



We're Gaining New Ground

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June 6, 2007

Mr. John Robertus
Executive Officer
CRWQCB-San Diego
9174 Sky Park Court, Suite 100
San Diego, CA 92123

Via Fax (858) 571-6972

RE: Hearing Addendum
Complaint No.1 R9-2007-0019
NPDES CO. CAG919001
Body Beautiful Car Wash Remediation
Terra Vac Project #31-0335

Dear Mr. Robertus:

In view of the fact that the Water Board denied Terra Vac's written request for more time to collect data and prepare documents for the hearing currently scheduled for June 13, 2007, Terra Vac is submitting additional information and further requests that a time be made available for TV to present our case after 1 pm on June 13. This is due to the fact that I must travel from near Sacramento that morning just to attend the meeting.

Considering the very full agenda of the Board for many issues weightier than Terra Vac's complaint, Terra Vac would again be eager to postpone our issue until the August Board meeting. Also, the Board should be aware that the remediation system related to this NPDES permit has been shut down and will remain so for at least three more months, so there is no ongoing discharge or risk of any continuance of the alleged violations that lead to this complaint.

If the Board requires the presence of Terra Vac at the Board meeting on June 13, 2007, we will, of course, comply. Although our data is still incomplete, Terra Vac would present its case along the following lines of reasoning:

1. Opening Statement to request postponement to allow collection of more complete data to support our case.
2. Pending Issues with NPDES violations alleged by the Water Board

- a. Nickel: four alleged exceedances, which have now been dropped upon further analysis of data by the Water Board staff. Terra Vac concurs with the staff assessment and its recommendation to drop the alleged nickel violations, since nickel is not an issue here.
- b. Total Suspended Solids (TSS): three alleged violations pending review
- c. Tributyltin (TBT): one alleged violation pending

3. Brief Project History

- a. Terra Vac's involvement in remediation and this site.
- b. Site is subject of 15 year legal dispute, which Terra Vac is helping to resolve by cleaning up the site of its petroleum contamination, which started with up to 6.8 ft. of gasoline floating on the water table over 4 city blocks.
- c. Innovative technology initially developed by Terra Vac is used to remediate petroleum products at site.
- d. Groundwater extraction required in order to treat floating gasoline (free product) smeared out during the construction of the light rail line in 1995 to depths as low as 8 feet below sea level and contaminated soils at the site. The groundwater treatment includes two filters and settling tank that results in NPDES discharge.
- e. California UST Fund reimbursement site.
- f. No prior data from site regarding constituents related to alleged violations.
- g. Terra Vac has successfully removed more than 180,000 pounds of hydrocarbons from the site to date and achieved regulatory-approved cleanup objectives throughout most of the site (see attached February 2007 Monthly Remediation Report).
- h. Variability in sampling and analyses resulted in alleged violations.

4. Defenses

- a. Terra Vac is not owner of site (see attached list of owners of site: Schedule 1.26) and not the generator of any contaminants related to alleged violations and should not be assessed any fines for proactively remediating a petroleum site, while it also proactively sought to immediately mitigate the conditions that were thought to be causal to the alleged violations. These efforts to mitigate were supported by discussions with Water Board staff.
- b. Each alleged violation falls within the definition of an "Upset Condition" as defined by the NPDES permit (section C.14) and therefore, are not applicable to fines.
- c. Results are statistically below permit conditions following standard Quality Control and Quality Assurance standards applied to analytical procedures and sampling conditions and therefore, are not representative at the levels alleged to be in violation and technically unsupported for a violation (see attached statistical analysis for TSS; TBT analysis is still pending)

- d. Constituents of Concern (nickel, TSS, TBT) were not known to be present at the site ever before including over a year of operations prior to the alleged violations so Terra Vac should not be responsible for impact. (See attached Addendum 1 Bid Specifications; item 13)
- e. As a UST reimbursement site, Terra Vac cannot make changes to the system with direction from the regulatory agency (see attached response from reimbursement request from this site) or contractually without direction from the Trust (the contracting entity for the owners and other responsible parties). Terra Vac recommended additional filters be installed months before the alleged violations at issue here with no response from the agency or the Trust (see attached October 2005 remediation report, section 5). Since Terra Vac was caught in the middle, doing its best to cleanup the real contamination at the site, it should not be liable for fines due to others or due to the inaction of others.
- f. The receiving waters (storm sewer) have higher background concentrations for each of the Constituents of Concern and therefore, levels below background should not be assessed fines (personal inspection of sewer).
- g. The San Diego Bay is known to have TBT and groundwater extraction operations at the site were pulling in Bay water at the time of the only TBT alleged violation. As a background condition, pulling contaminants from the Bay treating them with best available practices and putting them back in the Bay should not result in penalties.
- h. Duplicate fines for the same sample appears to be by "double accounting" (see two fines assessed for one sample on 1/25/06).
- i. Terra Vac is a very small business and hasn't been paid by the Trust for work done since last July and can't afford to pay the proposed fines and keep personnel employed waiting for resolution of payment problems by the Trust.
- j. There is no approved EPA method for TBT analysis and applicable standards of QA/QC are not applied to the available testing procedures; therefore, results at the levels reported are invalid and accordingly, the alleged violations are invalid. The test used is subject to many interferences, especially at the reported levels only 0.0001 part per million above the detection limits. (see attached "Common Laboratory Difficulties with TBT Analysis").
- k. Background concentrations for these constituents are high and discharge to the bay without treatment under natural conditions and groundwater migration (see attached groundwater elevation map). Assessing penalties for background conditions is unjust.
- l. TSS is not a toxic chemical but simply a gross indicator parameter for natural clay particles in the extracted groundwater; therefore, like the TUC parameter, it should not be associated with additional penalties.

5. Conclusion

Due to the compounding technical and site specific issues raised regarding the alleged violations, the Water Board should

- a. drop all the alleged violations against Terra Vac for this site,
- b. promote remediation of the significant petroleum contamination remaining in soil and groundwater, and
- c. support future remediation discharge to the sanitary sewer.

Thank you for your understanding of this matter. If you have any questions, please contact me at your convenience.

