

2169 E. FRANCISCO BOULEVARD, SUITE B
SAN RAFAEL, CALIFORNIA 94901
415/457-7595 FAX: 415/457-8521

22 May 1989

Mr. Bob Foss
Chevron USA
2410 Camino Ramon
San Ramon, CA 94583

Re: Proposed Soil Vapor
Extraction System
Chevron Service Station #92582
7420 Dublin Blvd.
Dublin, CA
WGR # 1-124.03

Dear Mr. Foss:

As per your request, Western Geologic Resources, Inc. (WGR) is submitting a preliminary design of a soil vapor extraction system to be installed at the Chevron Service Station #92582 located at the corner of Dublin Blvd. and Village Parkway.

SCOPE OF WORK

This letter provides a preliminary workplan to address unsaturated soil contamination within the property limits of this site.

PROJECT APPROACH

WGR proposes to install a soil vapor extraction system that will ventilate hydrocarbons from the shallow low-permeability zones in the vicinity of the pump islands.

The unsaturated (vadose) zone soils can be remediated by soil vapor extraction. The normal procedure is to conduct a pilot test to establish design criteria for the soil venting system. Unfortunately, testing of this site is not practical in its current state: the surface must be sealed at grade in order to prevent short-circuiting of soil vapor flow paths. We propose to install an interim venting system, test its efficacy and then upgrade it if necessary. It is likely that the interim venting system will be capable of remediating the entire contaminated unsaturated zone.

The remediation will progress in three phases:

Phase I: Install vent piping in the existing excavated areas, backfill and pave areas.

Bob Foss/22 May 1989

2

Phase 2: Perform a soil vent pilot test to determine the zone of influence and extraction rate.

Phase 3: Permit and install an air emissions unit and expand the vent system if necessary.

A brief description of the three phases follows:

Phase 1:

WGR proposes to install three perforated pipe manifolds in the existing excavated areas, as shown in the attached Figure 1. The three pipes will be installed in a trench leading to the planter area located south west of the pump islands and stubbed out at the surface. A grout seal will prevent short circuiting of air through the trench backfill. The excavated areas will be backfilled with pea-gravel and/or sand, and the area will be paved to seal the surface.

The manifold in the tank pit would not be used. It will be provided in the unlikely event that contamination is found in the eastern portion of the property. The tank pit area will be isolated from the rest of the excavated area by a bentonite grout plug to allow independent venting of the rest of the excavation area.

Phase 2:

The pilot test will be carried out by installing a series of soil gas pressure monitoring points through out the contaminated unsaturated zone, then applying a vacuum to the manifolds in the backfill near the pump islands. This will require the extraction of air from the two pipe stub-outs in the planter area.

The air flow rate will be measured at various vacuum levels. The pressure will be measured at the monitoring points and recorded. The zone of influence at various vacuum/flow conditions will be mapped and compared with the contaminated zone.

The air stream extracted from the pipe stub-outs will be sampled and analyzed for hydrocarbon content. The results of these analyses will be used to make projections of hydrocarbon extraction rates.

Bob Foss/22 May 1989

3

Phase 3:

After the zone of influence maps are compared with the contaminated soil area, the lowest flow/vacuum combination that influences the entire contaminated zone will be chosen. If no such combination exists for the venting system as currently proposed, the pilot test data will be extrapolated to design an adequate upgrade. If needed, the upgrade will consist of more powerful blowers and/or additional vents.

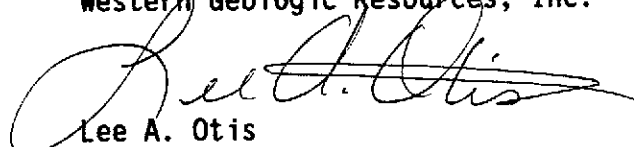
The hydrocarbon extraction rates will determine the approach to air emissions treatment and permitting. The most effective treatment system will depend on air flow rate and hydrocarbon concentration in the air stream. Once the treatment system design is complete, an air emissions source permit application will be submitted to the Bay Area Air Quality Monitoring District (BAAQMD). The permanent extraction/treatment system will be installed and started up upon receipt of a permit to operate from BAAQMD.

EVALUATION OF REMEDIAL ACTION


The hydrocarbon extraction rates will be monitored at appropriate intervals. Once the rates have dropped significantly, the site will be re-assessed. If the hydrocarbon concentrations in the soils have dropped sufficiently, the system will be shut down. All concerned regulating agencies will be notified well in advance of our intentions to shut the system down.

Should you have any further questions, or require additional information, please feel free to contact us at your convenience.

