ENVIRONMENTAL ENGINEERING, INC
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August 30, 2000

Mr. Barney M. Chan
Alameda County
Department of Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Claim No. 7912
Site Address: 3609 International Blvd., Oakland, California

Dear Mr. Chan:

A copy of SOMA's "Installation of Soil Vapor Extraction and Air Sparging System and Initial Results Report" for the subject property is enclosed.

Thank you for your time in reviewing our report. If you have any questions or comments, please call me at (925) 244-6600.

Sincerely,

Mansour Sepehr, Ph.D.,P.E.
Principal Hydrogeologist

MS/jb

Enclosure

cc: Mr. Abolghassem Razi w/enclosure
Tony's Express Auto Service

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1.0 INTRODUCTION

This report has been prepared by SOMA Environmental Engineering, Inc. (SOMA) on behalf of Mr. Tony Razi, the property owner. The site is located at 3609 International Boulevard Oakland, California (the "Site"); see Figure 1. This report documents installation of a Soil Vapor Extraction and Air Sparging System installed in July and August of 2000.

The Vapor Extraction System (VES) installation was completed in July 2000, based on the recommendation of the Corrective Action Plan (CAP) document dated July 1, 1999 prepared by SOMA (SOMA July 1, 1999), followed by approval from the Alameda County Department of Environmental Health. Prior to preparation of the CAP, SOMA conducted groundwater flow modeling and vapor extraction testing to evaluate various alternatives for remediation of fuel-impacted soil and groundwater beneath the site. Based on the recommendation of the CAP, installation of a French drain for groundwater extraction purposes, combined with air sparging and vapor extraction was determined to be the most cost effective and feasible solution for removal of petroleum hydrocarbon beneath the Site.

1.1 Background

Currently, the Site is used as a gasoline service station. The environmental investigation at the subject property started since 1992, when Mr. Razi, the property owner retained Soil Tech Engineering, Inc. (STE) of San Jose to conduct a limited subsurface investigation. The purpose STE investigation was to determine whether or not the soil near the product lines and underground storage tanks (USTs) have been impacted with petroleum hydrocarbons.

In July 1993, STE removed one- single-walled 10,000-gallon gasoline tank and one single-walled 6,000-gallon gasoline tank along with a 550-gallon waste oil tank from the Site. These tanks were replaced by similar sized double-walled USTs. Currently, there is one-10,000 gallon double-walled gasoline tank and two-6,000 gallon double-walled gasoline tanks beneath the Site.

In December 1997, Mr. Razi retained Western Geo-Engineers (WEGE) to conduct additional investigation and perform groundwater monitoring on quarterly basis. The results of WEGE groundwater monitoring events indicated elevated levels of petroleum hydrocarbons and MTBE in groundwater.

1.2 Scope of Work

The scope of this report is to document the installation of the Soil Vapor Extraction System located adjacent to Tony's Express Auto Service, and to present the initial results of the system operation. This work was divided into four tasks:

Task 1: **Permit Acquisition and Preparation of Health and Safety Plan**
Task 2: **Installation of Vapor Extraction System**
Task 3: **Pilot Testing and Initiation of Vapor Extraction System**
Task 4: **Report Preparation**

2.0 PERMIT ACQUISITION AND PREPARATION OF HEALTH AND SAFETY PLAN

For construction of the Vapor Extraction System, necessary permits were obtained from the Bay Area Air Quality Management District (BAAQMD) (see Appendix A).

Prior to commencement of field activity, a site-specific health and safety plan was prepared by SOMA. The health and safety plan (HSP) was designed to address safety provisions during field activities. It provided procedures to protect field crew from physical and chemical hazards resulting from testing and exposure to fuel-impacted vapors, as well as other site specific hazards. The HSP established personnel responsibilities, general safe work practices, field procedures, personal protective equipment standards, decontamination procedures and emergency action plans.

3.0 INSTALLATION OF VAPOR EXTRACTION SYSTEM

The purpose of the VES system is to extract hydrocarbon-contaminated vapor from the soil, and to remove all traces of contaminants before exhausting the clean air to the atmosphere. This system remediates hydrocarbon contamination residing in soil and groundwater through enhancement of the volatilization process. This is combined with an air sparging system that introduces oxygen into the subsurface and increases the rate of aerobic biodegradation of hydrocarbons in soil and groundwater.

3.1 Installation of the Vapor Extraction System

Four vapor extraction wells (P-1 through P-4) and two horizontal vapor extraction trenches (ISL-1 and ISL-2) were originally installed by STE in August of 1993 (Figure 2). Each vapor extraction well each consists of a 6-inch diameter PVC casing that extends to a depth of 15 feet below ground surface and is capped on the bottom. In P-1, P-2, and P-3 the casing is perforated from 5 feet to 15 feet depth, but in P-4 the perforations extend from 8 feet to 15 feet depth. Each horizontal vapor extraction trenches consists of a 6-inch diameter, perforated PVC pipe placed horizontally at a depth of 4 feet below ground surface. Each of

these extraction points is connected to a junction box via PVC piping which runs below the paved surface of the Site, see Figure 2.

During testing of the system in 1999, it was determined that in some extraction wells the tops of the slotted sections were at or below the water table. SOMA concluded that these wells would be unsuitable for the vapor extraction, and it was SOMA's intent to replace them. However, since the installation and operation of the French drain at the Site, the groundwater level has dropped several feet. As a result of this, the perforated sections are above the water table. Since this is the case, no modifications were made to these wells. For installation details of these wells refer to Soil Tech Engineering (November, 93)

In July of 2000, SOMA personnel connected the existing extraction lines to a manifold consisting of 2" PVC pipe (Figure 3). This manifold was first connected to a moisture separator, and then connected to an oil-less vacuum blower. The blower was sized to withdraw 70 cubic feet of air per minute at a vacuum of 20 inches of water. Air exhausted from the blower passes into a series of 55 gallon drums that contain 200 pounds of granulated activated charcoal. These GAC vessels remove contaminants from the vapor stream before it is exhausted to the atmosphere.

3.2 Installation of the Air Sparging System

The air sparging system was installed by WEGE in March of 1998. It consisted of a small pump blowing air through thin plastic tubing that was lowered into several of the monitoring wells onsite. A cap was placed over the top of the wells, and the air was injected at a depth of 20 feet below ground surface. Air bubbling up from the tubing introduced oxygen into the water.