Very truly yours,

James J. Malot, PE
Principle Engineer

OCTOBER 2005 MONTHLY REMEDIATION REPORT

FOGERTY v. EXXON, et al.
San Diego, California
Establishment Nos.
H15338, H00678, H03575, and H12116

Prepared for:

Fogerty v. Exxon Corporation, et al.
Trust Under Second Interim Order
San Diego, California

Prepared by:

TERRA VAC Corporation
1211 N. Barsten Way
Anaheim, California 92806-1822
(714) 666-1988

November 15, 2005



We're gaining new ground.

1. INTRODUCTION

The TERRA VAC Corporation has been contracted by Fogerty v. Exxon, et al. Trust Under Second Interim Order to implement a groundwater and soil remediation system on a free product plume and petroleum hydrocarbon-impacted soil at the Site. The Site encompasses the area generally bounded by and including Kettner Boulevard on the east, Grape Street on the south, Pacific Highway on the west, and Ivy Street on the north, but excluding the Akhevan Property and China Camp/Denny's Property, in San Diego, California.

The Site includes the following unauthorized release cases and addresses:

- | | |
|---|---|
| •Benton Property
Establishment #H15338
Parcel Nos. 533-113-01 and 533-113-02
2136 Kettner Boulevard, San Diego, California | •Body Beautiful Car Wash Property
Establishment #H00678
Parcel Nos. 533-214-01, 533-214-02, and 533-214-03
2945 Pacific Highway, San Diego, California |
| •Fogerty Property
Establishment #H03575
Parcel No. 533-113-03
946 W. Hawthorn Street, San Diego, California | •Luscomb Property
Establishment #H12116
Parcel No. 533-113-04
2100 Kettner Boulevard, San Diego, California. |

2. REMEDIATION SYSTEM DESCRIPTION

The remediation system for the Site is divided into two separate Vapor Extraction/Dual Phase Extraction (DPE) systems. One system is located east of the Light Rail Transit (LRT) structure that divides the above properties. This first system is located on the Fogerty property. A second system is to be located west of the LRT on the Body Beautiful property.

The Remediation system east of the LRT (east system) consists of:

- 1,000 scfm Catalytic Oxidizer
- Two 200-gallon Moisture vapor separators
- Two 40 hp positive displacement blowers
- Liquid Phase carbon for water treatment.
- Forty (40) vertical and Six (6) angled extraction wells and associated piping were installed.
- Seven (7) preexisting monitoring wells have been temporarily modified as remediation wells and also connected to the east system.
- Two 450-foot long horizontal wells to be installed.

The Remediation system west of the LRT (west system) consists of:

- 1,000 scfm Catalytic Oxidizer

Two 200-gallon Moisture vapor separators
One 100 hp positive displacement blowers
Liquid Phase carbon for water treatment.
46 extraction wells and associated piping.
Four (4) preexisting monitoring wells have been temporarily modified as remediation wells and also connected to the west system.
Two 450 foot long horizontal wells to be installed.
One 70 foot long horizontal SVE well under Grape Street.

3. OPERATION AND MAINTENACE ACTIVITIES

3.1. East Remediation System

The remediation system east of the LRT completed start-up on September 11, 2003 and has been operating in vapor extraction mode since start-up. On January 27, 2004 we began implementing limited Dual Vapor Extraction (DVE). For each of the DVE wells designed for use with entrainment devices, the entrainment device was lowered to the approximate depth of free product. This would allow for further removal of free product while minimizing water recovery. Monthly free product gauging has shown evidence of substantial free product removal. On July 13, 2004 groundwater extraction began. Since beginning of groundwater extraction the water table at the site has been lowered targeting the historic depth of the smear zone as defined in Corrective Action Work Plan.

The East remediation system was shutdown on August 1, 2005 for rebound testing. Monthly well gauging for the eastern wells commenced on October 18, 2005. Ten (10) groundwater monitoring wells were gauged for depth to groundwater and thickness of free product. Free product was detected in only wells B-MW-1 (sheen), B-MW-3 and FVET-MW-22. The maximum product thickness was measured in FVET-MW-22 at 0.26 feet. Table 1 presents the individual results from monthly well gauging on the east side. No evidence of free product rebound was detected.

3.2. West Remediation System

The remediation system west of the LRT completed start-up on October 28, 2004 and has been operating in vapor extraction mode since start-up. The operating plan is to operate in vapor extraction mode and limited Dual Vapor Extraction (DVE) until the west system data indicates that substantial free product has been removed. When the Site data indicates that free product has been removed groundwater extraction will commence to expose the base of the historic smear zone to remediation. On March 24, 2005 limited Dual Vapor Extraction commenced targeting areas with the highest recorded free product thickness.

Forty two vapor extractions wells are currently in operation. The maximum system vapor influent concentration during this period as measured by a Photo Ionization Detector (PID) was

558 ppmv with maximum inlet vapor flow rate of 494 scfm. The maximum mass recovery rate for this period is calculated at approximately 86 lbs./day with an estimated 968 lbs. of hydrocarbons (FID data) removed since the end of the last reporting period. Figures 1 and 2 depict the hydrocarbon recovery rates and cumulative mass recovered to date. The system has maintained an average of 79% up time since startup.

During this period Radius of Influence (ROI) testing was conducted commencing on October 5, 2005. The ROI testing was conducted to collect data for additional remedial design. Additional remedial design is necessary to address the southwest portion of the hydrocarbon remediation area as described in the Corrective Action Plan. This area is not currently addressed by the existing remedial system. As a result of this testing the system experienced approximately two weeks of down time.

Remediation system influent and effluent vapor monitoring has been conducted weekly in accordance with the San Diego Air Pollution Control District (APCD) permit to construct and operate dated May 12, 2003 under Application No. 978733. All influent, diluted extraction vapor flow rates remained below the permit limit of 1,000 scfm. Measured effluent concentrations remain below the permit limit of 200 ppmv (as methane). Notice of construction completion for this system was sent to the APCD on October 26, 2004. Table 2 presents the west remediation system emissions data and table 3 presents the west system inlet/operating data.