Sincerely,
Western Geologic Resources, Inc.



Lee A. Otis
Project Hydrogeologist



Rudy Millan P.E.
Senior Engineer

cc: Gil Wilstar - Alameda County Environmental Health Dept.

124P1My9

LEGEND	
	Monitoring Wells Installed by Engineering, Science, and Technology, Inc.
	Pea-Gravel Back-Fill
	Bentonite Grout
	Perforated 4" Pipe, Buried
	Non-Perforated 4" Pipe, Buried

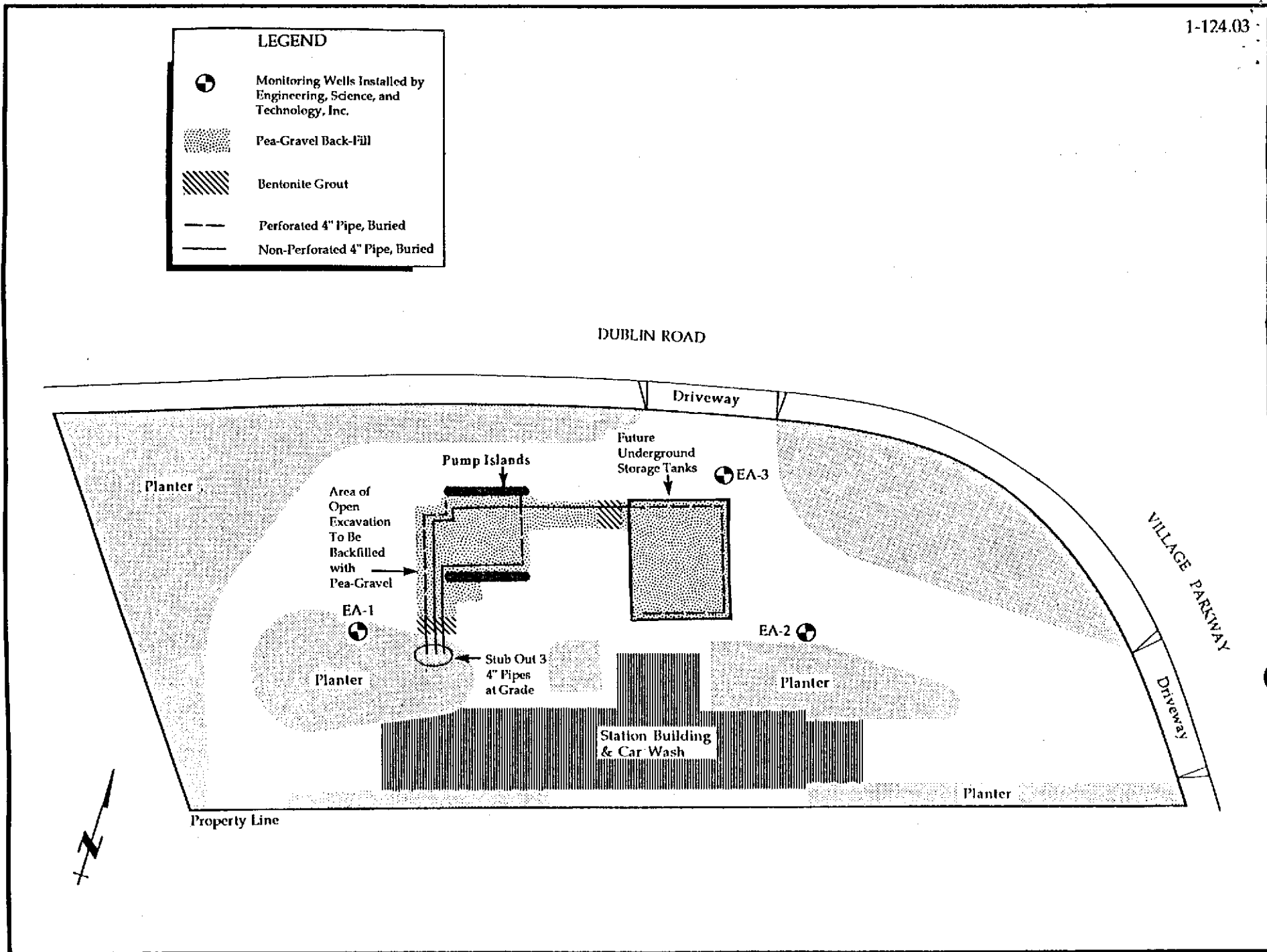


Figure 1. Site Map with Proposed Soil Vent Lines Chevron SS # 92582, Dublin, California