT**	**17.5 - 18.5 FT**	**2.2 - 3.2 FT**	**6.4 - 7.4 FT**	**15.5 - 16.5 FT**
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/kg)							
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	6.1 UJ	330 R	660 UJ	440 R	960 UJ	920 U
Hexanone-2	591-78-6	12 U	660 R	1300 U	880 R	1900 U	1800 U
Isopropylbenzene	98-82-8	7.9 J	380 J	610 J	1100 J	1400 J	1700
Methyl acetate	79-20-9	6.1 U	540 J	660 UJ	1500 J	960 UJ	920 U
Methyl cyclohexane	108-87-2	6.1 U	740 J	1300 J	440 UJ	1200 J	1200
Methyl ethyl ketone (2-butanone)	78-93-3	12 U	660 R	1300 U	880 UJ	1900 U	1800 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	12 U	660 R	1300 U	430 J	1900 U	1800 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Methylene chloride	75-09-2	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Styrene	100-42-5	6.1 UJ	330 R	660 UJ	440 R	960 UJ	920 U
Tetrachloroethane-1,1,2,2	79-34-5	6.1 UJ	330 R	660 R	440 R	960 U	920 U
Tetrachloroethylene	127-18-4	6.1 UJ	450 J	460 J	12000 J	960 UJ	920 U
Toluene	108-88-3	0.95 J	4400 J	4200 J	1300 J	530 J	1400
Trichlorobenzene-1,2,3	87-61-6	6.1 UJ	100 J	660 UJ	440 R	960 UJ	920 U
Trichlorobenzene-1,2,4	120-82-1	6.1 UJ	230 J	210 J	73 J	290 J	210 J
Trichloroethane-1,1,1	71-55-6	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Trichloroethane-1,1,2	79-00-5	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Trichloroethylene	79-01-6	1.7 J	130 J	160 J	9300 J	960 UJ	920 U
Trichlorofluoromethane	75-69-4	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Vinyl chloride	75-01-4	6.1 U	330 R	660 UJ	440 R	960 UJ	920 U
Xylene-o	95-47-6	16 J	3800 J	5300 J	3100 J	12000 J	14000
Xylenes, m & p	179601-23-1	17 J	8400 J	12000 J	9000 J	26000 J	32000
Semivolatile Organic Compounds (ug/kg)							
Acenaphthene	83-32-9	190 U	2000 U	640 J	1400	3200 J	2500
Acenaphthylene	208-96-8	190 U	1700 J	310 J	550 J	940 J	800 J
Acetophenone	98-86-2	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Anthracene	120-12-7	44 J	2600	900 J	1100 J	2700 J	2500
Atrazine	1912-24-9	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Benzaldehyde	100-52-7	190 U	2000 U	1000 U	1200 U	2500 U	2300 U

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Station ID		SB-53-Berm	SB-54-Berm	SB-55-Berm	SB-55-Berm	SB-56-Berm	SB-56-Berm
Sample ID		**SB-53-13.5-14.5-3**	**SB-54-13.5-14.5-3**	**SB-55-17.5-18.5-3**	**SB-55-2.2-3.2-3**	**SB-56-6.4-7.4-3**	**SB-56-15.5-16.5-3**
Sample Date		**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/22/2009**	**05/29/2009**
Sample Interval		**13.5 - 14.5 FT**	**13.5 - 14.5 FT**	**17.5 - 18.5 FT**	**2.2 - 3.2 FT**	**6.4 - 7.4 FT**	**15.5 - 16.5 FT**
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Benzo(a)anthracene	56-55-3	29 J	6000	1500	2300	4400	3200
Benzo(a)pyrene	50-32-8	21 J	4700	1100	2300	4400 J	3200
Benzo(b)fluoranthene	205-99-2	32 J	8200	1700	3800	5400 J	3900
Benzo(g,h,I)perylene	191-24-2	190 U	4000	930 J	1900	3000 J	2200 J
Benzo(k)fluoranthene	207-08-9	190 U	2200	550 J	1300	1800 J	1500 J
Biphenyl	92-52-4	190 U	500 J	220 J	260 J	600 J	1100 J
Bromophenyl-4 Phenyl Ether	101-55-3	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Butylbenzyl phthalate	85-68-7	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Caprolactam	105-60-2	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Carbazole	86-74-8	190 U	2000 U	1000 U	220 J	370 J	370 J
Chloroaniline-4	106-47-8	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Chloronaphthalene-2	91-58-7	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Chlorophenol-2	95-57-8	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Chlorophenyl-4 phenyl ether	7005-72-3	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Chrysene	218-01-9	40 J	6400	1600	2700	4900	3800
Cresol-4,6-dinitro-ortho	534-52-1	360 U	3900 U	1900 U	2400 U	4800 U	4600 U
Cresol-o	95-48-7	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Cresol-p	106-44-5	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Cresol-parachloro-meta	59-50-7	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Dibenzo(a,h)anthracene	53-70-3	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Dibenzofuran	132-64-9	190 U	480 J	190 J	250 J	490 J	560 J
Dichlorobenzidine-3,3	91-94-1	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Dichlorophenol-2,4	120-83-2	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Dimethylphenol-2,4	105-67-9	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Dinitrophenol-2,4	51-28-5	360 UJ	3900 U	1900 U	2400 U	4800 U	4600 U
Dinitrotoluene-2,4	121-14-2	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Dinitrotoluene-2,6	606-20-2	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Ether, bis(2-chloroethyl)	111-44-4	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Ether, bis-chloroisopropyl	108-60-1	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Fluoranthene	206-44-0	69 J	8800	2500	4200	7600	5900

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Station ID		SB-53-Berm	SB-54-Berm	SB-55-Berm	SB-55-Berm	SB-56-Berm	SB-56-Berm
Sample ID		**SB-53-13.5-14.5-3**	**SB-54-13.5-14.5-3**	**SB-55-17.5-18.5-3**	**SB-55-2.2-3.2-3**	**SB-56-6.4-7.4-3**	**SB-56-15.5-16.5-3**
Sample Date		**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/22/2009**	**05/29/2009**
Sample Interval		**13.5 - 14.5 FT**	**13.5 - 14.5 FT**	**17.5 - 18.5 FT**	**2.2 - 3.2 FT**	**6.4 - 7.4 FT**	**15.5 - 16.5 FT**
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Fluorene	86-73-7	54 J	1700 J	690 J	990 J	2300 J	2100 J
Hexachlorobenzene	118-74-1	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Hexachlorobutadiene	87-68-3	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Hexachlorocyclopentadiene	77-47-4	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Hexachloroethane	67-72-1	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Indeno(1,2,3-cd)pyrene	193-39-5	190 U	3500	780 J	1600	2700 J	1900 J
Isophorone	78-59-1	190 UJ	2000 U	1000 U	1200 U	2500 U	2300 U
Methane, bis(2-chloroethoxy)	111-91-1	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Methylnaphthalene-2	91-57-6	160 J	6800	3700	1100 J	8200 J	11000
Naphthalene	91-20-3	66 J	4100	3000	1300	5200 J	7000
Nitroaniline-2	88-74-4	360 UJ	3900 U	1900 U	2400 U	4800 U	4600 U
Nitroaniline-3	99-09-2	360 UJ	3900 U	1900 U	2400 U	4800 U	4600 U
Nitroaniline-4	100-01-6	360 UJ	3900 U	1900 U	2400 U	4800 U	4600 U
Nitrobenzene	98-95-3	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Nitrophenol-2	88-75-5	190 UJ	2000 U	1000 U	1200 U	2500 U	2300 U
Nitrophenol-4	100-02-7	360 UJ	3900 U	1900 U	2400 U	4800 U	4600 U
Nitroso-di-n-propyl-amine-N	621-64-7	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Nitrosodiphenylamine-n	86-30-6	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
PCP (Pentachlorophenol)	87-86-5	360 U	3900 U	1900 U	2400 U	4800 U	4600 U
Phenanthrene	85-01-8	110 J	6500	2600	3100	8700 J	8000
Phenol	108-95-2	190 U	2000 U	1000 U	330 J	2500 U	2300 U
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	150 J	980 J	1700	8500	12000	22000
Phthalate, diethyl	84-66-2	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Phthalate, dimethyl	131-11-3	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Phthalate, di-n-butyl	84-74-2	22 J	2000 U	1000 U	370 J	2500 U	240 J
Phthalate, di-n-octyl	117-84-0	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Pyrene	129-00-0	100 J	10000	2800	4300	8800	7000
Tetrachlorobenzene-1,2,4,5	95-94-3	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Tetrachlorophenol-2,3,4,6	58-90-2	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Trichlorophenol-2,4,5	95-95-4	190 U	2000 U	1000 U	1200 U	2500 U	2300 U

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Appendix 2
Berms
2009 and 2013
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Station ID		SB-53-Berm	SB-54-Berm	SB-55-Berm	SB-55-Berm	SB-56-Berm	SB-56-Berm
Sample ID		**SB-53-13.5-14.5-3**	**SB-54-13.5-14.5-3**	**SB-55-17.5-18.5-3**	**SB-55-2.2-3.2-3**	**SB-56-6.4-7.4-3**	**SB-56-15.5-16.5-3**
Sample Date		**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/22/2009**	**05/29/2009**
Sample Interval		**13.5 - 14.5 FT**	**13.5 - 14.5 FT**	**17.5 - 18.5 FT**	**2.2 - 3.2 FT**	**6.4 - 7.4 FT**	**15.5 - 16.5 FT**
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/kg)							
Trichlorophenol-2,4,6	88-06-2	190 U	2000 U	1000 U	1200 U	2500 U	2300 U
Pesticides and PCBs (ug/kg)							
Aldrin	309-00-2	1.9 UJ	5.5 JN	5.8 J	7.9 R	28 J	42 J
BHC, alpha	319-84-6	1.9 UJ	2 UJ	2 UJ	3.7 J	2.5 UJ	2.3 UJ
BHC, beta	319-85-7	1.9 U	5.6 JN	2 U	7.3 R	19 JN	11 R
BHC, delta	319-86-8	1.9 U	2 R	2 U	2.5 UJ	2.5 UJ	2.3 R
BHC, gamma (Lindane)	58-89-9	1.9 U	2 R	2 U	2.5 UJ	2.5 UJ	2.3 R
Chlordane - alpha	5103-71-9	1.9 U	2 R	2.4 J	2.5 UJ	12 R	9.8 R
Chlordane - gamma	5566-34-7	NA	NA	NA	NA	NA	NA
DDD-4,4	72-54-8	3.8 UJ	28 J	23 J	140 J	14 R	14 R
DDE-4,4	72-55-9	3.8 UJ	4.1 R	4 UJ	33 R	16 JN	14 J
DDT-4,4	50-29-3	3.8 UJ	4 UJ	4.6 R	64 R	23 JN	6 R
Dieldrin	60-57-1	2.5 J	5.1 R	4 U	15 R	6.8 JN	7.2 JN
Endosulfan I (alpha)	959-98-8	1.9 U	2.9 JN	2 U	7 R	3.7 R	4.4 JN
Endosulfan II (beta)	33213-65-9	0.87 J	20 JN	7	7.2 R	26 R	25 JN
Endosulfan Sulfate	1031-07-8	3.8 U	4 UJ	4 U	5 UJ	5.6 R	4.6 UJ
Endrin	72-20-8	0.23 J	4 UJ	4 UJ	5 UJ	10 R	4.6 UJ
Endrin Aldehyde	7421-93-4	3.8 UJ	4 UJ	4 UJ	18 J	47 R	40 R
Endrin ketone	53494-70-5	3.8 UJ	8.5 R	5.9 R	5 UJ	13 R	13 R
Heptachlor	76-44-8	2.3	19 J	13 J	18 J	3 R	2.3 UJ
Heptachlor Epoxide	1024-57-3	1.9 U	5.7 J	5.7	10 R	3.4 R	15 JN
Methoxychlor	72-43-5	19 U	21 J	20 U	5 UJ	59 R	23 UJ
PCB-Aroclor 1016	12674-11-2	36 U	39 UJ	39 UJ	48 U	47 U	45 U
PCB-Aroclor 1221	11104-28-2	36 U	39 UJ	39 UJ	48 U	47 U	45 U
PCB-Aroclor 1232	11141-16-5	36 U	39 UJ	39 UJ	48 U	47 U	45 U
PCB-Aroclor 1242	53469-21-9	93	1200 J	610 J	1000 J	2900 J	1800 J
PCB-Aroclor 1248	12672-29-6	36 U	39 UJ	39 UJ	48 U	47 U	45 U
PCB-Aroclor 1254	11097-69-1	36 U	39 UJ	39 UJ	48 U	47 U	45 U
PCB-Aroclor 1260	11096-82-5	41 NJ	340 J	450 J	560 J	310 R	410 NJ

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Station ID		SB-53-Berm	SB-54-Berm	SB-55-Berm	SB-55-Berm	SB-56-Berm	SB-56-Berm
Sample ID		**SB-53-13.5-14.5-3**	**SB-54-13.5-14.5-3**	**SB-55-17.5-18.5-3**	**SB-55-2.2-3.2-3**	**SB-56-6.4-7.4-3**	**SB-56-15.5-16.5-3**
Sample Date		**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/28/2009**	**05/22/2009**	**05/29/2009**
Sample Interval		**13.5 - 14.5 FT**	**13.5 - 14.5 FT**	**17.5 - 18.5 FT**	**2.2 - 3.2 FT**	**6.4 - 7.4 FT**	**15.5 - 16.5 FT**
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/kg)							
PCB-Aroclor 1262	37324-23-5	36 U	39 UJ	39 UJ	48 U	47 U	45 U
PCB-Aroclor 1268	11100-14-4	36 U	39 UJ	39 UJ	48 U	47 U	45 U
Toxaphene	8001-35-2	190 U	200 R	200 U	250 U	250 UJ	230 R
Metals (ug/kg)							
Aluminum	7429-90-5	8680000	3910000	2460000	7400000	9170000	6580000
Antimony	7440-36-0	6600 U	7100 U	6900 U	8200 U	7600 U	8200 U
Arsenic	7440-38-2	900 J	6200	4300	33100	35800	19900
Barium	7440-39-3	50600 J	154000 J	76800 J	454000 J	636000 J	491000 J
Beryllium	7440-41-7	220 J	220 J	220 J	480 J	600 J	400 J
Cadmium	7440-43-9	550 U	840	430 J	6800	17000	5700
Calcium	7440-70-2	43400000	26000000	6710000	8030000	4610000	7540000
Chromium	7440-47-3	8200	32700	25600	163000	277000	135000
Cobalt	7440-48-4	7700	3600 J	41800	9600	8500	6700 J
Copper	7440-50-8	64200	81100	34400	308000	442000	396000
Cyanide	57-12-5	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	14000000	9280000	7520000	29900000	19900000	22200000
Lead	7439-92-1	8900	814000	112000	2150000	7700000	2490000
Magnesium	7439-95-4	3910000	1660000	904000	2220000	3040000	2120000
Manganese	7439-96-5	202000	84800	453000	269000	227000	193000
Mercury	7439-97-6	110 U	510	350	2500	5300	3800
Nickel	7440-02-0	8000	18400	60300	48800	61100	48400
Potassium	7440-09-7	701000	391000 J	518000 J	732000	1170000	778000
Selenium	7782-49-2	3800 U	4100 U	4000 U	2000 J	2200 J	4800 U
Silver	7440-22-4	1100 U	540 J	1200 U	3300	5100	318000
Sodium	7440-23-5	535000 J	462000 J	207000 J	467000 J	1150000	1490000
Thallium	7440-28-0	2700 U	3000 U	2900 U	3400 U	3200 U	3400 U
Vanadium	7440-62-2	24500	16600	9000	31900	36200	31300
Zinc	7440-66-6	25200	169000	96800	814000	1130000	710000

