



Delta
Environmental
Consultants, Inc.

September 18, 2002

Alameda County
SEP 24 2002
Environmental Health

3164 Gold Camp Drive
Suite 200
Rancho Cordova, CA 95670-6021
U.S.A.
916-638-2085
FAX: 916-638-8385

Mr. Amir Gholami
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: *Request for Shut-down of Dual Vacuum Extraction System*
Former Chevron Service Station No. 9-0260
21995 Foothill Boulevard
Hayward, California
Delta Project No. DG90-260

Dear Mr. Gholami:

Delta Environmental Consultants, Inc. (Delta) was authorized by Chevron Products Company (Chevron) to request the shut-down of the Dual Vacuum Extraction (DVE) system operation at former Chevron Service Station No. 9-0260, located at 21995 Foothill Boulevard, Hayward, Alameda County, California (Figure 1). Site features are shown in Figure 2.

The decision to shut-down the DVE system was based on data reported in DVE system performance reports provided by Terra Vac and cumulative groundwater analytical data reported in groundwater monitoring reports. After assessing available DVE system data and residual concentrations of the hydrocarbons in groundwater we have concluded that the DVE system in its current configuration is no longer economically effective at removing hydrocarbons.

Delta is preparing a workplan for pilot testing to provide data necessary to evaluate options to address residual contamination at this site. The pilot test workplan is being submitted as a separate document.

Rationale for DVE System Shut-Down

The DVE system was designed to address the bulk of the contamination source associated with the former tank basin and onsite source areas. Terra Vac proposed that remediation of the soil and groundwater in the vicinity of the site could be completed in two phases. The first phase involved removal of the bulk of the contamination using DVE. The second phase involved the removal of residual contamination using polishing methods such as bio-sparging and or air sparging. However, due to the concerns of vapor transport in nearby residential buildings, the second phase was never implemented.

A summary of system operations beginning October 1997 through August 2002 is provided below:

- October 1997 through April 1998 - The DVE system removed approximately 17,000 pounds of hydrocarbons and approximately 620,000 gallons of water were treated with carbon and discharged to the sanitary sewer. Hydrocarbon removal rates peaked at 330 pounds per day, began to decrease in mid- January 1998 and fell to less than 5 pounds per day with the rise in groundwater elevation in March 1998 due to the storms of El Nino. DVE operations were suspended until groundwater elevations decreased in July 1998.
- July 1998 through December 1998 - The DVE system removed approximately 12,000 pounds hydrocarbons and approximately 680,000 gallons of water were treated with carbon and discharged to the sanitary sewer. Hydrocarbon removal rates peaked at 215 pounds per day, began to decrease in November and fell to less than 6 pounds per day with the rise in groundwater elevation in December 1998. DVE operations were suspended until groundwater elevations decreased in July 1999.
- January through August 1999 - Concentrations of hydrocarbons in groundwater samples collected from onsite wells MW-6, MW-7, MW-11 and MW-14 were below commercial and residential Risk Based Corrective Action (RBCA) goals established for this site.
- April 1999 - Interim DVE wells DVE-17, DVE-18, and DVE-19 were installed.
- June 1999 through November 1999 - The system operated erratically on interim wells due to equipment problems, high silt levels, and plugged carbons.
- November 1999 through August 2000 - Groundwater samples from wells MW-4 through MW-7 and MW-18 met residential RBCA goals. Groundwater samples from MW-11 met commercial RBCA goals in February and May 2000.
- August 2000 through December 2000 - The system operated erratically apparently due to an electrical problem. The heating coil failed and had to be welded.
- January 2001 through October 2001 - The system was restarted in January 2001. System operations stabilized in February 2001. Approximately 500 pounds of hydrocarbons were removed predominantly from interim DVE wells DVE-17, DVE-18, and DVE-19 through May 2001. Another 500 pounds of hydrocarbons were removed during the erratic operations from July through October 2001. The heating coil failed again in October 2001.
- May 2002 - The heating coil was replaced and the system was restarted. The flow rate was approximately 370 scfm, with hydrocarbon removal at less than 1 pound per day.
- June 2002 through August 2002 - The system operated sporadically due to low influent vapor concentrations and high groundwater levels. A system status report for this operation period was not available.

