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RECEIVED

4:07 pm, Jan 30, 2009

Alameda County
Environmental Health

26 January 2009
Project No. 01LV

Jerry Wickham
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Work Plan for Additional Injection Well Installation
1619 1st Street, Livermore, California
Tesoro No. 67076 (Former Beacon 3604); ACEH Case No. RO0000434

Dear Mr. Wickham:

Arctos Environmental (Arctos), on behalf of Tesoro Companies, Inc., is submitting this work plan for your approval. The work plan describes the installation of one dual-casing oxygen injection well at the subject site (Figure 1).

Executive Summary

Arctos prepared this work plan following the installation and baseline sampling of oxygen injection wells IP-8 and IP-9 at the site as described in the Work Plan for Additional Well Installation submitted to Alameda County Environmental Health (ACEH) on 18 September 2008, and approved by ACEH on 25 September 2008. Injection wells IP-8 and IP-9 are located adjacent to the existing underground storage tanks (USTs; Figure 2) and had total petroleum hydrocarbons as gasoline (TPHg) concentrations of 120,000 and 110,000 micrograms per liter (µg/l), respectively, and benzene concentrations of 7,800 µg/l in both wells (Figure 3). The proposed injection well will increase the oxygen injection system area of influence to the southwest of injection well IP-9. Installation of the proposed well will also assist in delineating the vertical extent of impacted groundwater below the screen of existing monitoring well MW-1. Field data and analytical data from the installation will be included in the first quarter status report.

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Site Background

The site description and background are included in Arctos's IRAP dated 21 March 2008 (Arctos, 2008).

Objective and Scope of Work

The objective of the planned activities is to install one dual-casing oxygen injection well to delineate the vertical extent of impacted groundwater to the south of injection well IP-9 and to increase the oxygen injection system area of influence. To meet this objective, Arctos will perform the following scope of work:

1. Arctos will mobilize for well installation, which includes (1) marking for underground service alert (USA), (2) obtaining well permit from Zone 7 Water Agency, and (3) preparing a site-specific health and safety plan (HSP).

2. A licensed drilling contractor will be retained to drill a soil boring for the oxygen injection well, designated as IP-10 (Figure 2). Arctos will collect soil samples 5 feet below grade and at 5-foot intervals for visual logging using the Unified Soil Classification System (USCS), and field headspace measurements using a photoionization detector (PID).

3. The proposed oxygen injection well, designated as IP-10, will be constructed as a dual-casing injection/monitoring well using 1-inch Schedule 40 polyvinyl chloride (PVC) pipe for the injection well and 2-inch Schedule 40 PVC pipe for the monitoring well. The well will be screened from approximately 60 to 65 feet below grade using 0.020-inch slotted screen (Figure 4). The drilling contractor will develop the well at least 48 hours after it is installed.

4. The new well will be sampled at least 72 hours after it has been developed.

5. A State-certified laboratory will analyze water samples for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes, methyl tert-butyl ether, tert-butyl alcohol, other oxygenates, lead scavengers, methanol, and ethanol analyses using EPA Method 8260B.

6. A licensed surveyor will be contracted to survey the new well.

Field procedures for the proposed field program will be conducted as described in the approved IRAP dated 21 March 2008 (Arctos, 2008). A well construction diagram for the proposed injection well is shown on Figure 4. Field personnel may adjust the actual well depth and screen placement as required by the field conditions encountered. Arctos will evaluate the field and analytical data and incorporate the results into the first quarter 2009 status report. The report will include the following:

- ☐ Field activities and sampling procedures (including boring/well construction log, development log, sampling log, and a figure showing the well location)
- ☐ Laboratory analytical results presented in tables.

Schedule

To include the proposed wells in the planned treatment system construction, Arctos is requesting approval to conduct the well installation activities in February 2009.

If you have any questions or comments, please call Mike Purchase at 510/525-2180 or Matthew Nelson at 562/988-2755.

Very truly yours,

ARCTOS ENVIRONMENTAL

Matthew Nelson
Senior Staff Engineer

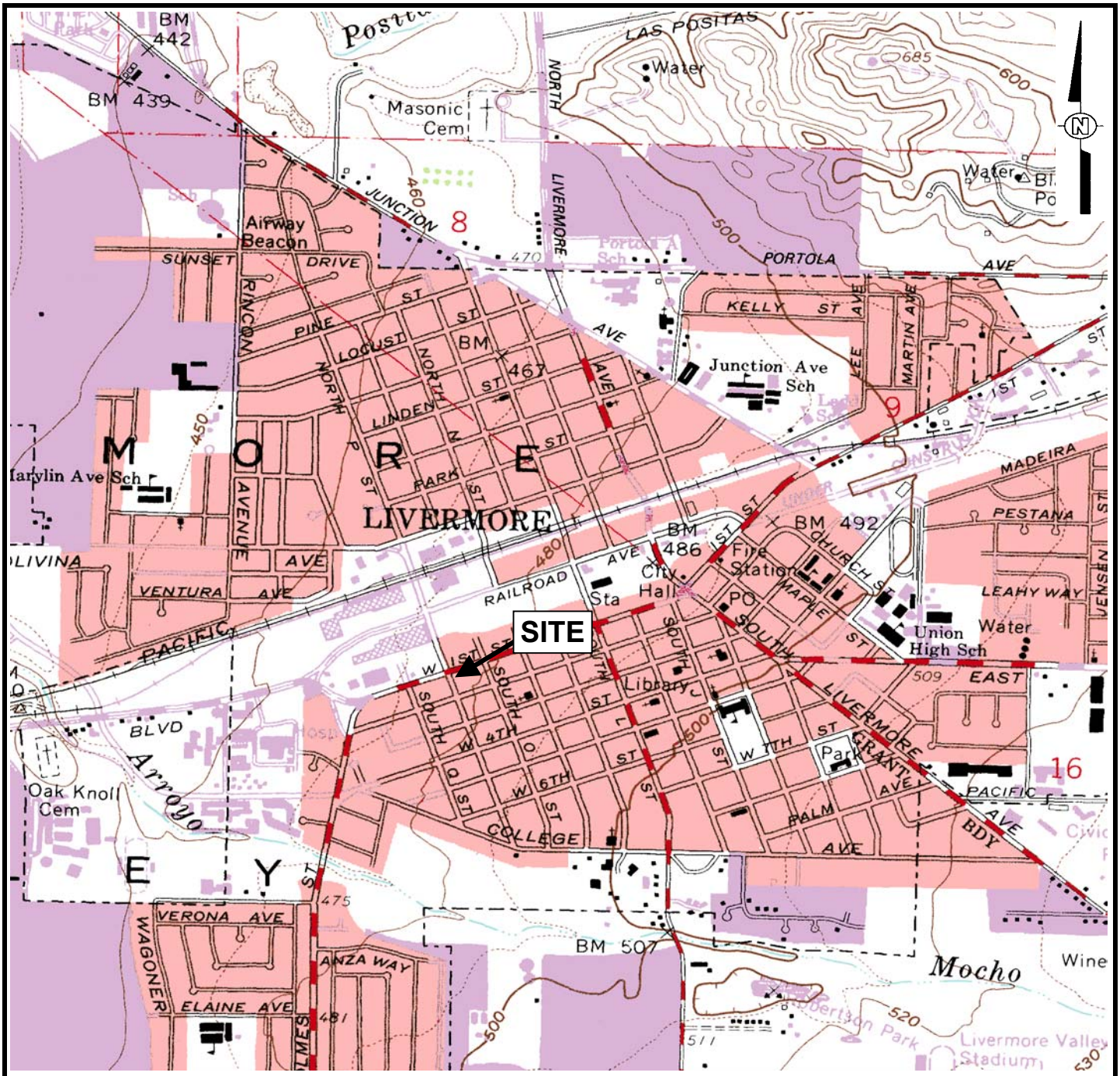
Michael P. Purchase, P.E.
Senior Project Manager

Copy: Jeffrey M. Baker, P.E. – Tesoro Companies, Inc.
Colleen Winey – Zone 7 Water Agency

Attachments: Figure 1 – Site Location Map
Figure 2 – Site Plan
Figure 3 – Cross Section A-A'
Figure 4 – Injection Well Construction Diagram

References

Arctos Environmental, 2008. *Interim Remedial Action Plan for Groundwater, 1619 1st Street, Livermore, California, Tesoro Station No. 67076, Former Beacon Station No. 3604, ACEH Case No. RO0434,* 21 March.



REFERENCE

7.5 MINUTE USGS TOPOGRAPHIC MAP OF
LIVERMORE, CALIFORNIA QUADRANGLE
DATE: 1961, PHOTOREVISED 1980
SCALE = 1:24,000

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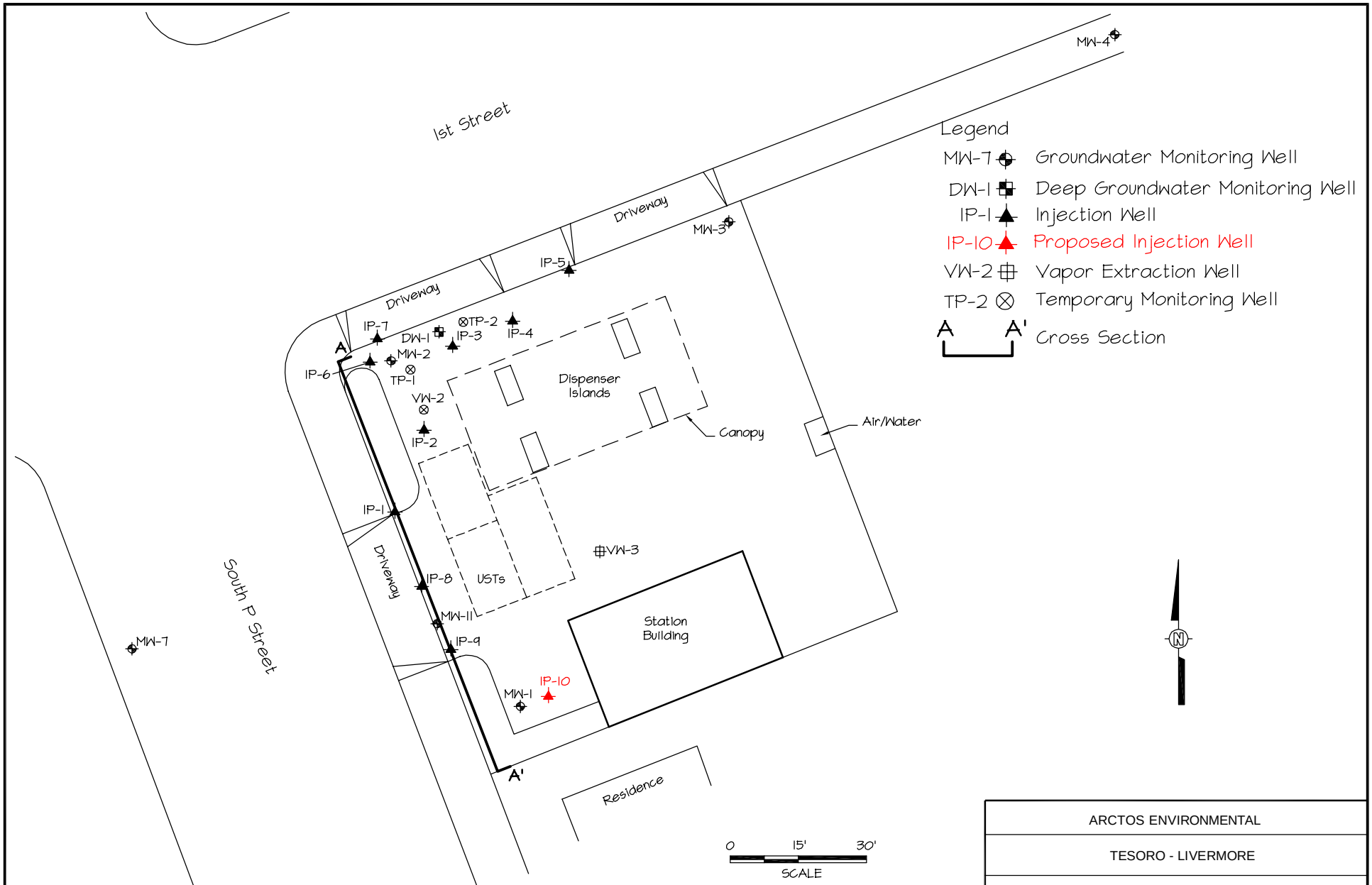
TESORO - LIVERMORE			
SITE LOCATION MAP			
PROJECT NO. 01LV	DRAWN BY MP	CHECKED BY MP	APPROVED BY JG
FILE NO. Site Map.xls		**FIGURE 1**	



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0	0	MY	1/21/09	Additional Well Installation Work Plan

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PROPOSED WELL LOCATION

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FIGURE 2

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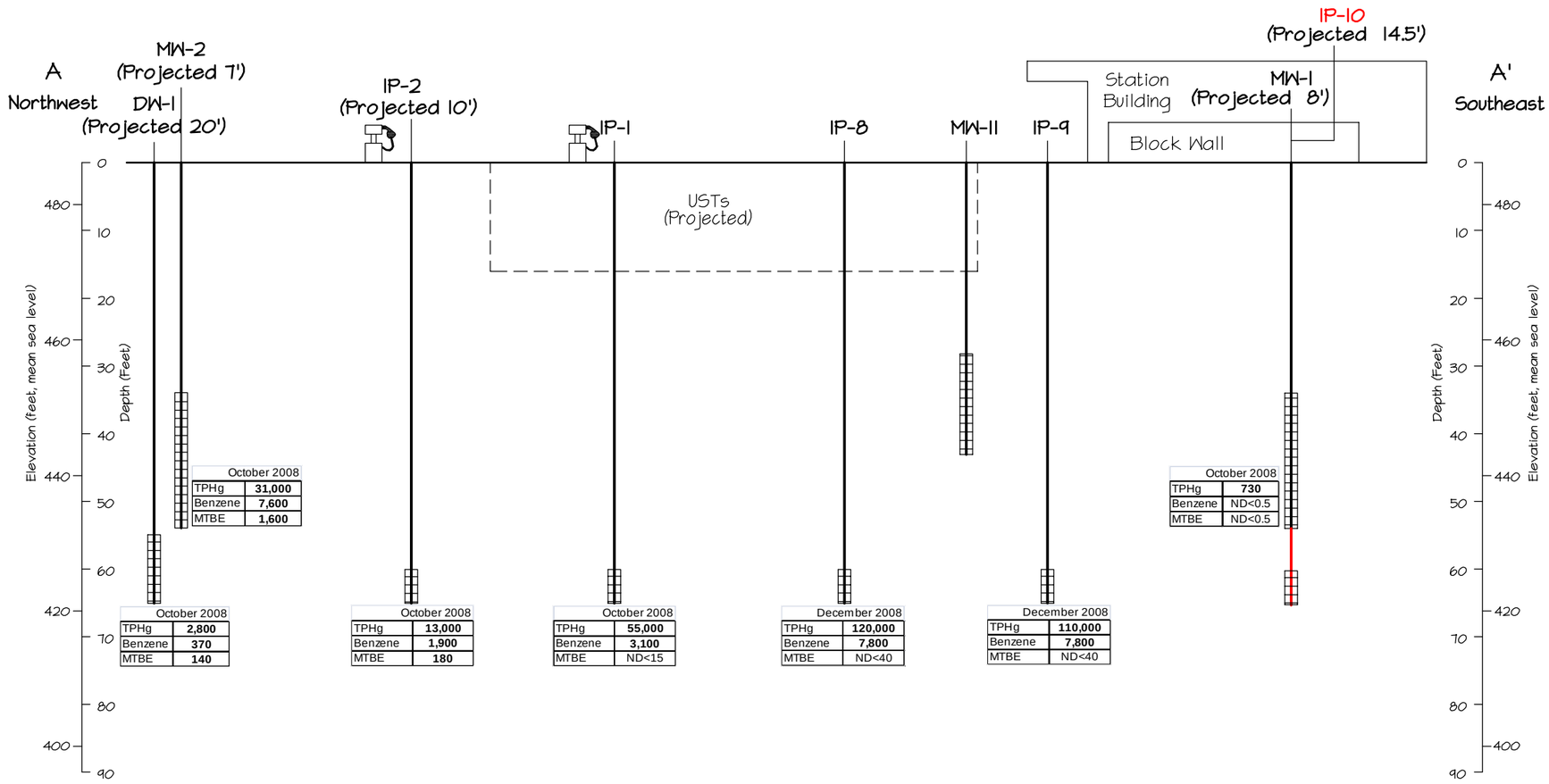

Legend

MW-1 Well Identification

IP-1 Injection Well

IP-10 Proposed Injection Well

Screened interval groundwater wells sampled on 13 October 2008 and 16 December 2008

Groundwater Results

TPHg	730
Benzene	ND<0.5
MTBE	ND<0.5

- TPHg: Total Petroleum Hydrocarbons As Gasoline (µg/l)
- Benzene (µg/l)
- MTBE: Methyl Tert-Butyl Ether (MTBE) (µg/l)

0 5' 10'
Horizontal Scale

0 10' 20'
Vertical Scale

REVISION	NO.	BY	DATE	DESCRIPTION
0	0	MY	1/21/09	Additional Injection Well Installation Work Plan

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CROSS SECTION A-A'

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FIGURE 3

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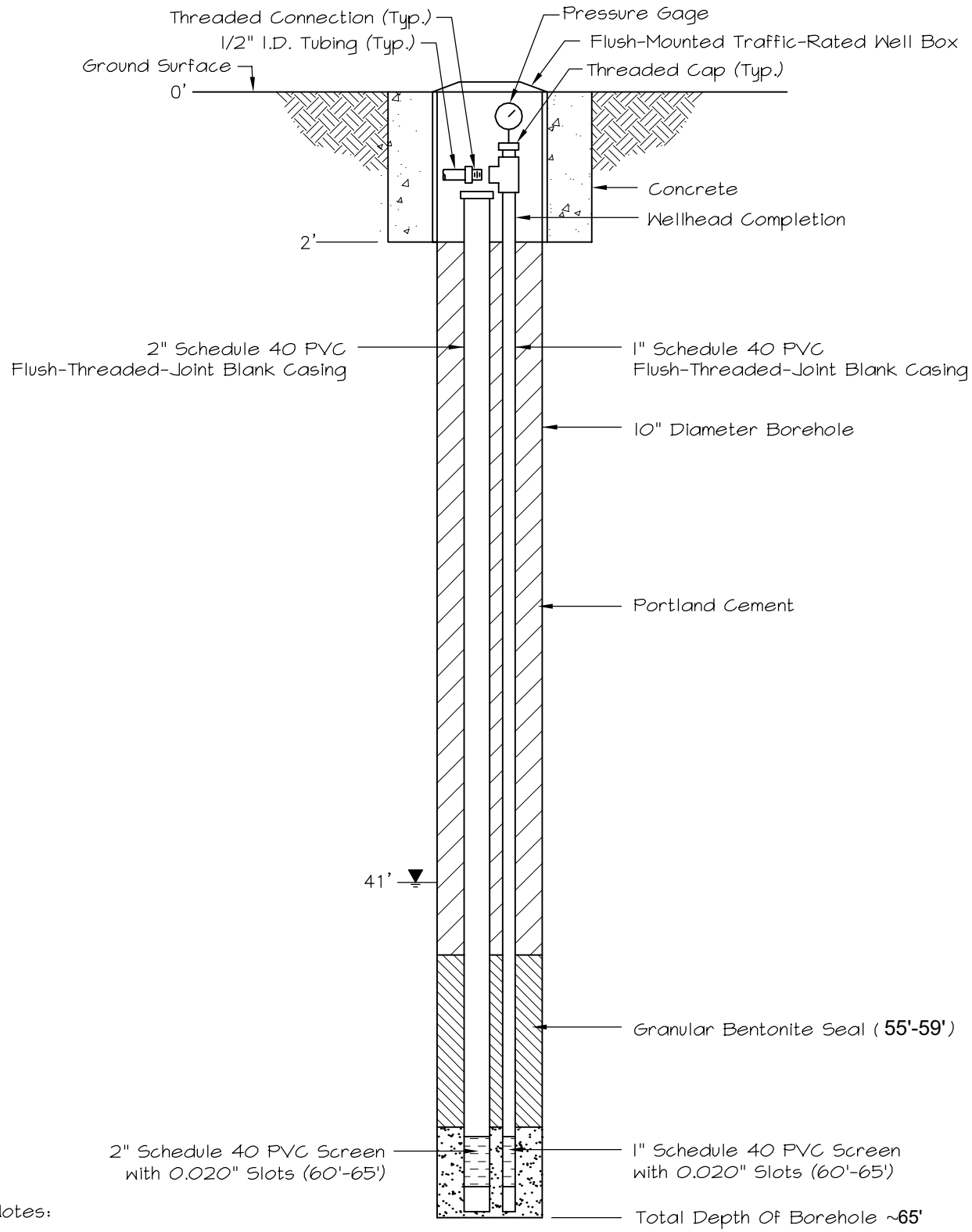

Notes:

1. Drawing not to scale.

2. Actual well construction may vary based on field investigation.

REVISION	NO.	BY	DATE	DESCRIPTION
	0	MY	3/21/08	IRAP
	1	MN	8/29/08	Additional Well Installation Work Plan
2	2	MN	1/21/09	Additional Well Installation Work Plan

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TESORO - LIVERMORE

INJECTION WELL CONSTRUCTION DIAGRAM

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FIGURE 4

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