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Appendix H
Analytical Results - Contract Laboratory Program Analyses

Section 4
Groundwater – Analytical Results

Appendix 1
Groundwater
2014
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

Station ID		MW-01S	MW-02S	MW-03S	MW-04S	MW-05S	MW-06S
Sample ID		MW-01S-4	MW-02S-4	MW-03S-4	MW-04S-4	MW-05S-4	MW-06S-4
Sample Date		01/22/2014	02/04/2014	02/07/2014	01/28/2014	01/28/2014	01/22/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Acetone	67-64-1	5 U	5 U	5 U	5 U	5 U	5 U
Acrolein	107-02-8	NA	5 U	5 U	NA	NA	NA
Acrylonitrile	107-13-1	NA	10 U	10 U	NA	NA	NA
Benzene	71-43-2	0.5 U	0.5 U	14	1.8	0.5 U	0.5 U
Bromoform	75-25-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	74-83-9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	75-15-0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	56-23-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	108-90-7	18	0.5 U	0.5 U	3.1	1 J-	0.5 U
Chlorobromomethane	74-97-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	75-00-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	67-66-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	74-87-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	110-82-7	0.5 U	0.5 U	4.6	0.5 U	0.5 U	0.5 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dibromochloromethane	124-48-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromoethane-1,2	106-93-4	0.05 U	0.05 U	0.5 U	0.05 U	0.05 U	0.05 U
Dichlorobenzene-1,2	95-50-1	0.5 U	0.5 U	6.6	0.5 U	0.5 UJ	0.5 U
Dichlorobenzene-1,3	541-73-1	0.5 U	0.5 U	0.45 J	0.5 U	0.5 UJ	0.5 U
Dichlorobenzene-1,4	106-46-7	2.9	0.5 U	0.77	0.51	0.5 UJ	0.5 U
Dichlorobromomethane	75-27-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	75-71-8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethane-1,1	75-34-3	0.5 U	0.5 U	0.45 J	0.5 U	0.5 U	0.5 U
Dichloroethane-1,2	107-06-2	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	0.5 U
Dichloroethene-1,2 trans	156-60-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,1	75-35-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,2 cis	156-59-2	0.5 U	0.5 U	5.6	0.5 U	0.5 U	0.5 U
Dichloropropane-1,2	78-87-5	0.5 U	0.5 U	0.67	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 cis	10061-01-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 trans	10061-02-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

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Diamond Head Oil Superfund Site - Operable Unit

Station ID		MW-01S	MW-02S	MW-03S	MW-04S	MW-05S 3	MW-06S
Sample ID		MW-01S-4	MW-02S-4	MW-03S-4	MW-04S-4	MW-05S-4 3	MW-06S-4
Sample Date		01/22/2014	02/04/2014	02/07/2014	01/28/2014	01/28/2014	01/22/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Ether, bis(chloromethyl)	542-88-1	NA	1 U	1 U	NA	NA	NA
Ethylbenzene	100-41-4	0.5 U	0.5 U	1.5	0.5 U	0.5 U	0.5 U
Ethylenimine	151-56-4	NA	5 U	5 U	NA	NA	NA
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexanone-2	591-78-6	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	98-82-8	0.56	0.5 U	2.7	0.45 J	0.5 U	0.5 U
Methyl acetate	79-20-9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl cyclohexane	108-87-2	0.5 U	0.5 U	4.5	0.5 U	0.5 U	0.5 U
Methyl ethyl ketone (2-butanone)	78-93-3	5 U	5 U	5 U	5 U	5 U	5 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	5 U	5 U	5 U	5 U	5 U	5 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	75-09-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	100-42-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethane-1,1,2,2	79-34-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethylene	127-18-4	0.5 U	0.5 U	0.31 J	0.5 U	0.5 U	0.5 U
Toluene	108-88-3	0.5 U	0.5 U	0.77 U	0.5 U	0.5 U	0.5 U
Trichlorobenzene-1,2,3	87-61-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U
Trichlorobenzene-1,2,4	120-82-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U
Trichloroethane-1,1,1	71-55-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethane-1,1,2	79-00-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	79-01-6	0.5 U	0.5 U	0.5	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	75-69-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	75-01-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl ether, 2-chloroethyl	110-75-8	NA	5 U	5 U	NA	NA	NA
Xylene-o	95-47-6	0.5 U	0.5 U	1.9	0.5 U	0.5 U	0.5 U
Xylenes, m & p	179601-23-1	0.5 U	0.5 U	2	0.5 U	0.5 U	0.5 U
Semivolatile Organic Compounds (ug/l)							
Acenaphthene	83-32-9	3.1	0.1 U	0.38	0.91	0.77	0.31
Acenaphthylene	208-96-8	0.1 U	0.1 U	0.12	0.1 U	0.1 U	0.1 U

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Station ID		MW-01S	MW-02S	MW-03S	MW-04S	MW-05S 3	MW-06S
Sample ID		MW-01S-4	MW-02S-4	MW-03S-4	MW-04S-4	MW-05S-4 3	MW-06S-4
Sample Date		01/22/2014	02/04/2014	02/07/2014	01/28/2014	01/28/2014	01/22/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Acetophenone	98-86-2	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	120-12-7	0.1 U	0.1 U	5 U	0.1 U	0.1 U	0.1 U
Atrazine	1912-24-9	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde	100-52-7	5 U	5 U	5 U	5 U	5 U	5 U
Benzidine	92-87-5	NA	5 U	5 U	NA	NA	NA
Benzo(a)anthracene	56-55-3	0.1 U	0.1 U	0.45	0.1 U	0.1 U	0.1 U
Benzo(a)pyrene	50-32-8	0.1 U	0.1 U	5 U	0.1 U	0.1 U	0.1 U
Benzo(b)fluoranthene	205-99-2	0.1 U	5 U	5 U	0.1 U	0.1 U	0.1 U
Benzo(g,h,I)perylene	191-24-2	0.1 U	0.1 U	5 U	0.1 U	0.093 J	0.1 U
Benzo(k)fluoranthene	207-08-9	0.1 U	0.1 U	5 U	0.1 U	0.1 U	0.1 U
Biphenyl	92-52-4	5 U	5 U	5 U	5 U	5 U	5 U
Bromophenyl-4 Phenyl Ether	101-55-3	5 U	5 U	5 U	5 U	5 U	5 U
Butylbenzyl phthalate	85-68-7	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	105-60-2	5 U	5 U	5 U	5 U	5 U	5 U
Carbazole	86-74-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloroaniline-4	106-47-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloronaphthalene-2	91-58-7	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenol-2	95-57-8	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenyl-4 phenyl ether	7005-72-3	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	218-01-9	0.1 U	0.1 U	0.14	0.1 U	0.1 U	0.1 U
Cresol-4,6-dinitro-ortho	534-52-1	10 U	5 U	5 U	10 UJ	10 UJ	10 UJ
Cresol-o	95-48-7	5 U	5 U	5 U	5 U	5 U	5 U
Cresol-p	106-44-5	5 U	5 U	5 U	5 U	5 U	5 U
Cresol-parachloro-meta	59-50-7	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	53-70-3	0.1 U	0.1 U	5 U	0.1 U	0.1 U	0.1 U
Dibenzofuran	132-64-9	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorobenzidine-3,3	91-94-1	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,4	120-83-2	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,6	87-65-0	NA	5 U	5 U	NA	NA	NA
Dimethylphenol-2,4	105-67-9	5 U	5 U	5 U	5 U	5 U	5 U

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Station ID		MW-01S	MW-02S	MW-03S	MW-04S	MW-05S 3	MW-06S
Sample ID		MW-01S-4	MW-02S-4	MW-03S-4	MW-04S-4	MW-05S-4 3	MW-06S-4
Sample Date		01/22/2014	02/04/2014	02/07/2014	01/28/2014	01/28/2014	01/22/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Dinitrophenol-2,4	51-28-5	10 U	10 U	10 U	10 U	10 U	10 U
Dinitrotoluene-2,4	121-14-2	5 U	5 U	5 U	5 U	5 U	5 U
Dinitrotoluene-2,6	606-20-2	5 U	5 U	5 U	5 U	5 U	5 U
Dioxane, 1,4-	123-91-1	NA	2 U	2.9 J+	NA	NA	NA
Diphenylhydrazine-1,2	122-66-7	NA	5 U	5 U	NA	NA	NA
Ether, bis(2-chloroethyl)	111-44-4	5 U	5 U	5 U	5 U	5 U	5 U
Ether, bis-chloroisopropyl	108-60-1	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	206-44-0	0.39	0.1 U	5 U	0.17	0.1 U	0.1 U
Fluorene	86-73-7	0.28	0.1 U	0.25	0.34	0.1 U	0.1 U
Hexachlorobenzene	118-74-1	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	67-72-1	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.1 U	0.1 U	5 U	0.1 U	0.1 U	0.1 U
Isophorone	78-59-1	5 U	5 U	5 U	5 U	5 U	5 U
Methane, bis(2-chloroethoxy)	111-91-1	5 U	5 U	5 U	5 U	5 U	5 U
Methylnaphthalene-2	91-57-6	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	91-20-3	0.1 U	0.1 U	0.25 U	0.1 U	0.1 U	0.1 U
Nitroaniline-2	88-74-4	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-3	99-09-2	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-4	100-01-6	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	98-95-3	5 U	5 U	5 U	5 U	5 U	5 U
Nitrophenol-2	88-75-5	5 U	5 U	5 U	5 U	5 U	5 U
Nitrophenol-4	100-02-7	10 U	10 U	10 U	10 U	10 U	10 U
Nitrosodimethylamine-n	62-75-9	NA	5 U	5 U	NA	NA	NA
Nitroso-di-n-propyl-amine-N	621-64-7	5 U	5 U	5 U	5 U	5 U	5 U
Nitrosodiphenylamine-n	86-30-6	5 U	5 U	5 U	5 U	5 U	5 U
PCP (Pentachlorophenol)	87-86-5	0.2 U	0.2 U	10 U	0.2 U	0.2 U	0.2 U
Phenanthrene	85-01-8	0.1 U	0.1 U	5 U	0.1 U	0.11	0.1 U
Phenol	108-95-2	5 U	5 U	5 U	5 U	5 U	5 U

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Station ID		MW-01S	MW-02S	MW-03S	MW-04S	MW-05S 3	MW-06S
Sample ID		MW-01S-4	MW-02S-4	MW-03S-4	MW-04S-4	MW-05S-4 3	MW-06S-4
Sample Date		01/22/2014	02/04/2014	02/07/2014	01/28/2014	01/28/2014	01/22/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, diethyl	84-66-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, dimethyl	131-11-3	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-butyl	84-74-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-octyl	117-84-0	5 U	5 U	5 U	5 U	5 U	5 U
Picoline, 2	109-06-8	NA	5 U	5 U	NA	NA	NA
Pyrene	129-00-0	0.5	0.1 U	0.47	0.22	0.1 U	0.1 U
Tetrachlorobenzene-1,2,4,5	95-94-3	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachlorophenol-2,3,4,6	58-90-2	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,5	95-95-4	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,6	88-06-2	5 U	5 U	5 U	5 U	5 U	5 U
Trinitrobenzol	99-35-4	NA	5 U	5 U	NA	NA	NA
Pesticides and PCBs (ug/l)							
Aldrin	309-00-2	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
BHC, alpha	319-84-6	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
BHC, beta	319-85-7	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
BHC, delta	319-86-8	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
BHC, gamma (Lindane)	58-89-9	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
Chlordane - alpha	5103-71-9	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
Chlordane - gamma	5566-34-7	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
DDD-4,4	72-54-8	0.0052 U	0.005 UJ	0.0056 U	0.0053 U	0.0052 U	0.0051 U
DDE-4,4	72-55-9	0.0052 U	0.005 UJ	0.0056 U	0.0053 U	0.0052 U	0.0051 U
DDT-4,4	50-29-3	0.0052 U	0.005 UJ	0.0056 U	0.0053 U	0.0052 U	0.0051 U
Dieldrin	60-57-1	0.0052 U	0.005 UJ	0.0056 U	0.0053 U	0.0052 U	0.0051 U
Endosulfan I (alpha)	959-98-8	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
Endosulfan II (beta)	33213-65-9	0.0052 U	0.005 UJ	0.0056 U	0.0053 U	0.0052 U	0.0051 U
Endosulfan Sulfate	1031-07-8	0.0052 U	0.005 UJ	0.0056 U	0.0053 U	0.0052 U	0.0051 U
Endrin	72-20-8	0.0052 U	0.005 UJ	0.0056 U	0.0053 U	0.0052 U	0.0051 U
Endrin Aldehyde	7421-93-4	0.0052 U	0.005 UJ	0.0056 UL	0.0053 UL	0.0052 UL	0.0051 U

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Sample ID		MW-01S-4	MW-02S-4	MW-03S-4	MW-04S-4	MW-05S-4 3	MW-06S-4
Sample Date		01/22/2014	02/04/2014	02/07/2014	01/28/2014	01/28/2014	01/22/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/l)							
Endrin ketone	53494-70-5	0.0052 U	0.005 UJ	0.0056 UL	0.0053 U	0.0052 U	0.0051 U
Heptachlor	76-44-8	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
Heptachlor Epoxide	1024-57-3	0.0026 U	0.0025 UJ	0.0028 U	0.0027 U	0.0026 U	0.0025 U
Methoxychlor	72-43-5	0.026 U	0.025 UJ	0.028 U	0.027 U	0.026 U	0.025 U
PCB-Aroclor 1016	12674-11-2	0.032 U	0.031 UJ	0.035 U	0.033 U	0.033 U	0.032 U
PCB-Aroclor 1221	11104-28-2	0.064 U	0.062 UJ	0.07 U	0.066 U	0.065 U	0.063 U
PCB-Aroclor 1232	11141-16-5	0.032 U	0.031 UJ	0.035 U	0.033 U	0.033 U	0.032 U
PCB-Aroclor 1242	53469-21-9	0.032 U	0.031 UJ	0.035 U	0.033 U	0.033 U	0.032 U
PCB-Aroclor 1248	12672-29-6	0.032 U	0.031 UJ	0.035 U	0.033 U	0.033 U	0.032 U
PCB-Aroclor 1254	11097-69-1	0.032 U	0.031 UJ	0.035 U	0.033 U	0.033 U	0.032 U
PCB-Aroclor 1260	11096-82-5	0.032 U	0.031 UJ	0.035 U	0.033 U	0.033 U	0.032 U
PCB-Aroclor 1262	37324-23-5	0.032 U	0.031 UJ	0.035 U	0.033 U	0.033 U	0.032 U
PCB-Aroclor 1268	11100-14-4	0.032 U	0.031 UJ	0.035 U	0.033 U	0.033 U	0.032 U
Toxaphene	8001-35-2	0.19 U	0.19 UJ	0.21 U	0.2 U	0.2 U	0.19 U
Metals (ug/l)							
Aluminum	7429-90-5	66	20 U	20 U	250	42	25
Antimony	7440-36-0	4.9	1.4	2.3	9.1	14	9.1
Arsenic	7440-38-2	2.5	1.7	6.4	10	13	14
Barium	7440-39-3	150	110	270	58	150	55
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	7440-43-9	2.6	1 U	1 U	10	1 U	1.7
Calcium	7440-70-2	430000	72000	280000	440000	360000	510000
Chromium	7440-47-3	3.3	18	19	30	9.1	12
Cobalt	7440-48-4	17	1 U	1 U	430	280	60
Copper	7440-50-8	15	14	9.6	150	18	110
Cyanide	57-12-5	10 U	10 U	10 U	10 U	NA	10 U
Iron	7439-89-6	19000	220	3500	43000	8600	32000
Lead	7439-92-1	2.3	18	83	38	4.3	6.9
Magnesium	7439-95-4	99000	46000	41000	130000	95000	180000