This system as designed is ineffective, as the filter pack material extends above

the water table. This allows injected air to escape directly to the soil, rather than confining the injected air to the groundwater. SOMA will operate the VES system without using the air sparging system for a trial period, but notes that these wells may need to be modified in the future for more effective groundwater treatment.

3.3 Details of Vapor Extraction System

The VES is composed of the following components:

Manifold:

During installation of the vapor extraction wells, PVC pipes were installed to connect each wellhead to a junction box located in front of the service station. SOMA field crew identified the pipe in the junction box corresponding to each well head, and installed PVC pipes to connect these pipes to a manifold located adjacent to the mechanic shop. Each of the six PVC pipes entering the manifold had a valve installed in it to allow airflow from each of the wells to be controlled independently. In addition, a flow meter and vacuum gauge were installed in each of the six pipes to allow for exact measurement of the volume of flow from each of the wells.

Moisture Trap:

From the manifold, PVC pipe carries extracted air into a moisture separator (model# MS200P). The moisture trap consists of a 15-gallon polyethylene container and a valve. The moisture trap removes water vapor from the extracted air, preventing moisture from entering the remediation system.

Regenerative Vacuum Blower:

The vacuum blower that drives the system is installed after the moisture trap. The blower is a Rotron EN454W58L powered by a 1.5 Hp electrical

motor. The blower is capable of extracting 80 scfm from the VES wells. Vapor extracted from the wells is exhausted from the blower into the treatment system.

Granulated Activated Carbon Vessels:

This system consists of four Granulated Activated Carbon vessels (GACs) in series. The GACs are 55 gallon drums filled with 200 pounds of charcoal. Clean air exhausts to the atmosphere from the last GAC unit.

4.0 INITIAL RESULTS

Initial results from the vapor extraction system are shown in Table 1. The system began operation on July 24, 2000. Flow through the system has been fairly constant at 80 to 90 cubic feet per minute. Flow is measured at the influent and effluent ports to the GAC series, but the effluent measurement is regarded as more accurate since the vapor stream is not under pressure at the effluent port.

When operation began, three GACs were used. Organic carbon concentrations were measured at the influent to the treatment system, as well as the effluent port of each GAC. Measurements were made using a Photoionization Detector (PID) daily, as per the Permit to Construct issued by the Bay Area Air Quality Management District (BAAQMD) on July 18 (see Appendix A). Influent concentrations have been decreasing from an initial high of 394 ppmv on July 24 to the current values, which range from 100 to 150 ppmv (figure 5).

The initial measurement of effluent from the system indicated no measurable amount of hydrocarbons were exhausting from the system. Over the next several days, increasing amounts of hydrocarbons were detected at the system outlet, until July 30 when 12 ppmv was detected. At this point the system was shut down to

replace the first GAC in the series with a new unit.

After replacement of the GAC the system was restarted. Measurements indicated hydrocarbon concentrations in the effluent of 4 to 5 ppmv. Effluent concentrations stayed at this level for 5 days before beginning to rise again. On August 8 effluent concentrations reached 10 ppmv, and the system was again shut down for replacing spent GACs. At this point a new GAC was added to the series, bringing the total number of vessels in the series to four.

On August 16, the last GAC in series began showing breakthrough of contaminant. The first GAC was removed from the series, and a new GAC was added to the end of the series. This is the process that will be used to replace GACs in the future, as it optimizes the efficiency of the GACs while preventing breakthrough of contaminants. As of August 16, the effluent concentration of the system was measured at 0 ppmv.

Table 2 shows the total amount of organic carbon removed from soil vapor as of August 16. In 24 days of operation, the system has removed approximately 63 pounds of hydrocarbons from the Site, yielding an average rate of 2.73 pounds per day. The average daily removal was initially 3 to 4 pounds per day, but has decreased to 1.9 pounds per day over the last week of operation.

On August 16, SOMA submitted a request in writing to BAAQMD to change the permit condition requiring daily monitoring. Based on the stability of the system, and the demonstration that the VES was operating within the permit constraints, BAAQMD granted this request on August 17. As a result, starting August 17 the system will be monitored a minimum of once every three days.

Laboratory analysis was completed on vapor samples collected at the Site on July 27. Results of this analysis are shown in Table 3, and a copy of the lab

report can be found in Appendix B.

5.0 CONCLUSIONS

Based on the data collected to date, it appears that the vapor extraction system is extremely effective at removing contaminants from the Site. Previous estimates by SOMA indicate there is approximately 1100 pounds of TPH-g in the soils at the Site, as well as another 1100 pounds in the groundwater. At the current rate of 2.73 pounds per day (see Table 2), it will take approximately 800 days to extract this total contaminant mass. Allowing for a decreasing rate of recovery of contaminant, an average removal rate of 1.5 pounds per day will lead to complete remediation in approximately 4 years. This estimate does not take into account removal of contaminants by the groundwater treatment system operating at the site, and also assumes that there is no new release of petroleum hydrocarbon at the site.

6.0 REFERENCES

SOMA Environmental Engineering, Inc., June 21, 1999 "Further Site Characterization and Conducting Risk Based Corrective Action at Tony's Express Auto Services Site, 3609 International Boulevard, Oakland, California"

SOMA Environmental Engineering, Inc., July 1, 1999 "Corrective Action Plan, Tony's Express Auto Services Site, 3609 International Boulevard, Oakland, California"

SOMA Environmental Engineering, Inc. (October 27, 1997), "Second Quarter 1999, Groundwater Monitoring Report, 3609 International Boulevard, Oakland, California"

Soil Tech Engineering, November 8, 1993 "Interim Corrective Action & Preliminary Soil and Groundwater Investigation for Tony's Express Auto Service Station located at 3609 East 14th Street, Oakland, California

Western Geo-Engineers, July 13, 1998 "Results of Five day Vapor Extraction Pilot Test at Tony's Express Auto Service Site 3609 International Boulevard, Oakland, California"