Monthly well gauging for the western wells commenced on October 18, 2005. Ten (10) groundwater monitoring wells were gauged for depth to groundwater and thickness of free product. Free product was detected in only wells BB-MW-5, BB-MW-2, and BB-PZ-1 although a decreasing trend in product thickness has been measured. The maximum product thickness was measured this period in BB-MW-5 at 1.02 feet. All wells have shown a reduction in product thickness compared to last month's measurements. Table 4 presents the individual results from monthly well gauging on the west side.

Monthly extraction well vapor, vacuum and flow monitoring commenced on October 27, 2005. Table 5 presents the individual vapor extraction well monitoring data for all 42 wells sampled including the main system inlet to date.

Groundwater discharge monitoring was conducted in accordance with the San Diego RWQCB NPDES Permit. The monthly groundwater discharge samples for the West system were collected on October 20, 2005 and the laboratory analytical reports are attached. Water treatment system discharge data estimates that 4,355 gallons of water have been treated and discharged since the last reporting period.

4. PERFORMANCE MONITORING

Following completion of installation of the Performance Monitoring Points (PMP) weekly performance monitoring has been conducted throughout the Site. Weekly performance monitoring was performed in accordance with the County of San Diego approved Corrective Action Workplan and consists of measuring vacuum and depth to water at ten locations across the site. The monitoring is conducted to confirm remediation system performance is meeting

design specifications of 1) obtaining a minimum of 0.3 inches of water vacuum and 2) lowering the groundwater table to the historic depth of the smear zone.

Collected data indicate that the vacuum performance criterion has been met at each PMP on the west systems. However, both remediation systems require installation and operation of the horizontal groundwater extraction wells. Table 6 presents the weekly PMP monitoring data.

5. FINDINGS AND CONCLUSIONS

Terra Vac presents the following conclusions:

East Remediation System

- The east side remediation system is shut down for rebound testing. No rebound observed this period.

West Remediation System

- The west side remediation system up time was 38% for this period due to ROI testing.
- Maximum mass removal rate of 86 lbs./day was recorded.
- Estimated 968 pounds of hydrocarbons (149 gallons)¹ have been removed during this reporting period by the west system based on PID data.
- Estimated 31,639 pounds of hydrocarbons (4,868 gallons)¹ have been removed to date by the east system based on PID data.
- The remediation system is operating in compliance with the APCD and NPDES permits.
- Recommend installing a water filter system prior to the liquid phase carbon treatment.

6. PLANNED ACTIVITIES FOR NEXT MONTH

Site activities planned for next month include:

- Performing scheduled daily, weekly and monthly monitoring and operations of the east and west remediation systems.
- Install submersible pumps for the West Remediation System.
- Continue to monitor East System monthly monitoring wells for potential rebound.
- Conduct Radius of Influence (ROI) testing for West system.
- Complete repairs to damaged concrete well box.

Suspended Solids: Unequal Results from Equal Methods

By John Stone

As of November 2003, 40 CFR, Part 136 lists five approved methods for determining Total Suspended Solids (Residue). Major differences between these methods can produce unequal results from similar samples. Currently approved methods are US EPA 160.2 (written in 1971), US Geological Survey Method I-3765-85 (1985), Standard Method 2540 D 18th Edition (1991), Standard Method 2540 D 19th Edition (1991), and Standard Method 2540 D 20th Edition (1997).

MDL's and Sample Volumes

Method Detection Limits vary between the approved methods; some are more plainly stated than others. EPA 160.2 is the clearest. It lists an MDL of 4mg/L to 20,000mg/L (Section 1.2). A minimum 1 mg residue must be collected on 47mm filters (Section 7.2), with no cap on the sample volume.

The 18th, 19th and 20th Editions of Standard Methods state the method MDL is "*up to 20,000mg/L*" (2540 A, Section 4). In addition to the "*up to 20,000mg/L*" common 2540 D statement, the 18th and 19th Editions require sample volumes selected "*yield a residue between 10 and 200 mg dried residue*", (with the interesting clause that when less than 10 mg of total suspended solids is collected "*compensate by using a high sensitivity balance, (0.002mg)*") (Section 3.b.). Because a minimum residue weight is required in the 18th and 19th, there is in fact a minimum MDL; but since no sample volume limit is established for these two methods, the lower MDL of the 18th and 19th Editions of 2540 D is indeterminable.

20th Edition followers are not required to own a secondary balance that will weigh to 0.002mg. They must however, use enough sample volume to "*yield 2.5 to 200 mg dried residue*" with total sample volume not to exceed 1 liter (Section 3.b). Although unstated, these parameters create a defacto lower MDL of 2.5mg/L. This lower MDL of 2.5mg/L is 60% less than EPA method 160.2 and much higher than the 18th and 19th Editions.

The 40 CFR, Part 136 approved USGS method stays above the MDL fray by not alluding to one.

Filter Prep Procedure

EPA 160.2 and the three approved versions of Standard Method 2540 D share a common filter prep procedure. This procedure requires filter rinsing with three successive 20mL aliquots of reagent-grade water under vacuum, then drying, desiccating and weighing the filter to 0.0001g. After recording the initial weight, a re-dry and re-weigh step is required until a constant weight is reached, $\pm 0.5\text{mg}$ (EPA 160.2, Section 7.1; Standard Method 2540 D, Section 3.a).

The USGS method eliminates the drudgery of filter prep by not requiring any. To follow the USGS procedure, simply weigh the filter once before use (Section 6.2). The washing, drying, or obtaining of a constant weight before running the sample is not required to adhere to I-2765-85.

Eliminating the filter prep step produces erroneous data. In support of this claim stand two facts. First, washing the filter before use removes small fibers that would otherwise wash from the filter when a volume of water (i.e., sample) is vacuumed through the filter. This prep step precludes negative filter weights that would result from the loss of loose fibers.

Secondly, glass fiber filters in almost all environments hold a small amount of ambient water. This water-weight can only be removed by drying. The requirement to achieve a constant weight in 160.2 and 2540 D supports the claim that ambient moisture weight can adversely affect the final result, as does the USGS requirement to "*dry the residue and filter disk overnight at 105°C*" (Section 6.4), then "*cool in dessicator and weigh*" (Section 6.5). Ambient water-weight of 0.2 to 0.4mg is usually measured in a 47mm filter, significantly more on larger filters.

