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ALAMEDA POINT
SSIC NO. 5090.3

TECHNICAL MEMORANDUM

Installation and Sampling of Wells OU2B-MW01 through OU2B-MW05 at Installation Restoration Site 11/21 Alameda Point, Alameda, California

Environmental Remedial Action
Contract Number N62474-98-D-2076
Contract Task Order 0107

Document Control Number 9820
Revision 0

January 20, 2006

Submitted to:

U.S. Department of the Navy
Base Realignment and Closure
Naval Facilities Engineering Command
Southwest Division
1455 Frazee Road, Suite 900
San Diego, California 92108-4310

Submitted by:

Shaw Environmental, Inc.
4005 Port Chicago Highway
Concord, California 92132-5190

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE
1455 FRAZEE RD, SUITE 900
SAN DIEGO, CA 92108-4310

5090
Ser BPMOW.GC\0040
January 19, 2006

Ms. Anna-Marie Cook
Project Manager
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street, (SFD-8-2)
San Francisco, CA 94105-3901

Dear Ms. Cook:

Subj: TECHNICAL MEMORANDUM FOR THE INSTALLATION AND SAMPLING OF WELLS OU2B-MW01 THROUGH OU2B-MW05 AT INSTALLATION RESTORATION SITE 11/21, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Enclosure (1) is submitted for your information. The technical memorandum covers the installation and initial sampling of the five new wells that the Regional Water Quality Control Board asked the Navy to install. These wells are located in the western portion of IR Sites 11/21, along Seaplane Lagoon.

Please call Ms. Glenna Clark, at (619) 532-0951, if you have any questions.

Sincerely,

THOMAS L. MACCHIARELLA
BRAC Environmental Coordinator
By direction of the Director

Encl: (1) Technical Memorandum For The Installation And Sampling Of Wells OU2b-MW01 Through OU2b-MW05 At Installation Restoration Site 11/21, Alameda Point, Alameda, California

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1220 Pacific Highway
San Diego, CA 92132-5190

Date : January 19, 2006

CTO : 0107

Location: Alameda

FROM: D. W. Bach
for John McGuire
Project Manager

DESCRIPTION OF ENCLOSURE : ***Technical Memorandum for the Installation and Sampling of Wells OU2B-MW01 through OU2B-MW05 at Installation Restoration Site 11/21, Alameda Point, Alameda, Dated January 20, 2006.***

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Acronyms and Abbreviations

bgs	below ground surface
IR	Installation Restoration
OU	Operable Unit
PVC	polyvinyl chloride

1.0 Well Installation, Development, and Sampling

This technical memorandum discusses the installation and development of five groundwater monitoring wells (Operable Unit [OU]2B-MW01 through OU2B-MW05) at the western boundary of Installation Restoration (IR) Sites 11 and 21 (between Ferry Point Road and the Seaplane Lagoon), located at Alameda Point, Alameda, California (Figure 1, "OU2B Well Locations, IR Sites 11 and 21"), and presents the analytical results. The wells were installed due to regulator concerns of metals possibly being transported from the sites to the Seaplane Lagoon.

The five groundwater monitoring wells were installed and constructed by BC2 Environmental on August 8, 2005 to a depth of approximately 12 feet below ground surface (bgs). Prior to installation, the boring locations were visually cleared of utilities to a depth of 5 feet bgs using air knifing techniques.

The monitoring wells were installed using 8-inch inside diameter hollow-stem augers. During drilling activities, soil cuttings were collected from the auger flights and lithologic information was recorded. Prior to drilling, the bottom auger was plugged with a wooden plug to prevent heaving sands from entering the interior of the augers. Once the total depth was reached, the augers were flooded with potable water to prevent heaving sands from entering the interior of the augers once the wooden plug was knocked out. Upon knocking out the wooden plug, the well screen, sand pack, bentonite seal, and concrete surface seal were installed.

The monitoring wells were constructed of 2-inch diameter, Schedule 40 polyvinyl chloride (PVC) casing with 0.020-inch slotted PVC screen. The monitoring wells had 5 feet of screen. The annulus of each well was filled with #2/12 silica sand, which extended from the bottom of the borehole (13 feet bgs) to approximately 1 foot above the top of the screen (approximately 7 feet bgs). A seal consisting of ⅜-inch diameter bentonite chips was placed above the top of the sand pack to approximately 5 feet bgs. The bentonite above the water table was hydrated with potable water. The bentonite was allowed to set for a minimum of one hour to allow for hydration. The remainder of the borehole was filled to the surface with concrete. The surface completion consisted of a 12-inch by 12-inch steel traffic-rated well box set in the concrete. Well construction logs for the monitoring wells installed are presented in Appendix A.

The wells were developed on August 11, 2005 to remove formation and filter pack materials from the wells and to increase hydraulic communication between the wells and the formation. Wells were developed using a bailer, vented surge block, and submersible pump. During well development, pH, specific conductance, turbidity, and temperature readings were periodically recorded. Development was considered complete when these indicator parameters stabilized to within 10 percent of the previous two readings and the extracted water appeared clear. All

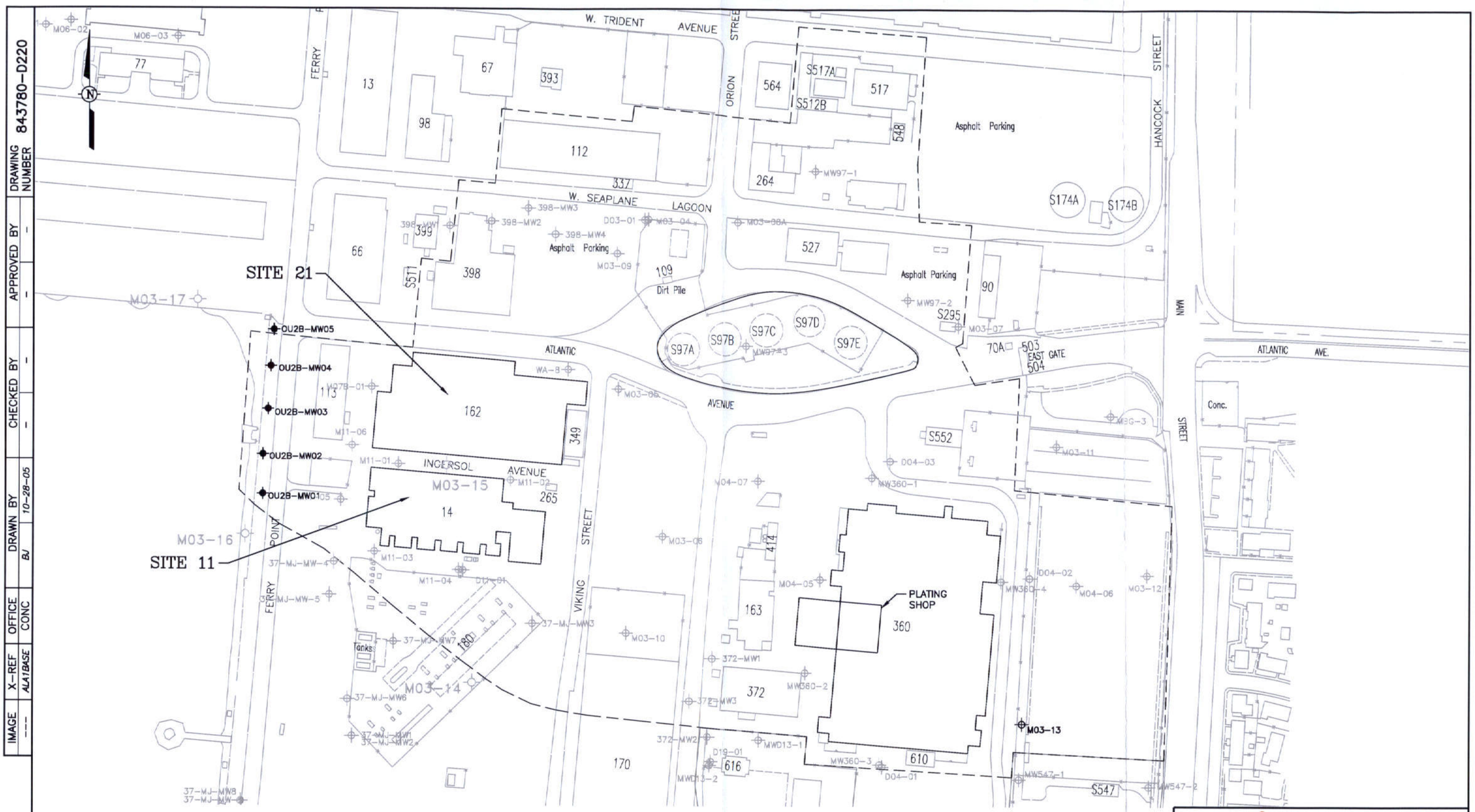
equipment (i.e., surge block, bailer, submersible pump) was decontaminated prior to developing each well. Well development logs generated during field activities are contained in Appendix B, "Well Development Logs."