TABLES

Table 1: Initial Results for Vapor Extraction System at Tony's Express Auto

3609 International Blvd., Oakland, CA

Date	Time	Operation	Sampled	PID Reading (ppm)					Flow Meter (scfm)		Vacuum Gauges (H_2O")						
		Hours		Influent	GAC-1	GAC-2	GAC-3	Effluent	Influent	Effluent	Main	P1	P2	P3	P4	ISL-1	ISL-2
7/24/00	5:00	Start	No	394	10	5	n/a	0	80	85	22	15	15	15	15	15	15
7/25/00	5:15	24:15:00	No	38*	8**	5**	n/a	2**	85	95	25	15	15	15	15	15	15
7/26/00	5:05	48:05:00	No	207	8	4	n/a	1	80	80	15	15	15	15	15	15	15
7/27/00	9:00	64:00:00	Yes	160	50	19	n/a	5	80	92	17	14	14	12	14	12	14
7/28/00	4:30	95:30:00	No	141	52	5	n/a	7	80	87	15	14	14	12	14	12	14
7/29/00	1:30	116:30:00	No	225	112	43	n/a	8	80	85	16	14	14	12.5	14	13	14
7/30/00	9:00	136:00:00	No	226	133	51	n/a	12	80	85	16	15	15	12	14	13	14
			-System shut down until replacement of GAC on July 31-														
7/31/00	3:00	166:00:00	No	141	3.9	25	n/a	5	80	85	16	14	14	12.5	14	13	14
			-First GAC in series replaced with new vessel-														
8/1/00	5:00	192:00:00	No	135	0.3	14	n/a	4	80	80	15	14	15	13	14	13	14
8/2/00	4:00	215:00:00	No	80	0.9	12	n/a	4	80	80	15	14	15	12.5	14	13	14
8/3/00	5:00	240:00:00	No	60	0	7	n/a	5	80	85	15	14	15	13	14	13	14
8/4/00	3:00	262:00:00	No	57	1	6	n/a	4	80	85	17	14	14	12.5	13.5	12	14
8/5/00	2:00	285:00:00	No	97	7	8	n/a	8	80	87	17	14	14	12.5	13.5	12	14
8/6/00	12:00	307:00:00	No	114	20	11	n/a	8	80	80	16	14	14	12.5	13.5	12	14
8/7/00	12:00	331:00:00	No	93	29	17	n/a	9	80	85	16	14	14	12.5	13.5	12	14
8/8/00	4:30	359:30:00	No	152	55	28	n/a	10	80	85	16	14	14	12	13	12.5	14
			-System shut down until replacement of GAC on August 10-														
8/10/00	10:00	377:00:00	No	173	33	14	8	1	80	75	19	13	14	11	12	12	13
			-New GAC added to series: now 4 vessels in line-														
8/11/00	7:00	410:00:00	No	78	40	15	6	4	75	70	18	14	14	12.5	14	12	14
8/12/00	9:00	424:00:00	No	100	50	19	9	6	75	70	19	14	14	12	14	12	14
8/13/00	5:00	456:00:00	No	107	61	28	21	9	75	70	19	14	14	12	14	12	14
8/14/00	12:30	475:30:00	No	122	38	20	9	5	75	70	19	14	14	12	14	12	14
8/15/00	6:00	505:00:00	No	103	60	25	17	12	75	70	19	14	14	12	14	12	14
			-First GAC in series replaced with new vessel-														
8/16/00	12:30	523:30:00	No	112	26	8	4	0	75	70	19	14	14	12	14	12	14
			-Change of Monitoring Schedule to Every 3rd Day-														
8/18/00	9:00	568:00:00	No	90	31	9	7	0	77	75	20						

* Dilution valve was partially opened

** A tedlar bag filled from the sampling port and then connected to PID and the maximum reading was taken

$(400\ ppmv)(3.9\times10^{6}\ \ell)$

$\frac{400\ (78)}{24.45} = 1276\ mg/m^3$

$cm^3 = 1\ m\ell$

$1000\ cm^3 = 1000\ m\ell = 1\ \ell$

$(3.9\times10^{6}\ \ell) \times (10^{-3}\ m^3/\ell) \times (1276\ mg/m^3)(10^{-3}\ g/mg)\left(\frac{1\ lb}{454\ g}\right) = 11\ \#$?

Table 2: Total Mass of petroleume hydrocarbons removed by Vapor Extraction System (VES) at Tony's Auto Express, 3609 International Blvd Oakland California

Date	Time	Time Elapsed (hr)	PID (ppmv) Influent	PID (ppmv) Effluent	Flow Rate (cfm)	Daily Flux (Liters)	Daily Mass ** (pounds)
7/24/00	5:00	0	394	0	85	0	0.00
7/25/00	5:15	24.25	38	2	95	3,914,096	1.01
7/26/00	5:05	48	207	1	80	3,228,121	4.52
7/27/00	9:00	64	160	5	92	2,500,944	2.71
7/28/00	4:30	95.5	141	7	87	4,656,139	4.44
7/29/00	1:30	116.5	225	8	85	3,032,734	4.62
7/30/00	9:00	136	226	12	85	2,816,110	4.31
7/31/00	3:00	166	141	5	85	4,332,478	4.13
8/1/00	5:00	192	135	4	80	3,533,942	3.23
8/2/00	4:00	215	80	4	80	3,126,180	1.69
8/3/00	5:00	240	60	5	85	3,610,398	1.47
8/4/00	3:00	262	57	4	85	3,177,150	1.23
8/5/00	2:00	285	97	8	87	3,399,721	2.23
8/6/00	12:00	307	114	8	80	2,990,259	2.31
8/7/00	12:00	331	93	9	85	3,465,982	2.18
8/8/00	4:30	359.5	152	10	85	4,115,854	4.23
8/10/00	10:00	377	173	1	85	2,527,279	2.96
8/11/00	7:00	410	78	4	70	3,924,715	2.07
8/12/00	9:00	424	100	6	70	1,665,031	1.13
8/13/00	5:00	456	107	9	70	3,805,784	2.75
8/14/00	12:30	475.5	122	5	70	2,319,150	1.91
8/15/00	6:00	505	103	12	70	3,508,457	2.44
8/16/00	12:30	523.5	112	0	70	2,200,219	1.67
8/18/00	9:00	568	90	0	75	5,670,449	3.45
			Total Mass of Petroleum Hydrocarbons Removed=				**62.68**
						Average Daily Removal=	**2.73**

* The represantetive molecular weight of hydrocarbons was assumed to be 78 gram/mole and used the measured temperature of Vapor (36 ^{0}C) in converting ppm-v to ppm on mass basis.