Sample Storage and Holding Times

Sample Holding Times are congruent within the three approved Standard Method versions of 2540 D. Analysts reading these methods can decide to establish a holding time limit of "*begin analysis as soon as possible*" or "*24 hours*" or "*7 days*" (2540 A, Section 3). The 18th, 19th and 20th also require sample refrigeration (4°C) "*to minimize microbiological decomposition of solids*" (2540 A, Section 3).

EPA and USGS methods do not mention refrigeration and/or holding times.

Given the sample storage and holding time instruction set forth in the three approved Standard Method versions, it is evident that analysis results for suspended solids will vary depending on the quantity of "*microbiological decomposition of solids*" occurring during the period between sampling and analysis. Therefore, unequal results will occur due to differing parameters employed for Sample Storage and Holding Times.

Filter Selection

Suspended solids is a method defined parameter, defined in large part by the porosity of the filter used. As such, an assumption might be that approved methods prescribe similar filters. This would be incorrect.

The three Standard Method versions list filters equal to EPA Method 160.2 approved filters. These four methods each specify glass fiber, binder-free filters with a nominal

porosity of 1.5 μ m. However, USGS method I-3765-85 approves the use of any filter disk as long as it is "glass fiber" (Section 4.2).

A quick review of a major manufacturer's "glass fiber" disks – those filters acceptable under the USGS protocol – finds a wide variety available. Pore sizes range from 0.7 to >10 μ m. Manufacturers also commonly provide glass fiber filters with organic binders (glue), use of which would be disastrous in suspended solids testing because filter weight in the washing and oven-heating process would never achieve continuity.

Since Suspended Solids is, as the EPA Method states, "those solids retained by a glass fiber filter", haphazard filter selection within the USGS method will produce results vastly dissimilar to the other four approved methods.

(Please note that in the past 12 years of assisting laboratories with suspended solids testing, I have never found one using a filter with binder; only occasionally do I find labs using glass fiber filters with pore sizes other than 1.5 μ m. Also, the USGS lab in Denver, CO, uses filters equal in all respects to the type designated in EPA 160.2 and Standard Methods 2540 D.)

Report

The USGS method includes a section entitled, "Report" (Section 8). Nothing like this is found in the other four approved methods. Section 8 of I-3765-85 requires the report of concentrations <1,000mg/L in "whole numbers" and \geq 1,000mg/L to "three significant figures". Although sections 6.5 and 7.2 of I-3765-85 specifically indicate determinations to be made in 0.1mg increments, labs following this protocol are instructed to disregard the tenths increment for some sample results.

Precision and Accuracy

All five approved suspended solids methods include sections to delineate the Precision and Accuracy expected from the method.

Standard Methods 2540 D (18th, 19th and 20th Editions):

"The standard deviation was 5.2 mg/L (coefficient of 33%) at 15 mg/L, 24 mg/L (10%) at 242 mg/L, and 13 mg/L (0.76%) at 1707 mg/L in studies by two analysts of four sets of 10 determinations each." "Single-laboratory duplicate analyses of 50 samples of water and wastewater were made with a standard deviation of differences of 2.8 mg/L." (Section 5)

EPA 160.2: "Precision data are not available at this time." (Section 9.1)

"Accuracy data on actual samples cannot be obtained." (Section 9.2)

USGS I-3765-85: "Precision data are not available for this method." (Section 9)

Interferences

In the 18th and 19th Editions of Standard Methods 2540 D, Section 1.b, titled "Interferences", the first sentence reads, "*Exclude large floating particles or submerged agglomerates of non-homogeneous materials from the sample if it is determined that their inclusion is not desired in the final result.*" (underline added.)

Guidelines are not offered to establish how one defines what is or is not "*desired*". Certainly two labs could run the same 18th or 19th 2540 D methods on the same sample and achieve vastly different results based on the desirability of the submerged agglomerate in Sample A. Also not addressed is the question of *who* determines desirability.

In discussing interferences the 20th Edition begins the same as the 18th and 19th in section 1.b., but ends with, "... *if it is determined that their inclusion is not representative.*" (underline added). Therefore, labs following the 20th Edition must first determine, "The submerged agglomerate in Sample A is (or is not) representative of *what?*" One lab might reasonably decide the submerged agglomerate in Sample A is representative of the sample; while the second might decide the agglomerate in Sample A is not representative of the stream, etc ...

The 20th also includes the same reference found in the 18th and 19th methods that sends the reader to 2540 B.1 (Section 1.b). There 2540 B.1. in its discourse on interferences states, "*Exclude large floating particles or submerged agglomerates of non-homogeneous materials from the sample*", and concludes with, "*if it is determined that their inclusion is not desired in the final result*" (underline added).

So 20th Edition followers must tackle both "*not desired*" and "*not representative*" in deciding whether to leave the submerged agglomerate in, or take it out of, Sample A. (What happens if the agglomerate is *not desired*, but *representative*?)

Although this paper's focus is the differences between methods that can cause unequal results and not the variances within a particular method that can cause unequal results, herein lies the start point of the interference morass.

For the three approved versions of 2540 D to achieve equal results from Sample A with its submerged agglomerate, all labs following the 18th and 19th and 20th methods must agree on a definition of "*not desired in the final result*". Then all labs following the 20th Edition must agree on a definition of "*not representative*" that in all circumstances does not conflict with the previously agreed upon definition of "*not desired*".

Moving on, EPA 160.2 addresses interferences in "Sample Handling", Section 4.1 stating, "Non-representative particulates such as leaves, sticks, fish and lumps of fecal matter should be excluded from the sample if it is determined that their inclusion is not desired in the final result." (underlines added). Here both limiting phrases appear in the same sentence, placing followers of the EPA method into the same boat as the followers of the 20th Edition 2540 D.

The Interferences section (Section 3) of the USGS method bears no resemblance to the other four methods. It states in totality, "*Precipitation in the sample during storage, such as iron, will produce erroneously high results.*" This error-source is not mentioned in the other four methods.

Those who decide the submerged agglomerate of Sample A is an interference will remove it before analysis. Those who decide it a non-interference will include its solid weight in the sample results. Therefore, how one defines interferences becomes critical in determining the method-defined parameter: suspended solids. Finally, according to the USGS method, sample storage can create false positives, while according to Standard Methods (sic microbiological decomposition discussed in the Sample Storage and Holding Times section of this paper), false negatives.