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Sample ID		MW-01S-4	MW-02S-4	MW-03S-4	MW-04S-4	MW-05S-4 3	MW-06S-4
Sample Date		01/22/2014	02/04/2014	02/07/2014	01/28/2014	01/28/2014	01/22/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Metals (ug/l)							
Manganese	7439-96-5	1500	34	1500	5500	3100	4200
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	1.1	0.2 U	0.36
Nickel	7440-02-0	75	10	4.9	710	2100	160
Potassium	7440-09-7	21000	1800	11000	36000	35000	23000
Selenium	7782-49-2	14	1 U	1 U	1 U	1 U	52
Silver	7440-22-4	1 U	1 U	1 U	1.5	1 U	1.3
Sodium	7440-23-5	120000	24000	110000	95000	110000	140000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	7440-62-2	1.9	36	14	1.5	1.4	10
Zinc	7440-66-6	1800	14	73	5700	4000	1300
Dissolved Metals (ug/l)							
Aluminum	7429-90-5	20 U	20 U	20 U	69	NA	20 U
Antimony	7440-36-0	3.6	1.1	1.7	2.8	NA	9.2
Arsenic	7440-38-2	1.6	1.5	3.7	5	NA	13
Barium	7440-39-3	140	79	270	72	NA	56
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	NA	1 U
Cadmium	7440-43-9	1 U	1 U	1 U	2.3	NA	2.3
Calcium	7440-70-2	430000	56000	280000	450000	NA	560000
Chromium	7440-47-3	2.8	16	18	47	NA	7.8
Cobalt	7440-48-4	23	1.1	1 U	270	NA	69
Copper	7440-50-8	1.7	2.2	1 U	50	NA	46
Iron	7439-89-6	22000	110	2800	39000	NA	44000
Lead	7439-92-1	1 U	2.6	3.8	13	NA	2.1
Magnesium	7439-95-4	100000	36000	40000	130000	NA	180000
Manganese	7439-96-5	1600	44	1500	5200	NA	4400
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.27	NA	0.2 U
Nickel	7440-02-0	95	10	4.2	460	NA	200
Potassium	7440-09-7	22000	1900	11000	36000	NA	22000
Selenium	7782-49-2	10	1 U	1 U	1 U	NA	50

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Sample ID		MW-01S-4	MW-02S-4	MW-03S-4	MW-04S-4	MW-05S-4 3	MW-06S-4
Sample Date		01/22/2014	02/04/2014	02/07/2014	01/28/2014	01/28/2014	01/22/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Dissolved Metals (ug/l)							
Silver	7440-22-4	1 U	1 U	1 U	1 U	NA	1 U
Sodium	7440-23-5	130000	35000	120000	95000	NA	140000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	NA	1 U
Vanadium	7440-62-2	1.6	30	13	1	NA	10
Zinc	7440-66-6	2300	15	2.3	1900	NA	1700

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Sample ID		MW-07S-4	MW-09S-4	MW-10D-4	MW-10S-4	MW-11D-4	MW-11S-4
Sample Date		01/31/2014	02/04/2014	01/23/2014	01/23/2014	01/31/2014	02/06/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Acetone	67-64-1	5 U	5 U	5 U	5 U	5 U	5 U
Acrolein	107-02-8	5 R	5 U	NA	NA	NA	5 U
Acrylonitrile	107-13-1	10 R	10 U	NA	NA	NA	10 U
Benzene	71-43-2	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	75-25-2	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	74-83-9	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	75-15-0	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	56-23-5	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	108-90-7	0.5 R	0.5 U	5	0.5 U	0.38 J	0.5 U
Chlorobromomethane	74-97-5	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	75-00-3	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	67-66-3	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	74-87-3	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	110-82-7	0.5 R	0.5 U	0.84	0.5 U	0.31 J	0.5 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dibromochloromethane	124-48-1	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromoethane-1,2	106-93-4	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dichlorobenzene-1,2	95-50-1	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorobenzene-1,3	541-73-1	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorobenzene-1,4	106-46-7	0.5 R	0.5 U	0.34 J	0.5 U	0.5 U	0.5 U
Dichlorobromomethane	75-27-4	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	75-71-8	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethane-1,1	75-34-3	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethane-1,2	107-06-2	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethene-1,2 trans	156-60-5	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,1	75-35-4	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,2 cis	156-59-2	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	3.1
Dichloropropane-1,2	78-87-5	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 cis	10061-01-5	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 trans	10061-02-6	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

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Station ID		MW-07S	MW-09S	MW-10D	MW-10S	MW-11D	MW-11S
Sample ID		MW-07S-4	MW-09S-4	MW-10D-4	MW-10S-4	MW-11D-4	MW-11S-4
Sample Date		01/31/2014	02/04/2014	01/23/2014	01/23/2014	01/31/2014	02/06/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Ether, bis(chloromethyl)	542-88-1	1 R	1 U	NA	NA	NA	1 U
Ethylbenzene	100-41-4	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylenimine	151-56-4	5 R	5 U	NA	NA	NA	5 U
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexanone-2	591-78-6	5 R	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	98-82-8	0.5 R	0.5 U	0.63	0.5 U	0.5 U	0.5 U
Methyl acetate	79-20-9	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl cyclohexane	108-87-2	0.5 R	0.5 U	0.34 J	0.5 U	0.5 U	0.5 U
Methyl ethyl ketone (2-butanone)	78-93-3	5 R	5 U	5 U	5 U	5 U	5 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	5 R	5 U	5 U	5 U	5 U	5 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	75-09-2	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	100-42-5	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethane-1,1,2,2	79-34-5	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethylene	127-18-4	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	108-88-3	0.5 R	0.5 U	0.51 U	0.5 U	0.5 U	0.5 U
Trichlorobenzene-1,2,3	87-61-6	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorobenzene-1,2,4	120-82-1	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethane-1,1,1	71-55-6	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethane-1,1,2	79-00-5	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	79-01-6	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	75-69-4	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	75-01-4	0.5 R	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl ether, 2-chloroethyl	110-75-8	5 R	5 U	NA	NA	NA	5 U
Xylene-o	95-47-6	0.5 R	0.5 U	1.4	0.5 U	0.5 U	0.5 U
Xylenes, m & p	179601-23-1	0.5 R	0.5 U	1.1	0.5 U	0.5 U	0.5 U
Semivolatile Organic Compounds (ug/l)							
Acenaphthene	83-32-9	0.11	0.58	24 J	0.24	3.1	0.1 U
Acenaphthylene	208-96-8	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

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Station ID		MW-07S	MW-09S	MW-10D	MW-10S	MW-11D	MW-11S
Sample ID		MW-07S-4	MW-09S-4	MW-10D-4	MW-10S-4	MW-11D-4	MW-11S-4
Sample Date		01/31/2014	02/04/2014	01/23/2014	01/23/2014	01/31/2014	02/06/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Acetophenone	98-86-2	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	120-12-7	0.1 U	0.1 U	0.1 U	0.1 U	5 U	0.1 U
Atrazine	1912-24-9	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde	100-52-7	5 U	5 U	5 U	5 U	5 U	5 U
Benzidine	92-87-5	5 U	5 U	NA	NA	NA	5 U
Benzo(a)anthracene	56-55-3	0.1 U	0.1 U	0.1 U	0.1 U	5 U	0.1 U
Benzo(a)pyrene	50-32-8	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(b)fluoranthene	205-99-2	5 U	5 U	0.1 U	0.1 U	0.1 UJ	0.1 U
Benzo(g,h,I)perylene	191-24-2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(k)fluoranthene	207-08-9	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Biphenyl	92-52-4	5 U	5 U	5 U	5 U	5 U	5 U
Bromophenyl-4 Phenyl Ether	101-55-3	5 U	5 U	5 U	5 U	5 U	5 U
Butylbenzyl phthalate	85-68-7	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	105-60-2	5 U	5 U	5 U	5 U	5 U	5 U
Carbazole	86-74-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloroaniline-4	106-47-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloronaphthalene-2	91-58-7	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenol-2	95-57-8	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenyl-4 phenyl ether	7005-72-3	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	218-01-9	0.1 U	0.1 U	0.1 U	0.1 U	5 U	0.1 U
Cresol-4,6-dinitro-ortho	534-52-1	5 U	5 U	10 UJ	10 U	10 U	5 U
Cresol-o	95-48-7	5 U	5 U	5 U	5 U	5 U	5 U
Cresol-p	106-44-5	5 U	5 U	5 U	5 U	5 U	5 U
Cresol-parachloro-meta	59-50-7	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	53-70-3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenzofuran	132-64-9	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorobenzidine-3,3	91-94-1	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,4	120-83-2	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,6	87-65-0	5 U	5 U	NA	NA	NA	5 U
Dimethylphenol-2,4	105-67-9	5 U	5 U	5 U	5 U	5 U	5 U

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Station ID		MW-07S	MW-09S	MW-10D	MW-10S	MW-11D	MW-11S
Sample ID		MW-07S-4	MW-09S-4	MW-10D-4	MW-10S-4	MW-11D-4	MW-11S-4
Sample Date		01/31/2014	02/04/2014	01/23/2014	01/23/2014	01/31/2014	02/06/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Dinitrophenol-2,4	51-28-5	10 U	10 U	10 U	10 U	10 U	10 U
Dinitrotoluene-2,4	121-14-2	5 U	5 U	5 U	5 U	5 U	5 U
Dinitrotoluene-2,6	606-20-2	5 U	5 U	5 U	5 U	5 U	5 U
Dioxane, 1,4-	123-91-1	2 U	17 J+	NA	NA	NA	2 U
Diphenylhydrazine-1,2	122-66-7	5 U	5 U	NA	NA	NA	5 U
Ether, bis(2-chloroethyl)	111-44-4	5 U	5 U	5 U	5 U	5 U	5 U
Ether, bis-chloroisopropyl	108-60-1	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	206-44-0	0.1 U	0.1 U	0.1 U	0.1 U	3.7	0.1 U
Fluorene	86-73-7	0.14	0.1 U	5.7	0.1 U	5 U	0.1 U
Hexachlorobenzene	118-74-1	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	67-72-1	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.1 U	0.1 U	0.1 U	0.1 U	5 U	0.1 U
Isophorone	78-59-1	5 U	5 U	5 U	5 U	5 U	5 U
Methane, bis(2-chloroethoxy)	111-91-1	5 U	5 U	5 U	5 U	5 U	5 U
Methylnaphthalene-2	91-57-6	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	91-20-3	0.1 U	0.1 U	0.36	0.1 U	5 U	0.1 U
Nitroaniline-2	88-74-4	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-3	99-09-2	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-4	100-01-6	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	98-95-3	5 U	5 U	5 U	5 U	5 U	5 U
Nitrophenol-2	88-75-5	5 U	5 U	5 U	5 U	5 U	5 U
Nitrophenol-4	100-02-7	10 U	10 U	10 U	10 U	10 U	10 U
Nitrosodimethylamine-n	62-75-9	5 U	5 U	NA	NA	NA	5 U
Nitroso-di-n-propyl-amine-N	621-64-7	5 U	5 U	5 U	5 U	5 U	5 U
Nitrosodiphenylamine-n	86-30-6	5 U	5 U	5 U	5 U	5 U	5 U
PCP (Pentachlorophenol)	87-86-5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene	85-01-8	0.23	0.1 U	0.32	0.1 U	0.1	0.1 U
Phenol	108-95-2	5 U	5 U	5 U	5 U	5 U	5 U

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Station ID		MW-07S	MW-09S	MW-10D	MW-10S	MW-11D	MW-11S
Sample ID		MW-07S-4	MW-09S-4	MW-10D-4	MW-10S-4	MW-11D-4	MW-11S-4
Sample Date		01/31/2014	02/04/2014	01/23/2014	01/23/2014	01/31/2014	02/06/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, diethyl	84-66-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, dimethyl	131-11-3	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-butyl	84-74-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-octyl	117-84-0	5 U	5 U	5 U	5 U	5 U	5 U
Picoline, 2	109-06-8	5 U	5 U	NA	NA	NA	5 U
Pyrene	129-00-0	0.1 U	0.1 U	0.1 U	0.1 U	1.2	0.1 U
Tetrachlorobenzene-1,2,4,5	95-94-3	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachlorophenol-2,3,4,6	58-90-2	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,5	95-95-4	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,6	88-06-2	5 U	5 U	5 U	5 U	5 U	5 U
Trinitrobenzol	99-35-4	5 U	5 U	NA	NA	NA	5 U
Pesticides and PCBs (ug/l)							
Aldrin	309-00-2	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
BHC, alpha	319-84-6	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
BHC, beta	319-85-7	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
BHC, delta	319-86-8	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
BHC, gamma (Lindane)	58-89-9	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
Chlordane - alpha	5103-71-9	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
Chlordane - gamma	5566-34-7	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
DDD-4,4	72-54-8	0.0052 U	0.005 UJ	0.0052 UL	0.0052 U	0.0051 U	0.005 UJ
DDE-4,4	72-55-9	0.0052 U	0.005 UJ	0.0052 UL	0.0052 U	0.0051 U	0.005 UJ
DDT-4,4	50-29-3	0.0052 U	0.005 UJ	0.0052 UL	0.0052 UL	0.0051 U	0.005 UJ
Dieldrin	60-57-1	0.0052 U	0.005 UJ	0.0052 UL	0.0052 U	0.0051 U	0.005 UJ
Endosulfan I (alpha)	959-98-8	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
Endosulfan II (beta)	33213-65-9	0.0052 U	0.005 UJ	0.0052 UL	0.0052 U	0.0051 U	0.005 UJ
Endosulfan Sulfate	1031-07-8	0.0052 U	0.005 UJ	0.0052 UL	0.0052 U	0.0051 U	0.005 UJ
Endrin	72-20-8	0.0052 U	0.005 UJ	0.0052 UL	0.0052 U	0.0051 U	0.005 UJ
Endrin Aldehyde	7421-93-4	0.0052 UL	0.005 UJ	0.0052 UL	0.0052 U	0.0051 UL	0.005 UJ