Table 3: Laboratory Results for Vapor Samples from Tony's Express Auto
3609 International Blvd., Oakland, CA

Sample ID	Benzene ug/L	Toluene ug/L	Ethyl-benzene ug/L	Total Xylene ug/L	MTBE ug/L	TPHg ug/L	C2-C-4 hydrocarbon ug/L
Influent	38	12	6.1	34	8	1200	14
GAC-1 Effluent	0.65	ND	ND	ND	10	780	14
GAC-2 Effluent	ND	0.022	ND	ND	ND	22	28
GAC-3 Effluent	ND	0.041	0.016	0.099	ND	13	1
Air	0.056	0.098	0.074	0.53	0.017	21	ND

FIGURES

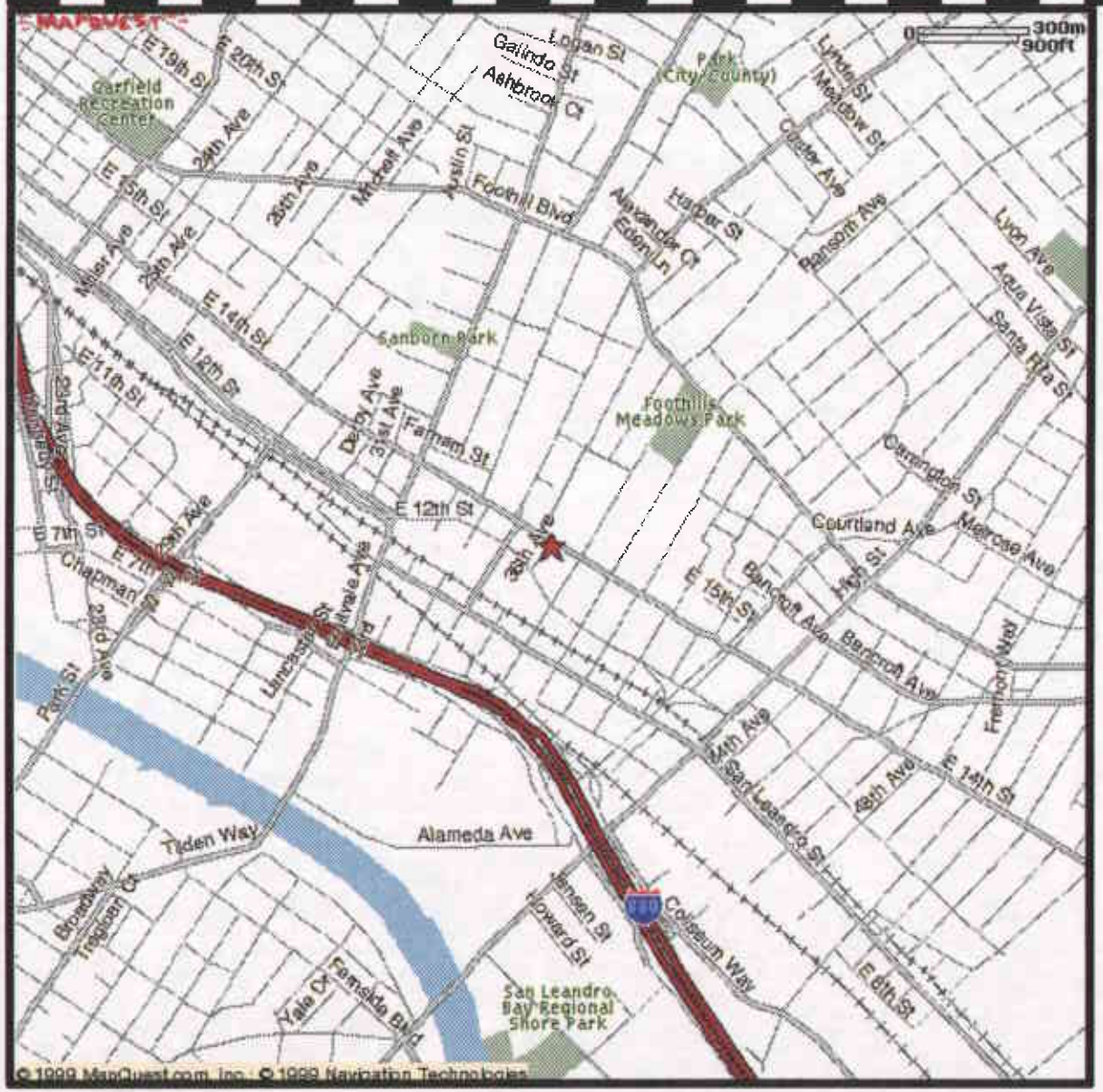

Figure 1: Site Location Map