Quality Control

The 18th and 19th Editions of Standard Method 2540 D require the analysis of all samples in duplicate (2540 A, Section 2). No other quality control samples are called for.

The 20th Edition not only requires 100% of samples be analyzed in duplicate (2540 A, Section 2), but includes the additional instruction to "*Analyze at least 10% of all samples in duplicate*" (2540 D, Section 3.c.). One might interpret 20th Edition duplicate statements as 90% non-redundant.

While blanks are not required in Standard Method versions of Suspended Solids, a blank is required "*with each set of samples*" in USGS Method I-3765-85 (Section 6.2), then blank correction is required per Section 7.2.

Within EPA 160.2, zero requirements for Quality Control are included.

Advancements in Suspended Solids

The 20th Edition of Standard Methods is the latest of all Methods, published in 1997. Section 3.c., "Procedure" therein begins with a sentence unlike any found in other method procedures. It states, "*If pre-prepared glass fiber filter disks are used, eliminate this step.*" "*This step*" is the entire filter prep procedure: the washing with 3 X 20mL aliquots of DI water, drying at 103-105°C for an hour, desiccating to room temperature, and then weighing to 0.0001g and reweighing for stability. Environmental Express'

“pre-prepared glass fiber filter disks” – ProWeigh Filters – are listed by name as acceptable filters in 2540 C.2.a. of the 20th Edition.

ProWeigh filters can be used alone or in conjunction with its sister product, ProWeigh Express, an automation system that performs both suspended solids and volatile suspended solids. ProWeigh Express automatically applies QC parameters for stability, blanks, duplicates, control 1, control 2, and total residue. The system eliminates messy handwriting, calculation errors, and transcription errors. It cuts analysis time in half, and is compatible with any LIMS system.

Environmental Express' Universal Solids Standard can also improve quality control by allowing lab control samples (LCS) to be run along with blanks and duplicates. This standard comes in a pack of 10 small bottles. The entire contents of a bottle are added to a graduated cylinder. The LCS is created by filling the remainder of the graduated cylinder up to a working volume with lab water. The LCS is then treated as a normal sample for total suspended solids (TSS), volatile suspended solids (VSS), total dissolved solids (TDS), total solids (TS), and/or volatile solids (VS). The nominal result plus an acceptable range of 3 standard deviations is provided on each individual bottle for TSS, VSS, TDS, TS and VS.

SCHEDULE 1.26
PROPERTY OWNERS

Benton Property:	William S. Benton
Body Beautiful Property:	John G. Pickard, Trustee; Body Beautiful Car Wash, Inc.: Yogesh G. Mody
Fogerty Property:	James E. Fogerty; Frederick C. Fogerty; Donald F. Hildre, Trustee
Luscomb Property:	Donald Armand Luscomb; Norma Luscomb; Donald Alfred Luscomb; Carol Williams; Neal Luscomb; Brian Luscomb; Luscomb 1986 Trust; Carol Williams Trust

NPDES STATISTICAL ANALYSIS
 TSS VARIABILITY
 Body Beautiful Car Wash Site, San Diego
 Fogerty v Exxon et.al. Trust Remediation

Reference: Standard Methods 2540 D (18th, 19th and 20th Editions):

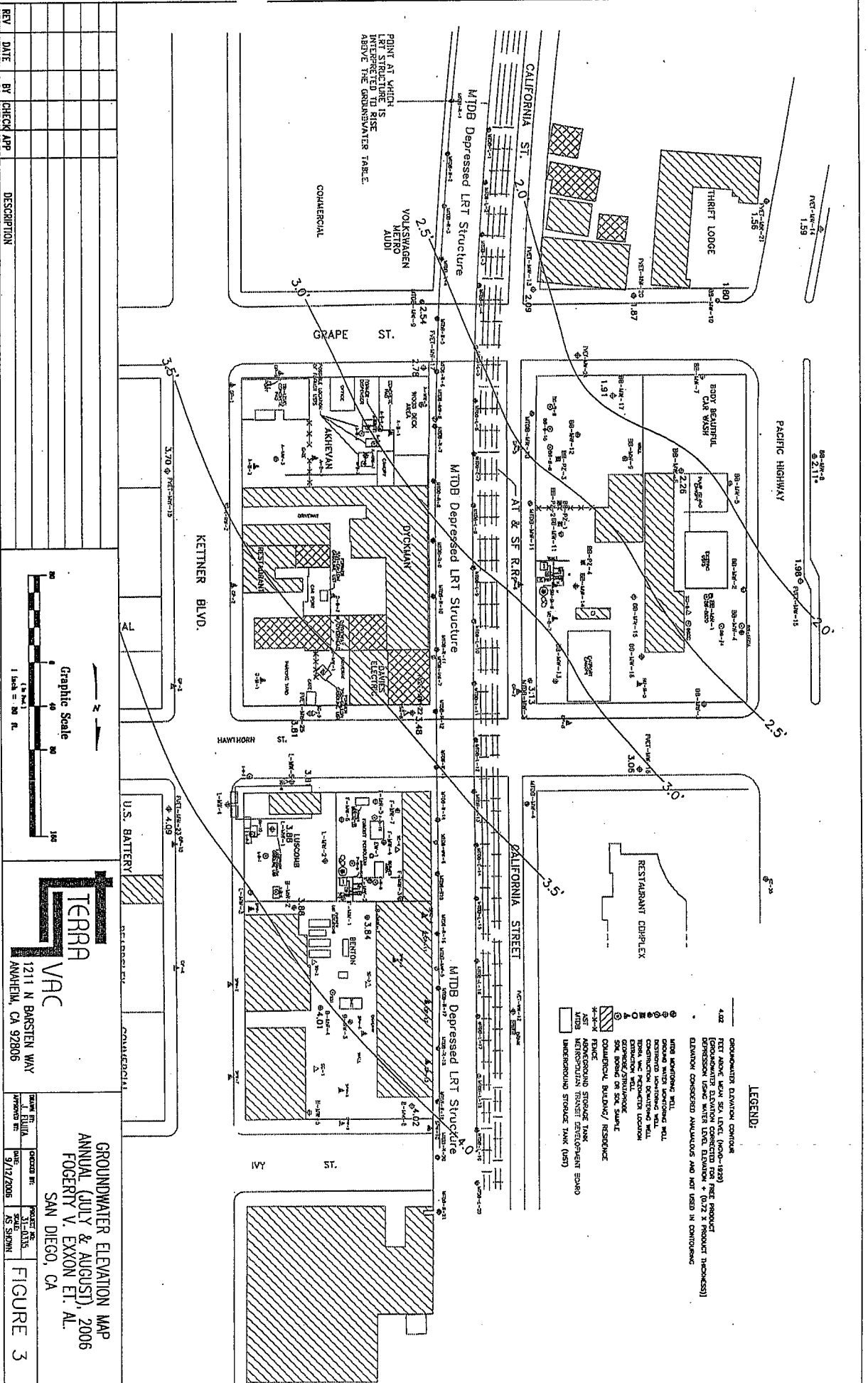
		standard deviation
CONCENTRATION (mg/l)	15	5.2
	242	24