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Station ID		MW-07S	MW-09S	MW-10D	MW-10S	MW-11D	MW-11S
Sample ID		MW-07S-4	MW-09S-4	MW-10D-4	MW-10S-4	MW-11D-4	MW-11S-4
Sample Date		01/31/2014	02/04/2014	01/23/2014	01/23/2014	01/31/2014	02/06/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/l)							
Endrin ketone	53494-70-5	0.0052 U	0.005 UJ	0.0052 UL	0.0052 U	0.0051 U	0.005 UJ
Heptachlor	76-44-8	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
Heptachlor Epoxide	1024-57-3	0.0026 U	0.0025 UJ	0.0026 UL	0.0026 U	0.0025 U	0.0025 UJ
Methoxychlor	72-43-5	0.026 U	0.025 UJ	0.026 UL	0.026 U	0.025 U	0.025 UJ
PCB-Aroclor 1016	12674-11-2	0.033 U	0.031 UJ	0.033 UL	0.033 U	0.032 U	0.031 UJ
PCB-Aroclor 1221	11104-28-2	0.065 U	0.062 UJ	0.065 UL	0.065 U	0.063 U	0.062 UJ
PCB-Aroclor 1232	11141-16-5	0.033 U	0.031 UJ	0.033 UL	0.033 U	0.032 U	0.031 UJ
PCB-Aroclor 1242	53469-21-9	0.033 U	0.031 UJ	0.033 UL	0.033 U	0.032 U	0.031 UJ
PCB-Aroclor 1248	12672-29-6	0.033 U	0.031 UJ	0.033 UL	0.033 U	0.032 U	0.031 UJ
PCB-Aroclor 1254	11097-69-1	0.033 U	0.031 UJ	0.033 UL	0.033 U	0.032 U	0.031 UJ
PCB-Aroclor 1260	11096-82-5	0.033 U	0.031 UJ	0.033 UL	0.033 U	0.032 U	0.031 UJ
PCB-Aroclor 1262	37324-23-5	0.033 U	0.031 UJ	0.033 UL	0.033 U	0.032 U	0.031 UJ
PCB-Aroclor 1268	11100-14-4	0.033 U	0.031 UJ	0.033 UL	0.033 U	0.032 U	0.031 UJ
Toxaphene	8001-35-2	0.2 U	0.19 UJ	0.2 UL	0.2 U	0.19 U	0.19 UJ
Metals (ug/l)							
Aluminum	7429-90-5	20 U	41	270	20 U	71	20 U
Antimony	7440-36-0	9.8	6.4	1 U	19	1 U	1.5
Arsenic	7440-38-2	3.8	3.8	1 U	2.1	1.6	1.2
Barium	7440-39-3	54	120	55	42	230	44
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	7440-43-9	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	7440-70-2	98000	250000	91000	240000	130000	62000
Chromium	7440-47-3	9.2	9.9	20	98	18	31
Cobalt	7440-48-4	2.1	2.9	1.9	1.9	3	1 U
Copper	7440-50-8	11	10	17	29	3	18
Cyanide	57-12-5	10 U	10 U	11	10 U	14	10 U
Iron	7439-89-6	710	6800	1900	1000	4900	140
Lead	7439-92-1	11	8.8	1 U	3.4	1 U	1.4
Magnesium	7439-95-4	33000	79000	76000	110000	120000	45000

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Station ID		MW-07S	MW-09S	MW-10D	MW-10S	MW-11D	MW-11S
Sample ID		MW-07S-4	MW-09S-4	MW-10D-4	MW-10S-4	MW-11D-4	MW-11S-4
Sample Date		01/31/2014	02/04/2014	01/23/2014	01/23/2014	01/31/2014	02/06/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Metals (ug/l)							
Manganese	7439-96-5	45	1000	210	330	310	16
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	7440-02-0	34	14	3.1	14	4.5	8
Potassium	7440-09-7	1300	17000	50000	36000	64000	4000
Selenium	7782-49-2	1 U	1 U	1 U	16	1 U	1 U
Silver	7440-22-4	1 U	1 U	1 U	1 U	1 U	1 U
Sodium	7440-23-5	20000	64000	310000	780000	660000	19000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	7440-62-2	37	2.9	42	2.7	95	11
Zinc	7440-66-6	6.4	32	21	75	8.7	21
Dissolved Metals (ug/l)							
Aluminum	7429-90-5	20 U	20 U	120	20 U	53	20 U
Antimony	7440-36-0	7.2	5.9	1 U	19	1 U	1.2
Arsenic	7440-38-2	3.1	3.2	1 U	1.8	1.6	1.3
Barium	7440-39-3	52	110	60	45	230	38
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	7440-43-9	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	7440-70-2	95000	250000	87000	250000	130000	54000
Chromium	7440-47-3	6	4.2	18	57	18	8
Cobalt	7440-48-4	1.5	2.7	1.7	1.9	2.9	1 U
Copper	7440-50-8	1.7	1 U	1.2	21	1 U	2.5
Iron	7439-89-6	590	6300	1700	760	5200	60
Lead	7439-92-1	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	7439-95-4	33000	80000	72000	110000	120000	40000
Manganese	7439-96-5	56	1000	210	340	320	30
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	7440-02-0	26	13	2.4	14	5	6.7
Potassium	7440-09-7	1400	18000	49000	36000	66000	4700
Selenium	7782-49-2	1 U	1 U	1 U	16	1 U	1 U

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Station ID		MW-07S	MW-09S	MW-10D	MW-10S	MW-11D	MW-11S
Sample ID		MW-07S-4	MW-09S-4	MW-10D-4	MW-10S-4	MW-11D-4	MW-11S-4
Sample Date		01/31/2014	02/04/2014	01/23/2014	01/23/2014	01/31/2014	02/06/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Dissolved Metals (ug/l)							
Silver	7440-22-4	1 U	1 U	1 U	1 U	1 U	1 U
Sodium	7440-23-5	21000	68000	310000	790000	690000	26000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	7440-62-2	23	2.2	40	2.4	92	11
Zinc	7440-66-6	2 U	19	11	73	4.9	4.1

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Station ID		MW-11S	MW-12S	MW-13D	MW-13S	MW-14S	MW-15D
Sample ID		MW-11S-4-D	MW-12S-4	MW-13D-4	MW-13S-4	MW-14S-4	MW-15D-4
Sample Date		02/06/2014	02/07/2014	01/30/2014	02/07/2014	02/07/2014	01/24/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Acetone	67-64-1	5 U	19	5 U	22	5 U	5 U
Acrolein	107-02-8	5 U	5 U	NA	5 U	5 U	NA
Acrylonitrile	107-13-1	10 U	10 U	NA	10 U	10 U	NA
Benzene	71-43-2	0.5 U	2.2	0.5 U	9.1	0.5 U	0.5 U
Bromoform	75-25-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	74-83-9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	75-15-0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	56-23-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	108-90-7	0.5 U	0.5 U	0.48 J	5.8	0.5 U	0.5 U
Chlorobromomethane	74-97-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	75-00-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	67-66-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	74-87-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	110-82-7	0.5 U	0.54	0.52	2.7	0.5 U	0.5 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dibromochloromethane	124-48-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromoethane-1,2	106-93-4	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dichlorobenzene-1,2	95-50-1	0.5 U	0.5 U	0.5 U	25	0.5 U	0.5 U
Dichlorobenzene-1,3	541-73-1	0.5 U	0.5 U	0.5 U	1.4	0.5 U	0.5 U
Dichlorobenzene-1,4	106-46-7	0.5 U	0.26 J	0.5 U	2.7	0.5 U	0.5 U
Dichlorobromomethane	75-27-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	75-71-8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethane-1,1	75-34-3	0.5 U	0.5 U	0.5 U	1.7	0.5 U	0.5 U
Dichloroethane-1,2	107-06-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethene-1,2 trans	156-60-5	0.5 U	0.65	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,1	75-35-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,2 cis	156-59-2	3.3	0.52	0.5 U	0.33 J	0.5 U	0.5 U
Dichloropropane-1,2	78-87-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 cis	10061-01-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 trans	10061-02-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

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Station ID		MW-11S	MW-12S	MW-13D	MW-13S	MW-14S	MW-15D
Sample ID		MW-11S-4-D	MW-12S-4	MW-13D-4	MW-13S-4	MW-14S-4	MW-15D-4
Sample Date		02/06/2014	02/07/2014	01/30/2014	02/07/2014	02/07/2014	01/24/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Ether, bis(chloromethyl)	542-88-1	1 U	1 U	NA	1 U	1 U	NA
Ethylbenzene	100-41-4	0.5 U	2.3	0.5 U	2.2	0.5 U	0.5 U
Ethylenimine	151-56-4	5 U	5 U	NA	5 U	5 U	NA
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexanone-2	591-78-6	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	98-82-8	0.5 U	0.4 J	0.61	3.5	0.5 U	0.5 U
Methyl acetate	79-20-9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl cyclohexane	108-87-2	0.5 U	0.83	0.43 J	2.5	0.5 U	0.5 U
Methyl ethyl ketone (2-butanone)	78-93-3	5 U	5 U	5 U	5 U	5 U	5 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	5 U	65	5 U	5 U	5 U	5 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	75-09-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	100-42-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethane-1,1,2,2	79-34-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethylene	127-18-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	108-88-3	0.5 U	5.6	0.5 U	3	0.5 U	0.5 U
Trichlorobenzene-1,2,3	87-61-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorobenzene-1,2,4	120-82-1	0.5 U	0.5 U	0.5 U	1.2	0.5 U	0.5 U
Trichloroethane-1,1,1	71-55-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethane-1,1,2	79-00-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	79-01-6	0.5 U	1.5	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	75-69-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	75-01-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl ether, 2-chloroethyl	110-75-8	5 U	5 U	NA	5 U	5 U	NA
Xylene-o	95-47-6	0.5 U	6.6	0.91 U	49	0.5 U	0.5 U
Xylenes, m & p	179601-23-1	0.5 U	6.7	0.83 U	31	0.5 U	0.5 U
Semivolatile Organic Compounds (ug/l)							
Acenaphthene	83-32-9	0.1 U	0.5	2.8 J-	0.78	0.1 U	0.12
Acenaphthylene	208-96-8	0.1 U	0.1 U	0.1 U	0.12	0.1 U	0.1 U

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Station ID		MW-11S	MW-12S	MW-13D	MW-13S	MW-14S	MW-15D
Sample ID		MW-11S-4-D	MW-12S-4	MW-13D-4	MW-13S-4	MW-14S-4	MW-15D-4
Sample Date		02/06/2014	02/07/2014	01/30/2014	02/07/2014	02/07/2014	01/24/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Acetophenone	98-86-2	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	120-12-7	0.1 U	0.16	0.12	0.11	0.1 U	0.1 U
Atrazine	1912-24-9	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde	100-52-7	5 U	5 U	5 U	5 U	5 U	5 U
Benzidine	92-87-5	5 U	5 U	NA	5 U	5 U	NA
Benzo(a)anthracene	56-55-3	0.1 U	0.24	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(a)pyrene	50-32-8	0.1 U	0.22	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(b)fluoranthene	205-99-2	0.1 U	0.19	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(g,h,I)perylene	191-24-2	0.1 U	0.23	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(k)fluoranthene	207-08-9	0.1 U	0.13	0.1 U	0.1 U	0.1 U	0.1 U
Biphenyl	92-52-4	5 U	5 U	5 U	5 U	5 U	5 U
Bromophenyl-4 Phenyl Ether	101-55-3	5 U	5 U	5 U	5 U	5 U	5 U
Butylbenzyl phthalate	85-68-7	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	105-60-2	5 U	5 U	5 U	5 U	5 U	5 U
Carbazole	86-74-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloroaniline-4	106-47-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloronaphthalene-2	91-58-7	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenol-2	95-57-8	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenyl-4 phenyl ether	7005-72-3	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	218-01-9	0.1 U	0.21	0.1 U	0.1 U	0.1 U	0.1 U
Cresol-4,6-dinitro-ortho	534-52-1	5 U	5 U	10 U	5 U	5 U	10 U
Cresol-o	95-48-7	5 U	37	5 U	5 U	5 U	5 U
Cresol-p	106-44-5	5 U	5 U	5 U	5 U	5 U	5 U
Cresol-parachloro-meta	59-50-7	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	53-70-3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenzofuran	132-64-9	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorobenzidine-3,3	91-94-1	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,4	120-83-2	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,6	87-65-0	5 U	5 U	NA	5 U	5 U	NA
Dimethylphenol-2,4	105-67-9	5 U	140	5 U	5 U	5 U	5 U

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Sample ID		MW-11S-4-D	MW-12S-4	MW-13D-4	MW-13S-4	MW-14S-4	MW-15D-4
Sample Date		02/06/2014	02/07/2014	01/30/2014	02/07/2014	02/07/2014	01/24/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Dinitrophenol-2,4	51-28-5	10 U	10 U	10 U	10 U	10 U	10 U
Dinitrotoluene-2,4	121-14-2	5 U	5 U	5 U	5 U	5 U	5 U
Dinitrotoluene-2,6	606-20-2	5 U	5 U	5 U	5 U	5 U	5 U
Dioxane, 1,4-	123-91-1	2 U	7.1 J+	NA	2 U	2 U	NA
Diphenylhydrazine-1,2	122-66-7	5 U	5 U	NA	5 U	5 U	NA
Ether, bis(2-chloroethyl)	111-44-4	5 U	5 U	5 U	5 U	5 U	5 U
Ether, bis-chloroisopropyl	108-60-1	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	206-44-0	0.1 U	0.5	0.13	0.15	0.1 U	0.1 U
Fluorene	86-73-7	0.1 U	0.34	0.23	0.61	0.1 U	0.1 U
Hexachlorobenzene	118-74-1	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	67-72-1	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.1 U	0.16	0.1 U	0.1 U	0.1 U	0.1 U
Isophorone	78-59-1	5 U	5 U	5 U	5 U	5 U	5 U
Methane, bis(2-chloroethoxy)	111-91-1	5 U	5 U	5 U	5 U	5 U	5 U
Methylnaphthalene-2	91-57-6	0.1 U	0.85	0.14	0.56	0.1 U	0.1 U
Naphthalene	91-20-3	0.1 U	3.3	0.29	4.1	0.1 U	0.1 U
Nitroaniline-2	88-74-4	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-3	99-09-2	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-4	100-01-6	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	98-95-3	5 U	5 U	5 U	5 U	5 U	5 U
Nitrophenol-2	88-75-5	5 U	5 U	5 U	5 U	5 U	5 U
Nitrophenol-4	100-02-7	10 U	10 U	10 U	10 U	10 U	10 U
Nitrosodimethylamine-n	62-75-9	5 U	5 U	NA	5 U	5 U	NA
Nitroso-di-n-propyl-amine-N	621-64-7	5 U	5 U	5 U	5 U	5 U	5 U
Nitrosodiphenylamine-n	86-30-6	5 U	5 U	5 U	5 U	5 U	5 U
PCP (Pentachlorophenol)	87-86-5	0.2 U	0.11 J	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene	85-01-8	0.1 U	0.14	0.35	0.096 J	0.09 J	0.1 U
Phenol	108-95-2	5 U	5 U	5 U	5 U	5 U	5 U

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Sample ID		MW-11S-4-D	MW-12S-4	MW-13D-4	MW-13S-4	MW-14S-4	MW-15D-4
Sample Date		02/06/2014	02/07/2014	01/30/2014	02/07/2014	02/07/2014	01/24/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, diethyl	84-66-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, dimethyl	131-11-3	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-butyl	84-74-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-octyl	117-84-0	5 U	5 U	5 U	5 U	5 U	5 U
Picoline, 2	109-06-8	5 U	5 U	NA	5 U	5 U	NA
Pyrene	129-00-0	0.1 U	0.67	0.17	0.19	0.1 U	0.13
Tetrachlorobenzene-1,2,4,5	95-94-3	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachlorophenol-2,3,4,6	58-90-2	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,5	95-95-4	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,6	88-06-2	5 U	5 U	5 U	5 U	5 U	5 U
Trinitrobenzol	99-35-4	5 U	5 U	NA	5 U	5 U	NA
Pesticides and PCBs (ug/l)							
Aldrin	309-00-2	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
BHC, alpha	319-84-6	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
BHC, beta	319-85-7	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
BHC, delta	319-86-8	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
BHC, gamma (Lindane)	58-89-9	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
Chlordane - alpha	5103-71-9	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
Chlordane - gamma	5566-34-7	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
DDD-4,4	72-54-8	0.005 UJ	0.0051 U	0.0052 U	0.0055 U	0.0056 U	0.0056 U
DDE-4,4	72-55-9	0.005 UJ	0.0051 U	0.0052 U	0.0055 U	0.0056 U	0.0056 U
DDT-4,4	50-29-3	0.005 UJ	0.0051 U	0.0052 U	0.0055 U	0.0056 U	0.0056 UL
Dieldrin	60-57-1	0.005 UJ	0.0051 U	0.0052 U	0.0055 U	0.0056 U	0.0056 U
Endosulfan I (alpha)	959-98-8	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
Endosulfan II (beta)	33213-65-9	0.005 UJ	0.0051 U	0.0052 U	0.0055 U	0.0056 U	0.0056 U
Endosulfan Sulfate	1031-07-8	0.005 UJ	0.0051 U	0.0052 U	0.0055 U	0.0056 U	0.0056 U
Endrin	72-20-8	0.005 UJ	0.0051 U	0.0052 U	0.0055 U	0.0056 U	0.0056 U
Endrin Aldehyde	7421-93-4	0.005 UJ	0.0051 UL	0.0052 UL	0.0055 UL	0.0056 UL	0.0056 U