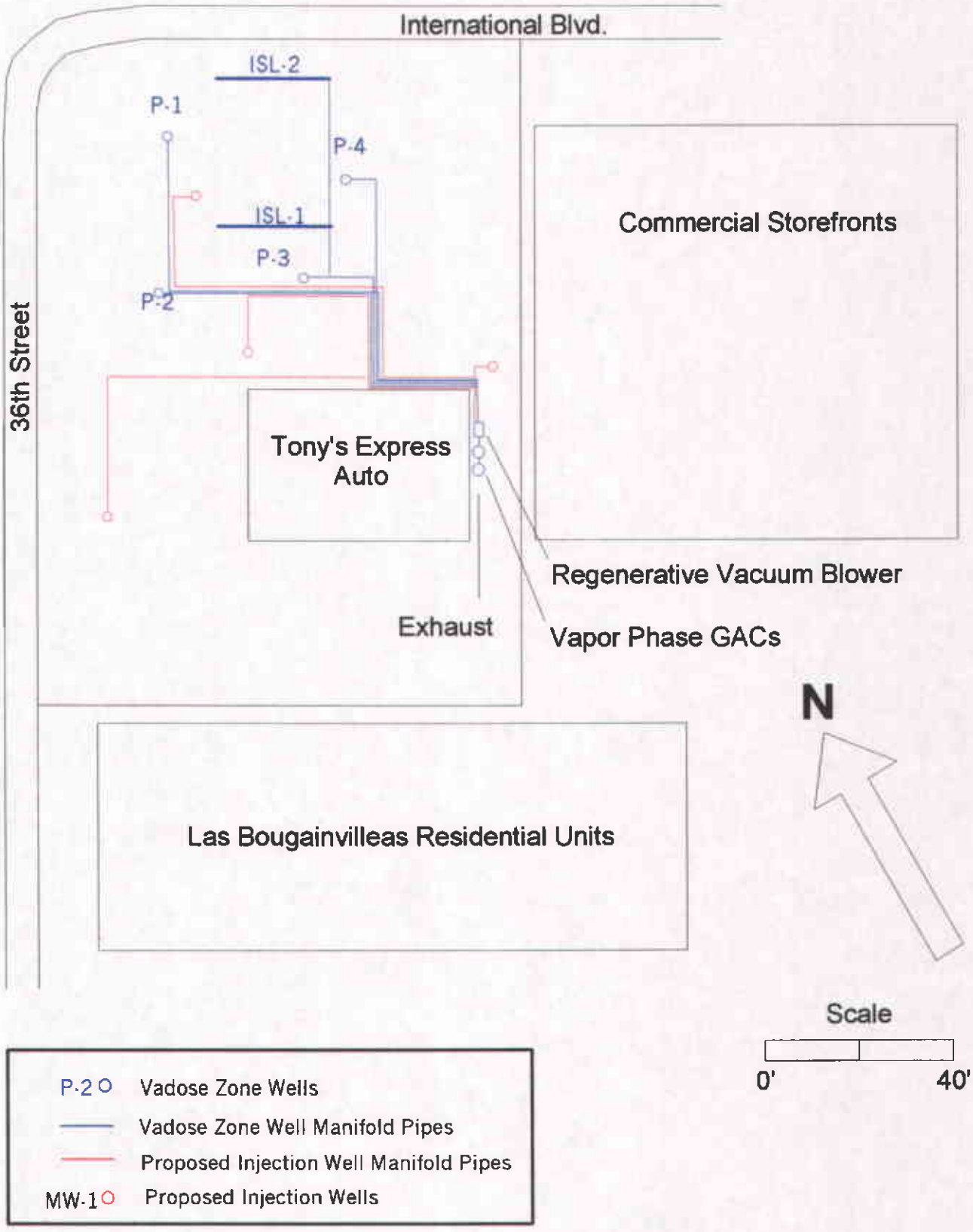

Figure 2: Location of Vapor Extraction Wells

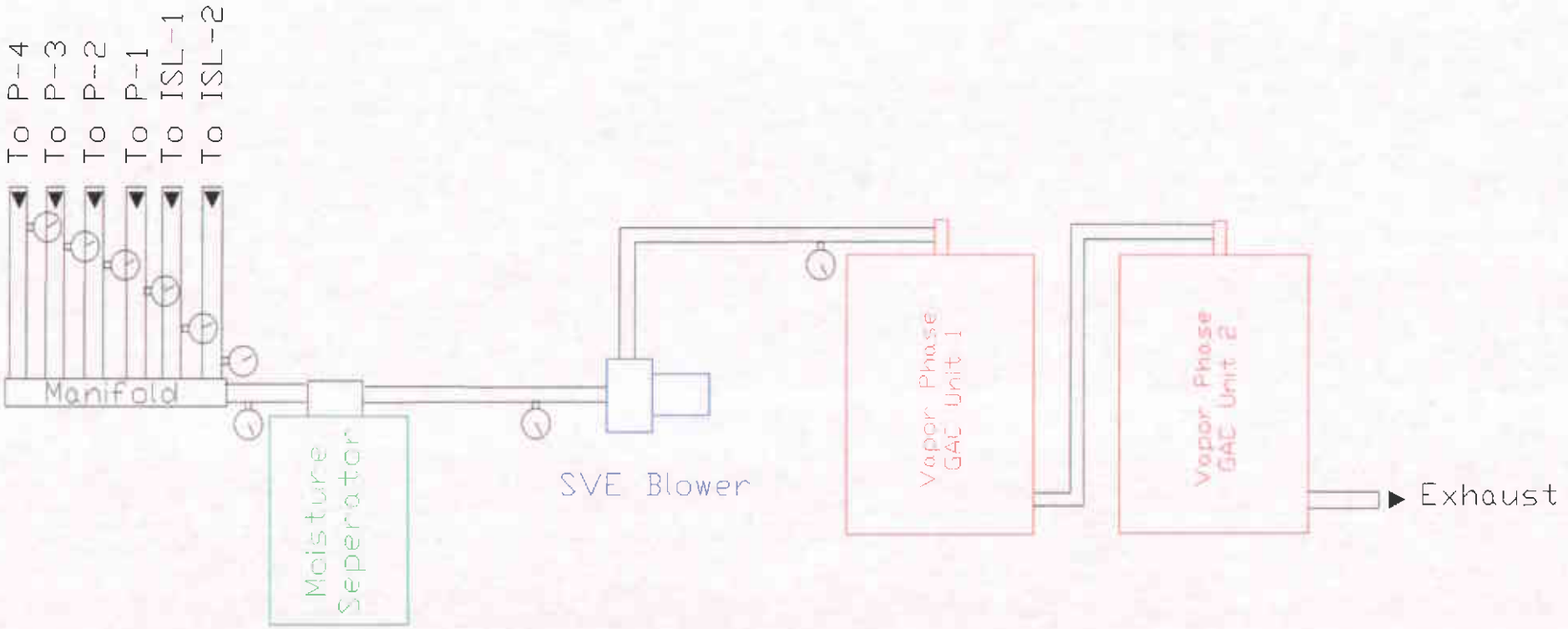

Figure 3: Schematic of the Vapor Extraction System

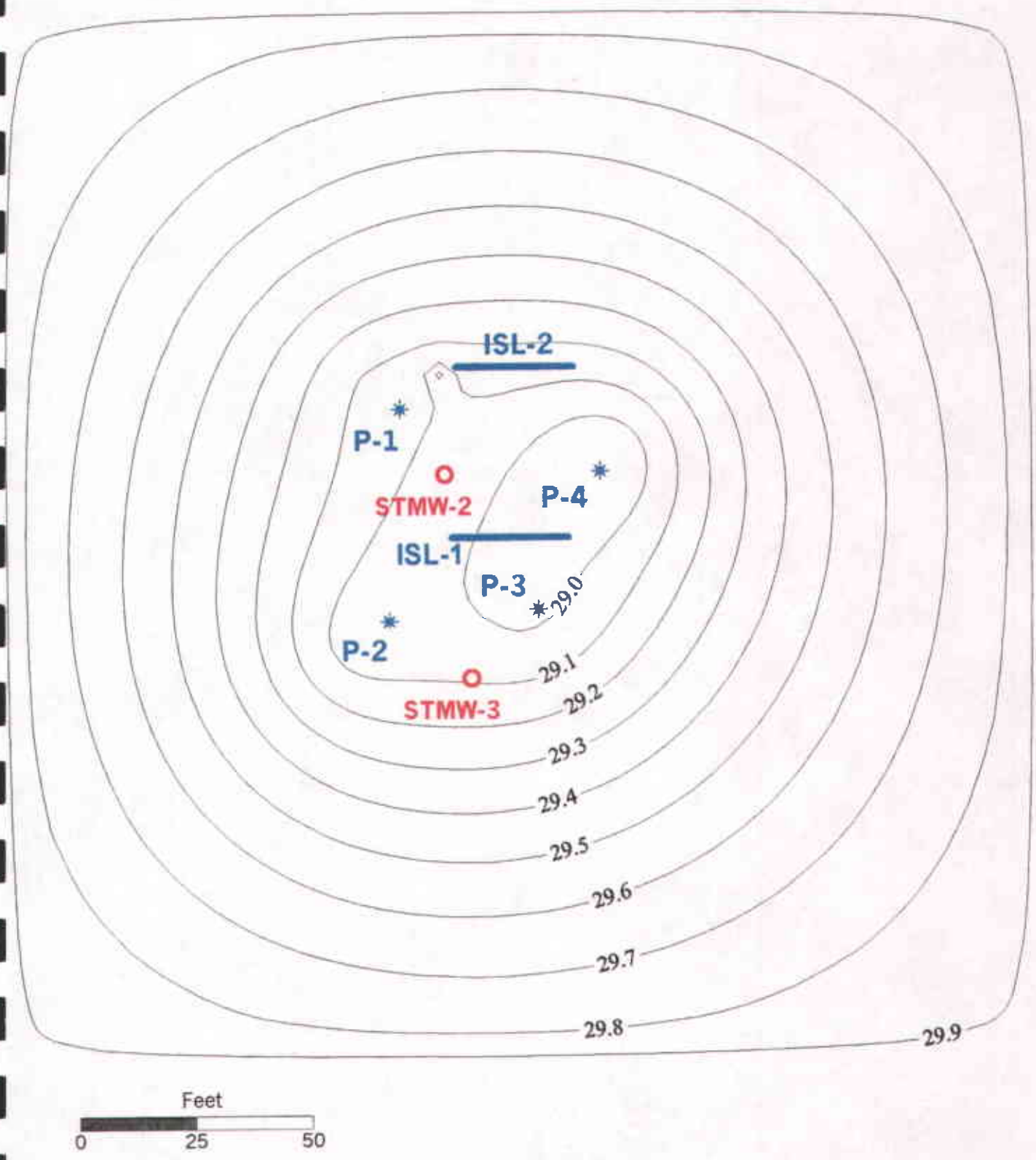

Figure 4: Simulated Pressure Contours around Vapor Extraction Wells Under 71 CFM Vapor Flow Rates

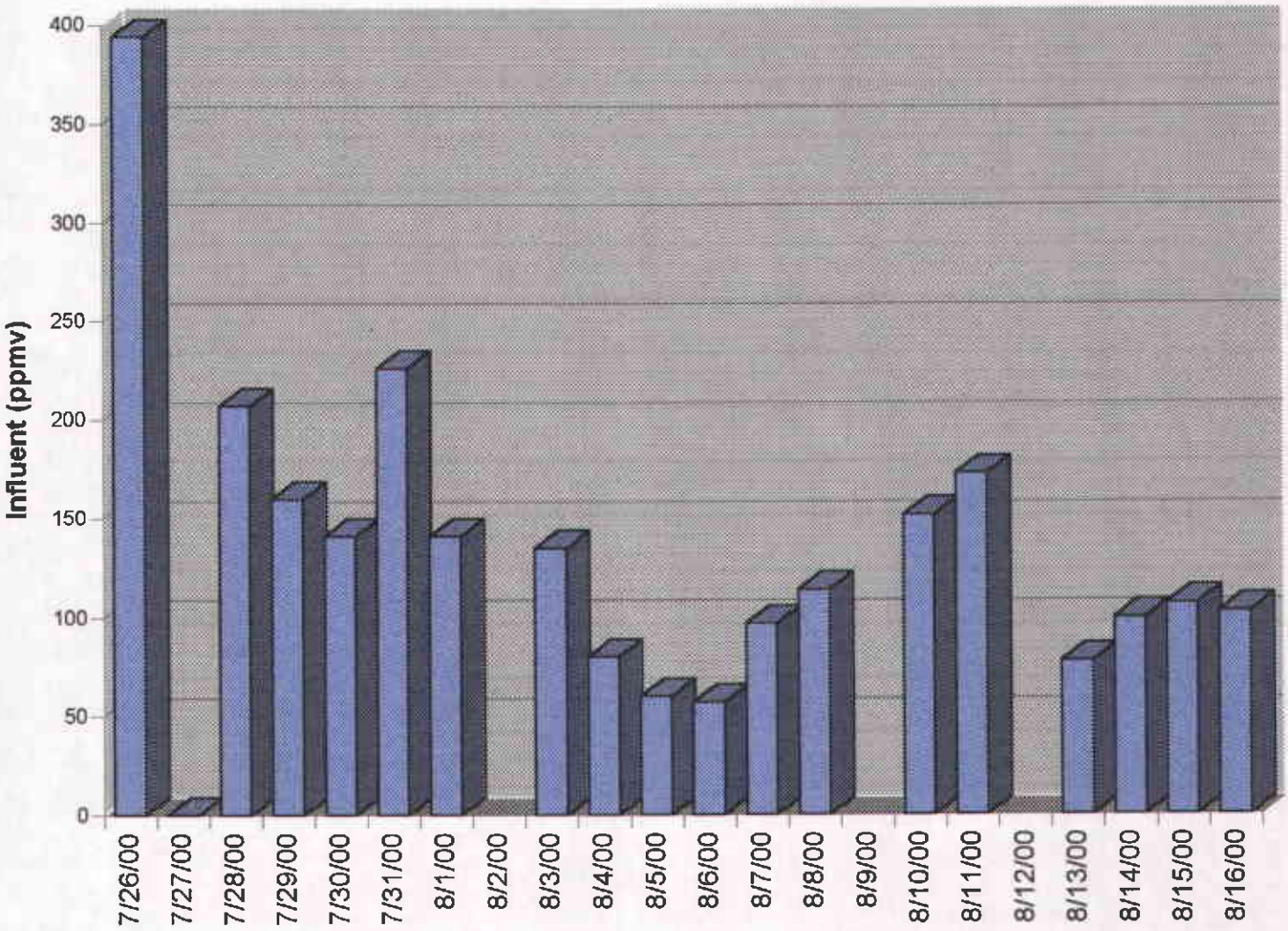

Figure 5: Influent Organic Carbon Concentrations, as Measured with PID

APPENDIX A

Bay Area Air Quality Management District

Vapor Extraction System Permit

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

PERMIT TO OPERATE No. 0942

PLANT No. 12111

SOURCE No. S-1

Tony's Express Auto Service

IS HEREBY GRANTED A PERMIT TO OPERATE THE FOLLOWING EQUIPMENT

Soil Vapor Extraction System consisting of Air Sparge/Vapor Extraction System, Abated by A-1 SVE Abatement System consisting of two (200 lb minimum capacity) Carbon Adsorption Vessels arranged in series and/or Catalytic Oxidation System