INTERPOLATION FORMULA $=5.2 + ((24-5.2)/(242-15))*(x-15)$

	1/25/2006	2/22/2006
FIELD CONCENTRATION (mg/l)	54	35

Std. Dev. @ field conc.	8.43	6.86
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95% CONFIDENCE LOWER CONCENTRATION (mg/l)	28.71	14.43
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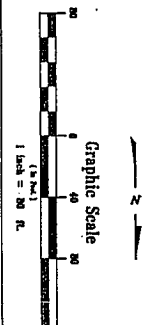
TERRA VAC
 1211 N BARSTEN WAY
 ANAHEIM, CA 92806

GROUNDWATER ELEVATION MAP
 ANNUAL (JULY & AUGUST), 2006
 FOGERTY V. EXXON ET. AL.
 SAN DIEGO, CA

DATE: 7/17/2006
 DRAWN BY: [blank]
 CHECKED BY: [blank]
 PROJECT NO.: [blank]
 SHEET NO.: [blank]
 OF SHEETS: [blank]

FIGURE 3

REV	DATE	BY	CHECK APP	DESCRIPTION



POINT AT WHICH
 LRT STRUCTURE IS
 INTERFERED TO RISE
 ABOVE THE GROUNDWATER TABLE.

COMMERCIAL
 VOLKSWAGEN
 METRO
 AUDI

GRAPE ST.

KETNER BLVD.

CALIFORNIA ST.

PACIFIC HIGHWAY

CALIFORNIA STREET

HAWTHORN ST.

U.S. BATTERY

COMMERCIAL

THIEF LODGE

BOY BEAUTIFUL
 BODY CAR WASH

RESTAURANT COMPLEX

LISCORNER

EXXTON

RESTAURANT COMPLEX

RESTAURANT COMPLEX

RESTAURANT COMPLEX

RESTAURANT COMPLEX

RESTAURANT COMPLEX

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November 3, 1998

ATTN: HOLLY KLOTZ, FLOUR DANIEL GTI, INC.
ABRAM ELOSKOF, FOSTER-WHEELER
ELLIS J. BIDDERSON, LEVINE-FRICKE-RECON
MEHDI MIREMADI, OGDEN ENVIRONMENTAL & ENERGY SERVICES
JIM KEEGAN, TERRA VAC

SITE: FOGERTY V. EXXON, ET AL. TRUST UNDER SECOND INTERIM ORDER

RE: ADDENDUM NO. 1 TO THE REMEDIATION BID SPECIFICATIONS

Dear Prospective Bidders:

This Addendum No. 1 (Addendum) to the Remediation Bid Specifications dated October 2, 1998 is submitted on behalf of the Fogerty v. Exxon, et al. Trust Under Second Interim Order (Trust). The Trust has been informed that Bidders have been contacting the San Diego County Department of Environmental Health (DEH). All communications regarding this project shall go through the Project Manager and/or Trust. Please do not contact the DEH and/or other regulatory agencies regarding this project.

Each Bidder that has been invited by the Trust to Bid on this remediation project has been issued one copy of the Addendum. The Addendum includes this letter and the attached exhibits, which are the following documents:

1. Page 6 of the Agreement for Performance of Remediation in Appendix A of the Bid Specifications. This page was missing in some copies received by the Bidders.
2. Alton Geoscience Workplan for Fuel and Waste Discharge Characterization dated October 15, 1998.
3. Three disks with digital versions of Figures 2 and 3 from the Bid Specifications, Figures 4 from the Bid Specifications and Figure 6 from the Revised Corrective Action Plan (CAP), and Figure 5 from the Bid Specifications, respectively. These files are in self executing/extraction format (.exe).
4. Table 2 provides a summary of drawings available in Alton Geoscience's office which show underground utilities. These drawings may not be complete and no warranty is made regarding accuracy. These drawings are available for review in Alton Geoscience's office. Call Gary McCue at (619) 505-8881 to arrange for a time to review the drawings. Review of the drawings is not mandatory for Bid submittal.
5. Table 3 provides a summary of well construction details. The table may not be complete and no warranty is made regarding its accuracy.
6. A copy of the sign-up sheet for the Bid Walk on October 14, 1998.