A graph depicting cumulative hydrocarbon mass removal is attached. The graph indicates that the system's hydrocarbon mass extraction rate has reached an asymptotic level and the system is no longer economically effective at removing hydrocarbons.

Conclusion

During its life span, the DVE system accounted for the removal of over 30,000 pounds of hydrocarbons. Based on Terra Vac's operational records, since the groundwater elevation has risen, the removal rate has dropped to less than 1.0 pound per day. Since the DVE wells were not appropriately screened for optimum exposure during seasonal changes in groundwater elevation, the current well design has limited the ability of the current system to adequately address hydrocarbons in the submerged "smear zone".

Based on the low hydrocarbon removal rate of the current system, Delta recommends that the system be shut-down immediately. As discussed earlier, Delta also recommends that a pilot test be performed to assess additional remediation options and/or system modifications, including well configurations to address residual hydrocarbons.

Pilot Test for Additional Information

Delta is preparing a workplan to perform pilot testing this fall. The pilot test is being performed to provide data to evaluate the next phase of remediation to more effectively remediate residual soil and groundwater hydrocarbon impacts. It is anticipated that the pilot test workplan will be submitted to you in mid October 2002, which will include a schedule for the pilot testing. Pilot test results will be presented in a remediation workplan to address residual soil and groundwater impacts.

Remarks/Signatures

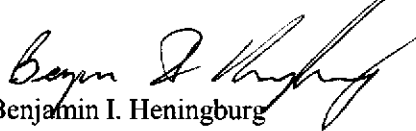
The interpretations contained in this report represent our professional opinions, and are based in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

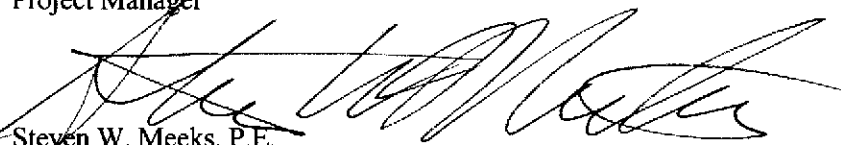
Mr. Amir Gholami
Alameda County Health Care Services Agency
September 18, 2002
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If you have questions or comments regarding this request, please contact Ben Heningburg at (916) 536-2623.

Sincerely,

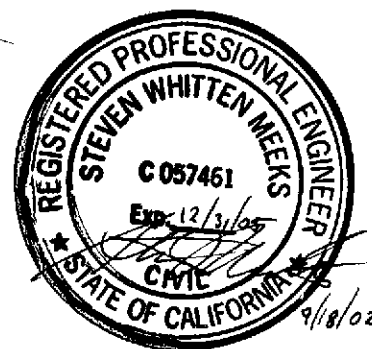
DELTA ENVIRONMENTAL CONSULTANTS, INC.

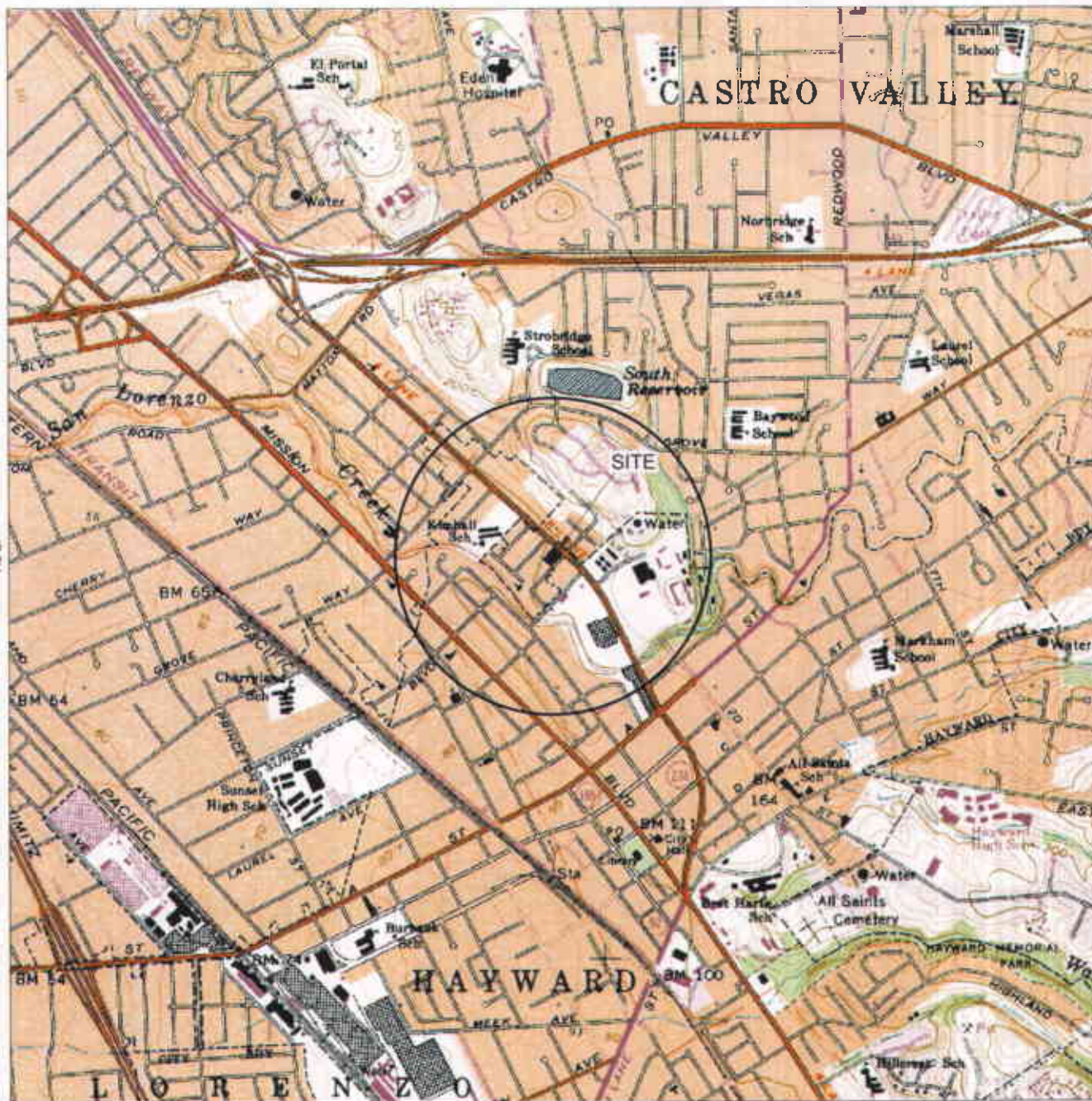

Benjamin I. Heningburg
Project Manager


Steven W. Meeks, P.E.
Project Manager
California Registered Civil Engineer No. C057461

BIH (CL001.9-0260 Sys Shutdown Rqst)

cc: Karen Streich - Chevron Products Company
Hugh Murphy - City of Hayward Fire Department
Jim Brownell - Delta Environmental Consultants, Inc.
Mr. and Mrs. Arthur Castillo, 1180 Rex Road, Hayward, CA 94541





R2W

GENERAL NOTES:
 BASE MAP FROM U.S.G.S.
 HAYWARD, CA.
 7.5 MINUTE TOPOGRAPHIC
 PHOTOREVISED 1980



QUADRANGLE LOCATION



FIGURE 1

SITE LOCATION MAP

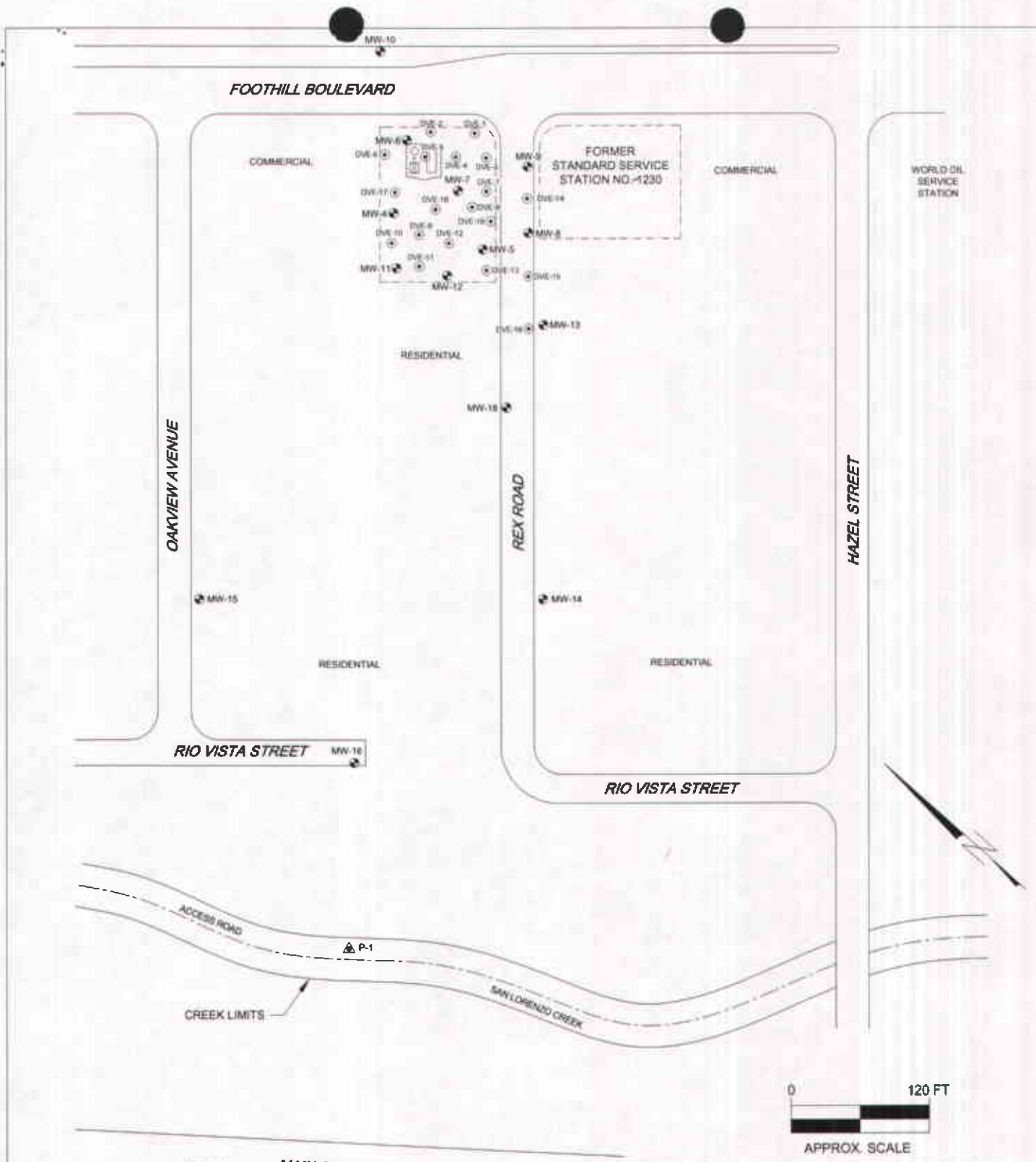
FORMER CHEVRON STATION NO. 9-0260
 21995 FOOTHILL BOULEVARD
 HAYWARD, CA.

PROJECT NO
 DG90-260
 FILE NO.
 DG90260A
 REVISION NO.
 1

DRAWN BY
 M.L. 9/17/02
 PREPARED BY
 W.S.
 REVIEWED BY



Delta
 Environmental
 Consultants, Inc.



LEGEND:

- MW-17 MONITORING WELL LOCATION
- ▲ P-1 PIEZOMETER LOCATION
- DVE-16 DUAL VACUUM EXTRACTION WELL LOCATION

FIGURE 2
SITE MAP

FORMER CHEVRON STATION NO. 9-0260
21995 FOOTHILL BOULEVARD
HAYWARD, CA.

PROJECT NO. DG90-260	DRAWN BY M.L. 9/17/02
FILE NO. DG90260B	PREPARED BY W.S.
REVISION NO. 1	REVIEWED BY



Cumulative Hydrocarbon Mass Extraction
Former Chevron No. 9-0260
21995 Foothill Boulevard, Hayward, CA

