DEPARTMENT OF TRANSPORTATION
BOX 23660
OAKLAND, CA 94623-0660
(510) 286-4444
TDD (510) 286-4454

#2933

00 NOV 27 PM 2:56

ENVIRONMENTAL PROTECTION

November 21, 2000

Mr. Barney Chan
Alameda County Department of Health Services
1131 Harborway Parkway
Alameda, California 94502

Subject: Ground Water Monitoring Report for the Third Quarter of 2000 at the South Oakland Maintenance Station located at 1112 29th Avenue in Oakland, Alameda County, California

Dear Mr. Chan:

Attached is a copy of Professional Services Industries, Inc. "*Third Quarter 2000 Ground Water Monitoring Report*" dated November 15, 2000 for work performed at the above-referenced site. The results of the sampling and analysis indicate that benzene and Methyl-tert-Butyl-Ether (MtBE) may be migrating down gradient from the former underground storage tank location.

We recommend a site investigation which would include installing additional monitoring wells down gradient and off-site to define the lateral and vertical extent of the dissolved gasoline constituents in the ground water. Also, we will continue to sample this well on a quarterly basis unless otherwise instructed by your office.

If you have any questions or require additional information, please contact Ms. Frances Maroni of my staff at (510) 286-5657.

Sincerely,

HARRY Y. YAHATA
District Director

By:

FRANCES MARONI

for RAY BOYER
District Branch Chief
Office of Environmental Engineering

Attachment

cc: Regional Water Quality Control Board, SF Bay Region, File

THIRD QUARTER 2000 GROUNDWATER MONITORING REPORT

TASK ORDER NUMBER 04-987901-WF
CONTRACT NUMBER 43A0012

SOUTH OAKLAND MAINTENANCE STATION
1112 29th AVENUE
OAKLAND, CALIFORNIA 11-15-00

Prepared for

CALIFORNIA DEPARTMENT OF TRANSPORTATION
District 4
P.O. Box 23660
Oakland, California

Prepared by

Professional Service Industries
1320 West Winton Avenue
Hayward, California 94545
(510) 785-1111

November 15, 2000
575-0G019

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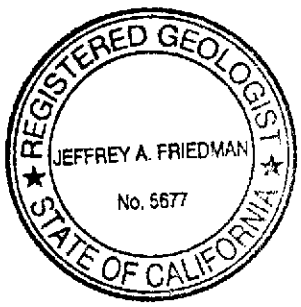
STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATIONS

Information provided in Professional Services Industries, Inc., (PSI) report number 575-0G019 is intended exclusively for the California Department of Transportation (Caltrans) for the evaluation of groundwater contamination as it pertains to the subject site. PSI is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation. The professional services provided have been performed in accordance with practices generally accepted by other geologists, hydrologists, hydrogeologists, engineers, and environmental scientists practicing in this field. No other warranty, either expressed or implied, is made. As with all subsurface investigations, there is no guarantee that the work conducted will identify any or all sources or locations of contamination.

This report is issued with the understanding that Caltrans is responsible for ensuring that the information contained in this report is brought to the attention of the appropriate regulatory agency. This report has been reviewed by a geologist who is registered in the State of California and whose signature and license number appear below.

Frank R. Poss
Senior Hydrogeologist

Jeffrey Friedman, R.G. (5677)
Senior Project Geologist



1.0 INTRODUCTION

This report summarizes the results of the Third Quarter 2000 groundwater monitoring activities conducted on September 11, 2000 at the South Oakland Maintenance Yard located in Oakland, California. The subject site location is presented on Figure 1. The purpose of this project is to comply with quarterly sampling requirements for Alameda County Department of Environmental Health.

1.1 SITE DESCRIPTION AND HISTORY

The site is currently used as a maintenance station by Caltrans. The maintenance station includes offices, a repair shop, a sign shop, and several material storage bins. The entire property covers approximately two acres. The site is paved with asphalt and is relatively flat. The Alameda/Oakland Estuary is approximately 0.5 miles southwest of the site.

One 4,000-gallon diesel underground storage tank (UST) and one 2,000-gallon gasoline UST were removed from the site on March 11, 1997. The tank pit was over-excavated and soil samples were collected. Sidewall and bottom samples collected from the excavation contained concentrations of Total Petroleum Hydrocarbons as Gasoline (TPH-G, [as high as 380 milligrams per kilogram (mg/kg)]), and Total Petroleum Hydrocarbons as Diesel (TPH-D, [as high as 21 mg/kg]). Concentrations of Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX), ranged from 0.010 to 48 mg/kg. Methyl Tertiary Butyl Ether (MTBE) concentrations ranged from 0.041 to 9.15 mg/kg. Groundwater samples were not collected (Caltrans, 1999).

On April 6 and 7, 1999, Borings B1 through B6 were drilled at the site. The boring locations are presented in Figure 2. All of the borings were converted to 1.3-centimeter (cm) (0.5-inch) inside diameter temporary groundwater monitoring wells. Soil samples were collected from each boring at depths of 1.52, 3, and 4.56 meters (5, 10, and 15 feet) below ground surface (bgs).

Soil samples were analyzed for TPH-G, TPH-D, and Volatile Organic Compounds (VOCs), by EPA Method 8260. TPH-G was detected in one soil sample (B6-10 [13 mg/kg]). None of the soil samples contained detectable concentrations of TPH-D. MTBE was the only VOC detected in the soil samples analyzed. MTBE was detected in the sample B5-1.5 meters (0.16 mg/kg). No other soil sample contained a detectable concentration of MTBE (PSI, 1999).

TPH-G was detected in groundwater samples from temporary Wells B3 (520 µg/l) and B4 (520 µg/l). No other groundwater samples contained detectable concentrations of TPH-G. No TPH-D was detected in any of the groundwater samples. Benzene was detected in the water sample from Well WB3 (6.3 µg/l). MTBE was detected in the samples from Well WB5 (6,600 µg/l) and WB6 (24 µg/l). Concentrations of other

gasoline related compounds were detected in samples from Wells WB1, WB3, WB4, and WB5. Chloroform was detected in water samples from Wells WB4 (2.4 µg/l) and WB6 (2.7 µg/l). Tetrachloroethene (synonym Perchloroethene [PCE]) was detected in the water sample from Well WB6 (12 µg/l) (PSI, 1999).

On August 13, 1999, Borings B7 through B9 were drilled at the site (Figure 2). The borings were drilled on the property boundary. The results of the sampling indicated the following:

- TPH-G concentrations were detected in one soil sample [B9-15 (0.54 mg/kg)] at the site.

- TPH-D was detected in one groundwater sample [WB7 (0.73 mg/l)]

- MTBE was detected in grab groundwater samples WB7 (5,600 µg/l) and WB8 (9.0 µg/l). The downgradient extent of MTBE has not been established.

In June and July 2000, PSI completed a supplemental investigation, which included the installation of four monitoring wells at the site. The conclusions and recommendations of the investigation follows:

- None of the soil samples contained detectable concentrations of TPH-G, while TPH-D was detected in two soil samples at concentrations below regulatory concern.

- None of the soil samples contained detectable concentrations of VOCs with the exception of MTBE. The highest MTBE concentration detected was 0.52 mg/kg in soil sample B3-10. All of the MTBE concentrations detected were below first groundwater.

- None of the groundwater samples contained detectable concentrations of TPH-D, while TPH-G was detected in two groundwater samples at a maximum concentration of 2.7 mg/l.

primary / secondary drinking water stds.

- Numerous VOCs were detected in the groundwater with only benzene and MTBE being at concentrations greater than the PDWS or SDWS. Based on the concentrations detected, MTBE appears to be the primary COC. The lateral extent of MTBE has not been defined.

- The report recommended continued groundwater monitoring and the installation of additional monitoring wells down gradient of monitoring well MW-3. Additionally, as TPH-D was not detected in the groundwater sample from monitoring well MW-3, the report recommended that the analyses for TPH-D in this well be eliminated.

2.0 GROUNDWATER MONITORING ACTIVITIES

2.1 GROUNDWATER ELEVATION AND HYDRAULIC GRADIENT

On September 11, 2000, static groundwater elevations were measured in wells MW-1 through MW-4 (Figure 2). The groundwater depths were measured using a groundwater interface probe. The average depth the groundwater decreased approximately 0.18 meters (0.6 feet) compared to last quarter. A summary of the depth to groundwater data collected during this monitoring event and previous monitoring events is presented in Table 1. Based on the groundwater data, the inferred groundwater flow direction beneath the site is to the west (Figure 2) with a hydraulic gradient of 0.015.

2.2 GROUNDWATER SAMPLING

Groundwater samples were collected from monitoring wells MW-1 through MW-4. Prior to the collection of groundwater samples, the monitoring wells were purged of a minimum of three well volumes of water until pH, conductivity, and temperature stabilized. The wells were allowed to recover to at least 80 percent of their original static groundwater levels prior to sampling.

The following procedures for well monitoring, well purging, and water sampling were implemented while sampling the wells:

1. All equipment was washed prior to entering the well with an Alconox solution, followed by two tap water rinses and a deionized water rinse.

2. Prior to purging the wells, depth-to-water was measured using an Solinst groundwater interface probe to an accuracy of approximately 0.01 foot. The measurements were made to the top of the well casing on the north side.

3. Monitoring wells at the site were prepared for sampling by purging the well of approximately 3 well volumes of water using disposable Teflon bailers.

4. Water samples were collected with a single-use Teflon bailer after the well had been purged and water in the well had equilibrated to approximately 80 percent of the static water level. The water collected was immediately decanted into laboratory-supplied vials and bottles. The containers were overfilled, capped, labeled, and placed in a chilled cooler prior to delivery to the laboratory for analysis.

5. Chain-of-custody procedures, including chain-of-custody forms, were used to document water sample handling and transport from collection to delivery to the laboratory for analyses.

6. Groundwater samples were delivered to the State-certified hazardous waste laboratory within approximately 48-hours of collection.

7. Purged water was contained in a DOT approved 55-gallon drum. The drum was labeled with the contents, date, well number, client name, and project number.

The groundwater monitoring purge logs are presented in Appendix A.

2.3 LABORATORY ANALYSIS AND RESULTS

The groundwater samples were submitted for analyses to Centrum Analytical of Redlands, California, a State of California certified hazardous waste analytical laboratory. The samples were analyzed for the following:

- EPA 8015 modified - TPH-G;
- EPA 8260 - Volatile Organic Compounds (VOCs).

A summary of the laboratory results for groundwater samples is presented in Table 2. A copy of the laboratory reports and chain of custody records are presented in Appendix B. The following are the results of the groundwater sampling:

- TPH-G was detected in the groundwater samples collected from monitoring wells MW-1 (0.92 mg/l) and MW-2 (1.9 mg/l). TPH-G concentrations were comparable to the previous sampling results.

Numerous VOCs were detected in the groundwater samples with the highest concentrations detected being found in monitoring well MW-3. The compounds detected are common constituents of gasoline. The compound with the highest concentration was MTBE at 2,700 micrograms per liter (ug/l). MTBE concentrations have generally decreased in each of the monitoring wells from the previous sampling event.

2.4 COMPARISON OF GROUNDWATER RESULTS WITH REGULATORY CRITERIA

The concentrations of contaminants reported by the analytical laboratory were compared to State of California Primary and Secondary Drinking Water Standards (PDWS and SDWS). The following samples were above their respective PDWS or SDWS.

- Benzene concentrations detected in groundwater samples MW-1 (14 ug/l) and MW-3 (19 ug/l).

- MTBE concentrations detected in groundwater samples MW-1 (860 ug/l), MW-2 (110 ug/l), and MW-3 (2,700 ug/l).

Based on the concentrations detected in the groundwater at the site, the primary contaminant of concern (COC) is MTBE. The concentrations of MTBE in each of the monitoring wells are shown in Figure 3. This figure indicates that the highest concentrations of MTBE are found in the monitoring well directly down gradient of the former USTs and in the well adjacent to the former USTs. Based on the data obtained, the lateral extent of MTBE impacted groundwater has not been defined.

3.0 SUMMARY AND CONCLUSIONS

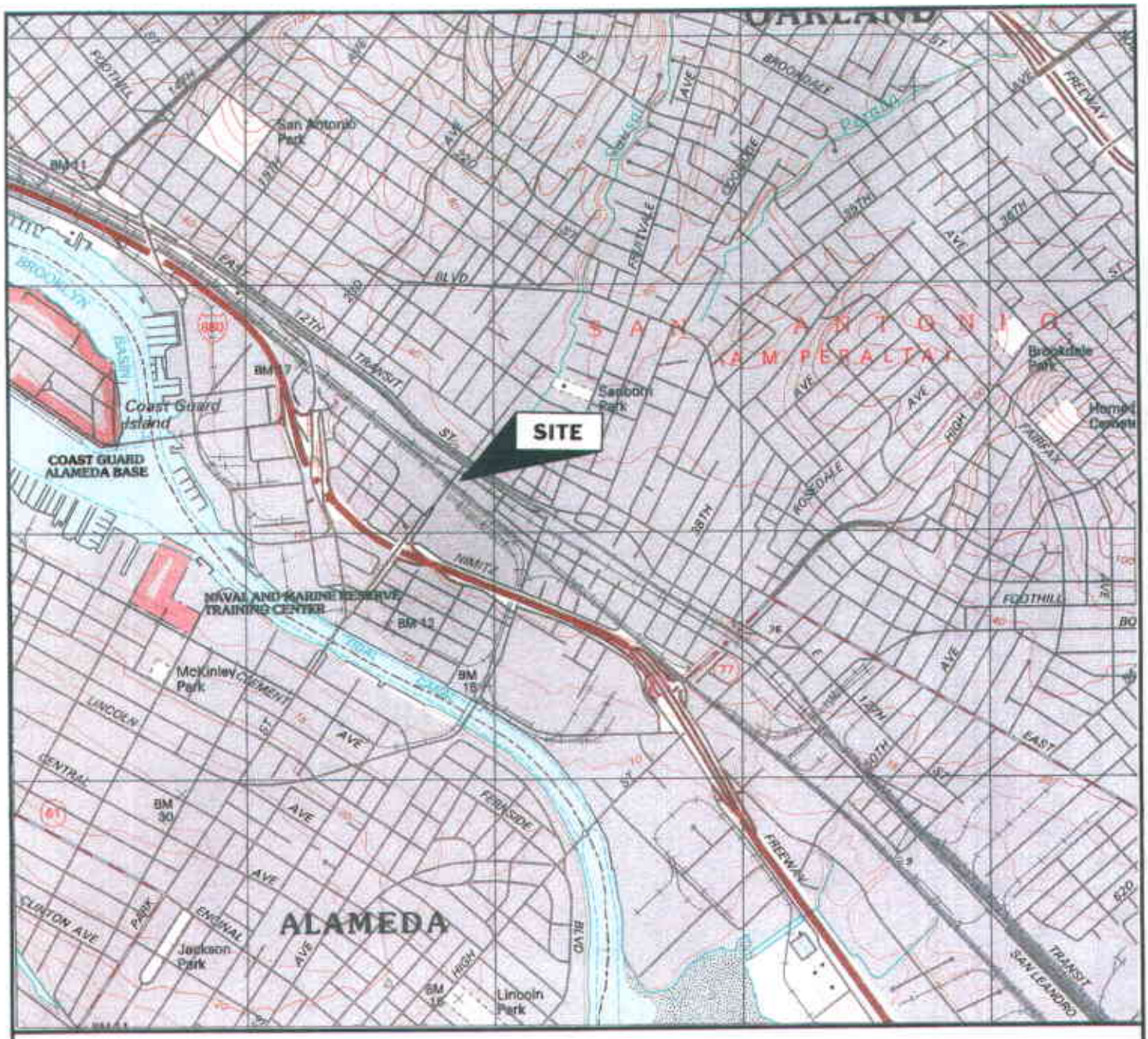
PSI performed a quarterly monitoring event on September 11, 2000. Groundwater samples were collected from monitoring wells MW-1 through MW-4. Based on measurements collected and analytical data the following conclusions are provided. Groundwater elevation data indicates the groundwater flow direction beneath the site is towards the west, with a hydraulic gradient of 0.015 meter per meter (0.015 foot per foot).

- Average groundwater elevations is approximately 0.18 meters (0.6 feet) higher than the average groundwater elevation measured for the previous sampling event.

- TPH-G was detected in the groundwater samples collected from monitoring wells MW-1 (0.92 mg/l) and MW-2 (1.9 mg/l).

- Numerous VOCs were detected in the groundwater samples from the site. However, only benzene and MTBE had concentrations greater than the PDWS. Based on the concentrations detected in the groundwater at the site, the primary COC is MTBE.

Based on the results of this report, PSI recommends continued groundwater monitoring and the installation of additional monitoring wells down gradient of monitoring well MW-3.



NORTH

0 1/2 1 MILE

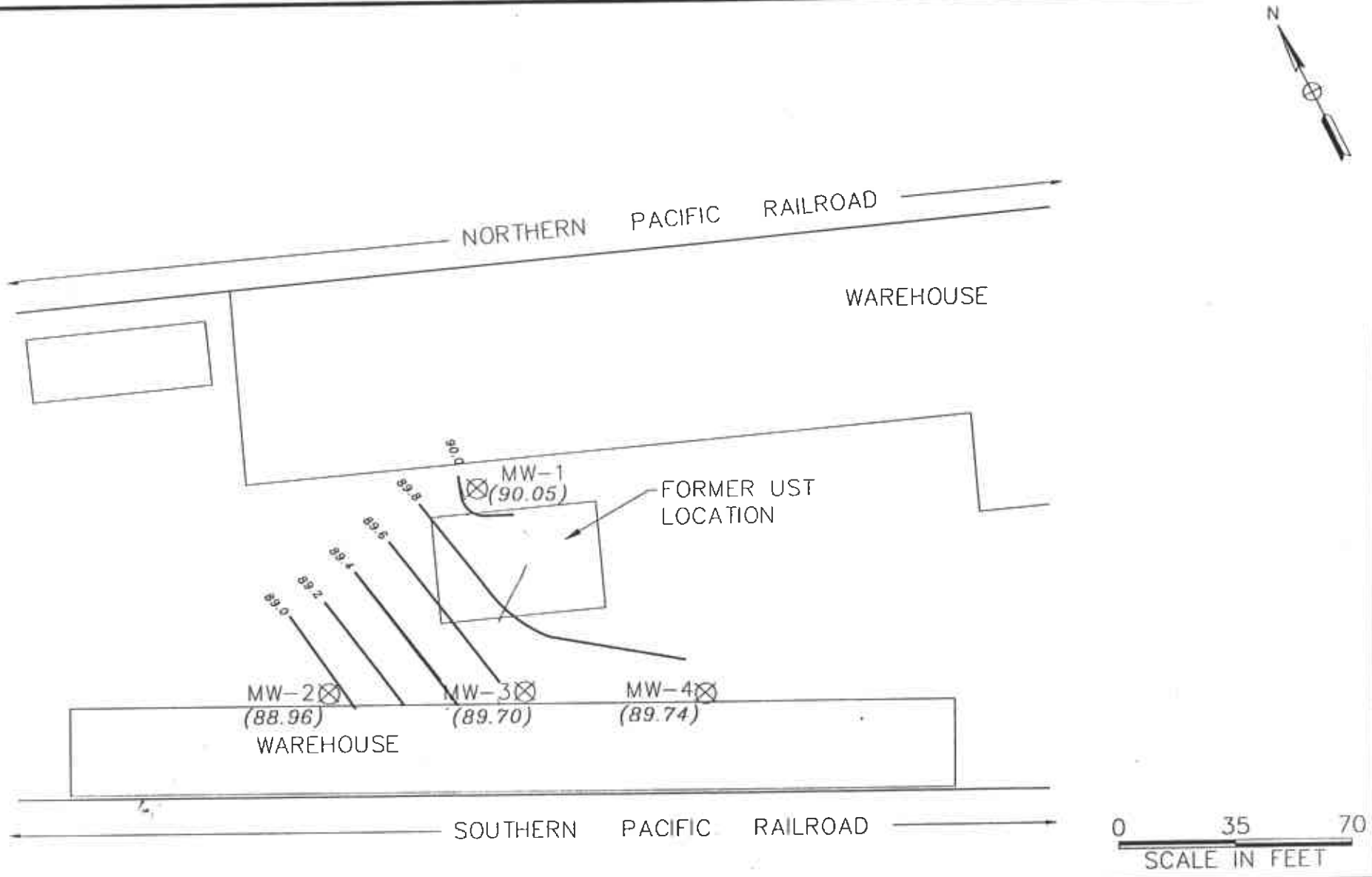
SCALE

REFERENCE:
U.S.G.S. OAKLAND EAST, CALIFORNIA, 1997

psi ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION
CONSULTING • ENGINEERING • TESTING

SITE LOCATION
CALTRANS MAINTENANCE STATION
1112 29TH AVENUE
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-9G014

DATE: 3/23/99	CK'D BY:	FIGURE NO.: 1
FILE NO.: 9G014-1		DRAWN BY: S. BOWERS



LEGEND

MW-2 (88.96) GROUNDWATER MONITORING WELL LOCATION AND GROUNNDWATER ELEVATION

89.0 GROUNDWATER ELEVATION CONTOUR

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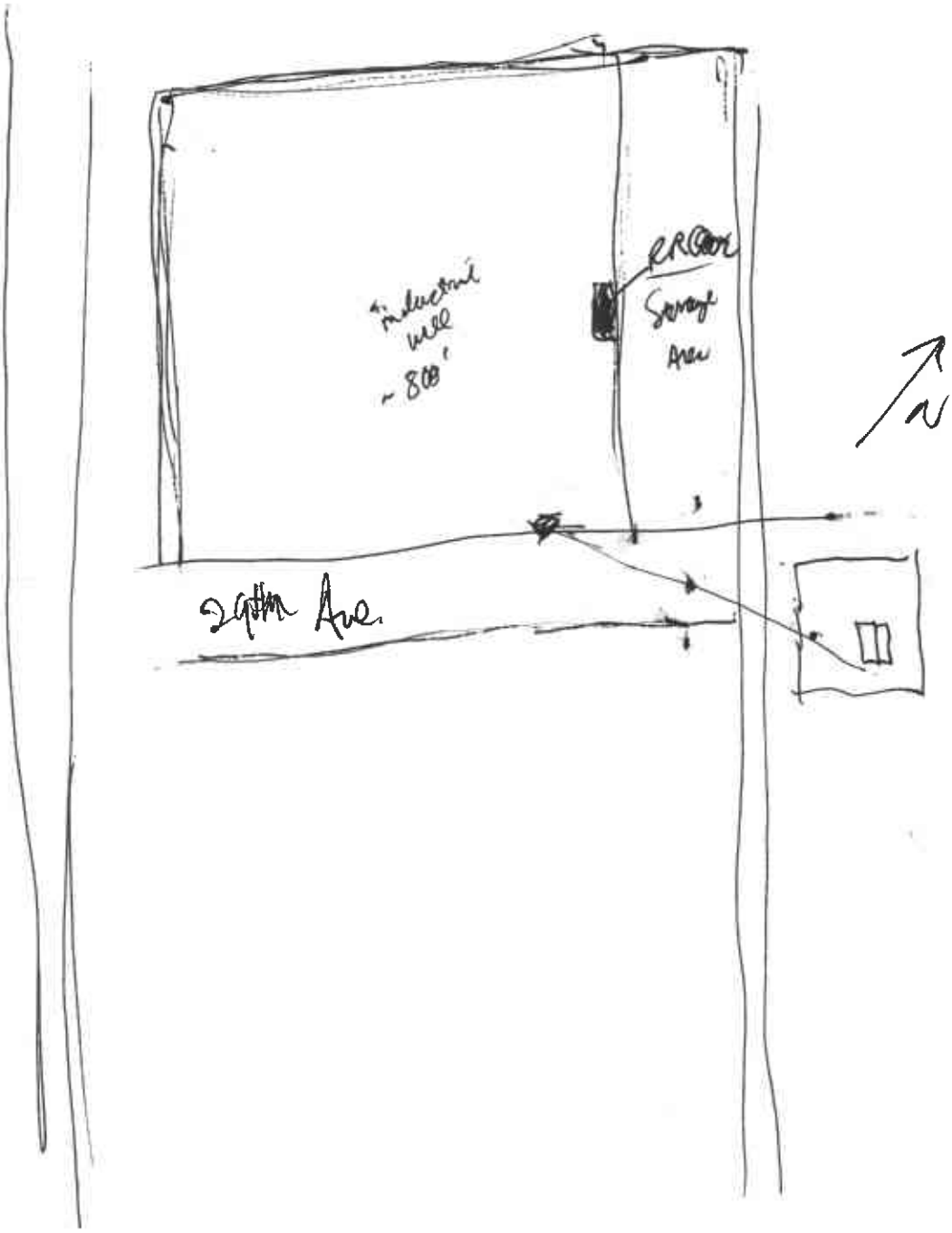
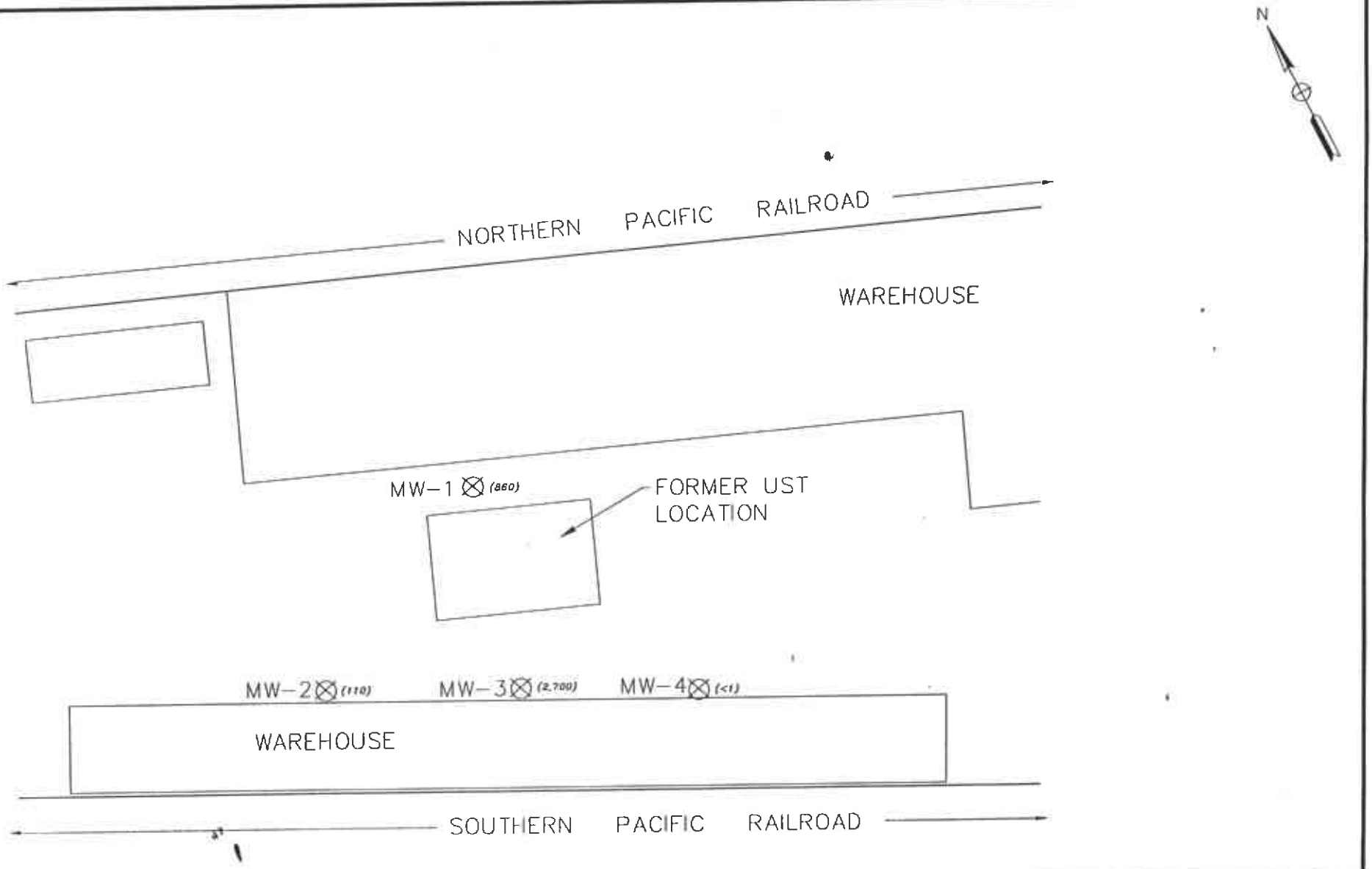
CONSULTING • ENGINEERING • TESTING

GROUNDWATER ELEVATION MAP: 9/11/00
CALTRANS MAINTENANCE STATION
1112 29TH AVENUE
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-0G019

DATE: 10/23/00	CKD BY:	FIGURE NO.: 2
FILE NO: 0G019-2S		DRAWN BY: A.CONSTANTINESCU


Industrial well ~80'
Storage Area
N
24th Ave.



LEGEND

MW-1 ⊗ GROUNDWATER MONITORING WELL

(2,700) MTBE CONCENTRATIONS IN GROUNDWATER (ug/L)

0 35 70

SCALE IN FEET

psi ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION

CONSULTING • ENGINEERING • TESTING

MTBE CONCENTRATIONS IN GROUNDWATER (09/11/00)
CALTRANS MAINTENANCE STATION
1112 29TH AVENUE
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-0G019

DATE: 7/21/00	CKD BY:	FIGURE NO.:	3
FILE NO: 0G019-3S		DRAWN BY:	A.CONSTANTINESCU

TABLE 1

GROUNDWATER ELEVATION
SOUTH OAKLAND MAINTENANCE STATION
SOUTH OAKLAND, CALIFORNIA

Sample Location	Date	Temperature (°C)	Conductivity (mS/cm) or µS/cm ?	pH	TOC Elevation (feet msl)*	Depth To Groundwater	Groundwater Elevation (feet msl)*
MW-1	6/27/00	---	---	---	99.57	9.13	90.44
	9/11/00	20.8	514	6.33	99.57	9.52	90.05
MW-2	6/27/00	---	---	---	98.91	9.05	89.86
	9/11/00	19.6	575	6.58	98.91	9.95	88.96
MW-3	6/27/00	---	---	---	98.98	8.76	90.22
	9/11/00	20.5	563	6.7	98.98	9.28	89.7
MW-4	6/27/00	---	---	---	99.04	8.74	90.3
	9/11/00	20.7	456	6.54	99.04	9.3	89.74

Notes:

All measurements are recorded in feet.
* TOC Measurements are from data supplied by Meridian Surveying
Feet msl = feet above mean sea level

TABLE 2

ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
SOUTH OAKLAND MAINTENANCE STATION
SOUTH OAKLAND, CALIFORNIA

Sample I.D.	Date	TPH-G mg/l	TPH-D mg/l	MTBE µg/l	tert-Butanol (TBA) ug/l	tert-Amyl Methyl Ether (TAME) ug/l	Benzene µg/l	Toluene µg/l	Ethyl-benzene µg/l	Total Xylenes µg/l
MW-1	6/27/00	0.85	---	880	<50	<5	20	<1.0	<1.0	19
	9/11/00	0.92	---	860	190	<5	14	<1.0	1.6	3.6
MW-2	6/27/00	<0.5	---	86	<50	<5	<1.0	<1.0	<1.0	<3.0
	9/11/00	<0.5	---	110	<50	<5	<1.0	<1.0	<1.0	<3.0
MW-3	6/27/00	2.7	<0.4	5,000	1,500	11	73	1.7	1.2	4.6
	9/11/00	1.9	---	2,700	310	10	19	<1.0	<1.0	<3.0
MW-4	6/27/00	<0.5	---	18	<50	<5	<1.0	<1.0	<1.0	<3.0
	9/11/00	<0.5	---	<1.0	<50	<5	<1.0	<1.0	<1.0	<3.0

NOTES:

TPH-D = Total Petroleum Hydrocarbons as Diesel by EPA Method 8015M.
TPH-G = Total Petroleum Hydrocarbons as Gasoline by EPA Method 8015M.
MTBE = Methyl Tertiary Butyl Ether
mg/l = milligrams per liter
ug/l = micrograms per liter

APPENDIX A

GROUNDWATER PURGE LOGS

FLUID MEASUREMENT FIELD DATA

SHEET: 1 OF 1

DATE: 9/11/00	PROJECT NAME: CALTRANS S. OAKLAND	PROJECT NO: CG019
WATER LEVEL MEASUREMENT INSTRUMENT: SOLINST		SERIAL NO:
PRODUCT DETECTION INSTRUMENT:		SERIAL NO:

EQUIP. DECON: ■ ALCONOX WASH ☐ DIST/DEION 1 RINSE ☐ ISOPROPANOL ☐ ANALYTE FREE FINAL RINSE ☐ TAP WATER FINAL RINSE
☐ TAP WATER WASH ☐ LIQUINOX WASH ■ DIST/DEION 2 RINSE ☐ OTHER SOLVENT ☐ DIST/DEION FINAL RINSE ☐ AIR DRY

WELL NUMBER	GROUND SURFACE ELEVATION	TOP OF CASING ELEVATION	DEPTH TO PRODUCT BELOW TOC	DEPTH TO WATER BELOW TOC	WELL DEPTH BELOW TOC	PRODUCT THICKNESS	WATER TABLE ELEVATION	ACTUAL TIME
MW-1				9.52'	25.18'			0849
MW-2				9.95	19.47			0852
MW-3				9.28	20.20			0854
MW-4				9.30	24.37			0856

REMEMBER TO CORRECT PRODUCT THICKNESS FOR DENSITY BEFORE CALCULATING WATER TABLE ELEVATION

PREPARED BY:

PSI
Rev. 12/95

WELL PURGING AND SAMPLING DATA

06-019

WELL NO: MW-1

DATE: 9-11-00	PROJECT NAME: CALTRANS S. OAKLAND	PROJECT NO: 06-019

WEATHER CONDITIONS: CLOUDY/FOGGY, WARM

WELL DIAMETER (IN.) ☐ 1 ■ 2 ☐ 4 ☐ 6 ☐ OTHER _____

SAMPLE TYPE: ■ GROUNDWATER ☐ WASTEWATER ☐ SURFACE WATER ☐ OTHER

WELL DEPTH (TOC)	25.18 FT.	DEPTH TO WATER BEFORE PURGING (TOC)	9.52 FT.
LENGTH OF WATER	15.66 FT.	CALCULATED ONE WELL VOLUME[1]:	~2.55 GAL.

PURGING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

SAMPLING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

EQUIP. DECON. ☐ TAP WATER WASH ☐ ISOPROPANOL ☐ ANALYTE FREE FINAL RINSE
☐ ALCONOX WASH ☐ DIST/DEION 1 RINSE ☐ OTHER SOLVENT ☐ DIST/DEION FINAL RINSE
☐ LIQUINOX WASH ☐ DIST/DEION 2 RINSE ☐ TAP WATER FINAL RINSE ☐ AIR DRY

CONTAINER PRESERVATION: ■ LAB PRESERVED ☐ FIELD PRESERVED

WATER ANALYZER MODEL & SERIAL NO: MYRON L 602 155

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP ☐ °F ■ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
0915	INITIAL	20.1	498	6.70				
0926	2.55	20.8	506	6.21				
0933	5.10	20.8	511.9	6.30				
0937	7.6	20.8	513.8	6.33				

DEPTH TO WATER AFTER PURGING (TOC) FT. SAMPLE FILTERED ☐ YES ☐ NO SIZE _____

NOTES:

SAMPLE TIME: 0940 ID# MW-1

DUPLICATE ☐ TIME: ID#:

EQUIP. BLANK: ☐ TIME: ID#:

PREPARED BY: CHRIS MERRITT

[1] A 1 FOOT LENGTH OF WATER = 0.05 GAL IN 1" DIA. PIPE 0.17 GAL IN 2" DIA PIPE 0.65 GAL IN 4" DIA PIPE 1.5 GAL IN 6" DIA PIPE

PSI
Rev. 12/95

WELL PURGING AND SAMPLING DATA

WELL NO: MW-2

DATE: 9-11-00 | PROJECT NAME: CALTRANS 5.OAKLAND | PROJECT NO: 06019

WEATHER CONDITIONS: CLOUDY/FOGGY, WARM

WELL DIAMETER (IN.) ☐ 1 ■ 2 ☐ 4 ☐ 6 ☐ OTHER _____

SAMPLE TYPE: ■ GROUNDWATER ☐ WASTEWATER ☐ SURFACE WATER ☐ OTHER

WELL DEPTH (TOC) 19.47 FT. | DEPTH TO WATER BEFORE PURGING (TOC) 9.95 FT.

LENGTH OF WATER 9.52 FT. | CALCULATED ONE WELL VOLUME[1]: ~1.7 GAL.

PURGING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

SAMPLING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

EQUIP. DECON. ☐ TAP WATER WASH ☐ ISOPROPANOL ☐ ANALYTE FREE FINAL RINSE
☐ ALCONOX WASH ☐ DIST/DEION 1 RINSE ☐ OTHER SOLVENT ☐ DIST/DEION FINAL RINSE
☐ LIQUINOX WASH ☐ DIST/DEION 2 RINSE ☐ TAP WATER FINAL RINSE ☐ AIR DRY

CONTAINER PRESERVATION: ■ LAB PRESERVED ☐ FIELD PRESERVED

WATER ANALYZER MODEL & SERIAL NO: MYRON L 602155

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP ☐ °F ■ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
0956	INITIAL	20.2	562	6.72				
1000	1.7	19.9	568	6.57				
1003	3.4	19.7	573	6.60				
1006	5.1	19.6	575	6.58				

DEPTH TO WATER AFTER PURGING (TOC) _____ FT. | SAMPLE FILTERED ☐ YES ☐ NO SIZE _____

NOTES:

SAMPLE TIME: 1010 ID# MW-2

DUPLICATE ☐ TIME: ID#:

EQUIP. BLANK: ☐ TIME: ID#:

PREPARED BY: CHRIS MERRITT

[1] A 1 FOOT LENGTH OF WATER = 0.05 GAL IN 1" DIA. PIPE 0.17 GAL IN 2" DIA PIPE 0.65 GAL IN 4" DIA PIPE 1.5 GAL IN 6" DIA PIPE

WELL PURGING AND SAMPLING DATA

WELL NO: MW-3

DATE: 9-11-00 | PROJECT NAME: CALTRANS S. OAKLAND | PROJECT NO: 06-019

WEATHER CONDITIONS: CLOUDY/FOGGY, WARM

WELL DIAMETER (IN.) ☐ 1 ■ 2 ☐ 4 ☐ 6 ☐ OTHER _____

SAMPLE TYPE: ■ GROUNDWATER ☐ WASTEWATER ☐ SURFACE WATER ☐ OTHER

WELL DEPTH (TOC) 20.20 FT. | DEPTH TO WATER BEFORE PURGING (TOC) 9.28 FT.

LENGTH OF WATER 10.92 FT. | CALCULATED ONE WELL VOLUME[1]: ~1.8 GAL.

PURGING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

SAMPLING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

EQUIP. DECON. ☐ TAP WATER WASH ☐ ISOPROPANOL ☐ ANALYTE FREE FINAL RINSE
☐ ALCONOX WASH ☐ DIST/DEION 1 RINSE ☐ OTHER SOLVENT ☐ DIST/DEION FINAL RINSE
☐ LIQUINOX WASH ☐ DIST/DEION 2 RINSE ☐ TAP WATER FINAL RINSE ☐ AIR DRY

CONTAINER PRESERVATION: ■ LAB PRESERVED ☐ FIELD PRESERVED

WATER ANALYZER MODEL & SERIAL NO: MYRON L 602155

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP ☐ °F ■ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
1021	INITIAL	20.0	533	6.62				
1026	1.8	20.5	556	6.48				
1038	3.6	20.6	557	6.60				
1042	5.4	20.5	563	6.70				

DEPTH TO WATER AFTER PURGING (TOC) FT. | SAMPLE FILTERED ☐ YES ☐ NO SIZE _____

NOTES:

SAMPLE TIME: 1045 ID# MW-3

DUPLICATE ☐ TIME: ID#:

EQUIP. BLANK: ☐ TIME: ID#:

PREPARED BY: CHRIS MERRITT

[1] A 1 FOOT LENGTH OF WATER = 0.05 GAL IN 1" DIA. PIPE 0.17 GAL IN 2" DIA PIPE 0.65 GAL IN 4" DIA PIPE 1.5 GAL IN 6" DIA PIPE

WELL PURGING AND SAMPLING DATA

WELL NO: MW-4

DATE: 9-11-00 | PROJECT NAME: CALTRANS S. OAKLAND | PROJECT NO: 06019

WEATHER CONDITIONS: CLOUDY/FOGGY, WARM

WELL DIAMETER (IN.) ☐ 1 ■ 2 ☐ 4 ☐ 6 ☐ OTHER _____

SAMPLE TYPE: ■ GROUNDWATER ☐ WASTEWATER ☐ SURFACE WATER ☐ OTHER

WELL DEPTH (TOC) 24.37 FT. | DEPTH TO WATER BEFORE PURGING (TOC) 9.30 FT.

LENGTH OF WATER 15.07 FT. | CALCULATED ONE WELL VOLUME[1]: 2.55 GAL.

PURGING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

SAMPLING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

EQUIP. DECON. ☐ TAP WATER WASH ☐ ISOPROPANOL ☐ ANALYTE FREE FINAL RINSE
☐ ALCONOX WASH ☐ DIST/DEION 1 RINSE ☐ OTHER SOLVENT ☐ DIST/DEION FINAL RINSE
☐ LIQUINOX WASH ☐ DIST/DEION 2 RINSE ☐ TAP WATER FINAL RINSE ☐ AIR DRY

CONTAINER PRESERVATION: ■ LAB PRESERVED ☐ FIELD PRESERVED

WATER ANALYZER MODEL & SERIAL NO: MYRON L 602 155

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP ☐ °F ☐ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
1101	INITIAL	21.3	452	7.55				
1109	2.55	20.7	456	7.22				
1120	7.0	20.6	456	6.62				
1123	7.5	20.7	456	6.54				

DEPTH TO WATER AFTER PURGING (TOC) FT. | SAMPLE FILTERED ☐ YES ☐ NO SIZE _____

NOTES:

SAMPLE TIME: 1125 ID# MW-4

DUPLICATE ☐ TIME: ID#:

EQUIP. BLANK: ☐ TIME: ID#:

PREPARED BY: CHRIS MERRITT

[1] A 1 FOOT LENGTH OF WATER = 0.05 GAL IN 1" DIA. PIPE 0.17 GAL IN 2" DIA PIPE 0.65 GAL IN 4" DIA PIPE 1.5 GAL IN 6" DIA PIPE

PSI
Rev. 12/95

APPENDIX B

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS

Centrum Analytical Laboratories, Inc.

CERTIFIED HAZARDOUS WASTE TESTING LABORATORY • CHEMICAL AND BIOLOGICAL ANALYSES

Client: PSI
1320 W. Winton Ave.
Hayward, CA 94545

Date Sampled: 09/11/00
Date Received: 09/12/00
Job Number: 17036

Project: Caltrans - South Oakland

CASE NARRATIVE

The following information applies to samples which were received on 09/12/00 :

The samples were received at the laboratory chilled and sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested.

Report approved by:

Robert R. Clark, Ph.D.
Laboratory Director

ELAP # 2419

DL : Detection Limit -- The lowest level at which the compound can reliably be detected under normal laboratory conditions.
ND : Not Detected -- The compound was analyzed for but was not found to be present at or above the detection limit.
NA : Not Analyzed -- Per client request, this analyte was not on the list of compounds to be analyzed for.

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Modified 8015 - Total Volatile Hydrocarbons as Gasoline

Client:	PSI	Date Sampled:	09/11/00
Project:	Caltrans - South Oakland	Date Received:	09/12/00
Job No.:	17036	Date Analyzed:	09/13/00
Matrix:	Water	Batch Number:	8015GW2714
Analyst:	CP		

	Detection Limit	**Petroleum Hydrocarbons as Gasoline**
Sample ID	mg/L	mg/L
Method Blank	0.50	ND
MW-1	0.50	**0.92**
MW-2	0.50	ND
MW-3	0.50	**1.9**
MW-4	0.50	ND

↑

too high
(500ppb)

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QC Sample Report - EPA 8015M Gasoline

Matrix: Water
Batch #: 8015GW2714

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Gasoline	10.0	**109**	70 - 130	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analyte	Spike Sample Recovery mg/L	Spike Duplicate Recovery mg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
Gasoline	10.94	10.67	**2%**	25%	**Pass**

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

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EPA 8260 - Volatile Organics with Oxygenates

Client: PSI
Project: Caltrans - South Oakland
Job No.: 17036
Matrix: Water
Analyst: JMR

Date Sampled: 09/11/00
Date Received: 09/12/00
Date Analyzed: 09/13-14/00
Batch Number: MS48260W2242

	Sample ID:	Blank	MW-1	MW-2	MW-3	MW-4
Compounds	**DL**	µg/L	µg/L	µg/L	µg/L	µg/L
Acetone	50	ND	ND	ND	ND	ND
tert-Amyl Methyl Ether (TAME)	5.0	ND	ND	ND	**10**	ND
Benzene	0.5	ND	**14**	ND	**19**	ND
Bromobenzene	1.0	ND	ND	ND	ND	ND
Bromochloromethane	1.0	ND	ND	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND	ND	ND
Bromoform	0.5	ND	ND	ND	ND	ND
Bromomethane	0.5	ND	ND	ND	ND	ND
tert-Butanol (TBA)	50	ND	**190**	ND	**310**	ND
2-Butanone (MEK)	10	ND	ND	ND	ND	ND
n-Butylbenzene	0.5	ND	ND	ND	ND	ND
sec-Butylbenzene	0.5	ND	**2.0**	ND	ND	ND
tert-Butylbenzene	0.5	ND	ND	ND	ND	ND
Carbon disulfide	10	ND	ND	ND	ND	ND
Carbon tetrachloride	0.5	ND	ND	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND	ND	ND
Chloroethane	0.5	ND	ND	ND	ND	ND
Chloroform	0.5	ND	ND	ND	ND	**6.1**
Chloromethane	0.5	ND	ND	ND	ND	ND
2-Chlorotoluene	0.5	ND	ND	ND	ND	ND
4-Chlorotoluene	0.5	ND	ND	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND	ND	ND
1,2-Dibromoethane	0.5	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	10	ND	ND	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND	ND	ND
Dichlorodifluoromethane	0.5	ND	ND	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND	ND	ND

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EPA 8260 - Volatile Organics with Oxygenates

Client:	PSI	Date Sampled:	09/11/00
Project:	Caltrans - South Oakland	Date Received:	09/12/00
Job No.:	17036	Date Analyzed:	09/13-14/00
Matrix:	Water	Batch Number:	MS48260W2242
Analyst:	JMR		

	Sample ID:	Blank	MW-1	MW-2	MW-3	MW-4
Compounds	**DL**	µg/L	µg/L	µg/L	µg/L	µg/L
cis-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND
Diisopropyl Ether (DIPE)	5.0	ND	ND	ND	ND	ND
Ethylbenzene	0.5	ND	**1.6**	ND	ND	ND
Ethyl tert-Butyl Ether (EtBE)	5.0	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND	ND	ND
2-Hexanone	10	ND	ND	ND	ND	ND
Isopropylbenzene	0.5	ND	**3.0**	ND	ND	ND
p-Isopropyltoluene	0.5	ND	ND	ND	ND	ND
Methylene chloride	20	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	5.0	ND	ND	ND	ND	ND
Methyl-tert-butyl ether (MtBE)	1.0	ND	**860**	**110**	**2,700**	ND
Napthalene	0.5	ND	**2.5**	ND	ND	ND
n-Propylbenzene	0.5	ND	**2.3**	ND	**0.6**	ND
Styrene	0.5	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND	ND	ND
Toluene	0.5	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	0.5	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.5	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND	ND	ND
Trichlorotrifluoroethane	5.0	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	0.5	ND	**8.7**	ND	ND	ND
1,3,5-Trimethylbenzene	0.5	ND	**4.5**	ND	ND	ND
Vinyl chloride	0.5	ND	ND	ND	ND	ND
Xylenes (total)	1.5	ND	**3.6**	ND	ND	ND

Surrogates (% recovery) Limits: 80 - 130

Sample ID:	Blank	MW-1	MW-2	MW-3	MW-4
Dibromofluoromethane	108	111	108	110	108
Toluene-d8	104	104	105	105	104
Bromofluorobenzene	103	102	104	103	104

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QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: MS48260W2242

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	**111**	59 - 172	**Pass**
Benzene	20	**112**	66 - 142	**Pass**
Trichloroethene	20	**112**	71 - 137	**Pass**
Toluene	20	**113**	59 - 139	**Pass**
Chlorobenzene	20	**106**	60 - 133	**Pass**

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analyte	Spike Sample Recovery µg/L	Spike Duplicate Recovery µg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
1,1-Dichloroethene	20.89	22.29	**6%**	22%	**Pass**
Benzene	22.27	22.44	**1%**	21%	**Pass**
Trichloroethene	20.99	22.32	**6%**	24%	**Pass**
Toluene	21.08	22.66	**7%**	21%	**Pass**
Chlorobenzene	20.79	21.18	**2%**	21%	**Pass**

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Centrum Analytical Laboratories, Inc.

290 TENNESSEE STREET
REDLANDS, CA 92373
www.centrum-labs.com

(909) 798-9336 ● (800) 798-9336
FAX (909) 793-1559
lab@centrum-labs.com

Chain of Custody Record

Centrum Job # 170036

Page 1 of 1

Project No:	Project Name:
CC019	CALTRANS SOUTH OAKLAND
Project Manager:	**Phone:** / **Fax:**
FRANK POSS	510 785-1111 / 510 785-1192
Client Name: (Report and Billing)	**Address:** (Report and Billing)
PSI	1320 W. WINTON AVE HAYWARD, CA. 94545

Please Circle **ALL** Analyses Requested

Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	8015M: Diesel, Fuel Screen, Carbon Chain	8015M: Gasoline only	8021B: BTEX/MtBE Only by GC/PID	418.1 (TRPH), 413.2 (Oil & Grease)	GCMS: 8260B, 8021B, 624, 524.2 w/OXYGENATES	GCMS: Fuel Oxygenates	GCMS: MIBE Conf. Only	GCMS: 8270C, 625	8081A/8082: Pesticides, PCBs, Pest/PCB		Metals: Title 22 (CAM), RCRA, PP	pH, TDS, TSS, Conductivity			Remarks/Special Instructions
1	MW-1	9-11-00	0940	H_2O		4 VOA		X			X										
2	MW-2	↓	1010	↓		↓		X			X										
3	MW-3		1045					X			X										
4	MW-4		1125					X			X										

Turn-Around Time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ■ Normal TAT

*Requires PRIOR approval, additional charges apply

Requested due date: _____

1) Relinquished by: (Sampler's Signature)	Date:	Time:	3) Relinquished by:	Date:	Time:
CHRIS MERRITT	9-11-00	1700			
2) Received by:	Date:	Time:	4) Received by:	Date:	Time:
The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.			5) Relinquished by: FEDEX	Date:	Time:
			6) Received for Laboratory by: Jennifer Dominguez	Date: 9/12	Time: 9:00A

To be completed by Laboratory personnel:

Samples chilled? ☒ Yes ☐ No ☐ From Field

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☒ Yes ☐ No

☐ Courier ☒ UPS Fed Ex ☐ Hand carried

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Laboratory Notes:

Sample Locator No.

VOA

White Copy - Original (Accompanies Samples) | Yellow Copy - Centrum Files | Pink Copy - Centrum duplicate | Gold Copy - Client Copy