LOCATED AT: **3609 International Blvd**

Oakland CA 94601

* **Subject to attached condition no. 17407**

ELLEN GARVEY
EXECUTIVE OFFICER
AIR POLLUTION CONTROL OFFICER

Permit Issue Date August 7, 2000
Reported Start Up Date July 24, 2000
Permit Expiration Date **July 24, 2001**

By _____

Right of Entry

The Air Pollution Control Officer of the Bay Area Air Quality Management District, the Chairman of the California Air Resources Board, the Regional Administrator of the Environmental Protection Agency, and/or their designees, upon presentation of credentials, shall be granted the right of entry to any premises on which an air pollution source is located for the purposes of: i) the inspection of the source ii) the sampling of materials used at the source iii) the conduction of an emissions source test iv) the inspection of any records required by District rule or permit condition.

This permit does not authorize violation of the rules and regulations of the BAAQMD or the Health and Safety Code of the State of California. District regulations may be viewed on line at www.baaqmd.gov/regs/rulereg.htm. This permit is not transferable to another person without approval from the District. * ***Compliance with conditions contained in this permit does not mean that the permit holder is currently in compliance with District Rules and Regulations. It is the responsibility of the permit holder to have knowledge of and be in compliance with all District Rules and regulations.***

COND# 17407 ----------

1. Abatement System

   Precursor Organic Compound (POC) emissions shall be abated by Abatement device A-1, SVE Abatement System, consisting of either a Catalytic Oxidizer or at least two (200 lbs minimum capacity) Activated Carbon Vessels during all periods of operation. Start-up and subsequent operation of each abatement device shall take place only after written notification of same has been received by the District's Permit Services Division. Vapor flow rate shall not exceed 215 scfm.

2. Abatement Efficiency

   The POC abatement efficiency of abatement device A-1 shall be maintained at a minimum of 98.5% by weight for inlet POC concentrations greater than or equal to 2000 ppmv (measured as C6). For inlet concentrations below 2000 ppmv and greater than or equal to 200 ppmv, a minimum abatement efficiency of 97% shall be maintained. The minimum abatement efficiency shall be waived if outlet POC concentrations are shown to be less than 10 ppmv (measured as C6). In no event shall benzene emissions to the atmosphere exceed 0.02 lb/day.

3. While operating as a Catalytic Oxidizer, the minimum operating temperature of A-1 shall not be less than 600 degrees Fahrenheit.

4. To determine compliance with Condition Number 3, above, the catalytic oxidizer shall be equipped with continuous measuring and temperature recording instrumentation. The temperature data collected from the temperature recorder shall be maintained in a file which shall be available for District inspection for a period of at least 2 years following the date on which such data are recorded.

5. To determine compliance with Condition 2, within ten days of initial start-up of the Catalytic Oxidizer, the operator of this Source shall:

   a. Analyze inlet gas stream to determine the flow rate and concentration of POC.
   b. Analyze exhaust gas to determine the flow rate, and the concentration of benzene and POC present.
   c. Calculate the benzene emission rate in pounds per day based on the exhaust gas analysis and the operating exhaust flow rate. The soil vapor flow rate shall be

decreased, if necessary, to demonstrate compliance with Condition 2.

d. Calculate the POC abatement efficiency based on the inlet and exhaust gas analysis. For the purpose of determining compliance with Condition 2, the POC concentration shall be reported as hexane.
e. Submit to the District's Permit Services Division the test results and emission calculations within one month from the testing date. Samples shall be analyzed according to modified EPA test methods 8015 and 8020 or their equivalent to determine the concentrations of POC and benzene.

6. Records

The operator of this source shall maintain the following records for each month of operation of the Catalytic Oxidizer:

a. Days and hours of operation.
b. Each emission test, analysis or monitoring results logged in for the day of operation they were taken.
c. Analysis results for any catalyst plugs removed from the bed to determine remaining life of the catalyst.

Such records shall be retained and made available for inspection by the District for two years following the date the data is recorded.

7. During operation of the Activated Carbon Vessels, the operator of this source shall monitor with a Photoionization Detector (PID), flame-ionization detector (FID), or other method approved in writing by the District's Source Test Manager at the following Locations:

a. At the inlet to the second to last carbon vessel in series.
b. At the inlet to the last Carbon vessel in series.
c. At the outlet of the Carbon vessel that is last in series prior to venting to the atmosphere.

When using an FID to monitor breakthrough, readings may be taken with and without a carbon filter tip fitted on the FID probe. Concentrations measured with the carbon filter tip in place shall be considered methane for the purpose of these permit conditions.

8. These monitor readings shall be recorded in a monitoring log at the time they are taken. The monitoring results shall be used to

estimate the frequency of carbon change-out necessary to maintain compliance with Conditions 9 and 10, and shall be conducted on a daily basis. The operator of this source may propose for District review, based on actual measurements taken at the site during operation of the source, that the monitoring schedule be changed based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District's Permit Services Division must be received by the operator prior to a change to the monitoring schedule.

9. The second to last carbon vessel shall be immediately changed out with unspent carbon upon breakthrough, defined as the detection at its outlet in excess of the higher of the following limits:

   a. 10% of the inlet stream concentration to the carbon bed.
   b. 10 ppmv (measured as C6).

10. The last carbon vessel shall be immediately changed out with unspent upon detection at its outlet of 10 ppmv or greater (measured as C6).

11. The operator of this source shall maintain the following information for each month of operation of the activated carbon vessels:

    a. Hours and time of operation.
    b. Each emission test, analysis or monitoring results logged in for the day of operation they were taken.
    c. The number of carbon vessels removed from service.

    Such records shall be retained and made available for inspection by the District for two years following the date the data is recorded.

