Perjury Statement

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached proposal or report is true and correct, to the best of my knowledge.

Seung Lee, owner, German Autocraft

WORK PLAN FOR DPE/AS FEASIBILITY STUDY

German Autocraft
301 E. 14th Street
San Leandro, California

Global ID No. T0600100639
AC LOP Case # 2783

Prepared For

Mr. Seung Lee
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Prepared By

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Cleaning California from the Groundwater up
347 Frederick Street, San Francisco, California 94117
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February 15, 2008

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1.0 INTRODUCTION

Groundwater Cleaners Inc (GCI) recently prepared a Corrective Action Plan (CAP) that proposes to reduce lingering high concentrations of subsurface fuel associated with the subject Site using a process known as dual-phase extraction with air sparging (DPE/AS). This Work Plan for DPE/AS Feasibility Study is a follow-on step to the CAP, as approved in the December 28, 2007 letter prepared by the agency overseeing this fuel leak case, the Alameda County Environmental Health (ACEH). Concurrently, as part of evaluating how extensive, aggressive and thorough the ultimate remedial actions should be, GCI is preparing another work plan to investigate the current soil vapor concentrations and vapor intrusion risks. Groundwater impacts have already been defined and tracked over time by the case's ongoing monitoring program.

2.0 SITE LOCATION AND BACKGROUND

2.1 Site Location and Description

The Site is located at 301 E. 14th Street in San Leandro, CA, in a high-density, mixed-use neighborhood of residential and small commercial buildings. Figure 1 shows the site location. E. 14th Street is a busy thoroughfare, running approximately 25 degrees west of north-south. Nine properties with past or current UST-related problems have been identified within five blocks of this site, along E. 14th Street. The Site is approximately 90' x 120' in size (~10,800 square feet) and its current use is an automobile repair facility.

1.2 Site Hydrogeologic Conditions

The Site is situated on mixed sediments about two miles east of San Francisco Bay within the East Bay Plain Groundwater Basin. First groundwater occurs within an areally continuous sandy stratum about 25-35 below grade. The groundwater gradient is usually about 0.002 ft/ft and the flow direction is typically WNW, which is consistent with the fuel plume orientation. Figure 2 shows the fuel impact area and the locations of monitoring wells, both on-site and off-site.

1.3 Project History

The subject fuel leak was discovered when an on-site gasoline storage tank was removed in October of 1990. Several series of investigations were performed and 14 monitoring wells were constructed through the subsequent years up to 2001. Well '141 Farrelly' was formerly used by a private residence for irrigation water supply. Groundwater impacts have been defined and are now tracked over time by the case's ongoing monitoring program. No active remediation has taken place since the excavating associated with the removal of the gasoline storage tank.

At the time of tank removal, free-phase liquid was present and soils were contaminated with high levels of fuel hydrocarbons. Now, levels of hydrocarbons in groundwater have stabilized at levels of about 100,000 µg/L near MW-1 and 5,000 to 10,000 µg/L near MW-2, -3 and -4. Detectable amounts of fuel impact groundwater up to 350 feet down-gradient of the site, but ongoing monitoring does not indicate any appreciable continued spreading. Testing of soil vapors on-site and directly downgradient, across Garcia Avenue, is pending.

3.0 PURPOSE

The primary purpose of the subject Feasibility Study is to affirm that DPE/AS is going to remove fuel mass effectively at this specific Site. Assuming that basic premise is shown to be true, additional objectives include the following - (a) obtaining data on key design parameters to be used in the actual remedial effort such as effective radii of influence, subsurface anisotropy influences (particularly with respect to the backfilled UST pit compared to undisturbed conditions), water yield rates, and relative conduciveness to air flow; and (b) improving predictions on how long and how expensive remediation will likely be. Some additional extraction wells and/or specialized air injection wells likely will be required for a successful remedial action, but the recommended number and layout will depend on the radii-of-influence found during this work.

If the concurrent soil vapor investigation mentioned in the Introduction determines that subsurface contamination levels associated with this case pose a potential vapor intrusion risk, a primary objective of the DPE/AS action will be to reduce the levels until they pose no unacceptable risk to the downgradient residents.

4.0 METHODOLOGY

The root of the subject groundwater contamination is hydrocarbon-contaminated soil in the water-bearing stratum that contacts the groundwater flowing past the site. DPE will attempt to markedly reduce the hydrocarbons so that natural bioattenuation processes can be reasonably expected to complete the remediation after operations cease. In the removal process, a significant amount of groundwater will probably be entrained in the vacuum-driven flow.

In our field work, a series of tests will be performed to determine the optimal methodology for an eventual remedial action. In each test, a partial vacuum will be applied to a well or group of wells for the purpose of extracting hydrocarbon vapors. Unless there is compelling reason to shorten a test, each run is planned to last a minimum of 2 hours. Different vacuum levels will be tested to determine the degree of hydrocarbon removal and amount of vacuum influence at surrounding wells under each condition.

There are five on-site wells (i.e., MW-1 through MW-5) plus two fairly close off-site wells (MW-6 and MW-8 as shown on Figure 3). Table 1 summarizes available construction data for these seven wells. Unfortunately, GCI does not currently know the

screen intervals of four key wells that are part of this Feasibility Study. This information will need to be obtained prior to conducting any field testing, either from County of Alameda records or a down-well camera.

Work will begin with single monitoring wells (MW-1, MW-2, MW-3 and MW-4), each tested in turn. Subsequently, we will conduct at least one multi-well extraction test such as the 3-well group consisting of MW-2 through MW-4. Outlying wells (MW-5, MW-6 and MW-8) will be checked for possible vacuum influences. Depending on the results of the single-well tests, several combinations of wells may be tested.

After the baseline DPE tests are conducted, compressed air will be injected into the ground through two new centrally-located well points (see Figure 3) in an attempt to provide an increased flow of air past the contaminated soil and through the groundwater (see Figure 4) to assist in dislodging adsorbed hydrocarbons. At most, we would conduct the 'with sparging' tests while extracting from MW-2, MW-3 and MW-4 individually and/or as a group, but not with individual extraction from MW-1.

We anticipate that hydrocarbon removal will be much greater for MW-1 and MW-4 than for the other wells as these two are closest to both the original fuel source and larger vertical intervals of contaminated soil.

For each test, the flow rate, sparge rate (if applicable), vacuum level, air pressure level (if applicable), water production and hydrocarbon level will be recorded. A typical field data sheet is provided as Attachment A. Vapor samples of inlet and discharge flows will be collected for "typical tests", then analyzed by a state-certified laboratory to meet BAAQMD requirements. Other hydrocarbon levels will be measured with a PID meter.

A schematic of our field unit is provided in Figure 5. The portable unit is capable of pulling up to 22 inches Hg vacuum and a flow of up to 500 scfm. For sparging, the unit can provide a flow of up to 250 scfm at 10 psi.

5.0 TENTATIVE WORK SCHEDULE

The starting schedule for this Feasibility Study is linked to resolving the crucial information about the well screen intervals of MW-2, MW-3, MW-4 and MW-5. If this information is not found in supplemental ACEH file reviews (or within Alameda County Public Works records), the services of a well specialty firm having a 2-inch downwell camera will have to retained. For efficiency, we would also like to install the two sparge well points as part of the same permitting and rig mobilization process as the pending soil vapor investigation.

Barring significant delays from the above, or any other, aspects, the field test work should be able to commence 3-5 weeks after ACEH approval of this Work Plan. Running the on-site tests is envisioned for a 5-day period. The data evaluation and reporting preparation likely will require an additional three weeks. In total, about a 6-8 week schedule is envisioned.

6.0 PROFESSIONAL CERTIFICATION

We declare, under penalty of perjury, that to the best of our knowledge, everything presented in this Work Plan is true and correct.

Should you have any questions or require supplemental information, please do not hesitate to contact us at (415) 665-6181.

Prepared by,

Glenn Reierstad, P.E.
Project Manager, Groundwater Cleaners, Inc.

Eric R. Lautenbach, P.E.
V.P. Engineering

Figures

Groundwater Cleaners, Inc.
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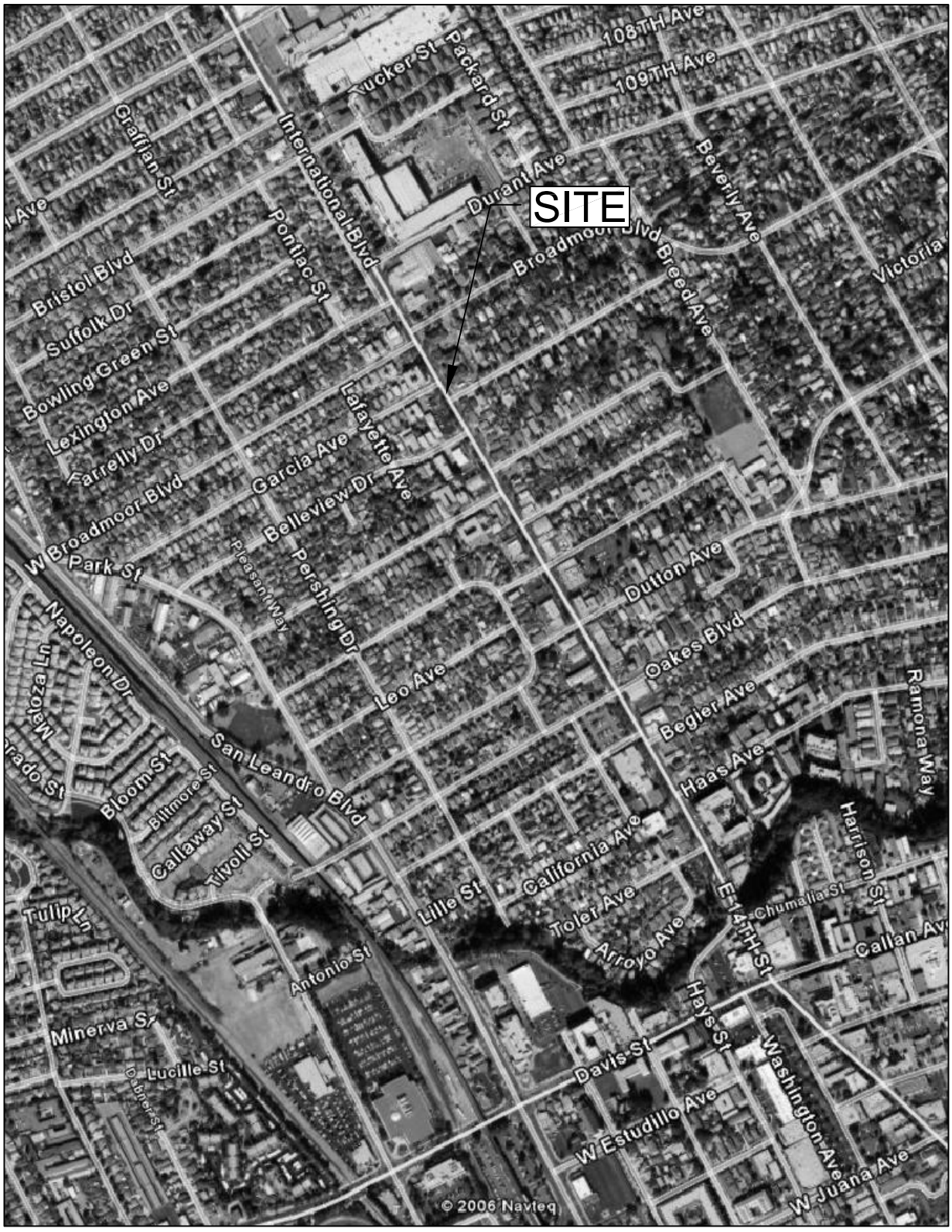
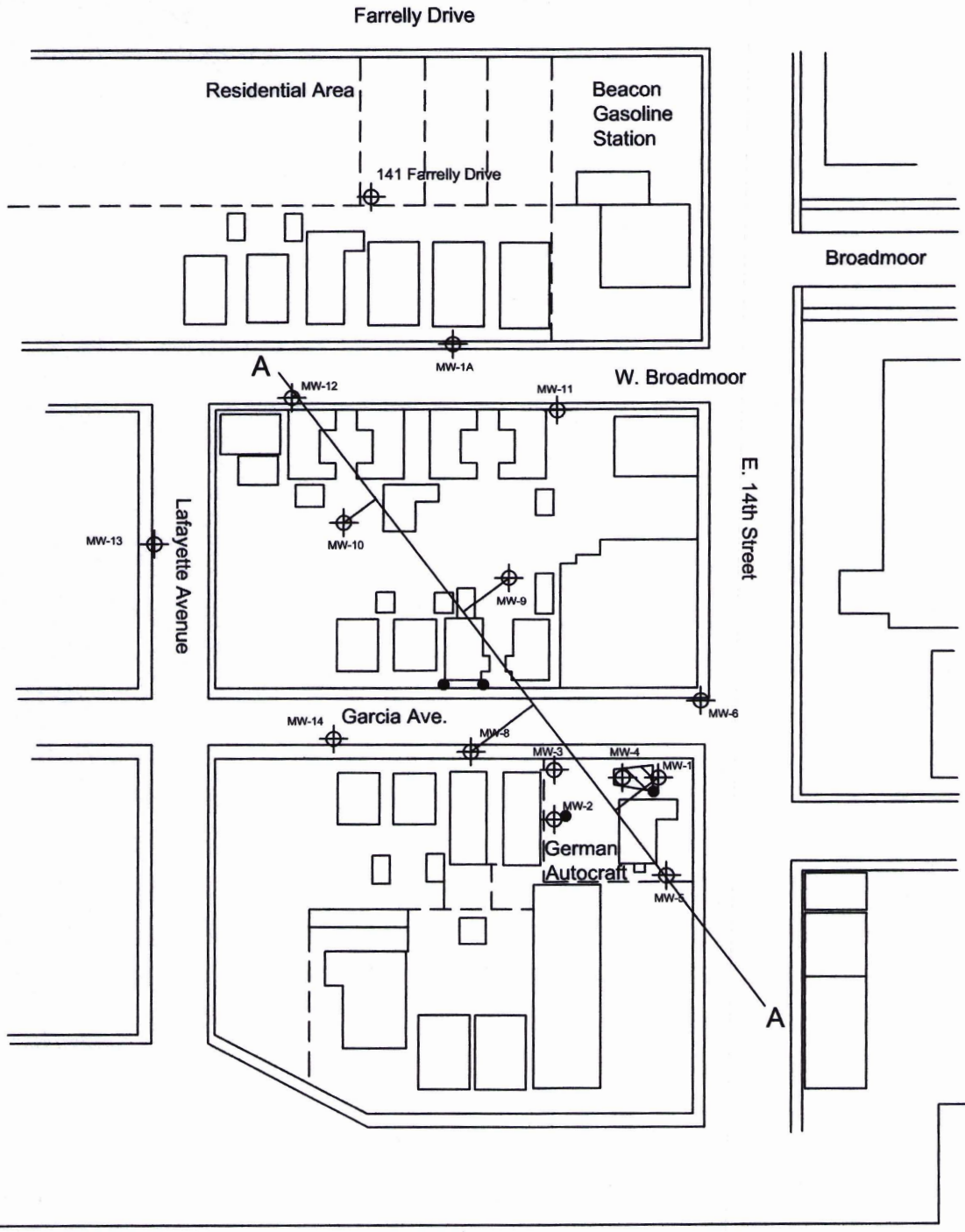


Image from Google ©2006

Groundwater GWC Cleaners Inc. *Cleaning California from the Groundwater Up* 347 Frederick Street, San Francisco, California, 94117 (415) 665-6181	German Autocraft 301 East 14th Street San Leandro, California	Figure 1 Rev. B
	Site Area Map	10.01.06



EXPLANATION:

0' 60' 120'

Scale: 1"=120'

A - A Geologic Cross Seciton

Proposed Soil Vapor Sampling Point

Groundwater Monitoring Well

Former Tank Pit Areas

Buildings

Groundwater GWC Cleaners Inc.

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(415) 665-6181

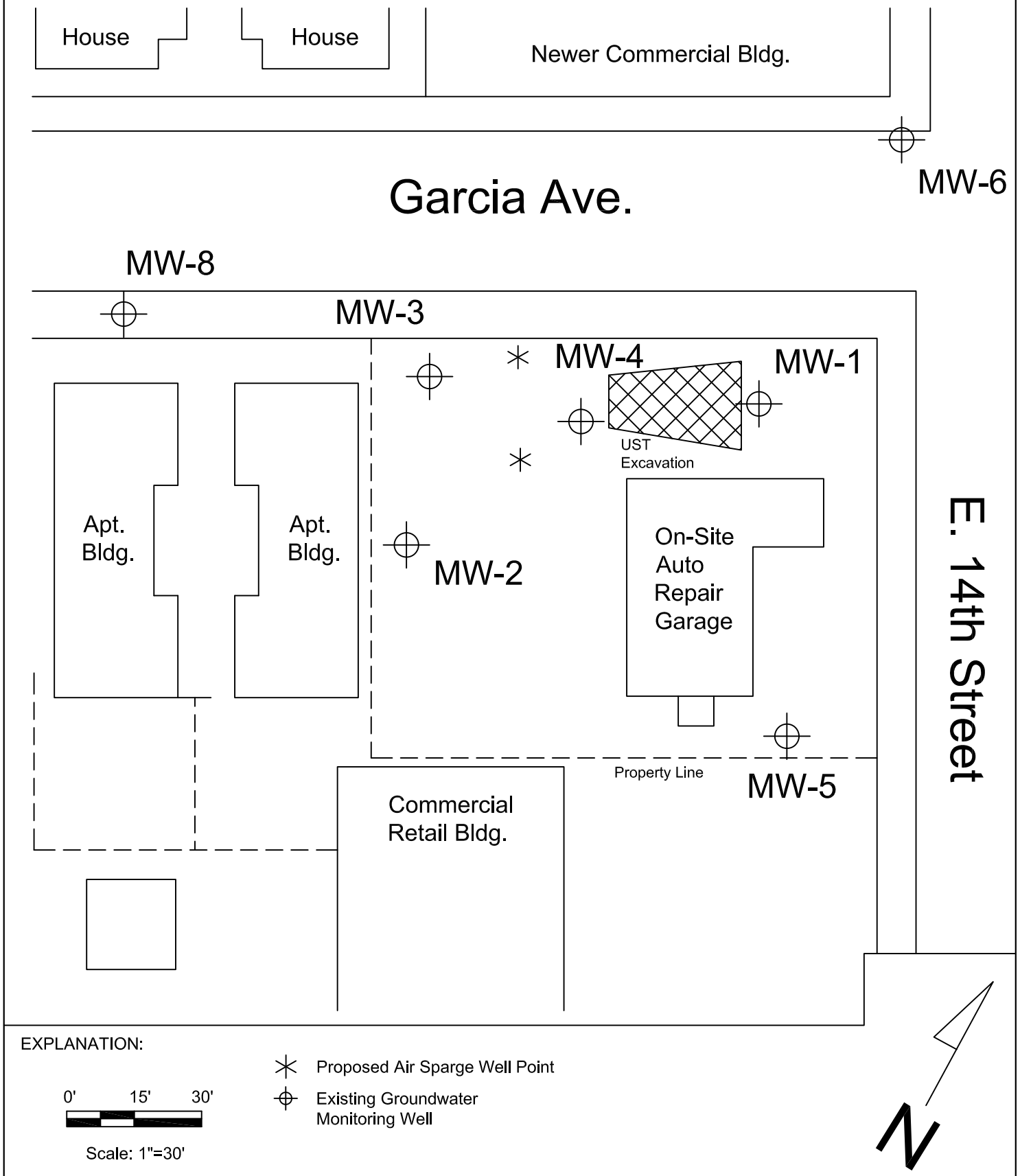
German Autocraft
301 East 14th Street
San Leandro, California

Figure 2

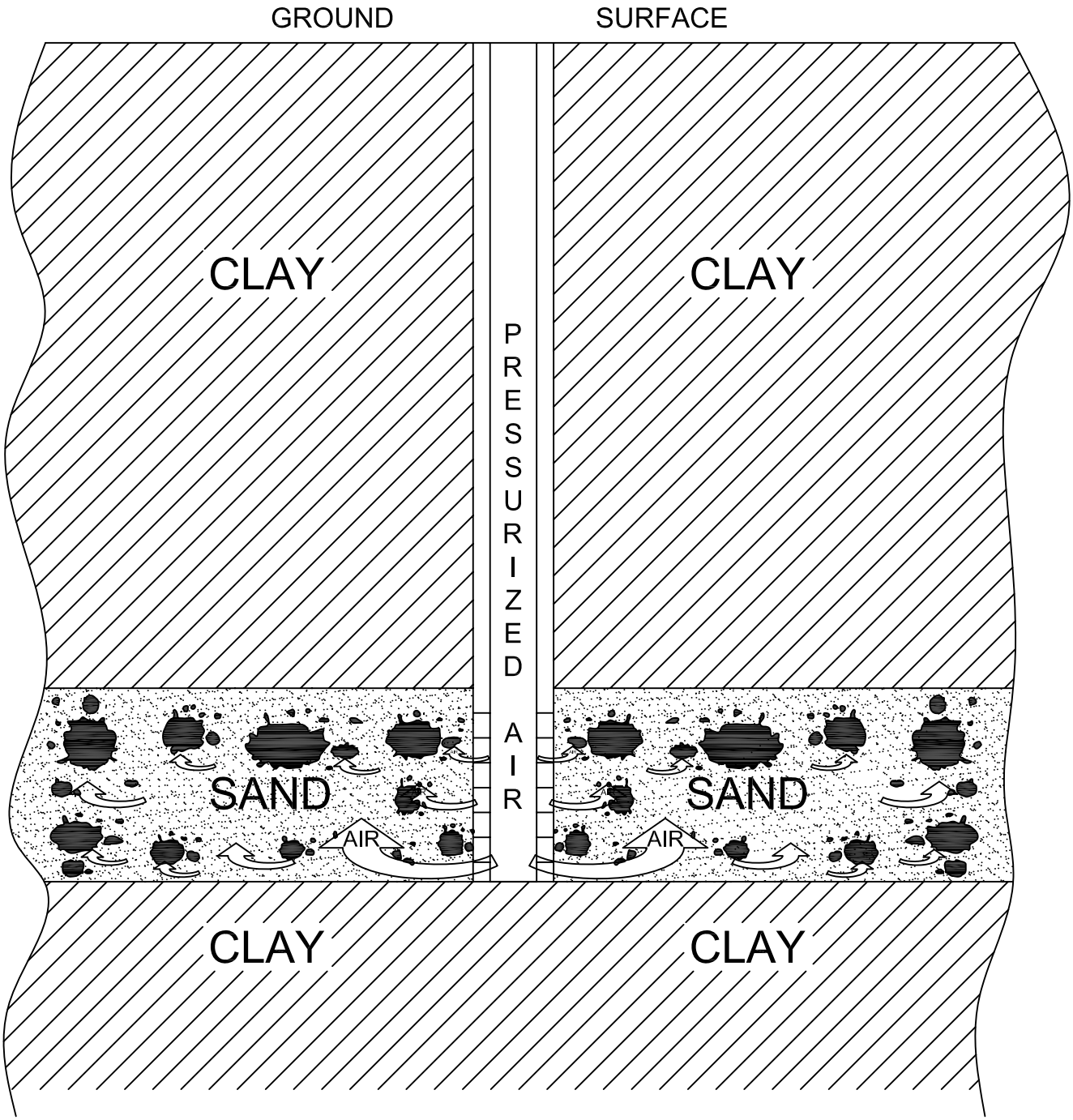
Rev. A

Fuel Leak Impact Area Plan

02.07.08

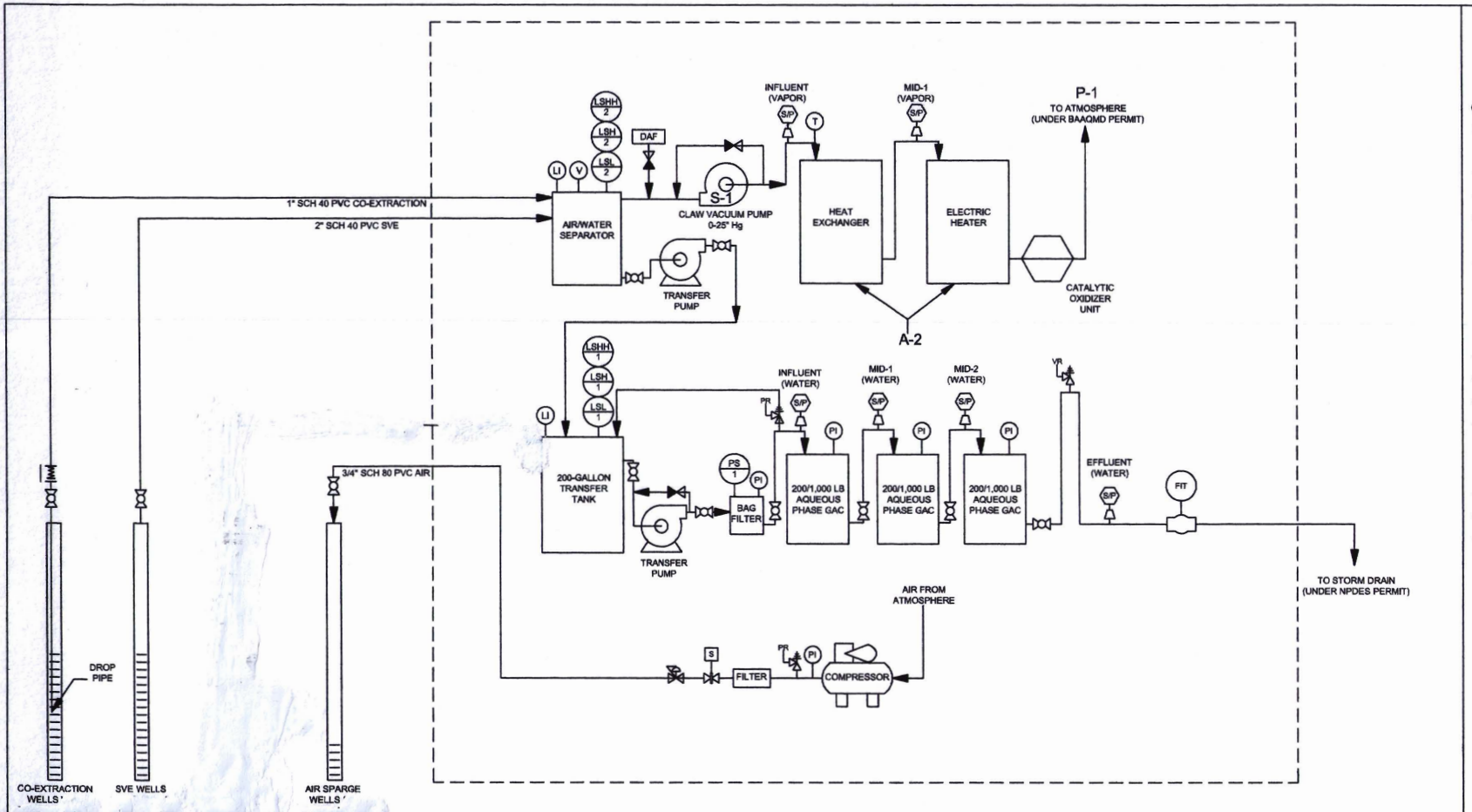


Groundwater GWC Cleaners Inc. *Cleaning California from the Groundwater Up* 347 Frederick Street, San Francisco, California, 94117 (415) 665-6181	German Autocraft 301 East 14th Street San Leandro, California	Figure 3 Rev. A
	Site Remedial Area Detail	02.17.08



AIR SPARGE WELL POINT SCHEMATIC
(NO SCALE)

Groundwater GWC Cleaners Inc. *Cleaning California from the Groundwater Up* 347 Frederick Street, San Francisco, California, 94117 (415) 665-6181	German Autocraft 301 East 14th Street San Leandro, California	Figure 4 Rev. A
	Anticipated Air Distribution	02.17.08



LEGEND

PRIMARY EQUIPMENT SYMBOLS

VACUUM PUMP; METERING PUMP; GROUNDWATER TRANSFER PUMP; COALESCING FILTER; LIQUID-RING BLOWER; DISCHARGE SILENCER; AIR COMPRESSOR; ANY FILTER

FITTING SYMBOLS

CAP (THREADED); UNION; PLUG (THREADED); FLANGED JOINT; REDUCER; ORIFICE-PLATE FLOW METER; RAIN CAP; CAM LOCK; WYE STRAINER; FLEXIBLE HOSE OR CONNECTOR; FOOT SCREEN; P-TRAP; SPRAY NOZZLE

VALVE SYMBOLS

GATE (NORMALLY OPEN); SOLENOID (NORMALLY CLOSED; FAIL CLOSED); GATE (THROTTLED); PRESSURE REGULATOR; BALL (NORMALLY OPEN); BALL (NORMALLY CLOSED); VACUUM RELIEF; BUTTERFLY (NORM. OPEN); PRESSURE RELIEF; BUTTERFLY (NORM. CLOSED); BALL CHECK; PRESSURE/ VACUUM RELIEF; SPRING CHECK; QUICK DISCONNECT; SEATLESS CHECK; AUTOMATICE DRAIN; QUICK DISCONNECT; NEEDLE VALVE

MISCELLANEOUS SYMBOLS

LOCALLY MOUNTED INSTRUMENT/SENSOR

CONTROL PANEL MOUNTED INSTRUMENT

OPERATING DEVICE (CP=CONTROL PANEL, M=MOTOR, S=SOLENOID)

ELECTRICAL INTERLOCK ("AND" OR "OR" LOGIC)

SAMPLE/PRESSURE PORT

EQUIPMENT GROUND

PRESSURE INDICATOR

LEVEL INDICATOR

VACUUM INDICATOR

TEMOERATURE INDICATOR

CONTROL UNIT	FUNCTION
LSHH 1	LEVEL SWITCH/HIGH HIGH ALARM TURNS OFF SUBMERSIBLE PUMP AND TRANSFER PUMP AT TRANSFER TANK, AND VACUUM PUMP AND AIR/WATER SEPARATOR TRANSFER PUMP DURING CO-EXTRACTION
LSH 1	LEVEL SWITCH HIGH: TURNS *ON* GROUNDWATER TRANSFER PUMP AT TRANSFER TANK
LSL 1	LEVEL SWITCH LOW: TURNS *OFF* GROUNDWATER TRANSFER PUMP AT TRANSFER TANK
PS 1	PRESSURE SWITCH: TURNS *OFF* GROUNDWATER TRANSFER PUMP AT TRANSFER TANK

CONTROL UNIT	FUNCTION
LSHH 2	LEVEL SWITCH/HIGH HIGH ALARM: TURNS *OFF* VACUUM PUMP AND TRANSFER PUMPS AT AIR/WATER SEPARATOR AND TRANSFER TANK *CLOSES* SOLENOID VALVE ON AIR SPARGE LINE
LSH 2	LEVEL SWITCH HIGH: TURNS *ON* GROUNDWATER TRANSFER PUMP AT AIR/WATER SEPARATOR
LSL 2	LEVEL SWITCH LOW: TURNS *OFF* GROUNDWATER TRANSFER PUMP AT AIR/WATER SEPARATOR

ABBREVIATIONS

DPI	DIFFERENTIAL PRESSURE INDICATOR
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
FI	FLOW INDICATOR
FIR	FLOW INDICATOR RECORDER
FIT	FLOW INDICATOR AND TOTALIZER
HS	HAND SWITCH (HAND, OFF, AUTO or ON, OFF)
LAHH	LEVEL ALARM HIGH HIGH
LAH	LEVEL ALARM HIGH
LAL	LEVEL ALARM LOW
LI	LEVEL INDICATOR
LSHH	LEVEL SWITCH HIGH HIGH
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
MS	MOTOR STARTER
PAH	PRESSURE ALARM HIGH
PI	PRESSURE INDICATOR
PS	PRESSURE SWITCH
TAD	TELEPHONE AUTOMATIC DIALER
TAH	TEMPERATURE ALARM HIGH
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TIC	TEMPERATURE INDICATOR CONTROLLER
TIR	TEMPERATURE INDICATOR RECORDER
TS	TEMPERATURE SWITCH
VSD	VARIABLE SPEED DRIVE

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TYPICAL DPE/AS SYSTEM

Process and Instrumentation Diagram - Catalytic Oxidizer As Abatement Device

Figure 5

Figure Rev.Date

Tables

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Table 1
Summary of Available Construction Details for Pertinent Wells

German Autocraft, 301 E. 14th Street, San Leandro, California

Well Number	Date Installed	Casing Diameter (inches)	Sounded Depth* (feet)	Screened Interval (feet)	Relative Location	TOC Elevation
MW-1	1/6/95	2	32.10	20-40 ft	Onsite	49.40
MW-2	1/6/95	2	33.05	unknown	Onsite	50.02
MW-3	1/6/95	2	34.80	unknown	Onsite	49.32
MW-4	12/30/98	2	34.30	unknown	Onsite	49.61
MW-5	12/30/98	2	21.15	conflict	Onsite	49.57
MW-6	12/30/98	2	33.10	20-35 ft	Off-site	48.06
MW-8	12/30/98	2	34.20	20-30 ft	Off-site	49.35

Note: * - Accumulated silt in well casing likely accounts for MW-1 and MW-6 having less open depth than their screen interval. Listed screen interval for MW-8 will be researched further for possible inaccuracy, as will the 'unknown' and 'conflict' intervals.

Field Data Sheets

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German Autocraft – Field Data Sheet

Date	Time	Wells under vacuum	Vapor Flow SCFM	Vacuum Inches Hg	Wells under pressure	Sparge Flow SCFM	Sparge Pressure psig	Heater Temp-erature	Catalyst Temp-erature	Stack Temp-erature