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Sample ID		MW-11S-4-D	MW-12S-4	MW-13D-4	MW-13S-4	MW-14S-4	MW-15D-4
Sample Date		02/06/2014	02/07/2014	01/30/2014	02/07/2014	02/07/2014	01/24/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/l)							
Endrin ketone	53494-70-5	0.005 UJ	0.0051 UL	0.0052 U	0.0055 UL	0.0056 UL	0.0056 U
Heptachlor	76-44-8	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
Heptachlor Epoxide	1024-57-3	0.0025 UJ	0.0026 U	0.0026 U	0.0027 U	0.0028 U	0.0028 U
Methoxychlor	72-43-5	0.025 UJ	0.026 U	0.026 U	0.027 U	0.028 U	0.028 U
PCB-Aroclor 1016	12674-11-2	0.031 UJ	0.032 U	0.033 U	0.034 U	0.035 U	0.035 U
PCB-Aroclor 1221	11104-28-2	0.062 UJ	0.064 U	0.065 U	0.069 U	0.069 U	0.07 U
PCB-Aroclor 1232	11141-16-5	0.031 UJ	0.032 U	0.033 U	0.034 U	0.035 U	0.035 U
PCB-Aroclor 1242	53469-21-9	0.031 UJ	0.032 U	0.033 U	0.034 U	0.035 U	0.035 U
PCB-Aroclor 1248	12672-29-6	0.031 UJ	0.032 U	0.033 U	0.034 U	0.035 U	0.035 U
PCB-Aroclor 1254	11097-69-1	0.031 UJ	0.032 U	0.033 U	0.034 U	0.035 U	0.035 U
PCB-Aroclor 1260	11096-82-5	0.031 UJ	0.032 U	0.033 U	0.034 U	0.035 U	0.035 U
PCB-Aroclor 1262	37324-23-5	0.031 UJ	0.032 U	0.033 U	0.034 U	0.035 U	0.035 U
PCB-Aroclor 1268	11100-14-4	0.031 UJ	0.032 U	0.033 U	0.034 U	0.035 U	0.035 U
Toxaphene	8001-35-2	0.19 UJ	0.19 U	0.2 U	0.21 U	0.21 U	0.21 U
Metals (ug/l)							
Aluminum	7429-90-5	20 U	260	78	20 U	96	97
Antimony	7440-36-0	1.4	1.6	1 U	1 U	7.5	1 U
Arsenic	7440-38-2	1.3	8	4.4	7.2	2.8	1 U
Barium	7440-39-3	43	49	450	120	170	42
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	7440-43-9	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	7440-70-2	61000	55000	50000	170000	99000	47000
Chromium	7440-47-3	25	32	15	4.3	9.1	13
Cobalt	7440-48-4	1 U	1 U	4.3	2.9	1.8	1.4
Copper	7440-50-8	15	9.8	1.2	5.1	63	5.6 L
Cyanide	57-12-5	10 U	10 U	12	10 U	10 U	10 U
Iron	7439-89-6	150	780	17000	8400	910	3100
Lead	7439-92-1	1.7	19	1.9	56	23	1 U
Magnesium	7439-95-4	44000	10000	130000	15000	23000	70000

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Station ID		MW-11S	MW-12S	MW-13D	MW-13S	MW-14S	MW-15D
Sample ID		MW-11S-4-D	MW-12S-4	MW-13D-4	MW-13S-4	MW-14S-4	MW-15D-4
Sample Date		02/06/2014	02/07/2014	01/30/2014	02/07/2014	02/07/2014	01/24/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Metals (ug/l)							
Manganese	7439-96-5	25	150	310	2200	11	520
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	7440-02-0	6.9	26	4.3	10	9.6	1.9
Potassium	7440-09-7	4300	5800	69000	4800	2900	45000 J
Selenium	7782-49-2	1 U	1	1.2	1 U	1.4	1 UL
Silver	7440-22-4	1 U	1 U	1 U	1 U	1 U	1 U
Sodium	7440-23-5	21000	130000	800000	21000	76000	420000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	7440-62-2	11	71	50	2.1	9.9	29
Zinc	7440-66-6	19	11	4	17	28	3.8
Dissolved Metals (ug/l)							
Aluminum	7429-90-5	20 U	280	60	20 U	20 U	57
Antimony	7440-36-0	1.2	1.4	1 U	1 U	8.8	1 U
Arsenic	7440-38-2	1.3	8.7	4.1	5.4	3.8	1 U
Barium	7440-39-3	37	33	450	120	160	48
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	7440-43-9	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	7440-70-2	53000	45000	49000	170000	100000	47000
Chromium	7440-47-3	7.1	12	14	3.6	5.3	12
Cobalt	7440-48-4	1 U	1 U	4.2	2.7	1.2	1.4
Copper	7440-50-8	2.3	1 U	1 U	1.3	4.1	1 UL
Iron	7439-89-6	57	50 U	17000	8600	310	2900
Lead	7439-92-1	1 U	1 U	1 U	2	1 U	1 U
Magnesium	7439-95-4	40000	8400	120000	15000	24000	72000
Manganese	7439-96-5	30	110	300	2300	41	520
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	7440-02-0	7.5	26	3.8	9.1	8.9	1.9
Potassium	7440-09-7	4800	6800	69000	4900	3600	47000 J
Selenium	7782-49-2	1 U	1.1	1.1	1 U	1 U	1 U

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Sample ID		MW-11S-4-D	MW-12S-4	MW-13D-4	MW-13S-4	MW-14S-4	MW-15D-4
Sample Date		02/06/2014	02/07/2014	01/30/2014	02/07/2014	02/07/2014	01/24/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Dissolved Metals (ug/l)							
Silver	7440-22-4	1 U	1 U	1 U	1 U	1 U	1 U
Sodium	7440-23-5	26000	150000	820000	21000	80000	440000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	7440-62-2	11	77	48	1.9	5.6	26
Zinc	7440-66-6	4.4	2 U	2.6	4	2.5	2.4

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Station ID		MW-15S	MW-17S	MW-18S	MW-19S	MW-20S	MW-21S
Sample ID		MW-15S-4	MW-17S-4	MW-18S-4	MW-19S-4	MW-20S-4	MW-21S-4
Sample Date		01/24/2014	01/29/2014	01/29/2014	01/30/2014	01/27/2014	01/27/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Acetone	67-64-1	5 U	5 U	5 U	5 U	5 U	5 U
Acrolein	107-02-8	NA	NA	NA	NA	NA	NA
Acrylonitrile	107-13-1	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	0.5 U	0.5 U	0.5 U	2.8	0.5 U	0.5 U
Bromoform	75-25-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	74-83-9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	75-15-0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	56-23-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	108-90-7	4.9	0.5 U	1.8	0.86	0.5 UJ	0.5 U
Chlorobromomethane	74-97-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	75-00-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	67-66-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	74-87-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	110-82-7	0.51	0.5 U	0.51	5.1	0.5 U	0.5 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dibromochloromethane	124-48-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromoethane-1,2	106-93-4	0.05 U	0.05 U	0.05 U	0.5 U	0.05 U	0.05 U
Dichlorobenzene-1,2	95-50-1	0.5 U	0.5 U	0.5 U	1.2	0.5 UJ	0.5 U
Dichlorobenzene-1,3	541-73-1	0.5 U	0.5 U	0.5 U	0.25 J	0.5 UJ	0.5 U
Dichlorobenzene-1,4	106-46-7	0.5 U	0.5 U	0.23 J	0.54	0.48 J	0.5 U
Dichlorobromomethane	75-27-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	75-71-8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethane-1,1	75-34-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethane-1,2	107-06-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethene-1,2 trans	156-60-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,1	75-35-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,2 cis	156-59-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropane-1,2	78-87-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 cis	10061-01-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 trans	10061-02-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

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Sample ID		MW-15S-4	MW-17S-4	MW-18S-4	MW-19S-4	MW-20S-4	MW-21S-4
Sample Date		01/24/2014	01/29/2014	01/29/2014	01/30/2014	01/27/2014	01/27/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Ether, bis(chloromethyl)	542-88-1	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	0.5 U	0.5 U	0.5 U	1.8	0.5 U	0.5 U
Ethylenimine	151-56-4	NA	NA	NA	NA	NA	NA
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexanone-2	591-78-6	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	98-82-8	0.5 U	0.5 U	0.5 U	19	0.5 U	0.5 U
Methyl acetate	79-20-9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.6
Methyl cyclohexane	108-87-2	0.5 U	0.5 U	0.5 U	32	0.5 U	0.5 U
Methyl ethyl ketone (2-butanone)	78-93-3	5 U	5 U	5 U	5 U	5 U	5 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	5 U	5 U	5 U	5 U	5 U	5 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	0.47 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	75-09-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	100-42-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethane-1,1,2,2	79-34-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethylene	127-18-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	108-88-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.67 U
Trichlorobenzene-1,2,3	87-61-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U
Trichlorobenzene-1,2,4	120-82-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U
Trichloroethane-1,1,1	71-55-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethane-1,1,2	79-00-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	79-01-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	75-69-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	75-01-4	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U
Vinyl ether, 2-chloroethyl	110-75-8	NA	NA	NA	NA	NA	NA
Xylene-o	95-47-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylenes, m & p	179601-23-1	0.5 U	0.5 U	0.5 U	44	0.5 U	0.5 U
Semivolatile Organic Compounds (ug/l)							
Acenaphthene	83-32-9	3.7	0.1 U	6.5	0.59	2.6	0.1 U
Acenaphthylene	208-96-8	0.1 U	0.1 U	0.14	0.1 U	0.1 U	0.1 U

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Sample ID		MW-15S-4	MW-17S-4	MW-18S-4	MW-19S-4	MW-20S-4	MW-21S-4
Sample Date		01/24/2014	01/29/2014	01/29/2014	01/30/2014	01/27/2014	01/27/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Acetophenone	98-86-2	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	120-12-7	0.1 U	0.1 U	0.43	0.1 U	0.24	0.14
Atrazine	1912-24-9	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde	100-52-7	5 U	5 U	5 U	5 U	5 U	5 U
Benzidine	92-87-5	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	0.1 U	0.1 U	0.1 U	0.1 U	0.56	0.1 U
Benzo(a)pyrene	50-32-8	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(b)fluoranthene	205-99-2	0.1 U	0.1 U	0.1 U	0.1 U	0.28	0.1 U
Benzo(g,h,I)perylene	191-24-2	0.1 U	0.1 U	0.1 U	0.1 U	0.24	0.1 U
Benzo(k)fluoranthene	207-08-9	0.1 U	0.1 U	0.1 U	0.1 U	0.21	0.1 U
Biphenyl	92-52-4	5 U	5 U	5 U	5 U	5 U	5 U
Bromophenyl-4 Phenyl Ether	101-55-3	5 U	5 U	5 U	5 U	5 U	5 U
Butylbenzyl phthalate	85-68-7	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	105-60-2	5 U	5 U	5 U	5 U	5 U	5 U
Carbazole	86-74-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloroaniline-4	106-47-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloronaphthalene-2	91-58-7	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenol-2	95-57-8	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenyl-4 phenyl ether	7005-72-3	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	218-01-9	0.1 U	0.1 U	0.1 U	0.096	0.44	0.1 U
Cresol-4,6-dinitro-ortho	534-52-1	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U
Cresol-o	95-48-7	5 U	5 U	5 U	5 U	5 U	120
Cresol-p	106-44-5	5 U	5 U	5 U	5 U	5 U	140
Cresol-parachloro-meta	59-50-7	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	53-70-3	0.1 U	0.1 U	0.1 U	0.1 U	0.13	0.1 U
Dibenzofuran	132-64-9	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorobenzidine-3,3	91-94-1	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,4	120-83-2	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,6	87-65-0	NA	NA	NA	NA	NA	NA
Dimethylphenol-2,4	105-67-9	5 U	5 U	5 U	5 U	5 U	50

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Sample ID		MW-15S-4	MW-17S-4	MW-18S-4	MW-19S-4	MW-20S-4	MW-21S-4
Sample Date		01/24/2014	01/29/2014	01/29/2014	01/30/2014	01/27/2014	01/27/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Dinitrophenol-2,4	51-28-5	10 U	10 U	10 U	10 U	10 U	10 U
Dinitrotoluene-2,4	121-14-2	5 U	5 U	5 U	5 U	5 U	5 U
Dinitrotoluene-2,6	606-20-2	5 U	5 U	5 U	5 U	5 U	5 U
Dioxane, 1,4-	123-91-1	NA	NA	NA	NA	NA	NA
Diphenylhydrazine-1,2	122-66-7	NA	NA	NA	NA	NA	NA
Ether, bis(2-chloroethyl)	111-44-4	5 U	5 U	5 U	5 U	5 U	5 U
Ether, bis-chloroisopropyl	108-60-1	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	206-44-0	0.1 U	0.1 U	0.42	0.24	0.67	0.38
Fluorene	86-73-7	0.17	0.1 U	2.2	0.27	0.22	0.16
Hexachlorobenzene	118-74-1	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	67-72-1	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.1 U	0.1 U	0.1 U	0.1 U	0.18	0.1 U
Isophorone	78-59-1	5 U	5 U	5 U	5 U	5 U	5 U
Methane, bis(2-chloroethoxy)	111-91-1	5 U	5 U	5 U	5 U	5 U	5 U
Methylnaphthalene-2	91-57-6	0.1 U	0.1 U	0.1 U	0.11	0.1 U	0.097
Naphthalene	91-20-3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.29
Nitroaniline-2	88-74-4	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-3	99-09-2	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-4	100-01-6	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	98-95-3	5 U	5 U	5 U	5 U	5 U	5 U
Nitrophenol-2	88-75-5	5 U	5 U	5 U	5 U	5 U	5 U
Nitrophenol-4	100-02-7	10 U	10 U	10 U	10 U	10 U	10 U
Nitrosodimethylamine-n	62-75-9	NA	NA	NA	NA	NA	NA
Nitroso-di-n-propyl-amine-N	621-64-7	5 U	5 U	5 U	5 U	5 U	5 U
Nitrosodiphenylamine-n	86-30-6	5 U	5 U	5 U	5 U	5 U	5 U
PCP (Pentachlorophenol)	87-86-5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene	85-01-8	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.78
Phenol	108-95-2	5 U	5 U	5 U	5 U	5 U	870