12. Any non-compliance with Conditions 1, 2, 9, and/or 10 shall be reported to the Compliance and Enforcement Division at the time that it is first discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well as the time of occurrence.

13. The operator shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this conditional Authority to Construct/Permit to Operate. All measurements, records and data required to be maintained by the operator shall be

retained for at least two years following the date the data is recorded.

14. Upon final completion of the remediation project, the operator of Source S-1 shall notify the Permit Services Division within two weeks of decommissioning the operation.

list condition NUMBER >>

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

17 August 2000

Patrick Sullivan
SOMA Environmental Engineering
2680 Bishop Drive, Suite 203
San Ramon, CA 94583

Application Number:	942
Plant Number:	12111
Equipment Location:	Tony's Express Auto Service 3609 International Boulevard Oakland, CA 94601

Dear Mr. Sullivan:

The District has reviewed your request, dated 16 August 2000, to change the monitoring frequency from daily to every other weekday. Based on the information provided, a monitoring schedule of every third day is both reasonable from the District's perspective and will also grant your firm the flexibility requested. Be aware that you can monitor your system more frequently if desired.

Please keep a copy of this letter and the attached revised operating conditions (COND# 17407) as verification that a monitoring schedule of at least once in every 3 days has been approved by the District for the site subject to P/O # 942 (plant #12111).

If you have any questions regarding this matter, please call me at (415) 749-4672.

Very truly yours,

Robert K. Lum for

Randy Frazier
Air Quality Engineer II
Permit Services Division

REF:rec
Enclosures

APPENDIX B

Laboratory Results and Chain of Custody

SOMA
Environmental Engineering
2680 Bishop Dr. Suite #203
San Ramon, CA 94583

Client Project ID:

2332

Ref.: R5150400_air
Method: TO3/GC/FID/PID
Sampled: 7/27/00
Received: 7/27/00
Matrix: ~~Gas/Tedlar Bag~~
Analyzed: 7/28/00
Reported: 7/31/00
Units: ug/ L

Attention: Dr. M. Sepehr
Rush48 hour

Laboratory Results for TPH + BTEX and MTBE Analysis

Analyte	Detection Limit	Results Sample ID				
		Influent	Effluent*	Air*	Gac 1*	Gac 2*
	ug/L					
BTEX						
Benzene	0.0032	38	ND	0.056	0.65 ***	ND
Toluene	0.0038	12	0.041	0.098	ND	0.022
Ethylbenzene	0.0044	6.1	0.016	0.074	ND	ND
Total-Xylene	0.0044	34	0.099	0.53	ND	ND
MTBE	0.0037	8.0	ND	0.017	10	ND
TPH(C5+ ref. Gasoline	0.10	1200	13	21	780	22
C2-C4 hydrocarbon	0.046	14	1.0	ND	14	28
Dilution Factor		**66.7**	**2.0**	**1**	**50**	**4.0**
Surrogate						
Fluorobenzen PID	%	129**	106	106	108	106
Fluorobenzen FID	%	123	97	98	99	97

ND:Not Detected(<MDL)

* The hydrocarbon profiles present in these samples did not resemble that of commercial gasoline. Results are reported as gasoline.
** Outside control limit due to high level hydrocarbon matrix interference. Data is reported as qualified.
*** Reported value may be baised due to apparent matrix interferences.

Delta Environmental Laboratories

Hossein Khosh Khoo, Ph.D.

DELTA
ENVIRONMENTAL LABORATORIES, Ltd

SOMA
Environmental Engineering
2680 Bishop Dr. Suite #203
San Ramon, CA 94583

Client Project ID:

2332

Ref.: R5150400_air_ppmv
Method TO3/GC/FID/PID
Sampled: 7/27/00
Received: 7/27/00
Matrix: Gas/Tedlar Bag
Analyzed: 7/28/00
Reported: 7/31/00
Units: ppmv

Attention: Dr. M. Sepehr
Rush48 hour

Laboratory Results for TPH + BTEX and MTBE Analysis

Analyte	Detection Limit	Results Sample ID				
		Influent	Effluent*	Air*	Gac 1*	Gac 2*
	ppmv					
BTEX						
Benzene	0.0010	12	ND	0.017	0.20 ***	ND
Toluene	0.0010	3.2	0.011	0.026	ND	0.0059
Ethylbenzene	0.0010	1.4	0.0034	0.017	ND	ND
Total Xylene	0.0010	7.6	0.022	0.12	ND	ND
MTBE	0.0010	2.2	ND	0.0048	2.8	ND
TPH(C5+ ref. Gasoline	0.025	280	3.2	5	190	5.2
C2-C4 hydrocarbon	0.025	7.7	0.56	ND	8.0	15
Dilution Factor		**66.7**	**2.0**	**1**	**50**	**4.0**
Surrogate						
Fluorobenzen PID	%	129**	106	106	108	106
Fluorobenzen FID	%	123	97	98	99	97

ND:Not Detected(<MDL)

* The hydrocarbon profiles present in these samples did not resemble that of commercial gasoline. Results are reported as gasoline.
** Outside control limit due to high level hydrocarbon matrix interference. Data is reported as qualified.
*** Reported value may be baised due to apparent matrix interferences.

Delta Environmental Laboratories

Hossein Khosh Khoo, Ph.D.

Delta Environmental Laboratories

Chain of Custody (COC) Form

685 Stone Road #11 & 12
Benicia, Ca, 94510
(707) 747-6081, 800-747-6082 FAX (707) 747-6082

Results to:
Client Name SOMA
Address
City
Telephone Fax:
SAMPLER (signature)
Turnaround Time ~~Standard~~ RUSH

Project Name 2332.
LAB ID
Ref #

5150

Special Instructions::

#	Sample ID	Date	Time	Matrix	No. of containers	pH	Temperature	TPH-g	BTEX	MTBE - confirm BT	8260 if Detected	Comments
1	INFLUENT	7/27/00		AIR				X	X	X		
2	EFFLUENT	↓		↓				X	X	X		
3	AIR							X	X			
4	GAC 1							X	X			
5	GAC 2	↓		↓				X	X			

Relinquished by:	Date 7/27/00	1)	Have all samples received been stored on ice? ___
Received By:	Date 7/27/00	2)	Did any VOA samples received have any head space? ___
Relinquished by:	Date	3)	Were samples in appropriate containers and packaged properly? ___
Received By:	Date	4)	Were samples receicved in good condition? ___

For Lab Use Only: