

October 19, 2000

Mr. Scott O. Seery – Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: **Workplan for Groundwater Monitoring Well Installations**
7867 Redwood Road, Oakland, CA

Dear Mr. Seery:

INTRODUCTION AND BACKGROUND

Stellar Environmental Solutions (SES) is submitting to the Alameda County Health Care Services Agency – Environmental Protection (ACHCSA) this workplan for installation and sampling of two additional groundwater monitoring wells at the referenced site, which is a service yard for the East Bay Regional Park District (District). This workplan is in response to the August 22, 2000 ACHCSA letter to the District. In accordance with that letter, **SES is currently conducting a Feasibility Study for corrective actions at the site.** The site monitoring report summarizing the most recent groundwater and surface water sampling event (September 2000) is included with this workplan. Figure 1 shows the site location, and Figure 2 shows the site plan.

PREVIOUS SITE ACTIVITIES

Until their removal in 1993, the site utilized two UFSTs (one 2,000-gallon diesel fuel and one 5,000-gallon unleaded gasoline) from the mid-1960s to 1993. Figure 2 shows the location of the former UFSTs. Site remediation and characterization activities have been conducted since 1993, beginning with removal of the UFSTs. A detailed discussion of previous site investigations and remedial activities is provided in previous SES reports. In brief, site investigations have documented a hydrocarbon groundwater plume that extends a distance of approximately 150 feet from the former UFST area to the creek, with concentrations above 10,000 µg/L TPH occurring over a distance of approximately 120 feet and a width of approximately 55 feet, beginning approximately 30 feet from the tank area. The data also indicate that the currently most

downgradient impacted well (MW-4) may not be located on the axis of the highest groundwater contamination (as indicated by April 1999 hydropunch groundwater sample HP-02), and that maximum site hydrocarbon concentrations in groundwater exist upgradient of the HP-02 location (as indicated by hydropunch samples HP-06 and HP-07). Figure 3 shows the April 1999 hydropunch groundwater analytical results and Figure 4 shows the most recent (September 2000) groundwater monitoring well analytical results.

While the existing groundwater monitoring well network and historical monitoring program have defined the lateral limits of the hydrocarbon plume, ACHCSA is requesting that two additional groundwater monitoring wells be installed and added to the quarterly groundwater monitoring program to provide a more focused evaluation of hydrochemical trends, as discussed below.

PROPOSED WELL INSTALLATION AND SAMPLING ACTIVITIES

In accordance with the ACHCSA August 22, 2000 letter, two groundwater monitoring wells (to be designated MW-7 and MW-8) will be installed at the approximate locations shown on Figure 2. Well MW-7 will be installed in the immediate vicinity of hydropunch location HP-02, just south of existing well MW-4, which is the most downgradient location available within the inferred centerline of the contaminant plume. Well MW-8 will be installed approximately half-way between MW-7 and the former UFST source area, within the inferred centerline of the contaminant plume. Exact well locations will be determined based on the results of the Feasibility Study and site constraints, but will likely not be moved more than 5 feet from the proposed locations.

Monitoring wells will be constructed in accordance with California Environmental Protection Agency (Cal/EPA) guidelines for sampling dissolved petroleum products in groundwater. There is no anticipated use of the wells for groundwater extraction; therefore the wells will be 2-inch diameter. Well construction will include the following:

- Fifteen feet of 2-inch diameter PVC factory-slotted well screen (0.010 inch slots) from total well depth (as with the existing site wells, the base of the wells will be at the top of the siltstone layer that defines the lower boundary of the water-bearing unit);

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- Annular sand pack from total well depth to 2 feet above the top of the well screen, overlain by 2 feet of hydrated bentonite pellets, overlain by neat Portland cement grout slurry;
- 2-inch diameter PVC blank casing from top of well screen to surface with locking well caps; and
- Surface completion will be either flush-mounted, Christy-type, traffic-rated well boxes or above-ground "stovepipe" type boxes with protective traffic bollards.

The boreholes for the wells will be geologically logged in accordance with the visual method of the Unified Soils Classification System, and borehole geologic logs will be prepared and certified by a California Registered Geologist. One soil sample will be collected for laboratory analysis from the capillary fringe from each borehole. The wells will be installed under appropriate permits from the Alameda County Public Works Agency.

No sooner than 48 hours following installation, the wells will be developed by surging and bailing or pumping to set the annular sand pack and reduce the potential for fine-grained native materials to infiltrate the sand pack. The vertical elevations of the well casing tops will be surveyed by a licensed California land surveyor so that accurate groundwater elevations can be measured over time.

Well development water will be temporarily containerized in the District's onsite poly tank that has historically been used to containerize groundwater well development and purge water. That water will be properly disposed of at a permitted non-hazardous liquids treatment facility.

PROPOSED WELL SAMPLING AND REPORTING

The wells will be included in the previously established program of quarterly monitoring and reporting. Groundwater sampling will be conducted in accordance with Cal/EPA guidelines for sampling dissolved petroleum products in groundwater. In brief, water levels will be measured with an electric water level meter prior to sampling. Each well will be purged by pumping or bailing of 3 to 5 wetted well volumes. Aquifer stabilization indicators (temperature, pH, electrical conductivity) will be measured between each well volume purged, and purging will continue until stabilized formation water is entering the well. Water samples will be collected with a new disposable bailer and transferred to sampling containers appropriate for each analytical method. Samples will be preserved and managed in accordance with USEPA

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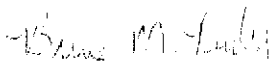
protocols. Groundwater samples will be analyzed by a State of California ELAP-certified laboratory for the site contaminants of concern (TPHg, TPHd, BTEX and MTBE). To demonstrate that the groundwater plume is stable or reducing, groundwater samples may also be analyzed for indicators of natural attenuation, which might include ferrous iron, dissolved oxygen, redox potential (ORP), sulfate and/or nitrogen.

Groundwater monitoring well installations will be documented in the first quarterly groundwater monitoring report that follows well installations. Subsequent quarterly groundwater monitoring reports will be prepared and submitted in accordance with the previously established program. All reports will be signed by a California Registered Geologist.

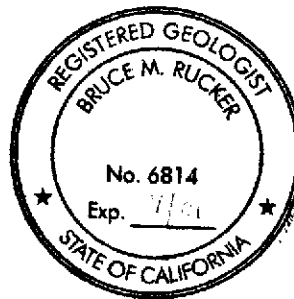
We trust that this submittal meets your needs. Please contact me directly if you have any questions or to provide your concurrence with this workplan, so that we may initiate the well installation program.

Sincerely,

Stellar Environmental Solutions



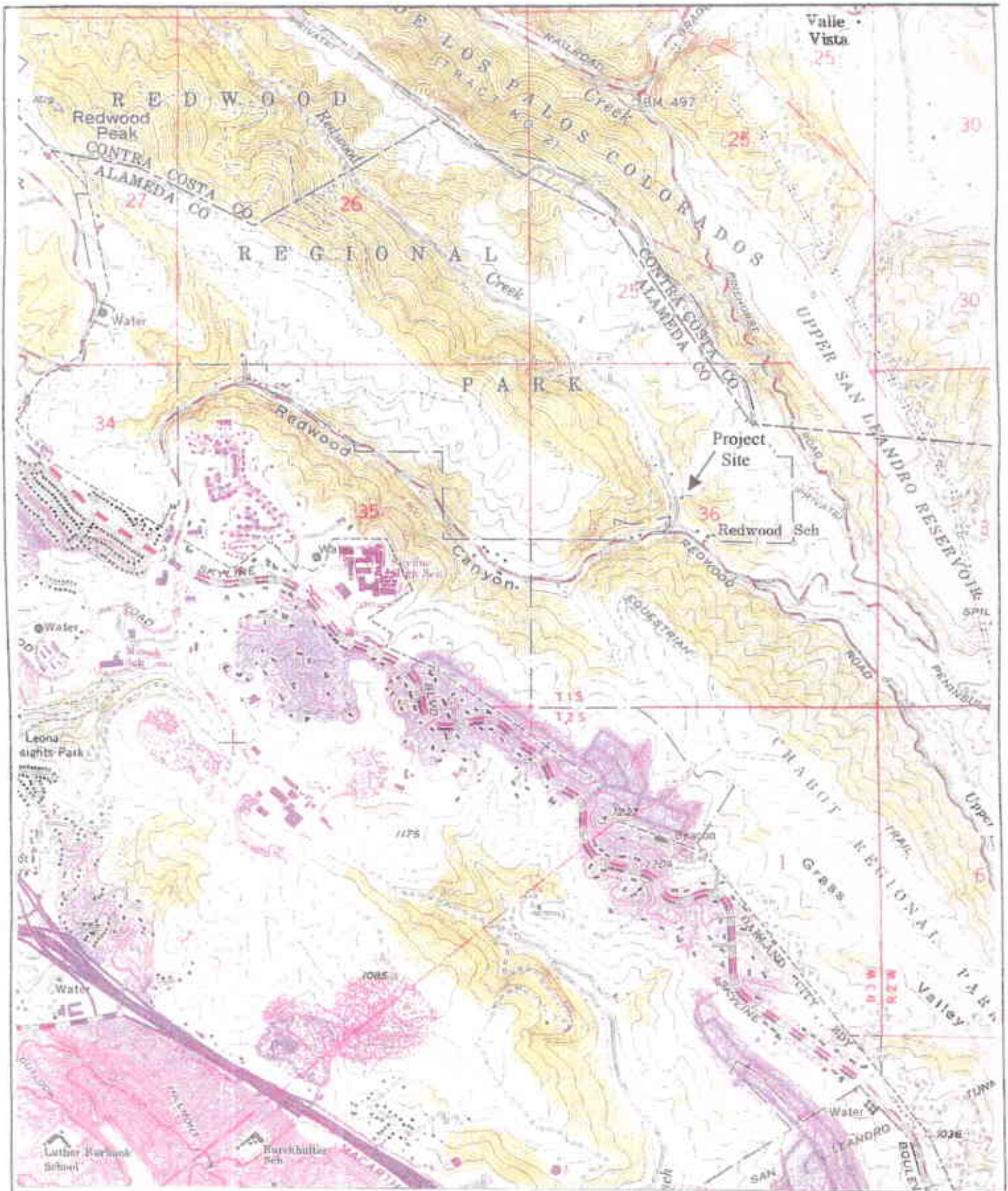
Bruce M. Rucker, R.G., R.E.A
Project Manager



cc: Chuck Headlee – Regional Board
Ken Burger – East Bay Regional Park District

Attachments: Figures 1 through 4

FIGURES



U.S.G.S. TOPOGRAPHIC MAP SHOWING SITE LOCATION

Redwood Regional Park Service Yard
Oakland, Alameda County, California

By: MJC

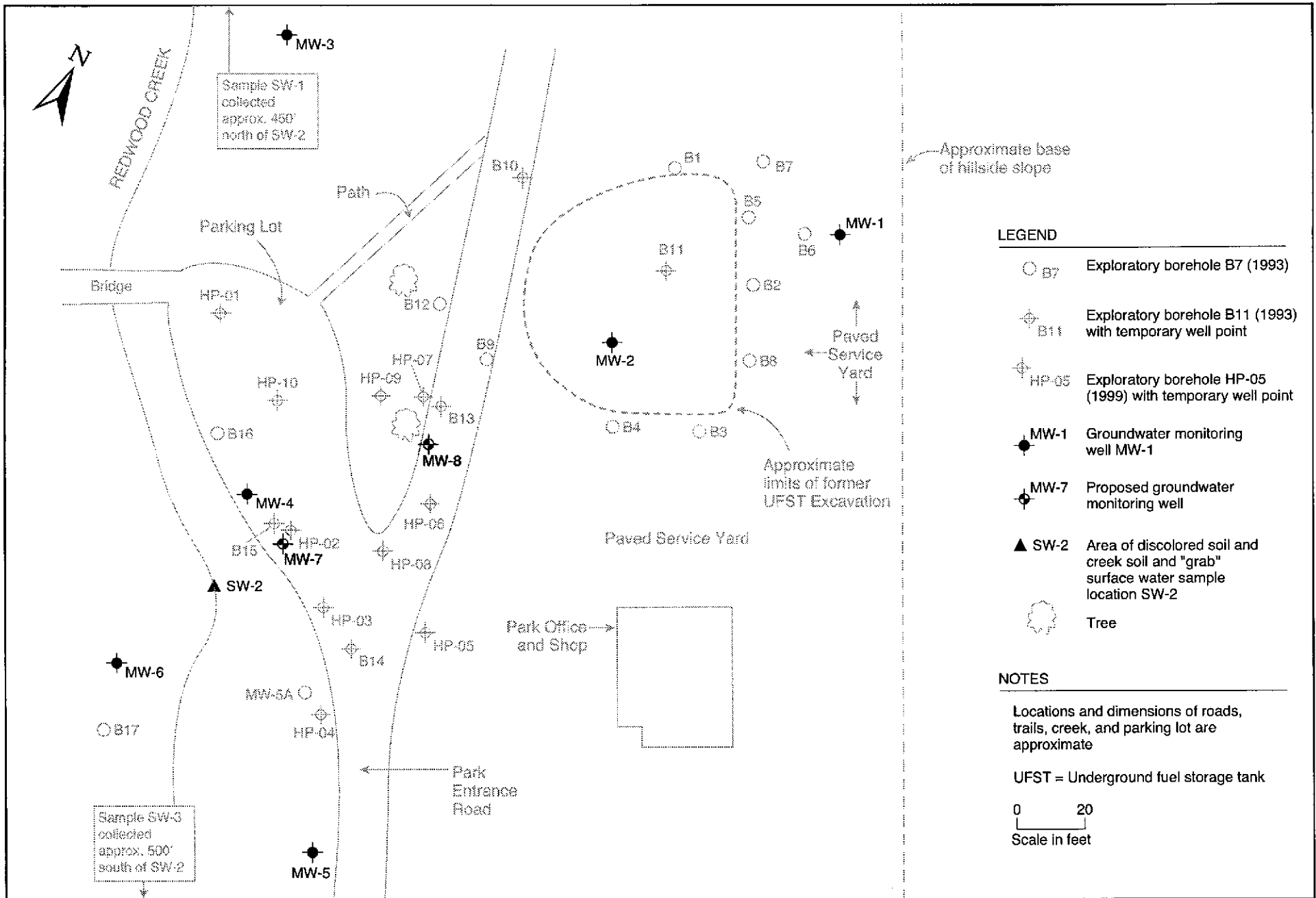
NOVEMBER 1997

Figure 1



Stellar Environmental Solutions

Geoscience & Engineering Consulting



LEGEND

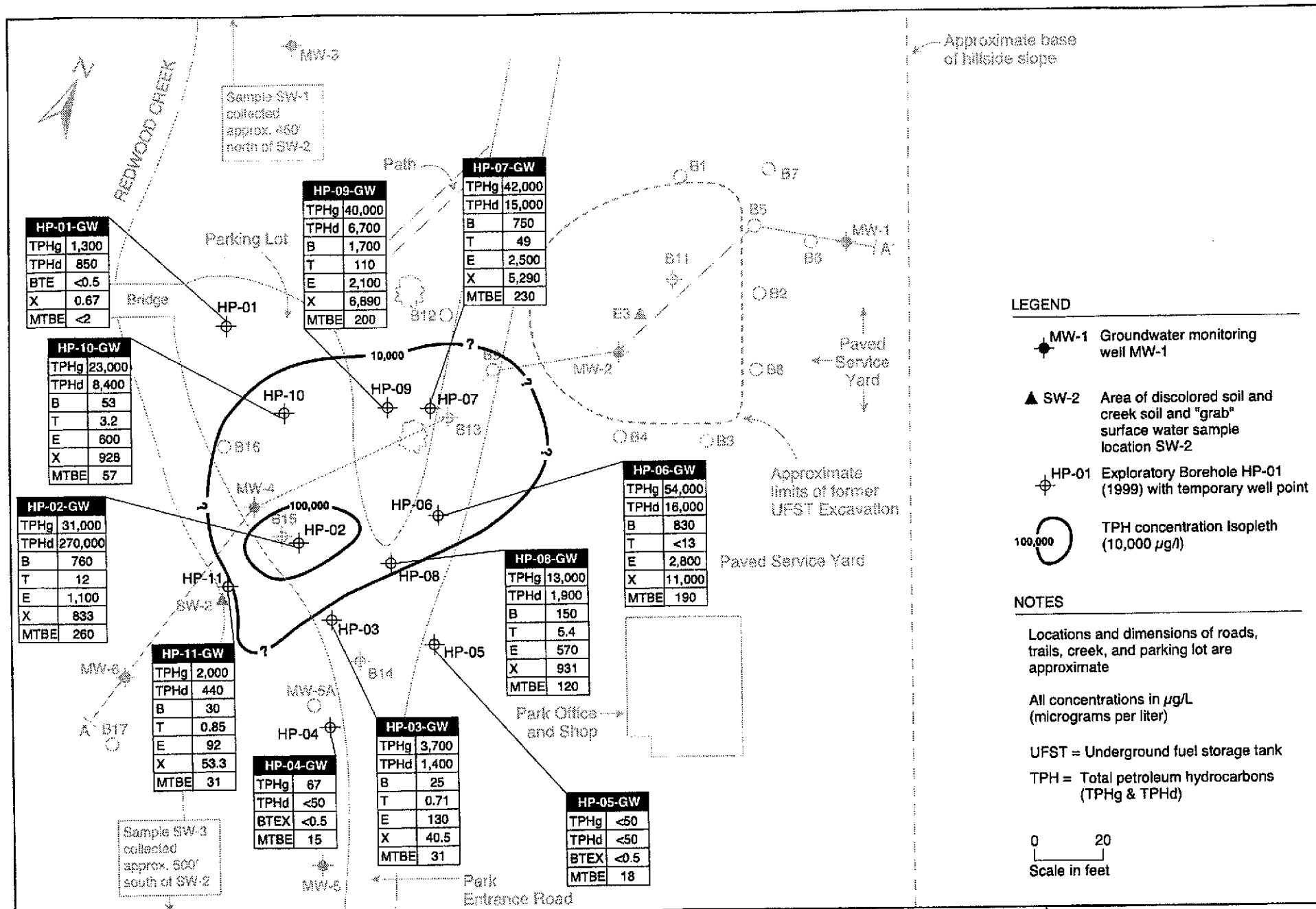
- B7 Exploratory borehole B7 (1993)
- ⊕ B11 Exploratory borehole B11 (1993) with temporary well point
- ⊕ HP-05 Exploratory borehole HP-05 (1999) with temporary well point
- MW-1 Groundwater monitoring well MW-1
- ⊕ MW-7 Proposed groundwater monitoring well
- ▲ SW-2 Area of discolored soil and creek soil and "grab" surface water sample location SW-2
- 🌳 Tree

NOTES

Locations and dimensions of roads, trails, creek, and parking lot are approximate

UFST = Underground fuel storage tank

0 20
Scale in feet



Approximate base of hillside slope

LEGEND

- MW-1 Groundwater monitoring well MW-1
- SW-2 Area of discolored soil and creek soil and "grab" surface water sample location SW-2
- HP-01 Exploratory Borehole HP-01 (1999) with temporary well point
- 100,000 TPH concentration isopleth (10,000 µg/l)

NOTES

Locations and dimensions of roads, trails, creek, and parking lot are approximate

All concentrations in µg/L (micrograms per liter)

UFST = Underground fuel storage tank

TPH = Total petroleum hydrocarbons (TPHg & TPHd)

0 20
Scale in feet

HP-01-GW	
TPHg	1,300
TPHd	850
BTE	<0.5
X	0.67
MTBE	<2

HP-09-GW	
TPHg	40,000
TPHd	6,700
B	1,700
T	110
E	2,100
X	6,890
MTBE	200

HP-07-GW	
TPHg	42,000
TPHd	15,000
B	750
T	49
E	2,500
X	5,290
MTBE	230

HP-10-GW	
TPHg	23,000
TPHd	8,400
B	53
T	3.2
E	600
X	928
MTBE	57

HP-02-GW	
TPHg	31,000
TPHd	270,000
B	760
T	12
E	1,100
X	833
MTBE	260

HP-06-GW	
TPHg	54,000
TPHd	16,000
B	830
T	<13
E	2,800
X	11,000
MTBE	190

HP-08-GW	
TPHg	13,000
TPHd	1,900
B	150
T	6.4
E	570
X	931
MTBE	120

HP-11-GW	
TPHg	2,000
TPHd	440
B	30
T	0.85
E	92
X	53.3
MTBE	31

HP-04-GW	
TPHg	67
TPHd	<50
BTEX	<0.5
MTBE	15

HP-03-GW	
TPHg	3,700
TPHd	1,400
B	25
T	0.71
E	130
X	40.5
MTBE	31

HP-05-GW	
TPHg	<50
TPHd	<50
BTEX	<0.5
MTBE	18