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Sample ID		MW-15S-4	MW-17S-4	MW-18S-4	MW-19S-4	MW-20S-4	MW-21S-4
Sample Date		01/24/2014	01/29/2014	01/29/2014	01/30/2014	01/27/2014	01/27/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	5 U	5.2	2.6 J	5 U	5 U	5 U
Phthalate, diethyl	84-66-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, dimethyl	131-11-3	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-butyl	84-74-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-octyl	117-84-0	5 U	5 U	5 U	5 U	5 U	5 U
Picoline, 2	109-06-8	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	0.1 U	0.1 U	0.45	0.56	1.6	0.47
Tetrachlorobenzene-1,2,4,5	95-94-3	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachlorophenol-2,3,4,6	58-90-2	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,5	95-95-4	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,6	88-06-2	5 U	5 U	5 U	5 U	5 U	5 U
Trinitrobenzol	99-35-4	NA	NA	NA	NA	NA	NA
Pesticides and PCBs (ug/l)							
Aldrin	309-00-2	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
BHC, alpha	319-84-6	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
BHC, beta	319-85-7	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
BHC, delta	319-86-8	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
BHC, gamma (Lindane)	58-89-9	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
Chlordane - alpha	5103-71-9	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
Chlordane - gamma	5566-34-7	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
DDD-4,4	72-54-8	0.0052 U	0.0065 U	0.005 U	0.005 U	0.026 U	0.0053 UL
DDE-4,4	72-55-9	0.0052 U	0.0065 U	0.005 U	0.005 U	0.026 U	0.0053 UL
DDT-4,4	50-29-3	0.0052 UL	0.0065 U	0.005 U	0.005 U	0.026 UL	0.0053 UL
Dieldrin	60-57-1	0.0052 U	0.0065 U	0.005 U	0.005 U	0.026 U	0.0053 UL
Endosulfan I (alpha)	959-98-8	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
Endosulfan II (beta)	33213-65-9	0.0052 U	0.0065 U	0.005 U	0.005 U	0.026 U	0.0053 UL
Endosulfan Sulfate	1031-07-8	0.0052 U	0.0065 U	0.005 U	0.005 U	0.026 U	0.0053 UL
Endrin	72-20-8	0.0052 U	0.0065 U	0.005 U	0.005 U	0.026 U	0.0053 UL
Endrin Aldehyde	7421-93-4	0.0052 U	0.0065 UL	0.005 UL	0.005 UL	0.026 U	0.0053 UL

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Sample ID		MW-15S-4	MW-17S-4	MW-18S-4	MW-19S-4	MW-20S-4	MW-21S-4
Sample Date		01/24/2014	01/29/2014	01/29/2014	01/30/2014	01/27/2014	01/27/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/l)							
Endrin ketone	53494-70-5	0.0052 U	0.0065 U	0.005 U	0.005 U	0.026 U	0.0053 UL
Heptachlor	76-44-8	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
Heptachlor Epoxide	1024-57-3	0.0026 U	0.0032 U	0.0025 U	0.0025 U	0.013 U	0.0026 UL
Methoxychlor	72-43-5	0.026 U	0.032 U	0.025 U	0.025 U	0.13 U	0.026 UL
PCB-Aroclor 1016	12674-11-2	0.033 U	0.041 U	0.031 U	0.031 U	0.16 U	0.033 UL
PCB-Aroclor 1221	11104-28-2	0.065 U	0.081 U	0.062 U	0.062 U	0.33 U	0.066 UL
PCB-Aroclor 1232	11141-16-5	0.033 U	0.041 U	0.031 U	0.031 U	0.16 U	0.033 UL
PCB-Aroclor 1242	53469-21-9	0.033 U	0.041 U	0.031 U	0.031 U	0.16 U	0.033 UL
PCB-Aroclor 1248	12672-29-6	0.033 U	0.041 U	0.031 U	0.031 U	0.16 U	0.033 UL
PCB-Aroclor 1254	11097-69-1	0.033 U	0.041 U	0.031 U	0.031 U	0.16 U	0.033 UL
PCB-Aroclor 1260	11096-82-5	0.033 U	0.041 U	0.031 U	0.031 U	0.16 U	0.033 UL
PCB-Aroclor 1262	37324-23-5	0.033 U	0.041 U	0.031 U	0.031 U	0.16 U	0.033 UL
PCB-Aroclor 1268	11100-14-4	0.033 U	0.041 U	0.031 U	0.031 U	0.16 U	0.033 UL
Toxaphene	8001-35-2	0.2 U	0.24 U	0.19 U	0.19 U	0.98 U	0.2 UL
Metals (ug/l)							
Aluminum	7429-90-5	20 U	20 U	20 U	20 U	30	67
Antimony	7440-36-0	34	2.7	1 U	1 U	1	2.2
Arsenic	7440-38-2	3.1	6	5.1	11	6.8	3
Barium	7440-39-3	130	94	360	1200	440	320
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	7440-43-9	18	1 U	1 U	1 U	1 U	1.7
Calcium	7440-70-2	250000	150000	190000	190000	230000	190000
Chromium	7440-47-3	2	2 U	2.9	24	8.5	58
Cobalt	7440-48-4	9.2	4.9	1 U	3.4	8.5	1.8
Copper	7440-50-8	70	6.5	2.2	1.1	1.5	110
Cyanide	57-12-5	10	10 U	10 U	10 U	17	10 U
Iron	7439-89-6	570	2200	9100	17000	32000	1600
Lead	7439-92-1	3.8	1 U	1 U	1.6	13	140
Magnesium	7439-95-4	85000	14000	37000	130000	72000	54000

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Sample ID		MW-15S-4	MW-17S-4	MW-18S-4	MW-19S-4	MW-20S-4	MW-21S-4
Sample Date		01/24/2014	01/29/2014	01/29/2014	01/30/2014	01/27/2014	01/27/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Metals (ug/l)							
Manganese	7439-96-5	1100	460	870	1500	4300	340
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.31
Nickel	7440-02-0	55	65	1.8	10	7	67
Potassium	7440-09-7	50000	11000	24000	110000	58000	32000
Selenium	7782-49-2	3.8	1 U	1 U	1 U	1.5	2.1
Silver	7440-22-4	1 U	1 U	1 U	1 U	1 U	1 U
Sodium	7440-23-5	590000	340000	410000	290000	510000	580000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	7440-62-2	4.3	1 U	1.2	16	67	35
Zinc	7440-66-6	1300	1800	9.4	12	7.8	200
Dissolved Metals (ug/l)							
Aluminum	7429-90-5	20 U	42	20 U	20 U	20 U	83
Antimony	7440-36-0	35	4.6	1.3	1 U	1	2.5
Arsenic	7440-38-2	2.7	7.6	5	10	6.4	4
Barium	7440-39-3	130	96	350	1100	440	350
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	7440-43-9	18	5.5	1 U	1 U	1 U	2.2
Calcium	7440-70-2	260000	170000	210000	170000	240000	180000
Chromium	7440-47-3	2 U	3.2	2.3	19	3.9	76
Cobalt	7440-48-4	8.7	5.4	1 U	3.1	8.1	2
Copper	7440-50-8	63	31	1 U	1 U	1 U	69
Iron	7439-89-6	370	3600	9500	15000	34000	1700
Lead	7439-92-1	1.1	9.1	1 U	1 U	1 U	68
Magnesium	7439-95-4	88000	14000	43000	110000	76000	53000
Manganese	7439-96-5	1100	510	910	1300	4500	330
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.24
Nickel	7440-02-0	51	68	2.3	8.6	6	82
Potassium	7440-09-7	51000	11000	24000	110000	59000	35000
Selenium	7782-49-2	3.8	1 U	1 U	1 U	1.5	2.3

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Station ID		MW-15S	MW-17S	MW-18S	MW-19S	MW-20S	MW-21S
Sample ID		MW-15S-4	MW-17S-4	MW-18S-4	MW-19S-4	MW-20S-4	MW-21S-4
Sample Date		01/24/2014	01/29/2014	01/29/2014	01/30/2014	01/27/2014	01/27/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Dissolved Metals (ug/l)							
Silver	7440-22-4	1 U	1 U	1 U	1 U	1 U	1 U
Sodium	7440-23-5	610000	340000	410000	270000	530000	700000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	7440-62-2	4.2	1.1	1.4	15	57	47
Zinc	7440-66-6	1300	2700	2 U	8.8	3.7	160

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Station ID		MW-23S	MW-23S	MW-24S	MW-25S	MW-26S	MW-26S
Sample ID		MW-23S-4	MW-23S-4-D	MW-24S-4	MW-25S-4	MW-26S-4	MW-26S-4-D
Sample Date		01/28/2014	01/28/2014	01/28/2014	01/27/2014	01/30/2014	01/30/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Acetone	67-64-1	26	23	5 U	5 U	5 U	5 U
Acrolein	107-02-8	NA	NA	NA	NA	NA	NA
Acrylonitrile	107-13-1	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	0.5 U	0.5 U	0.5 U	0.5 U	20	19
Bromoform	75-25-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane	74-83-9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide	75-15-0	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	56-23-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	108-90-7	0.5 U	0.5 U	0.5 U	0.5 U	44	44
Chlorobromomethane	74-97-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	75-00-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	67-66-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	74-87-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	110-82-7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dibromochloromethane	124-48-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromoethane-1,2	106-93-4	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dichlorobenzene-1,2	95-50-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorobenzene-1,3	541-73-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorobenzene-1,4	106-46-7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorobromomethane	75-27-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	75-71-8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethane-1,1	75-34-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethane-1,2	107-06-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethene-1,2 trans	156-60-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,1	75-35-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,2 cis	156-59-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropane-1,2	78-87-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 cis	10061-01-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 trans	10061-02-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

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Station ID		MW-23S	MW-23S	MW-24S	MW-25S	MW-26S	MW-26S
Sample ID		MW-23S-4	MW-23S-4-D	MW-24S-4	MW-25S-4	MW-26S-4	MW-26S-4-D
Sample Date		01/28/2014	01/28/2014	01/28/2014	01/27/2014	01/30/2014	01/30/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Volatile Organic Compounds (ug/l)							
Ether, bis(chloromethyl)	542-88-1	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	0.5 U	0.5 U	0.5 U	0.5 U	0.59	0.73
Ethylenimine	151-56-4	NA	NA	NA	NA	NA	NA
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexanone-2	591-78-6	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	98-82-8	0.37 J	0.3 J	0.5 U	0.5 U	1.5	2
Methyl acetate	79-20-9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl cyclohexane	108-87-2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl ethyl ketone (2-butanone)	78-93-3	5 U	5 U	5 U	5 U	5 U	5 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	5 U	5 U	5 U	5 U	5 U	5 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene chloride	75-09-2	0.5 U	0.5 U	0.5 U	0.5 U	0.21 J	0.5 U
Styrene	100-42-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethane-1,1,2,2	79-34-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethylene	127-18-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	108-88-3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorobenzene-1,2,3	87-61-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorobenzene-1,2,4	120-82-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethane-1,1,1	71-55-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethane-1,1,2	79-00-5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	79-01-6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	75-69-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	75-01-4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl ether, 2-chloroethyl	110-75-8	NA	NA	NA	NA	NA	NA
Xylene-o	95-47-6	0.5 U	0.5 U	0.5 U	0.5 U	0.57 U	0.57 U
Xylenes, m & p	179601-23-1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.53 U
Semivolatile Organic Compounds (ug/l)							
Acenaphthene	83-32-9	5.5	5.1	1.6	2	4.8	3.1
Acenaphthylene	208-96-8	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

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Sample ID		MW-23S-4	MW-23S-4-D	MW-24S-4	MW-25S-4	MW-26S-4	MW-26S-4-D
Sample Date		01/28/2014	01/28/2014	01/28/2014	01/27/2014	01/30/2014	01/30/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Acetophenone	98-86-2	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	120-12-7	0.65	0.51	0.62	0.34	0.1 U	0.1 U
Atrazine	1912-24-9	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde	100-52-7	5 U	5 U	5 U	5 U	5 U	5 U
Benzidine	92-87-5	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	0.11	0.1 U	0.098	0.2	0.1 U	0.1 U
Benzo(a)pyrene	50-32-8	0.1 U	0.1 U	0.1 U	0.14	0.1 U	0.1 U
Benzo(b)fluoranthene	205-99-2	0.1 U	0.1 U	0.1 U	0.091 J	0.1 U	0.1 U
Benzo(g,h,I)perylene	191-24-2	0.1 U	0.1 U	0.11	0.099	0.1 U	0.1 U
Benzo(k)fluoranthene	207-08-9	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Biphenyl	92-52-4	5 U	5 U	5 U	5 U	5 U	5 U
Bromophenyl-4 Phenyl Ether	101-55-3	5 U	5 U	5 U	5 U	5 U	5 U
Butylbenzyl phthalate	85-68-7	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	105-60-2	5 U	5 U	5 U	5 U	5 U	5 U
Carbazole	86-74-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloroaniline-4	106-47-8	5 U	5 U	5 U	5 U	5 U	5 U
Chloronaphthalene-2	91-58-7	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenol-2	95-57-8	5 U	5 U	5 U	5 U	5 U	5 U
Chlorophenyl-4 phenyl ether	7005-72-3	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	218-01-9	0.12	0.095	0.097	0.17	0.1 U	0.1 U
Cresol-4,6-dinitro-ortho	534-52-1	10 UJ	10 U	10 U	10 U	10 UJ	10 UJ
Cresol-o	95-48-7	5 U	5 U	5 U	5 U	5 U	5 U
Cresol-p	106-44-5	5 U	5 U	5 U	5 U	5 U	5 U
Cresol-parachloro-meta	59-50-7	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	53-70-3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenzofuran	132-64-9	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorobenzidine-3,3	91-94-1	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,4	120-83-2	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorophenol-2,6	87-65-0	NA	NA	NA	NA	NA	NA
Dimethylphenol-2,4	105-67-9	5 U	5 U	5 U	5 U	5 U	5 U

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Sample ID		MW-23S-4	MW-23S-4-D	MW-24S-4	MW-25S-4	MW-26S-4	MW-26S-4-D
Sample Date		01/28/2014	01/28/2014	01/28/2014	01/27/2014	01/30/2014	01/30/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Dinitrophenol-2,4	51-28-5	10 U	10 U	10 U	10 U	10 U	10 U
Dinitrotoluene-2,4	121-14-2	5 U	5 U	5 U	5 U	5 U	5 U
Dinitrotoluene-2,6	606-20-2	5 U	5 U	5 U	5 U	5 U	5 U
Dioxane, 1,4-	123-91-1	NA	NA	NA	NA	NA	NA
Diphenylhydrazine-1,2	122-66-7	NA	NA	NA	NA	NA	NA
Ether, bis(2-chloroethyl)	111-44-4	5 U	5 U	5 U	5 U	5 U	5 U
Ether, bis-chloroisopropyl	108-60-1	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	206-44-0	0.64	0.49	1.5	0.48	0.26	0.21
Fluorene	86-73-7	2.1	1.9	0.89	0.73	0.1 U	0.1 U
Hexachlorobenzene	118-74-1	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	67-72-1	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Isophorone	78-59-1	5 U	5 U	5 U	5 U	5 U	5 UJ
Methane, bis(2-chloroethoxy)	111-91-1	5 U	5 U	5 U	5 U	5 U	5 U
Methylnaphthalene-2	91-57-6	0.54	0.43	0.1	0.1 U	0.1 U	0.1 U
Naphthalene	91-20-3	0.95	0.74	0.25 U	0.25 U	5.6	3.4
Nitroaniline-2	88-74-4	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-3	99-09-2	10 U	10 U	10 U	10 U	10 U	10 U
Nitroaniline-4	100-01-6	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	98-95-3	5 U	5 U	5 U	5 U	5 U	5 U
Nitrophenol-2	88-75-5	5 U	5 U	5 U	5 U	5 U	5 UJ
Nitrophenol-4	100-02-7	10 U	10 U	10 U	10 U	10 U	10 U
Nitrosodimethylamine-n	62-75-9	NA	NA	NA	NA	NA	NA
Nitroso-di-n-propyl-amine-N	621-64-7	5 U	5 U	5 U	5 U	5 U	5 U
Nitrosodiphenylamine-n	86-30-6	5 U	5 U	5 U	5 U	5 U	5 U
PCP (Pentachlorophenol)	87-86-5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene	85-01-8	3.3	2.7	2	0.24	0.13	0.16
Phenol	108-95-2	5 U	5 U	5 U	5 U	5 U	5 U

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Sample ID		MW-23S-4	MW-23S-4-D	MW-24S-4	MW-25S-4	MW-26S-4	MW-26S-4-D
Sample Date		01/28/2014	01/28/2014	01/28/2014	01/27/2014	01/30/2014	01/30/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Semivolatile Organic Compounds (ug/l)							
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, diethyl	84-66-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, dimethyl	131-11-3	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-butyl	84-74-2	5 U	5 U	5 U	5 U	5 U	5 U
Phthalate, di-n-octyl	117-84-0	5 U	5 U	5 U	5 U	5 U	5 U
Picoline, 2	109-06-8	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	0.85	0.66	0.83	0.57	0.42	0.38
Tetrachlorobenzene-1,2,4,5	95-94-3	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachlorophenol-2,3,4,6	58-90-2	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,5	95-95-4	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorophenol-2,4,6	88-06-2	5 U	5 U	5 U	5 U	5 U	5 U
Trinitrobenzol	99-35-4	NA	NA	NA	NA	NA	NA
Pesticides and PCBs (ug/l)							
Aldrin	309-00-2	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
BHC, alpha	319-84-6	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
BHC, beta	319-85-7	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
BHC, delta	319-86-8	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
BHC, gamma (Lindane)	58-89-9	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
Chlordane - alpha	5103-71-9	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
Chlordane - gamma	5566-34-7	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
DDD-4,4	72-54-8	0.0056 U	0.0057 U	0.0057 U	0.0052 U	0.0057 UL	0.0055 U
DDE-4,4	72-55-9	0.0056 U	0.0057 U	0.0057 U	0.0052 U	0.0057 UL	0.0055 U
DDT-4,4	50-29-3	0.0056 U	0.0057 U	0.0057 U	0.0052 UL	0.0057 UL	0.0055 U
Dieldrin	60-57-1	0.0056 U	0.0057 U	0.0057 U	0.0052 U	0.0057 UL	0.0055 U
Endosulfan I (alpha)	959-98-8	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
Endosulfan II (beta)	33213-65-9	0.0056 U	0.0057 U	0.0057 U	0.0052 U	0.0057 UL	0.0055 U
Endosulfan Sulfate	1031-07-8	0.0056 U	0.0057 U	0.0057 U	0.0052 U	0.0057 UL	0.0055 U
Endrin	72-20-8	0.0056 U	0.0057 U	0.0057 U	0.0052 U	0.0057 UL	0.0055 U
Endrin Aldehyde	7421-93-4	0.0056 UL	0.0057 UL	0.0057 UL	0.0052 U	0.0057 UL	0.0055 UL

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Sample ID		MW-23S-4	MW-23S-4-D	MW-24S-4	MW-25S-4	MW-26S-4	MW-26S-4-D
Sample Date		01/28/2014	01/28/2014	01/28/2014	01/27/2014	01/30/2014	01/30/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Pesticides and PCBs (ug/l)							
Endrin ketone	53494-70-5	0.0056 U	0.0057 U	0.0057 U	0.0052 U	0.0057 UL	0.0055 U
Heptachlor	76-44-8	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
Heptachlor Epoxide	1024-57-3	0.0028 U	0.0029 U	0.0028 U	0.0026 U	0.0028 UL	0.0027 U
Methoxychlor	72-43-5	0.028 U	0.029 U	0.028 U	0.026 U	0.028 UL	0.027 U
PCB-Aroclor 1016	12674-11-2	0.035 U	0.036 U	0.036 U	0.032 U	0.036 UL	0.034 U
PCB-Aroclor 1221	11104-28-2	0.07 U	0.072 U	0.071 U	0.064 U	0.071 UL	0.069 U
PCB-Aroclor 1232	11141-16-5	0.035 U	0.036 U	0.036 U	0.032 U	0.036 UL	0.034 U
PCB-Aroclor 1242	53469-21-9	0.035 U	0.036 U	0.036 U	0.032 U	0.036 UL	0.034 U
PCB-Aroclor 1248	12672-29-6	0.035 U	0.036 U	0.036 U	0.032 U	0.036 UL	0.034 U
PCB-Aroclor 1254	11097-69-1	0.035 U	0.036 U	0.036 U	0.032 U	0.036 UL	0.034 U
PCB-Aroclor 1260	11096-82-5	0.035 U	0.036 U	0.036 U	0.032 U	0.036 UL	0.034 U
PCB-Aroclor 1262	37324-23-5	0.035 U	0.036 U	0.036 U	0.032 U	0.036 UL	0.034 U
PCB-Aroclor 1268	11100-14-4	0.035 U	0.036 U	0.036 U	0.032 U	0.036 UL	0.034 U
Toxaphene	8001-35-2	0.21 U	0.22 U	0.21 U	0.19 U	0.21 UL	0.21 U
Metals (ug/l)							
Aluminum	7429-90-5	20 U	20 U	20 U	64	240	220
Antimony	7440-36-0	1.6	1.6	1.3	1 U	1 U	1 U
Arsenic	7440-38-2	2.2	2.2	1.9	36	2.9	2.8
Barium	7440-39-3	380	370	590	240	380	400
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	7440-43-9	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	7440-70-2	130000	130000	40000	250000	170000	160000
Chromium	7440-47-3	2 U	2 U	2 U	4.2	13	13
Cobalt	7440-48-4	1 U	1 U	1 U	1 U	8.2	8.4
Copper	7440-50-8	1 U	1 U	1.2	2.1	8	7.9
Cyanide	57-12-5	10 U	10 U	10 U	10 U	10 U	10 U
Iron	7439-89-6	18000	18000	1200	30000	19000	18000
Lead	7439-92-1	1 U	1 U	1.5	3.1	2.4	2
Magnesium	7439-95-4	23000	22000	13000	52000	30000	25000

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Station ID		MW-23S	MW-23S	MW-24S	MW-25S	MW-26S	MW-26S
Sample ID		MW-23S-4	MW-23S-4-D	MW-24S-4	MW-25S-4	MW-26S-4	MW-26S-4-D
Sample Date		01/28/2014	01/28/2014	01/28/2014	01/27/2014	01/30/2014	01/30/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Metals (ug/l)							
Manganese	7439-96-5	1400	1400	170	510	1700	1600
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	7440-02-0	1	1.1	1.6	3.8	16	16
Potassium	7440-09-7	20000	20000	18000	48000	33000	38000
Selenium	7782-49-2	1 U	1 U	1 U	1 U	1 U	1 U
Silver	7440-22-4	1 U	1 U	1 U	1 U	1 U	1 U
Sodium	7440-23-5	150000	150000	67000	340000	1300000	1300000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	7440-62-2	1 U	1 U	1 U	1 U	6.7	7
Zinc	7440-66-6	6	6.3	9.1	14	21	22
Dissolved Metals (ug/l)							
Aluminum	7429-90-5	20 U	20 U	20 U	20 U	20 U	20 U
Antimony	7440-36-0	1.9	1.8	1.1	1 U	1 U	1 U
Arsenic	7440-38-2	2.3	2.2	1.6	36	2.7	2.7
Barium	7440-39-3	360	370	590	240	400	380
Beryllium	7440-41-7	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	7440-43-9	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	7440-70-2	130000	130000	45000	250000	170000	180000
Chromium	7440-47-3	2 U	2 U	2 U	2 U	13	12
Cobalt	7440-48-4	1 U	1 U	1 U	1 U	8.1	8.1
Copper	7440-50-8	1 U	1 U	1 U	1 U	1.1	1 U
Iron	7439-89-6	16000	17000	1300	28000	20000	19000
Lead	7439-92-1	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	7439-95-4	22000	22000	14000	53000	30000	28000
Manganese	7439-96-5	1400	1400	180	500	1800	1700
Mercury	7439-97-6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	7440-02-0	1.4	1.1	1.2	4.1	16	16
Potassium	7440-09-7	20000	20000	18000	45000	33000	36000
Selenium	7782-49-2	1 U	1 U	1 U	1 U	1 U	1 U

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Station ID		MW-23S	MW-23S	MW-24S	MW-25S	MW-26S	MW-26S
Sample ID		MW-23S-4	MW-23S-4-D	MW-24S-4	MW-25S-4	MW-26S-4	MW-26S-4-D
Sample Date		01/28/2014	01/28/2014	01/28/2014	01/27/2014	01/30/2014	01/30/2014
Sample Interval		N/A	N/A	N/A	N/A	N/A	N/A
Chemical Name	**CAS Number**						
Dissolved Metals (ug/l)							
Silver	7440-22-4	1 U	1 U	1 U	1 U	1 U	1 U
Sodium	7440-23-5	140000	150000	67000	330000	1300000	1200000
Thallium	7440-28-0	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	7440-62-2	1 U	1 U	1 U	1 U	6.3	6.4
Zinc	7440-66-6	6.4	5.2	3	5.9	19	18

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Station ID		PZ-14	PZ-16	PZ-17
Sample ID		PZ-14-4	PZ-16-4	PZ-17-4
Sample Date		02/10/2014	02/10/2014	02/04/2014
Sample Interval		N/A	N/A	N/A
Chemical Name	**CAS Number**			
Volatile Organic Compounds (ug/l)				
Acetone	67-64-1	410	5 U	5 U
Acrolein	107-02-8	5 U	5 U	5 U
Acrylonitrile	107-13-1	10 U	10 U	10 U
Benzene	71-43-2	39	0.5 U	0.5 U
Bromoform	75-25-2	0.5 U	0.5 U	0.5 U
Bromomethane	74-83-9	0.5 U	0.5 U	0.5 U
Carbon disulfide	75-15-0	0.5 U	0.5 U	0.5 U
Carbon tetrachloride	56-23-5	0.5 U	0.5 U	0.5 U
Chlorobenzene	108-90-7	0.5 U	0.5 U	0.5 U
Chlorobromomethane	74-97-5	0.5 U	0.5 U	0.5 U
Chloroethane	75-00-3	0.5 U	0.5 U	0.5 U
Chloroform	67-66-3	0.5 U	0.5 U	0.5 U
Chloromethane	74-87-3	0.5 U	0.5 U	0.5 U
Cyclohexane	110-82-7	2.6	0.5 U	0.5 U
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	0.5 U	0.5 U	0.05 U
Dibromochloromethane	124-48-1	0.5 U	0.5 U	0.5 U
Dibromoethane-1,2	106-93-4	0.5 U	0.5 U	0.05 U
Dichlorobenzene-1,2	95-50-1	7.4	0.5 U	0.5 U
Dichlorobenzene-1,3	541-73-1	0.39 J	0.5 U	0.5 U
Dichlorobenzene-1,4	106-46-7	1	0.5 U	0.5 U
Dichlorobromomethane	75-27-4	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	75-71-8	0.5 U	0.5 U	0.5 U
Dichloroethane-1,1	75-34-3	2.6	0.5 U	0.5 U
Dichloroethane-1,2	107-06-2	0.38 J	0.5 U	0.5 U
Dichloroethene-1,2 trans	156-60-5	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,1	75-35-4	0.5 U	0.5 U	0.5 U
Dichloroethylene-1,2 cis	156-59-2	11	0.37 J	0.44 J
Dichloropropane-1,2	78-87-5	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 cis	10061-01-5	0.5 U	0.5 U	0.5 U
Dichloropropene-1,3 trans	10061-02-6	0.5 U	0.5 U	0.5 U

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Station ID		PZ-14	PZ-16	PZ-17
Sample ID		PZ-14-4	PZ-16-4	PZ-17-4
Sample Date		02/10/2014	02/10/2014	02/04/2014
Sample Interval		N/A	N/A	N/A
Chemical Name	**CAS Number**			
Volatile Organic Compounds (ug/l)				
Ether, bis(chloromethyl)	542-88-1	1 U	1 U	1 U
Ethylbenzene	100-41-4	20	0.29 J	0.5 U
Ethylenimine	151-56-4	5 U	5 U	5 U
Freon 113 (1,1,2-trichloro-1,2-trifluoroethane)	76-13-1	0.5 U	0.5 U	0.5 U
Hexanone-2	591-78-6	8.4	5 U	5 U
Isopropylbenzene	98-82-8	2.7	0.5 U	0.5 U
Methyl acetate	79-20-9	0.5 U	0.5 U	0.5 U
Methyl cyclohexane	108-87-2	3.3	0.5 U	0.5 U
Methyl ethyl ketone (2-butanone)	78-93-3	85	5 U	5 U
Methyl isobutyl ketone (4-methyl-2-pentanone)	108-10-1	660	5 U	5 U
Methyl tertiary butyl ether (MTBE)	1634-04-4	0.5 U	0.5 U	0.5 U
Methylene chloride	75-09-2	0.5 U	0.5 U	0.5 U
Styrene	100-42-5	0.5 U	0.5 U	0.5 U
Tetrachloroethane-1,1,2,2	79-34-5	0.5 U	0.5 U	0.5 U
Tetrachloroethylene	127-18-4	1.8	0.5 U	0.5 U
Toluene	108-88-3	83	1.2	0.5 U
Trichlorobenzene-1,2,3	87-61-6	0.5 U	0.5 U	0.5 U
Trichlorobenzene-1,2,4	120-82-1	0.5 U	0.5 U	0.5 U
Trichloroethane-1,1,1	71-55-6	0.5 U	0.5 U	0.5 U
Trichloroethane-1,1,2	79-00-5	0.5 U	0.5 U	0.5 U
Trichloroethylene	79-01-6	5.3	1.3	0.5 U
Trichlorofluoromethane	75-69-4	0.5 U	0.5 U	0.5 U
Vinyl chloride	75-01-4	0.5 U	0.5 U	0.5 U
Vinyl ether, 2-chloroethyl	110-75-8	5 U	5 U	5 U
Xylene-o	95-47-6	65	0.84	0.5 U
Xylenes, m & p	179601-23-1	76	0.97	0.5 U
Semivolatile Organic Compounds (ug/l)				
Acenaphthene	83-32-9	3	0.1 U	0.1 U
Acenaphthylene	208-96-8	0.52 J-	0.1 U	0.1 U

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Station ID		PZ-14	PZ-16	PZ-17
Sample ID		PZ-14-4	PZ-16-4	PZ-17-4
Sample Date		02/10/2014	02/10/2014	02/04/2014
Sample Interval		N/A	N/A	N/A
Chemical Name	**CAS Number**			
Semivolatile Organic Compounds (ug/l)				
Acetophenone	98-86-2	5 R	5 U	5 U
Anthracene	120-12-7	1.3	0.1 U	0.1 U
Atrazine	1912-24-9	5 U	5 U	5 U
Benzaldehyde	100-52-7	5 R	5 U	5 U
Benzidine	92-87-5	5 U	5 U	5 U
Benzo(a)anthracene	56-55-3	1.2	0.1 U	0.1 U
Benzo(a)pyrene	50-32-8	1 J	0.1 U	0.1 U
Benzo(b)fluoranthene	205-99-2	0.84	0.1 U	0.1 U
Benzo(g,h,I)perylene	191-24-2	0.74	0.26	0.11
Benzo(k)fluoranthene	207-08-9	0.49	0.1 U	0.1 U
Biphenyl	92-52-4	5 U	5 U	5 U
Bromophenyl-4 Phenyl Ether	101-55-3	5 U	5 U	5 U
Butylbenzyl phthalate	85-68-7	5 U	5 U	5 U
Caprolactam	105-60-2	5 R	5 U	5 U
Carbazole	86-74-8	2.5 J	5 U	5 U
Chloroaniline-4	106-47-8	5 R	5 U	5 U
Chloronaphthalene-2	91-58-7	5 U	5 U	5 U
Chlorophenol-2	95-57-8	5 R	5 U	5 U
Chlorophenyl-4 phenyl ether	7005-72-3	5 U	5 U	5 U
Chrysene	218-01-9	1.2	0.1 U	0.1 U
Cresol-4,6-dinitro-ortho	534-52-1	5 U	5 U	5 U
Cresol-o	95-48-7	670	5 U	5 U
Cresol-p	106-44-5	2200	5 U	5 U
Cresol-parachloro-meta	59-50-7	5 R	5 U	5 U
Dibenzo(a,h)anthracene	53-70-3	0.1 U	0.1 U	0.1 U
Dibenzofuran	132-64-9	5 U	5 U	5 U
Dichlorobenzidine-3,3	91-94-1	5 U	5 U	5 U
Dichlorophenol-2,4	120-83-2	5 R	5 U	5 U
Dichlorophenol-2,6	87-65-0	5 R	5 U	5 U
Dimethylphenol-2,4	105-67-9	2300	5 U	5 U

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Station ID		PZ-14	PZ-16	PZ-17
Sample ID		PZ-14-4	PZ-16-4	PZ-17-4
Sample Date		02/10/2014	02/10/2014	02/04/2014
Sample Interval		N/A	N/A	N/A
Chemical Name	**CAS Number**			
Semivolatile Organic Compounds (ug/l)				
Dinitrophenol-2,4	51-28-5	10 U	10 U	10 U
Dinitrotoluene-2,4	121-14-2	5 U	5 U	5 U
Dinitrotoluene-2,6	606-20-2	5 U	5 U	5 U
Dioxane, 1,4-	123-91-1	38 J	2 U	2 U
Diphenylhydrazine-1,2	122-66-7	5 U	5 U	5 U
Ether, bis(2-chloroethyl)	111-44-4	5 R	5 U	5 U
Ether, bis-chloroisopropyl	108-60-1	5 R	5 U	5 U
Fluoranthene	206-44-0	2.8	0.1 U	0.1 U
Fluorene	86-73-7	1.9	0.1 U	0.1 U
Hexachlorobenzene	118-74-1	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	5 R	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	5 U	5 U	5 U
Hexachloroethane	67-72-1	5 R	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.4	0.1 U	0.1 U
Isophorone	78-59-1	5 R	5 U	5 U
Methane, bis(2-chloroethoxy)	111-91-1	5 R	5 U	5 U
Methylnaphthalene-2	91-57-6	24 J	0.1 U	0.1 U
Naphthalene	91-20-3	40 J	0.25 U	0.1 U
Nitroaniline-2	88-74-4	10 U	10 U	10 U
Nitroaniline-3	99-09-2	10 U	10 U	10 U
Nitroaniline-4	100-01-6	10 U	10 U	10 U
Nitrobenzene	98-95-3	5 R	5 U	5 U
Nitrophenol-2	88-75-5	5 R	5 U	5 U
Nitrophenol-4	100-02-7	10 U	10 U	10 U
Nitrosodimethylamine-n	62-75-9	5 U	5 U	5 U
Nitroso-di-n-propyl-amine-N	621-64-7	5 R	5 U	5 U
Nitrosodiphenylamine-n	86-30-6	5 U	5 U	5 U
PCP (Pentachlorophenol)	87-86-5	7.7 J	10 U	0.2 U
Phenanthrene	85-01-8	5.2	0.1 U	0.1 U
Phenol	108-95-2	1100	5 U	5 U

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Station ID		PZ-14	PZ-16	PZ-17
Sample ID		PZ-14-4	PZ-16-4	PZ-17-4
Sample Date		02/10/2014	02/10/2014	02/04/2014
Sample Interval		N/A	N/A	N/A
Chemical Name	**CAS Number**			
Semivolatile Organic Compounds (ug/l)				
Phthalate, bis(2-ethylhexyl) (DEHP)	117-81-7	5 U	5 U	5 U
Phthalate, diethyl	84-66-2	5 U	5 U	5 U
Phthalate, dimethyl	131-11-3	5 U	5 U	5 U
Phthalate, di-n-butyl	84-74-2	5 U	5 U	5 U
Phthalate, di-n-octyl	117-84-0	5 U	5 U	5 U
Picoline, 2	109-06-8	5 U	5 U	5 U
Pyrene	129-00-0	2.8	0.11	0.1 U
Tetrachlorobenzene-1,2,4,5	95-94-3	5 U	5 U	5 U
Tetrachlorophenol-2,3,4,6	58-90-2	5 U	5 U	5 U
Trichlorophenol-2,4,5	95-95-4	5 U	5 U	5 U
Trichlorophenol-2,4,6	88-06-2	5 U	5 U	5 U
Trinitrobenzol	99-35-4	5 U	5 U	5 U
Pesticides and PCBs (ug/l)				
Aldrin	309-00-2	0.0027 UL	0.0026 U	0.0025 UJ
BHC, alpha	319-84-6	0.0027 UL	0.0026 U	0.0025 UJ
BHC, beta	319-85-7	0.0027 UL	0.0026 U	0.0025 UJ
BHC, delta	319-86-8	0.0027 UL	0.0026 U	0.0025 UJ
BHC, gamma (Lindane)	58-89-9	0.0027 UL	0.0026 U	0.0025 UJ
Chlordane - alpha	5103-71-9	0.0027 UL	0.0026 U	0.0025 UJ
Chlordane - gamma	5566-34-7	0.0027 UL	0.0026 U	0.0025 UJ
DDD-4,4	72-54-8	0.0053 UL	0.0052 U	0.005 UJ
DDE-4,4	72-55-9	0.0053 UL	0.0052 U	0.005 UJ
DDT-4,4	50-29-3	0.0053 UL	0.0052 U	0.005 UJ
Dieldrin	60-57-1	0.0053 UL	0.0052 U	0.005 UJ
Endosulfan I (alpha)	959-98-8	0.0027 UL	0.0026 U	0.0025 UJ
Endosulfan II (beta)	33213-65-9	0.0053 UL	0.0052 U	0.005 UJ
Endosulfan Sulfate	1031-07-8	0.0053 UL	0.0052 U	0.005 UJ
Endrin	72-20-8	0.0053 UL	0.0052 U	0.005 UJ
Endrin Aldehyde	7421-93-4	0.0053 UL	0.0052 UL	0.005 UJ

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Station ID		PZ-14	PZ-16	PZ-17
Sample ID		PZ-14-4	PZ-16-4	PZ-17-4
Sample Date		02/10/2014	02/10/2014	02/04/2014
Sample Interval		N/A	N/A	N/A
Chemical Name	**CAS Number**			
Pesticides and PCBs (ug/l)				
Endrin ketone	53494-70-5	0.0053 UL	0.0052 UL	0.005 UJ
Heptachlor	76-44-8	0.0027 UL	0.0026 U	0.0025 UJ
Heptachlor Epoxide	1024-57-3	0.0027 UL	0.0026 U	0.0025 UJ
Methoxychlor	72-43-5	0.027 UL	0.026 U	0.025 UJ
PCB-Aroclor 1016	12674-11-2	0.033 UL	0.033 U	0.031 UJ
PCB-Aroclor 1221	11104-28-2	0.066 UL	0.065 U	0.062 UJ
PCB-Aroclor 1232	11141-16-5	0.033 UL	0.033 U	0.031 UJ
PCB-Aroclor 1242	53469-21-9	0.033 UL	0.033 U	0.031 UJ
PCB-Aroclor 1248	12672-29-6	0.033 UL	0.033 U	0.031 UJ
PCB-Aroclor 1254	11097-69-1	0.033 UL	0.033 U	0.031 UJ
PCB-Aroclor 1260	11096-82-5	0.033 UL	0.033 U	0.031 UJ
PCB-Aroclor 1262	37324-23-5	0.033 UL	0.033 U	0.031 UJ
PCB-Aroclor 1268	11100-14-4	0.033 UL	0.033 U	0.031 UJ
Toxaphene	8001-35-2	0.2 UL	0.2 U	0.19 UJ
Metals (ug/l)				
Aluminum	7429-90-5	NA	NA	NA
Antimony	7440-36-0	NA	NA	NA
Arsenic	7440-38-2	NA	NA	NA
Barium	7440-39-3	NA	NA	NA
Beryllium	7440-41-7	NA	NA	NA
Cadmium	7440-43-9	NA	NA	NA
Calcium	7440-70-2	NA	NA	NA
Chromium	7440-47-3	NA	NA	NA
Cobalt	7440-48-4	NA	NA	NA
Copper	7440-50-8	NA	NA	NA
Cyanide	57-12-5	NA	NA	NA
Iron	7439-89-6	NA	NA	NA
Lead	7439-92-1	NA	NA	NA
Magnesium	7439-95-4	NA	NA	NA

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Station ID		PZ-14	PZ-16	PZ-17
Sample ID		PZ-14-4	PZ-16-4	PZ-17-4
Sample Date		02/10/2014	02/10/2014	02/04/2014
Sample Interval		N/A	N/A	N/A
Chemical Name	**CAS Number**			
Metals (ug/l)				
Manganese	7439-96-5	NA	NA	NA
Mercury	7439-97-6	NA	NA	NA
Nickel	7440-02-0	NA	NA	NA
Potassium	7440-09-7	NA	NA	NA
Selenium	7782-49-2	NA	NA	NA
Silver	7440-22-4	NA	NA	NA
Sodium	7440-23-5	NA	NA	NA
Thallium	7440-28-0	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA
Dissolved Metals (ug/l)				
Aluminum	7429-90-5	NA	NA	NA
Antimony	7440-36-0	NA	NA	NA
Arsenic	7440-38-2	NA	NA	NA
Barium	7440-39-3	NA	NA	NA
Beryllium	7440-41-7	NA	NA	NA
Cadmium	7440-43-9	NA	NA	NA
Calcium	7440-70-2	NA	NA	NA
Chromium	7440-47-3	NA	NA	NA
Cobalt	7440-48-4	NA	NA	NA
Copper	7440-50-8	NA	NA	NA
Iron	7439-89-6	NA	NA	NA
Lead	7439-92-1	NA	NA	NA
Magnesium	7439-95-4	NA	NA	NA
Manganese	7439-96-5	NA	NA	NA
Mercury	7439-97-6	NA	NA	NA
Nickel	7440-02-0	NA	NA	NA
Potassium	7440-09-7	NA	NA	NA
Selenium	7782-49-2	NA	NA	NA

Appendix 1
Groundwater
2014
Pre-Design Investigation
Diamond Head Oil Superfund Site - Operable Unit

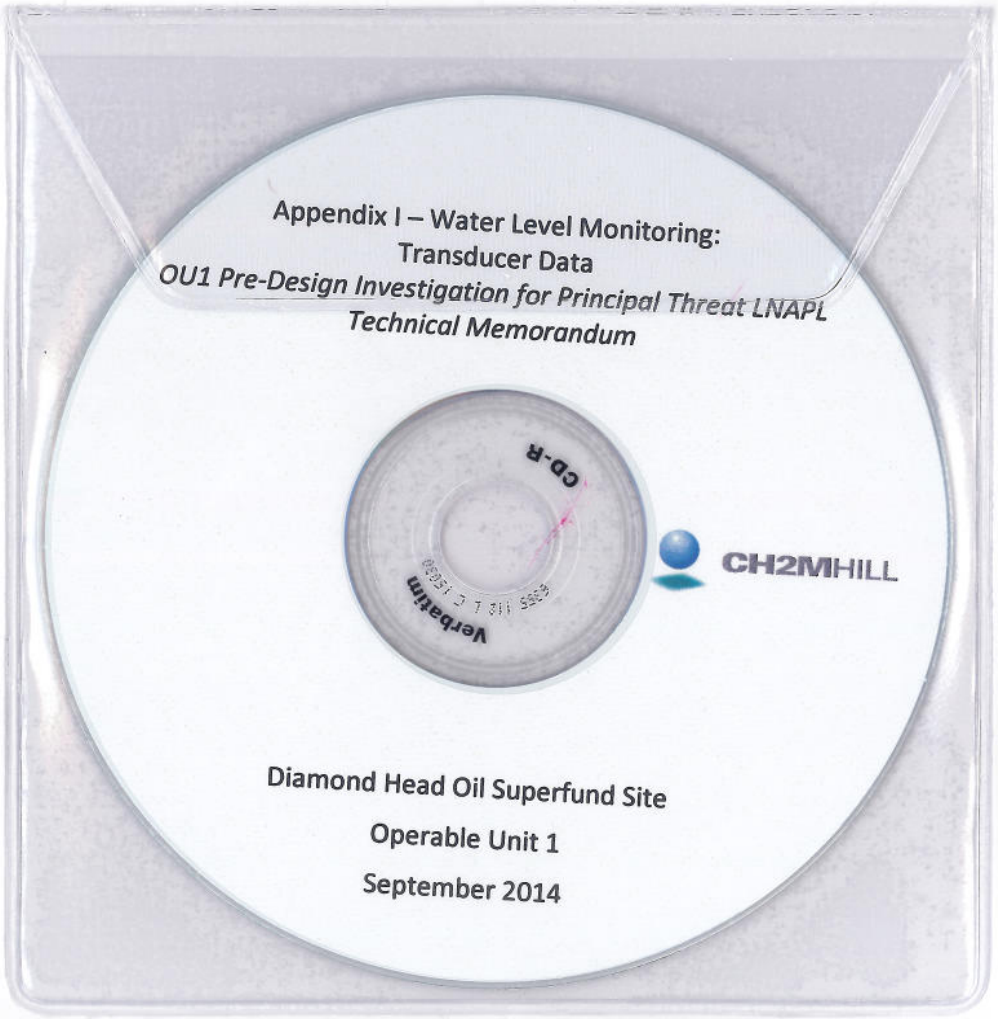
Station ID		PZ-14	PZ-16	PZ-17
Sample ID		PZ-14-4	PZ-16-4	PZ-17-4
Sample Date		02/10/2014	02/10/2014	02/04/2014
Sample Interval		N/A	N/A	N/A
Chemical Name	**CAS Number**			
Dissolved Metals (ug/l)				
Silver	7440-22-4	NA	NA	NA
Sodium	7440-23-5	NA	NA	NA
Thallium	7440-28-0	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA

Appendix I
Water Level Monitoring – Transducer Data

Contents

Electronic files of pressure transducer data provided on CD.

1. January 2014 (Winter) Pressure Transducer Data
    a. Raw transducer data: .dat files
    b. Transducer data with Barometric Corrections: .csv files

2. April 2014 (Spring) Pressure Transducer Data
    a. Raw transducer data: .dat files
    b. Transducer data with Barometric Corrections: .csv files

3. August 2014 (Summer) Pressure Transducer Data
    a. Raw transducer data: .dat files
    b. Transducer data with Barometric Corrections: .csv files