Water generated during well development activities was contained in a holding tank located at Building 112. The purge water was sampled and analyzed for disposal to the Publicly-Owned Treatment Works.

Groundwater samples were collected from each new monitoring well on August 15, 2005 using low-flow sampling methods and analyzed for dissolved metals by U.S. Environmental Protection Agency Method 6010B/6020A. The groundwater sampling record for each well is presented in Appendix C, "Groundwater Sampling Records."

Table 1, "Detected Groundwater Sampling Results, OU2B Wells, Installation Restoration Sites 11 and 21," presents the detected constituents. A complete listing of the analytical results is provided in Appendix D, "Analytical Results."

Figure



LEGEND

- OUB-MW01 THRU OUB-MW05
- PROGRAM MONITORING WELL
- MONITORING WELL NOT IN PROGRAM OR NOT SCREENED IN SPECIFIED HYDROLOGIC UNIT
- CERCLA BOUNDARY
- INSTALLATION RESTORATION SITE BOUNDARY
- (S97E) FORMER TANK LOCATIONS

SCALE
0 100 200 FEET

Shaw Environmental, Inc.

DEPARTMENT OF THE NAVY, SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN DIEGO, CALIFORNIA

FIGURE 1

OU2B WELL LOCATIONS
IR SITES 11 AND 21

ALAMEDA POINT ALAMEDA, CALIFORNIA

DRAWING NUMBER	APPROVED BY	CHECKED BY	DRAWN BY	OFFICE	X-REF	IMAGE
843780-D220	-	-	10-28-05 BJ	CONC	ALA1BASE	---

Table

Table 1: Detected Groundwater Sampling Results, OU2B Wells, Installation Restoration Sites 11 and 21
Alameda Point, Alameda, California

Analytical Method Group	Analytical Method	Analyte	MCL	Units	Result
Location: OU2B-MW01		**Depth: - feet bgs**			
Metals	SW6010B	Barium - Filtered	1000	µg/L	308
	SW6010B	Chromium - Filtered	50	µg/L	6.21
	SW6010B	Iron - Filtered	300	µg/L	125000
	SW6010B	Lead - Filtered	15	µg/L	139
	SW6010B	Manganese - Filtered	50	µg/L	8030
	SW6010B	Thallium - Filtered	2	µg/L	82.2
	SW6010B	Zinc - Filtered	5000	µg/L	17.6
	SW6010B	Calcium - Filtered		µg/L	154000
	SW6010B	Magnesium - Filtered		µg/L	233000
	SW6010B	Potassium - Filtered		µg/L	49500
	SW6010B	Sodium - Filtered		µg/L	1210000
Location: OU2B-MW02		**Depth: - feet bgs**			
Metals	SW6010B	Arsenic - Filtered	50	µg/L	7.73 J
	SW6010B	Barium - Filtered	1000	µg/L	163
	SW6010B	Lead - Filtered	15	µg/L	53.4
	SW6010B	Manganese - Filtered	50	µg/L	339
	SW6010B	Calcium - Filtered		µg/L	218000
	SW6010B	Magnesium - Filtered		µg/L	831000
	SW6010B	Potassium - Filtered		µg/L	288000
	SW6010B	Sodium - Filtered		µg/L	5900000

Table 1: Detected Groundwater Sampling Results, OU2B Wells, Installation Restoration Sites 11 and 21
Alameda Point, Alameda, California

Analytical Method Group	Analytical Method	Analyte	MCL	Units	Result
Location: OU2B-MW03		**Depth: - feet bgs**			
Metals	SW6010B	Barium - Filtered	1000	µg/L	287
	SW6010B	Iron - Filtered	300	µg/L	4750
	SW6010B	Lead - Filtered	15	µg/L	23.9
	SW6010B	Manganese - Filtered	50	µg/L	744
	SW6010B	Calcium - Filtered		µg/L	202000
	SW6010B	Magnesium - Filtered		µg/L	484000
	SW6010B	Potassium - Filtered		µg/L	139000
	SW6010B	Sodium - Filtered		µg/L	3330000
Location: OU2B-MW04		**Depth: - feet bgs**			
Metals	SW6010B	Arsenic - Filtered	50	µg/L	6.37 J
	SW6010B	Barium - Filtered	1000	µg/L	317
	SW6010B	Lead - Filtered	15	µg/L	5.51
	SW6010B	Manganese - Filtered	50	µg/L	163
	SW6010B	Thallium - Filtered	2	µg/L	6.97 J
	SW6010B	Calcium - Filtered		µg/L	178000
	SW6010B	Magnesium - Filtered		µg/L	431000
	SW6010B	Potassium - Filtered		µg/L	143000
	SW6010B	Sodium - Filtered		µg/L	3410000
Location: OU2B-MW05		**Depth: - feet bgs**			
Metals	SW6010B	Arsenic - Filtered	50	µg/L	9.7 J
	SW6010B	Barium - Filtered	1000	µg/L	154
	SW6010B	Iron - Filtered	300	µg/L	561
	SW6010B	Manganese - Filtered	50	µg/L	917
	SW6010B	Calcium - Filtered		µg/L	162000
	SW6010B	Magnesium - Filtered		µg/L	296000
	SW6010B	Potassium - Filtered		µg/L	77500
	SW6010B	Sodium - Filtered		µg/L	2130000

Table 1: Detected Groundwater Sampling Results, OU2B Wells, Installation Restoration Sites 11 and 21
Alameda Point, Alameda, California

Notes:

Circled result indicates detected result exceeds associated MCL.

bgs	below ground surface
MCL	Maximum Contaminant Level (Title 22, California Code of Regulations, effective June 2003)
µg/L	micrograms per liter
VOCs	volatile organic compounds
U	Not detected at or above the indicated reporting limit
J	Estimated value
UJ	Not detected at or above the reporting limit. The reporting limit is an estimate.

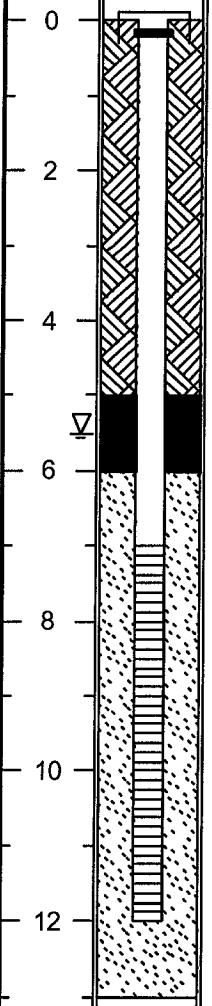
Appendix A
Well Construction Logs

Drilling Log

Monitoring Well **OU2B-MW01**

Project: Alameda - CTO 107 | Owner: U.S. Navy
Location: Alameda Naval Air Station | Proj. No.: 844918
Surface Elev.: NA | Total Hole Depth: 13.0 ft. | North: 470678.59 ft. | East: 1480646.09 ft.
Top of Casing: 9.73 ft. | Water Level Initial: ∇ 5.5 ft. | Static: NA | Diameter: 8 in.
Screen: Dia 2 in. | Length: 5 ft. | Type/Size: Sched 40 PVC/0.020 in.
Casing: Dia 2 in. | Length: 7 ft. | Type: Sched 40 PVC
Fill Material: Grout; Bentonite; Sand 2-12 | Rig/Core:
Drill Co.: BC2 DRILLING | Method: Hallow Stem Auger
Driller: Diego | Log By: Garrick Anderson | Date: 8/8/05 | Permit #: W2005-0718
Checked By: Dale Landon | License No.:

COMMENTS



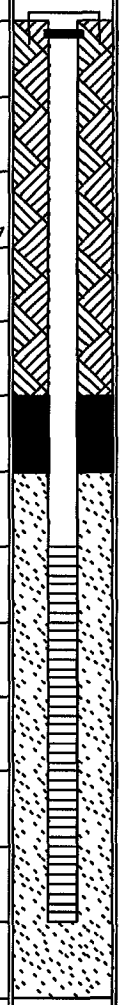
Depth (ft.)	PID (ppm)	USCS Class.	Description (Color, Texture, Structure) Soil Descriptions are Based on the USCS.
			Flush Mount 12-inch Traffic Rated Box
0			Asphalt to ~4" - Air knife to ~5'
		GP	Poorly Graded Gravel with Sand; 1/4 to 3/8 size; 20% sand; damp to slightly moist; no product odor
			Air knife to 5ft, augers push cuttings to side of boring, no returns.
2			
4			
	615		
∇ 6			Poorly Graded Sand; dark grayish brown (2.5Y 4/2); fine grained; loose; wet; very low to no product odor
	1577	SP	Poorly Graded Sand; very dark gray (GLEY1 3/N); fine grained; trace pea gravel; loose; saturated; slight product odor
8	433		Greenish black (GLEY1 2.5/10Y); slight product odor
10	424		Poorly Graded Sand, very dark greenish gray (GLEY1 3/10Y); fine grained; loose; saturated; low to moderate product odor
12	215		Poorly Graded Sand; very dark greenish gray (GLEY1 4/10GY); fine grained; trace silt; loose; saturated; moderate to low product odor
14			Total Depth = 13 ft

Drilling Log

Monitoring Well **OU2B-MW02**

Project: Alameda - CTO 107 | Owner: U.S. Navy
Location: Alameda Naval Air Station | Proj. No.: 844918
Surface Elev.: NA | Total Hole Depth: 13.0 ft. | North: 470763.69 ft. | East: 1480646.59 ft.
Top of Casing: 9.86 ft. | Water Level Initial: ∇ 3.0 ft. | Static: NA | Diameter: 8 in.
Screen: Dia 2 in. | Length: 5 ft. | Type/Size: Sched 40 PVC/0.020 in.
Casing: Dia 2 in. | Length: 7 ft. | Type: Sched 40 PVC
Fill Material: Grout; Bentonite; Sand 2-12 | Rig/Core:
Drill Co.: BC2 DRILLING | Method: Hallow Stem Auger
Driller: Diego | Log By: Garrick Anderson | Date: 8/8/05 | Permit #: W2005-0719
Checked By: Dale Landon | License No.:

COMMENTS
Air knife to ~11 ft, Augers pushed cuttings to side of hole. No cutting returns, lithology from upper knifed interval and examination of cutting on auger flights.



Depth (ft.)	PID (ppm)	USCS Class.	Description (Color, Texture, Structure) Soil Descriptions are Based on the USCS.
			Flush Mount 12-inch Traffic Rated Box
0			Asphalt to ~4" - Air knife to 5 ft.
	124	SP	Gravelly Sand with Silt; very dark grayish brown (10YR 3/2); 25% (1/4" to 1/2") gravel; 60% sand (fine to coarse); 15% silt; loose; damp; no product odor
	2000		Poorly Graded Sand with Gravel; dark olive gray (5Y 3/2); dominate fine grained with coarse to very coarse; 10% pea gravel to 1/4"; loose; slightly moist; no product odor
2	1382		Poorly Graded Sand; dark olive gray (5Y 3/2); fine grained; trace fine - very coarse; loose; slightly moist; very low to no product odor
∇	>2000		Poorly Graded Sand; greenish black (GLEY1 2.5/10Y); fine grained; loose; wet; slight product odor
4			
	>2000		
6			
	1983		Poorly Graded Sand; very dark greenish gray (GLEY2 3/5BG); fine grained; loose; wet-saturated; moderate to slight product odor
8			
	>2000		Poorly Graded Sand; greenish black (GLEY1 2.5/5GY); fine grained; loose; saturated; moderate product odor
10			
12	>2000		Poorly Graded Sand; greenish black (GLEY1 2.5/5GY); fine grained; loose; wet-saturated; moderate product odor
14			Total Depth = 13 ft

Drilling Log

Monitoring Well **OU2B-MW03**

Project: Alameda - CTO 107 | Owner: U.S. Navy
Location: Alameda Naval Air Station | Proj. No.: 844918
Surface Elev.: NA | Total Hole Depth: 13.0 ft. | North: 470860.98 ft. | East: 1480657.66 ft.
Top of Casing: 9.69 ft. | Water Level Initial: NA | Static: NA | Diameter: 8 in.
Screen: Dia: 2 in. | Length: 5 ft. | Type/Size: Sched 40 PVC/0.020 in.
Casing: Dia: 2 in. | Length: 7 ft. | Type: Sched 40 PVC
Fill Material: Grout; Bentonite; Sand 2-12 | Rig/Core:
Drill Co.: BC2 DRILLING | Method: Hallow Stem Auger
Driller: Diego | Log By: Garrick Anderson | Date: 8/8/05 | Permit #: W2005-0720
Checked By: Dale Landon | License No.:

COMMENTS
Air knife to 11 ft, Augers pushed cuttings to side of hole, no cuttings returned to surface, lithology taken from upper air knifed interval and from auger flights when pulled.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Soil Descriptions are Based on the USCS.
							Flush Mount 12-inch Traffic Rated Box
0							Asphalt to 3" - Air knifed to 5 ft.
						GW	Well Graded Gravel with Sand; brown (10YR 4/5); 40% sand; 60% gravel (<3/4"); loose; slightly moist to damp
		79					Poorly Graded Sand; olive brown (2.5Y 4/4); fine grained; slightly moist; no product odor
		49					
2							
4							
6		1838				SP	
		1061					(7 - 9 ft) Poorly Graded Sand; dark grayish brown (2.5Y 4/2); very moist - wet; moderate product odor
8							
		1098					
10							From 10' - 11' Vapors with air knife (steam / vapors); low to moderate product odor
		64.9					Poorly Graded Silty Sand; dark greenish gray (GLEY 4/10Y); very fine grained sand; 30% silt; loose; wet; very low to no product odor
12						SM	
14							Total Depth = 13 ft

Drilling Log

Monitoring Well **OU2B-MW04**

Project: Alameda - CTO 107 | Owner: U.S. Navy
Location: Alameda Naval Air Station | Proj. No.: 844918
Surface Elev.: NA | Total Hole Depth: 13.0 ft. | North: 470953.24 ft. | East: 148066.76 ft.
Top of Casing: 9.67 ft. | Water Level Initial: ▽ 1.5 ft. | Static: NA | Diameter: 8 in.
Screen: Dia: 2 in. | Length: 5 ft. | Type/Size: Sched 40 PVC/0.020 in.
Casing: Dia: 2 in. | Length: 7 ft. | Type: Sched 40 PVC
Fill Material: Grout; Bentonite; Sand 2-12 | Rig/Core:
Drill Co.: BC2 DRILLING | Method: Hallow Stem Auger
Driller: Diego | Log By: Garrick Anderson | Date: 8/8/05 | Permit #: W2005-0721
Checked By: Dale Landon | License No.:

COMMENTS
Air knife to 11 ft, Augers pushed cuttings to side of hole, no cuttings returned to surface, lithology taken from upper air knifed interval and from auger flights when pulled.

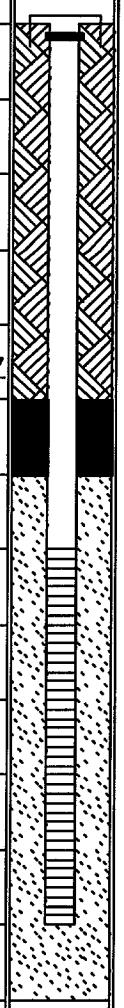
Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Soil Descriptions are Based on the USCS.
							Flush Mount 12-inch Traffic Rated Box
0		30.5					Asphalt to 5" - Air knife to 5 ft
		438				GP	Well Graded Gravelly Sand; very dark grayish brown (10YR 3/2); 65% sand (fine-very coarse); 35% pea to 3/4" (dominantly 1/4" to 1/2"); loose; very moist; low to moderate product odor
2		>2000				SP	Poorly Graded Sand; dark olive gray (5Y 3/2); fine grained; trace pea gravel; dispersed cobbles (angular) through (~4 to 6"); loose; moist; low to moderate product odor Poorly Graded Sand with Gravel; dark olive gray (5Y 3/2); fine grained; 25-30% gravel (1-1 1/2"); silty in part (trace to 20%); loose; wet; slight product odor
4							
6		2000					Poorly Graded Sand; very dark greenish gray (GLEY1 3/10Y); fine grained; very loose; wet; low to moderate product odor Poorly Graded Sand; greenish black (GLEY1 2.5/10); fine grained; very loose; wet; low product odor
8							
		1000				ML	Silt with Clay and Sand; increased fines ("thicker"); estimate 60% silt; 25% sand; 15% clay; saturated - wet; low to moderate product odor
10							
12		25				SP	Poorly Graded Sand; greenish black (GLEY1 2.5/1); fine grained; trace pea gravel; loose; wet; no product odor
14							Total Depth = 13 ft

Drilling Log

Monitoring Well **OU2B-MW05**

Project: Alameda - CTO 107 | Owner: U.S. Navy
Location: Alameda Naval Air Station | Proj. No.: 844918
Surface Elev.: NA | Total Hole Depth: 13.0 ft. | North: 471031.097 ft. | East: 1480670.46 ft.
Top of Casing: 9.17 ft. | Water Level Initial: ∇ 4.7 ft. | Static: NA | Diameter: 8 in.
Screen: Dia: 2 in. | Length: 5 ft. | Type/Size: Sched 40 PVC/0.020 in.
Casing: Dia: 2 in. | Length: 7 ft. | Type: Sched 40 PVC
Fill Material: Grout; Bentonite; Sand 2-12 | Rig/Core:
Drill Co.: BC2 DRILLING | Method: Hallow Stem Auger
Driller: Diego | Log By: Garrick Anderson | Date: 8/8/05 | Permit #: W2005-0722
Checked By: Dale Landon | License No.:

COMMENTS
Air knife to 5 ft



Depth (ft.)	PID (ppm)	USCS Class.	Description (Color, Texture, Structure) Soil Descriptions are Based on the USCS.
			Flush Mount 12-inch Traffic Rated Box
0			Asphalt to 3" - Air knife to 5 ft
		SM/ML	Silty Sand / Sandy Silt; light yellow brown (10YR 6/4); moderately loose
		GW	Well Graded Gravel with Sand; dark grayish brown (10YR 4/2); 1.5" to pea sized gravel; dry; no product odor
2	0	SP	Poorly Graded Sand; olive brown (2.5Y 4/3); fine grained; loose; slightly moist; no product odor
			At 3.5 ft, contacted geofabric (black cloth)
4	0	GP	Poorly Graded Gravel, angular (<1")
∇		SP	Poorly Graded Sand; olive brown (2.5Y 4/3); fine grained; moist; no product odor
6	101		Poorly Graded Sand; very dark greenish gray (GLEY1 3/5GY); fine grained; loose; saturated; low product odor
	114	CL	Increased viscosity; indication of associated clay; 20% sand; 80% saturated fines; very low product odor
		SP	
8	115	CL	
10	0	SP	Poorly Graded Sand; light olive brown (2.5Y 5/4); fine grained; loose; wet; no product odor
12			
14			Total Depth = 13 feet

Appendix B
Well Development Logs

Shaw Shaw E&I

WELL DEVELOPMENT RECORD #844918

Project Name: ALAMEDA POINT NAS, CTO-107

Location: SEA PLANE LAGOON

Well/~~Piezo~~ No.: OU2B-MW01

Personnel: GARRICK ANDERSON WITH BC2 CREW: JOSE C AND JEFF WARD

Date Installed: 8-8-2005

Date (Start/End): 8-11-05/8-11-05

Csg. Diameter (I.D.):

Method of Development:

Total Depth (ft. TOC): 11 FT 9 1/2 INCHES

☒ Surging ☒ Bailing ☒ Pumping ☐ Other (State Method)

☒ Original Development ☐ Redevelopment Development Date: 8-11-05

Depth to water before developing well: 5.24 FT (PRIOR TO BAIL & SURGE)

	Volume (V)	Purge Factor	Volume To Purge **
Height of Water Column:* ____ feet	____ =	____ gal.*	____ = ____

SEE ATTACHED SHEET RE WELL VOLUME CALCULATIONS
26 GALLONS (3 CASING VOLUMES) PLUS 7 GALLONS ADDED DURING CONSTRUCTION

$V = (B * r_c^2 * L_c * 7.48)+(B*(r_w-r_c)^2*L_s*ø_s*7.48)=$ ____ gallons

Depth purging from: 11-12 feet Time purging begins: 1452 BAILING // 1508 PUMPING

Weather: SUNNY, HOT, CLEAR SKY Screened Interval (ft. BGL): 7 TO 12 FT (0.020")

Equipment Nos.: Meter HORIBA 100882

Equipment decontaminated prior to development Y X N

Describe WIPED DOWN W/ ALCONOX BETWEEN WELLS
STEAM CLEANED PRIOR TO MOB TO FIELD.

Date 2005	Time HRS	Water Level (ft. TOC)	Volume Removed (gal.)	Temp (C)	pH	EC	Turbidity	D.O.	Comments
8-11	1508	5.24*	0	—	—	—	—	—	PUMP ON
8-11	1515	—	~14	23.54	6.48	10.1	999.	0	TURB. FLASHING
8-11	1520	6.17	~20	23.62	6.47	9.1	999.	0	TURB FLASHING MED GRAY, OPAQUE
8-11	1525	—	24.5	23.60	6.48	8.97	983	0	SULFIDE ODOR —
8-11	1530	6.23	30	23.57	6.52	7.85	99.2	0	LT GRAY, MOD. TRANSLUCENT; LT SULF.
8-11	1535	—	31.5	23.49	6.54	7.26	177.	0	—
8-11	1540	—	35	23.51	6.56	6.80	219.	0	V PALE YELLOW-GY CLOUDY, SEMI-OPAQUE
8-11	1545	6.37	42~	23.43	6.58	6.17	279.	0	" "

- Water levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to 0.1 pH units
- Electrical conductivity – Reported to the nearest 10% mhos/cm or
- µmho/cm @25 C or in mS/cm of instrument set range
- Water temperature – Reported to the nearest 0.1 C
- D.O. report in 0.1 mg/L
- Turbidity report in NTV nearest whole #

* PRIOR TO BAILING.

Where:
B=3.14
$ø_s$=porosity of the sand pack
r_c=radius of the well casing and screen in feet
L_c=length of water column inside the casing and screen in feet
r_w=radius of the well bore in feet
L_s=length of saturated portion of the sand pack in feet
7.48 gallons/cubic foot=conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

(continuation sheet)

WELL/~~PIEZ~~. NO. 042B-MW01

2005 DATE	HRS TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	°F/°C TEMP	pH	mS/cm EC	TURBIDITY NTU	mg/L DO	COMMENTS
8-11	1550	6.39	46	23.44	6.59	5.90	155	0	" "
8-11	1555	—	~50	23.32	6.65	4.94	133	0	DRAWN PUMPED OUT
8-11	1600	6.33	~55	23.39	6.59	5.65	369	0	—
8-11	1605	—	~60	23.37	6.61	5.10	194	0	LT GRAY CLOUDY: LT ODOR
8-11	1608	—	~63	23.37	6.63	4.82	122	0	3 MINUTE TIME
8-11	1611	6.12	~66	23.37	6.63	4.92	115	0	3 MINUTE TIME
	WELL STABILIZED WITHIN 10%								
	BETWEEN LAST TWO READINGS								
				MD					

WDRCD2.XLS

Shaw Shaw E & I

WELL DEVELOPMENT RECORD

Project Name: ALAMEDA POINT NAS, CTO-107

Location: FERRY PT. RD at ATLANTIC Well/~~Piez.~~ No.: OU2B-MW02

Personnel: GARRICK ANDERSON w/ BC2 JOSE C AND JEFF WARD Date Installed: 8-8-2005

Date (Start/End): 8-11-02 / 8-11-02 Csg. Diameter (I.D.): 2 inches

Method of Development: BAIL/SURGE/PUMP Total Depth (ft. TOC): 11 FT 10½" AFTER PARTIAL BAILING

☒ Surging ☒ Bailing ☒ Pumping ☐ Other (State Method) _____

☒ Original Development ☐ Redevelopment Development Date: 8-11-2005

Depth to water before developing well: 26 GALS (3 ~~WELL~~ CASING VOLS) + 7 GALS ADDED WATER. SILT TO 7 FT 2 inches.

Volume (V) Purge Factor Volume To Purge ⇒ 33 GALLONS TO DEVELOP.

Height of Water Column:* _____ feet _____ = _____ gal.* _____ = _____

SEE ATTACHED WELL VOLUME CALCULATIONS SHEET

$V = (B * r_c^2 * L_c * 7.48) + (B*(r_w - r_c)^2 * L_s * ø_s * 7.48) =$ _____ gallons

Depth purging from: 11-12 feet Time purging begins: 1310 (PUMP)

Weather: SUNNY, CLEAR - LT breeze Screened Interval (ft. BGL): 7 to 12 FT

Equipment Nos.: Meter HORIBA 100882

Equipment decontaminated prior to development TUBING CHANGED OUT PRIOR TO PUMPING Y X N _____

Describe DECONTAMINATED PRIOR TO FIELD WORK WIPED DOWN w/ ALCONOX BETWEEN WELLS.

Date 2005	Time HRS	Water Level (ft. TOC)	Volume Removed (gal.)	Temp (C)	pH	EC	Turbidity	D.O.	Comments
8-11	1310	RATE 1/2 GAL/MIN			—	—	—	—	PUMP ON
8-11	1320	NO	12 GAL	25.02	7.39	25.9	290.	0	LT GRAY STRONG SULFIDE
WELL PUMPING SHUT DOWN -- NO GENERATOR GAS									
8-11	1337	~~[illegible]~~							RESUME PUMPING
8-11	1340	6.25	~18	24.96	7.51	24.7	604	0	MED. GRAY OPAQUE. LT SULF. ODOR
8-11	1345	6.30	19	24.77	7.46	24.1	303	0	LT GRAY, CLOUDY, MOD SULF. ODOR
8-11	1350	—	22.5	24.68	7.46	21.2	232.	0	—
8-11	1355	6.27	26.0	24.63	7.46	22.9	329.	0	YELLSH-GY/GY, CLOUDY, V LT/NO SULFIDE ODOR

- Water levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to 0.1 pH units
- Electrical conductivity – Reported to the nearest 10% mhos/cm or
- µmho/cm @25 C or in mS/cm of instrument set range
- Water temperature – Reported to the nearest 0.1 C
- D.O. report in 0.1 mg/L
- Turbidity report in NTV nearest whole #

Where:

B=3.14

$ø_s$=porosity of the sand pack

r_c =radius of the well casing and screen in feet

L_c=length of water column inside the casing and screen in feet

r_w =radius of the well bore in feet

L_s =length of saturated portion of the sand pack in feet

7.48 gallons/cubic foot=conversion from cubic feet to gallons

OU2B-MW02

WELL DEVELOPMENT RECORD

WELL ~~PIEZ.~~ NO. _____

(continuation sheet)

2005 DATE	HRS TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	°K/°C TEMP	pH	mS/cm EC	TURBIDITY NTU	mg/L D.O	COMMENTS
8-11	1400	6.24	28	24.47	7.46	22.7	129.	0	LT GY CLOUDY SOMW/TRANSLUC SULFIDE ODOR
8-11	1410	—	30	24.44	7.46	22.1	95.2	0	LT GRAY TRANSLUC. MOD SULF.
8-11	1415	6.18	33	24.42	7.46	21.6	122.	0	—
8-11	1420	—	34.5	24.37	7.46	21.4	79.7	0	V. PL. GRAY, TRANSLUCENT SULFIDE ODOR
8-11	1425	6.13	40 ~	24.33	7.46	21.4	56.3	0	—
8-11	1430	—	41	24.30	7.46	22.6	51.3	0	CLEAR (VERY SLI. CLOUDY) MOD. SULFIDE ODOR
		WELL STABILIZED AT 1430 HRS							
					MAX				
		REMOVED 41 GALLONS PLUS 8 GALLONS							
			BAILED ⇒ 49 GALLONS						
						MAX			

WDRCD2.XLS

Shaw Shaw E&I

WELL DEVELOPMENT RECORD

Project Name: ALAMEDA POINT NAS, CTO-107

Location: FERRY PT RD X ATLANTIC AVE. Well/~~Piez~~ No.: OU2B-MW03

Personnel: GARRICK ANDERSON w/ BCI CREW: JOSE C & JEFF WARD Date Installed: Aug 8-2005

Date (Start/End): Aug 11-05 / Aug 11 '05 Csg. Diameter (I.D.): 2 inch

Method of Development: PUMP Total Depth (ft. TOC): 12 FT (MSRD 12.0')

☒ Surging ☒ Bailing 8 GALLONS ☒ Pumping ☐ Other (State Method) _____

☒ Original Development ☐ Redevelopment Development Date: 8-11-05

Depth to water before developing well: 5.68 FT PRIOR TO BAIL & SURGE

		Volume (V)	Purge Factor	Volume To Purge
Height of Water Column: * _____ feet	_____ =	_____ gal.*	_____ =	_____

SEE ATTACHED SHEET (VOLUME CALCULATIONS)
3 vols (550) = 33 GALLONS (7 GALLONS WATER ADDED INCLUDED)

$V = (B * r_c^2 * L_c * 7.48) + (B*(r_w - r_c)^2 * L_s * ø_s * 7.48) =$ _____ gallons

Depth purging from: 11-12 feet Time purging begins: 1126 HRS

Weather: SUNNY, CLEAR, LIGHT BREEZE Screened Interval (ft. BGL): 7 TO 12 FT

Equipment Nos.: Meter HORIBA # 100882

Equipment decontaminated prior to development Y X N X

Describe SHOP ONLY w/ HIGH PRESSURE - WIPE DOWN w/ ALCONOX - (500 ml x 4/min = 2 L/min = 0.5 gal/min) ON SITE; NOT PRESSURE SPRAYED.

Date 2005	Time	Water Level (ft. TOC)	Volume Removed (gal.) 1 gal/min	Temp (C) ✓	pH ✓	EC ✓	Turbidity	D.O. ✓	Comments
8-11	1126	—	BAILED 8 GALLONS					—	PUMP ON
8-11	1130	6.34	~4	23.19	7.20	10.4	999.	0	TURBIDITY PLASTIC & LT-MOD GY. OPAQUE; LT. SULF.
8-11	1136	—	6	23.33	7.12	10.4	405.	0	—
8-11	1140	6.34	9	23.41	7.09	10.6	137.	0	CLOUDY, TRANSLUCENT; SLI. SULFIDE.
8-11	1145	—	12	23.39	7.06	10.6	43.2	0	SLI. CLOUDY; SLIGHT SULFIDE ODOR
8-11	1150	6.36	14.5	23.43	7.03	10.6	36.7	0	CLEAR - LT TO MOD SULFIDE ODOR
8-11	1155	—	17.0	23.46	7.02	10.6	28.3	0	LT SULFIDE ODOR
8-11	1200	6.37	20	23.43	7.01	10.8	27.2	0	CLR; V LIGHT SULFIDE ODOR

- Water levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to 0.1 pH units.
- Electrical conductivity – Reported to the nearest 10% mhos/cm or
- µmho/cm @25 C or in mS/cm of instrument set range
- Water temperature – Reported to the nearest 0.1 C
- D.O. report in 0.1 mg/L
- Turbidity report in NTV nearest whole #

Where:

B=3.14

$ø_s$=porosity of the sand pack

r_c =radius of the well casing and screen in feet

L_c=length of water column inside the casing and screen in feet

r_w =radius of the well bore in feet

L_s =length of saturated portion of the sand pack in feet

7.48 gallons/cubic foot=conversion from cubic feet to gallons

OU2B-MW03

WELL/~~PIEZ~~ NO. _____

PAGE 2 OF 2

WELL DEVELOPMENT RECORD

(continuation sheet)

Aug 2005 DATE	TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	°F/°C TEMP	pH	mS/cm EC	TURBIDITY NTU	mg/L DO	COMMENTS
8-11 ~~2005~~	1205	—	23	23.46	7.00	10.9	253	0	CLOUDY-MOD. LT. SULFIDE.
8-11	1210	6.36	26	23.43	6.98	11.0	43.2	0	CLEARING V. LT SULF. ODOR
8-11	1215	—	29	23.50	6.97	11.0	25.8	0	
8-11	1220	6.35	31.5	23.47	6.97	11.3	24.0	0	CLEAR w/ V. SLI. CLOUDY. SLI. SULFIDE
8-11		WELL DEVELOPED. PUMP OFF BY 1222.							
					AA				
8-11	1223	5.75	NO CLIMBING						

WDRCD2.XLS

Shaw Shaw E&I

WELL DEVELOPMENT RECORD

Project Name: ALAMEDA PT NAS CTO-107 (FERRY PT. ROAD)

Location: ALAMEDA PT AT ATLANTIC AVE. Well/Piez. No.: OU2B-MW04

Personnel: GARRICK ANDERSON BC2 CREW JOSE C & JEFF WARD Date Installed: AUG 8, 2003

Date (Start/End): AUG 11 2005 / AUG 11, 2005 Csg. Diameter (I.D.): 2 inch

Method of Development: SURGE, BAIL, PUMP Total Depth (ft. TOC): 12 FT (12.14 FT)

☒ Surging ☒ Bailing ☒ Pumping ☐ Other (State Method) _____

☒ Original Development ☐ Redevelopment Development Date: 8-11-05

Depth to water before developing well: 5.8 FT BEFORE BAIL/SURGE; FT PRIOR TO PUMPING

SEE ATTACHMENT

Height of Water Column: _____ feet _____ = _____ gal.* _____ = 33 GALLONS (3 WELL CSG VOLUMES PLUS ADDED WATER)

Volume (V) Purge Factor Volume To Purge

$$V = (B * r_c^2 * L_c * 7.48)+(B*(r_w-r_c)^2*L_s*ø_s*7.48)= \_\_\_\_\_ \text{ gallons}$$

Depth purging from: 11 feet Time purging begins: _____

Weather: SUNNY 95% CLEAR Screened Interval (ft. BGL): 7 TO 12 FT

Equipment Nos.: Meter HORIBA # 100882

Equipment decontaminated prior to development Y X N ~~X~~

Describe DECONTAMINATED IN SHOP ONLY BETWEEN WELLS (NOT PRESSURE SPRAYED) WIPED DOWN W/ ALCONOX

2005 Date	Time	Water Level (ft. TOC)	~0.38 G/min Volume Removed (gal.) ~1.40 LIT/min	Temp (C)	pH	EC	Turbidity	D.O.	Comments
8-11	BAIL - 7 GALLONS								
"	SURGE 0845 to 0900								
"	0911	5.46	—	—	—	—	—	—	PUMP ON
"	0923	—	—	23.93	7.83	15.7	440.	0	←(0923 HRS)
"	0930	6.22	~9.0 G	23.88	7.76	14.8	46.9	0	VERY FAINT YELLOW TINT.
"	0935	—	10.5	23.92	7.73	15.7	36.2	0	MOD STRONG SULF. ODOR
"	0940	6.25	—	23.90	7.71	15.6	25.3	0	
"	0945	6.26	~14	24.03	7.70	15.4	106.	0	CLOUDY. SLI. YEL. MOD-LT SULF. ODOR

- Water levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to 0.1 pH units
- Electrical conductivity – Reported to the nearest 10% mhos/cm or
- µmho/cm @25 C or in mS/cm of instrument set range
- Water temperature – Reported to the nearest 0.1 C
- D.O. report in 0.1 mg/L
- Turbidity report in NTV nearest whole #

Where:
B=3.14
$ø_s$=porosity of the sand pack
r_c =radius of the well casing and screen in feet
L_c=length of water column inside the casing and screen in feet
r_w =radius of the well bore in feet
L_s =length of saturated portion of the sand pack in feet
7.48 gallons/cubic foot=conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

WELL/~~PIEZ~~. NO. OU2B-MW04

PAGE 2 OF 2

(continuation sheet)

AUG 05 DATE	HRS TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	~~°F~~/°C TEMP	pH	mS/cm EC	TURBIDITY NTU	mg/L DO	COMMENTS
8-11	0950	6.30	~14.5	24.03	7.68	15.9	55.4	0	CLOUDY
8-11	0955	6.30	~16.5	24.07	7.67	15.8	179.	0	LT SULF. ODOR NO/SLI. YEL TINT
8-11	1000	6.30	~17.5	24.22	7.67	15.9	810	0	CLOUDY, OPAQUE; YELSH-GY; LT SULF.
8-11	1005	6.28	~21	23.98	7.65	15.3	72	0	~~CLEAR w/ V SLI YEL TINT; LT SULF~~
8-11	1010	—	~23	23.99	7.65	16.8	23.2	0	—
8-11	1015	6.30	~24.5	24.07	7.64	17.0	13.7	0	CLEAR w/ V SLI. YELLOW TINT; LT SULF
8-11	1022	—	~25.5	24.14	7.63	16.5	44.2	0	—
8-11	1025	6.30	~26.5	24.17	7.63	14.6	21.6	0	CLEAR w/ VV PALE YEL TINT; LT SULFIDE
8-11	1030	—	~29.5	24.28	7.62	16.8	17.4	0	—
8-11	1035	6.31	~30	24.29	7.62	15.1	10.4	0	CLEAR w/ V PALE TO N YEL; MOD SULF. ODOR.
8-11	1040	—	~32	24.27	7.62	15.6	9.7	0	—
8-11	1045	6.32	33	24.41	7.61	15.3	9.4	0	
8-11	1048	—	~34	PUMP		OFF			CLEAR; LT SULF. ODOR
	WELL STABILIZED								
		TOTAL PULLED FROM WELL = 34						+7	BAILED
								=41	GALLONS
						MAA			

WDRCD2.XLS

Shaw Shaw E&I

WELL DEVELOPMENT RECORD

Project Name: CTO-107 ALAMEDA PT. NAS # 844918

Location: FERRY PT. RD

Well/Piez. No.: OU2B-MW05

Personnel: GARRICK ANDERSON w/ BC2 CREW *

Date Installed: AUG. 8, 2005

Date (Start/End): 8-11-05 / 8-11-05

Csg. Diameter (I.D.): 2 inch

Method of Development: BAIL/SURGE/PUMP

Total Depth (ft. TOC): 12 FT

☒ Surging ☒ Bailing 8 GALLONS ☒ Pumping 34 GALLONS ☐ Other (State Method) _____

☒ Original Development ☐ Redevelopment Development Date: 8-11-05

Depth to water before developing well: 4.66 FT (after BAILING/SURGING)

(SEE ATTACHMENT)

Height of Water Column: _____ feet _____ = Volume (V) _____ gal.* Purge Factor _____ = Volume To Purge _____ (SEE ATTACHMENT)

THREE (3) CSG VOLS = 26 GALS + 7 GALS ADDED DURING DRLG = 33 GALS.

$$V = (B * r_c^2 * L_c * 7.48)+(B*(r_w-r_c)^2*L_s*ø_s*7.48)= \_\_\_\_\_ \text{ gallons}$$

Depth purging from: 12.0 feet

Time purging begins: 0736

Weather: PARTIAL OVERCAST CLEARING

Screened Interval (ft. BGL): 7 TO 12 FT

Equipment Nos.: Meter HORIBA # 100882

Equipment decontaminated prior to development Y ✓ N _____

Describe STEAM CLEANED IN SHOP, WIPED DOWN AFTERWARDS w/ ALCONOX.

2L/MIN x 5 MIN = 10L OR ~2.5 GAL (EST).

8-11 2005 Date	Time	Water Level (ft. TOC)	Volume Removed (gal.)	Temp (C) ✓	pH ✓	EC ✓	Turbidity ✓	D.O. ✓	Comments PUMP RATE 2 L/MIN
8-11	0736	—	0	—	—	—	—	—	START PUMP (EST)
"	0750	7.32	~15	22.22	7.55	12.7	999.	0	TURB FLASHING - SULF. ODOR, CLOUDY, PL YEL; TRANSLUC
"	0755	7.34	17	22.29	7.58	12.8	976.4	0	" "
"	0800	6.83	19.5	22.30	7.57	13.0	153	0	PALE YEL, CLOUDY LT SULFIDE ODOR
"	0805	6.82	~22	22.33	7.59	12.9	159	0	—
"	0810	6.84	24	22.32	7.60	12.9	13	0	CLEAR; LT SULF. ODOR
"	0815	6.85	26.5	22.33	7.61	12.9	6.7	0	" "
"	0820	6.89	29	22.37	7.62	12.9	4.3	0	CLEAR SLIGHT SULF. ODOR

- Water levels – Reported to the nearest 0.01 foot.
- pH – Reading rounded to 0.1 pH units
- Electrical conductivity – Reported to the nearest 10% mhos/cm or
- µmho/cm @25 C or in mS/cm of instrument set range
- Water temperature – Reported to the nearest 0.1 C
- D.O. report in 0.1 mg/L
- Turbidity report in NTV nearest whole #

Where: * JOSE COSTANEDA (ASST) JEFF WARD (OPERATOR)

B=3.14

$ø_s$=porosity of the sand pack

r_c=radius of the well casing and screen in feet

L_c=length of water column inside the casing and screen in feet

r_w=radius of the well bore in feet

L_s=length of saturated portion of the sand pack in feet

7.48 gallons/cubic foot=conversion from cubic feet to gallons

WELL DEVELOPMENT RECORD

(continuation sheet)

WELL/PIEZ. NO. OU28-MW05

PAGE 2 OF 2

844918 CTO-107

2005 DATE	TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	~~°F~~/°C TEMP	pH	mS/cm EC	TURBIDITY NTU	mg/L DO	COMMENTS
8-11	0825	6.89	31.5	22.35	7.62	12.9	4.2	0	SULF ODOR CLEAR,
8-11	0830	6.90	34.	22.41	7.62	12.9	4.1	0	
						PUMP SHUT OFF 0832			
	WELL STABILIZED AT ~~34-35~~ 34+8 GALS BAILED GALLONS = 42.								

Appendix C
Groundwater Sampling Records

~~WELL DEVELOPMENT RECORD~~
Groundwater Sampling Record

Location: Alameda Pt. NAS CT0107 e w. side Ferry Point Rd

Well No. / ~~Piez No.~~: OU2B - MW01

Personnel: Suman Sharma & Garrick Anderson

Date Installed: 8/8/2005

Date: 8/15/05

Csg. Diameter (I.D.): 2"

Method of Development:

Total Depth (ft. BGL): 12FT

☐ Swabbing ☐ Bailing ☑ Pumping Geopump 2

Weather: Low overcast with 20-15 knot wind Sun breaking

Screened Interval (ft. BGL): 7-12 FT

Equipment No.: pH Meter: EC Meter: Turbidity Meter:

Solinst No.: LVE 0002057

Equipment decontamined prior to development Y ✓ ~~N/A~~ SS

Describe: New Tubing into Well (dedicated); Solinst line Decontaned using Alconox

Amount of Potable water added to augers NA

Collected sample of water added to well Y ____ N X

Describe:

DATE	TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	°F/°C TEMP	pH	ms/cm SC	TURBIDITY	DO	ODOR/COLOR/ETC COMMENTS
8/15/05	12:30	5.36							
	12:35		0.5 gals	23.27	6.52	9.13	63.5	0.00	
	12:40		1.0 gals	23.26	6.47	9.23	26.2	0.00	
	12:45		1.5 gals	23.27	6.45	9.16	15.9	0.00	
	12:50		2.0 gals.	23.29	6.42	9.02	6.7	0.00	
	12:55	5.36	2.5 gal	23.26	6.40	8.95	8.6	0.00	
	13:00								Sample

~~WELL DEVELOPMENT RECORD~~
Groundwater Sampling Record.

Alameda Pt. NAS CT0107

Location: @ W. side Ferry Point Rd.

Well No. / ~~Piez No.~~: OU2B-MW02

Personnel: Suman Sharma & Garrick Anderson

Date Installed: 8-8-2005

Date: 8-15-2005

Csg. Diameter (I.D.): 2"

Method of Development:

Total Depth (ft. BGL): 12 ft

☐ Swabbing ☐ Bailing ☒ Pumping GeoPump 2

Weather: Low overcast with 20-15 Knot wind Sun Breaking

Screened Interval (ft. BGL): 7-12 ft

Equipment No.: pH Meter: EC Meter: Turbidity Meter:

Solinst No.: LVE 000 2057

Equipment decontamined prior to development Y ✓ N ~~NA~~ SS

Describe: New Tubing into well (dedicated), Solinst line Deconned using Alconox

Amount of Potable water added to augers NA

Collected sample of water added to well Y ____ N X

Describe: ____

2005 DATE	TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	°F/°C TEMP	pH	ms/cm SC	TURBIDITY	DO	ODOR/COLOR/ETC COMMENTS
8-15	1200	5.56	0.5	23.04	7.15	30.7	44.3	0.00	PUMP ON
	1205		1.0	23.05	7.14	30.6	38.8	0.00	"
	1210		1.5	23.08	7.13	30.2	45.2	0.00	
	1215	5.55	2.0	23.11	7.12	29.8	38.2	0.00	
	1220	5.56	2.5	23.11	7.11	29.4	40.1	0.00	
	1225								Sample

~~WELL DEVELOPMENT RECORD~~
Groundwater Sampling Record

ALAMEDA PT NAS CTO-107

Location: @ W SIDE FERRY POINT RD.

~~Well No.~~ / ~~Piez. No.~~: OU2B-MW03

Personnel: SUMAN SHARMA & GARRICK ANDERSON

Date Installed: 8-8-2005

Date: 8-15-2005

Csg. Diameter (I.D.): 2"

Method of Development:

Total Depth (ft. BGL): 12 FT

☐ Swabbing ☐ Bailing ☒ Pumping GEOPUMP 2

Weather: LOW OVERCAST W/ 20-15 KNOT WIND. SUN BREAKING

Screened Interval (ft. BGL): 7-12 FT

Equipment No.: pH Meter: EC Meter: Turbidity Meter:

Solinst No.: LVE002057

Equipment decontamined prior to development Y X N ____

Describe: NEW TUBING INTO WELL (DEDICATED); SOLINST LINE DECONNED BY ALCONOX

Amount of Potable water added to augers N/A

Collected sample of water added to well Y ____ N X

Describe:

PUMP ON: 1120 HRS GW @ 5.16 FT @ 1121 HRS

PUMP RATE: 440 ml/minute

2005 DATE	HRS TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	°F/°C 1 Deg TEMP	± .1 pH	SC	TURB-IDITY	10% DO	ODOR/COLOR/ETC COMMENTS
8-15	1125	5.17	≤ 0.5	22.73	6.91	25.4	47.1	0.0	
"	1130	5.17	1 gal	22.78	6.89	22.9	32.9	0.0	
"	1135	5.17	1.7 gal	22.73	6.86	21.1	10.5	0.0	
"	1142	5.17	2.2 gal	22.70	6.86	19.7	3.0	0.0	
"	1145	5.17	2.75 gal	22.68	6.86	18.6	2.0	0.0	
"	1150								SAMPLE

~~WELL DEVELOPMENT RECORD~~
Groundwater Sampling Record

Location: Alameda Point NAS CTO-107 Well No. ~~/ Pier No.~~: OU2B-MW04

Personnel: Suman Sharma & Gazzich Anderson Date Installed: 8-8-2005

Date: 8-15-2005 Csg. Diameter (I.D.): 2"

Method of Development: Total Depth (ft. BGL): 12 FT

☐ Swabbing ☐ Bailing ☒ Pumping Geopump 2

Weather: cool w/ 12-15 knot on-shore breeze low Screened Interval (ft. BGL): 7-12 FT

Equipment No.: pH Meter: EC Meter: Turbidity Meter:

Solinst No.: LV5000205 7

Equipment decontamined prior to development Y ✓ N ____

Describe: New tubing run into well (dedicated); Solinst line Decontaminated with Alconox

Amount of Potable water added to augers N/A

Collected sample of water added to well Y ____ N ✓

Describe: ____

DATE	TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	°F/°C TEMP	pH	ms/cm SC	TURBIDITY	DO	ODOR/COLOR/ETC COMMENTS
8/15/05	10:50	5.05	0.5 gals	22.54	7.55	17.5	81.8	0.00	
	10:55	5.08	1.0 gal	22.52	7.55	17.6	34.9	0.00	
	11:00		1.5 gal	22.55	7.56	17.6	10.9	0.00	
	11:05	5.13	2.0 gal	22.63	7.57	17.3	-2.5	0.00	
	11:10	5.12	2.5 gal	22.64	7.58	17.2	-4.9	0.00	
	11:15								Sample

~~WELL DEVELOPMENT RECORD~~
Groundwater Sampling Record

Location: ALAMEDA PT. NAS, CTO-107 Well No. / ~~Piez No.~~: OU2B-MW05

Personnel: FERRY PT. RD (west) SUMAN SHARMA AND GARRICK ANDERSON Date Installed: 8-8-05

Date: 8-15-05 Csg. Diameter (I.D.): 2"

Method of Development: Total Depth (ft. BGL): 12 FT

☐ Swabbing ☐ Bailing ☒ Pumping GEOPUMP 2

Weather: cool w/ 12-15 knot onshore breeze, low overcast Screened Interval (ft. BGL): 7-12 FT

Equipment No.: pH Meter: EC Meter: Turbidity Meter:

Solinst No.: LVE 0002057

Equipment decontamined prior to development Y ✓ N ____

Describe: New Tubing Run into hole; Solinst line decontaminated w/ Alconox

Amount of Potable water added to augers N/A

Collected sample of water added to well Y ____ N ✓

Describe: ____

DATE	TIME	WATER LEVEL (ft.)	VOLUME REMOVED (gal)	°F/°C TEMP	pH	mS/cm SC	TURBIDITY	DO	ODOR/COLOR/ETC COMMENTS
8/15/05	0947	4.40		22.11	7.08	12.5	155	0.0	PUMP ON
"	0953	4.56	0.5 gal	22.13	7.28	12.9	83.2	0.0	
"	0958	4.69	1.0 gal	22.18	7.40	12.9	40.2	0.0	
"	1003		1.5 gal	22.17	7.47	12.6	18.1	0.0	
"	1008		2.0 gal	22.12	7.50	12.5	11.8	0.0	
"	1013	4.69	2.5 gal	22.14	7.53	12.4	9.8	0.0	
"	1018	4.67	3.0 gal	22.15	7.54	12.4	11.0	0.0	
"	1021	4.67	3.5 gal	22.15	7.55	12.4	10.8	0.0	
"	1024	4.67	4.0 gal	22.19	7.57	12.3	11.9	0.0	
"	1028	4.67	4.5 gal	22.20	7.57	12.3	12.0	0.0	
	1032 1035								PUMP OFF SAMPLE

O2UB-MW05-3006 is FD of (collection time put as 1100)

O2UB-MW05-3005.

WDRCD1.XLS

Chain Of Custody

SHAW Environmental and Infrastructure, Inc.

Project Manager Dan Shafer

Send Report To : Suman Sharma
Phone : (925) 288-2332
Address: 4005 Port Chicago Hwy
Concord, CA 94520

Project Number:

Project Name/Location: **Alameda CTO-107**

Source 125

Phase: **Site 11/21 Groundwater**

Purchase Order #: _____

Ship Date: 8/15/05 Waybill No: _____

Ref. Document #: 1114

Page 1 of 1

COOLER TEMPERATURE:

LAB: EMAX,
1835 205th St.,
Torrance, CA 90501

Lab Phone: 301-618-8889

Sampler's Name:		Aqueous # of Containers & Container Type			3X40 mL V	2X1 L A	1x250mL PE	1X500mL PE	1X500mL PE	2X1 L A	1X250 mL PE	
		Aqueous Preservative			HCL to pH<2, ice	ice	H2SO4, ice	HNO3, ice	HNO3, ice	ice	ice	
Sample ID Number	**Date**	**Time**	**Matrix**	**Total Number of Contai er**	VOCs (EPA 8260B)	SVOC (EPA 8270C)	TOC (EPA 415.1)	Dissolved Metals (EPA 6010B/ 6020A)	Total Metals (SW6010B)	Technical Chlordane (EPA 8081A)	Hexavalent Chromium (EPA 7196A)	Comments
OU2B-MW01-3001	8/15/05	1300	GW	1				✓				
OU2B-MW02-3002	↓	1220	↓	1				↓				
OU2B-MW03-3003	↓	1150	↓	1				↓				
OU2B-MW04-3004	↓	1115	↓	1				↓				
OU2B-MW05-3005	↓	1035	↓	1				↓				
OU2B-MW05-3006	✓	1100	✓	1				✓				

For CHEMIST use only

Sprecial Instructions: List of metals (Al, As, Sb, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, K, Se, Ag, Na, Tl, Va, Zn)

Turnaround Time: __ 24-hr __ 48-hr __ Normal __ 3-days __ 5 days

Level of QC Required: I II III Project Specific:

Relinquished by: Suman Sharma Date: 8/15/05 Time: 1400

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

Matrix Codes

GW = Ground Water
WW = Waste Water
SO = Soil

U:\Alameda\CTO-107 Chemical Ox\database\CTO107Main_data.mdb/rpt_COC_Site 11_21

Appendix D
Analytical Results

APPENDIX D – ANALYTICAL RESULTS IS CONTAINED IN ELECTRONIC FORMAT

TO VIEW THE DATA, CONTACT:

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RECORDS MANAGEMENT SPECIALIST
NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

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