Addendum No. 1 to the Remediation Bid Specifications
Fogerty v. Exxon, et al., Trust Under Second Interim Order
November 3, 1998

7. Trust Agreement for Second Interim Order for Implementation of Assessment and Remediation Fund Based on Consent of Contributing Parties.
8. Letter of Commitment for Reimbursement of Corrective Action Cost from Underground Storage Tank Cleanup Fund (LOC) from the Underground Storage Tank Cleanup Fund (USTCF).
9. Agreement For Coordinated Corrective Action.
10. As built (two pages), Body Beautiful Car Wash, 2045 Pacific Highway, San Diego, CA, Alm Services 12/6/89. These drawings may not be complete and no warranty is made regarding accuracy

The following information is provided to assist you in preparing your Bids:

11. Due to delays in obtaining clarifications to the Bid Documents, the Bid Submittal due date has changed from November 20, 1998 to December 4, 1998.
12. Bidders may walk the Site to view conditions on November 4 and 16, 1998 from 10 AM to 3 PM. The Bidders shall not be escorted by representatives of the Trust. The Bidders shall confine themselves to inspection of the Site and not interview Site occupants. No on-Site personnel are authorized to commit the Trust and/or occupants of the Site to anything regarding this project.
13. The Workplan for Fuel and Waste Discharge Characterization dated October 15, 1998 and prepared by Alton Geoscience has been approved by DEH without conditions. We are expediting the completion of this work. The laboratory data for this work shall be made available to the Bidders once it is completed. Selected analysis in the Workplan shall not be conducted as follows: a) oxygen, total suspended solids, settleable solids, and tributyltin analysis shall not be conducted, b) chlorinated hydrocarbon and semi-volatile organic compound (SVOC) analysis shall not be conducted on BB-MW-6 since some data already exists on the Body Beautiful Car Wash (see Table 5 in the CAP), and c) the chronic and acute bioassay analysis shall be reduced. Instead of one sample from both sides of the Depressed LRT Structure, one composite sample will be analyzed. The Bid should not be delayed pending receipt of the additional information.
14. The Public Notification process has been completed. The DEH has stated it will issue final approval of the CAP without further conditions. The Trust shall keep the Bidders informed of the status of completion of that process.
15. The location of the Remediation Treatment Compound on the west side of the Depressed LRT Structure is currently being reviewed. Its location may change. As soon as the Trust determines its location, the Bidders shall be informed of the new location.

FEBUARY 2007 MONTHLY REMEDIATION REPORT

FOGERTY v. EXXON, et al. TRUST

San Diego, California

Establishment Nos.

H15338, H00678, H03575, and H12116

Prepared for:

Fogerty v. Exxon Corporation, et al.

Trust Under Second Interim Order

San Diego, California

Prepared by:

TERRA VAC Corporation

961 Garcia Avenue, Suite D

Pittsburg, California 94565

(925) 473-1178

March 13, 2007



We're gaining new ground.

1. INTRODUCTION

The TERRA VAC Corporation has been contracted by Fogerty v. Exxon, et al. Trust Under Second Interim Order to implement a groundwater and soil remediation system for a free product plume and petroleum hydrocarbon-impacted soil at the Site. The Site encompasses the area generally bounded by and including Kettner Boulevard on the east, Grape Street on the south, Pacific Highway on the west, and Ivy Street on the north, but excluding the Akhevan Property and China Camp/Denny's Property, in San Diego, California. This report presents remediation activities conducted at the site for the period of February 2, 2007 to March 1, 2007.

The Site includes the following unauthorized release cases and addresses:

- | | |
|---|---|
| •Benton Property
Establishment #H15338
Parcel Nos. 533-113-01 and 533-113-02
2136 Kettner Boulevard, San Diego, California | •Body Beautiful Car Wash Property
Establishment #H00678
Parcel Nos. 533-214-01, 533-214-02, and 533-214-03
2945 Pacific Highway, San Diego, California |
| •Fogerty Property
Establishment #H03575
Parcel No. 533-113-03
946 W. Hawthorn Street, San Diego, California | •Luscomb Property
Establishment #H12116
Parcel No. 533-113-04
2100 Kettner Boulevard, San Diego, California. |

2. REMEDIATION SYSTEM DESCRIPTION

The remediation system for the Site is divided into two separate Dual Vapor Extraction (DVE) [also called Dual Phase Extraction (DPE)] systems. One system is located east of the Light Rail Transit (LRT) structure that divides the above properties. This east system is located on the Fogerty property. A second system is located west of the LRT on the Body Beautiful property.

The Remediation system east of the LRT (east system) consists of:

- 1,000 scfm Catalytic Oxidizer.
- Two 200-gallon Moisture vapor separators.
- Two 40 hp positive displacement blowers.
- Two 2,000 lbs Liquid Phase carbon vessels for water treatment.
- Forty-eight (48) vertical and Eight (8) angled extraction wells and associated piping.
- Eight (8) pre-existing monitoring wells have been temporarily modified as remediation wells and also connected to the east system.
- Two 250-foot long horizontal wells.

The Remediation system west of the LRT (west system) consists of:

1,000 scfm Catalytic Oxidizer.
Two 200-gallon Moisture vapor separators.
One 100 hp positive displacement blower.
Four Liquid Phase carbon vessels for water treatment.
46 extraction wells and associated piping.
Seven (7) pre-existing monitoring wells, and three piezometers have been temporarily modified as remediation wells and also connected to the west system.
Two 450 foot long horizontal wells.

3. OPERATION AND MAINTENANCE ACTIVITIES

3.1. East Remediation System

The remediation system east of the LRT completed start-up on September 11, 2003 and has been operating in vapor extraction mode since start-up. On January 27, 2004 Terra Vac began implementing limited Dual Vapor Extraction (DVE). For each of the DVE wells designed for use with entrainment devices, the entrainment device was lowered to the approximate depth of free product. This would allow for further removal of free product while minimizing water recovery. Monthly free product gauging and total mass removed has shown evidence of substantial free product removal. On July 13, 2004 groundwater extraction began. Since beginning groundwater extraction the water table at the site has been lowered targeting the historic depth of the smear zone as defined in Corrective Action Work Plan.

The East remediation system was shutdown on August 1, 2005 for rebound testing. On February 10, 2006 Terra Vac restarted the Vapor Extraction system to test for potential rebound of subsurface vapors. Initial testing was performed with vapor extraction only and no dual phase extraction was applied. During the testing period volatile organic compounds were measured in the remediation system inlet vapor. Remediation system inlet vapor concentrations at shut down (August 1, 2005) were 522 ppm. Remediation system inlet vapor concentrations after restart were 641 ppm.

The east remediation system was shut down on May 22, 2006 due to construction of wells and piping per the 3rd Addendum to the Workplan. After construction and well installation the remediation system was restarted on the week of August 14, 2006 for vapor and free product extraction only. DVE operations were resumed on October 12, 2006.

Thirty-five vapor/dual phase extraction wells, including the addition of B-MW-3, B-MW-1, and one horizontal groundwater extraction well operated during this period. In addition, vapor is being extracted from the horizontal SVE well. The maximum system vapor influent concentration during this period as measured by a Photo Ionization Detector (PID) was 950 ppmv, and a maximum inlet vapor flow rate of 640 scfm. The remediation system is currently operating in dual phase extraction mode. The maximum mass recovery rate for this period is calculated at approximately 171 lbs/day with an estimated 19,900 lbs. of hydrocarbons (PID

data) removed since system restart (8/14/06), and 4,355 pounds during this period. Figures 1 and 2 depict the hydrocarbon recovery rates and cumulative mass recovered to date. Previous reports had been underreporting mass removal rates due to a flow calculation based on schedule 80 pipe, rather than the schedule 40 pipe installed. Cumulative totals and removal rates are approximately ten percent higher than reported in the past. The system has maintained an average of 86% uptime since startup (does not include planned shutdowns). There were no shutdowns during this operating period. Due to some noise concerns, a sound blanket was placed on the vacuum blowers this month.

In order to estimate hydrocarbon biodegradation, carbon dioxide concentrations in the system inlet stream were measured using a portable GasTector model meter. Hydrocarbon removal rates through the biodegradation pathway are calculated as follows:

$$\text{Pounds per day carbon as CO}_2 = \text{scfm} * (\% \text{CO}_2 - 0.03) * 0.0898 * 4.94 \text{mgC/L}/\%$$

Where,

$$\begin{aligned} 0.0898 &= \text{unit conversion factor} = 1440 \text{min/day} * 1 \text{lb}/454,000 \text{mg} * 28.3 \text{L}/\text{cubic foot} \\ 4.94 \text{mg/L}/\% &= \text{mass carbon in } \% \text{CO}_2 = 12 \text{a.w.C}/44 \text{a.w.CO}_2 * 100\% * 18.29 \text{mg/L}/\% \\ 1\% \text{CO}_2 &= 18.29 \text{mg/L} \end{aligned}$$

An average reading of 2.7 percent carbon dioxide was observed for the east side inlet stream during February. At an average flow rate of 580 scfm, this corresponds to approximately 687 pounds/day of carbon generated as CO₂, predominantly from the degradation of hydrocarbons. Atmospheric background levels are generally considered to be 0.03%. Comparison of the hydrocarbon removal rates due to volatilization (calculation from PID readings) and biodegradation (calculation from CO₂ readings) indicate about 80% of the mass removal is through biodegradation. In other words, biodegradation through the DVE process is removing about 4 times more mass than volatilization. This is fairly typical for long term sites with low permeability soils, such as this site.

Remediation system influent and effluent vapor monitoring has been conducted weekly in accordance with the San Diego Air Pollution Control District (APCD) permit to construct and operate dated May 12, 2003 under Application No. 978734. All influent, diluted extraction vapor flow rates remained below the permit limit of 1,000 scfm. Measured effluent concentrations remain below the permit limit of 200 ppmv (as methane). Notice of construction completion for this system was sent to the APCD on September 28, 2003. Table 1 presents the east remediation system emissions data. Table 2 presents the remediation system inlet/operating data.

Monthly well gauging was conducted on February 27, 2007. Eleven (11) groundwater monitoring wells were gauged for depth to groundwater and thickness of free product. Free product was detected only in well FVET-MW-22, with 0.02 feet present. Wells F-MW-2, F-MW-3, F-MW-4, and F-MW-7 are online to the DVE system and water has been extracted to total depth. Table 3 presents the individual results from monthly well gauging.

Groundwater discharge monitoring was conducted in accordance with the San Diego Regional Water Quality Control Board (RWQCB) NPDES Permit. The monthly groundwater discharge

samples for the East system were collected on February 22, 2007, with the laboratory results showing compliance with permit limits. A filter was added to the system, now requiring routine cleaning at a weekly minimum.

As of March 1, 2007 a total of 1,244,995 gallons of water have been extracted, treated, and discharged by the east remediation system. Table 4 is the discharge log for the east system.

3.2. West Remediation System

The remediation system west of the LRT completed start-up on October 28, 2004. The operating plan was to operate in vapor extraction mode and limited Dual Vapor Extraction (DVE) until the west system data indicated that substantial free product has been removed. Once the site data indicated that free product had been removed, groundwater extraction was then begun to expose the base of the historic smear zone to the DVE process. On March 24, 2005 limited DVE commenced targeting areas with the highest recorded free product thickness.

Forty-four vapor extraction wells and one horizontal vapor extraction well were in DVE operation during this period. In mid-December, system vacuum and capacity was optimized, while maintaining air permit compliance. In addition, BB-MW-11 and piezometers PZ-1, PZ-2 and PZ-3 were added to the system and piping modifications to a number of wells along the eastern portion of the west system, were made to increase flow velocity and water extraction in the area. The maximum system vapor influent concentration during this period as measured by a FID was 1410 ppmv, with maximum inlet vapor flow rate of 872 scfm. The maximum mass recovery rate for this period is calculated at approximately **354 lbs/day** with an estimated 8,300 lbs. of hydrocarbons (PID data) removed since the end of the last reporting period. Figures 3 and 4 depict the hydrocarbon recovery rates and cumulative mass recovered to date. The system has maintained an average of 81% up time since startup, inclusive of all downtime, with over 99 percent run time this month. Due to some noise concerns, sound blanket was placed over the vacuum unit this month.

As noted in the previous section for the east system, in order to estimate hydrocarbon extraction rates through biodegradation, carbon dioxide concentrations in the system inlet stream were measured using a portable GasTector model meter. An average reading of 3.7 percent carbon dioxide was observed for the west side inlet stream during this operating period. At an average flow rate of 816 scfm, this corresponds to approximately **1,328 pounds/day** of carbon generated as CO₂, predominantly from the degradation of hydrocarbons. Accordingly, for the west remediation system, about 80% of the mass of petroleum products removed from the subsurface is through biodegradation processes.

Remediation system influent and effluent vapor monitoring has been conducted weekly in accordance with the San Diego Air Pollution Control District (APCD) permit to construct and operate dated May 12, 2003 under Application No. 978733. All influent, diluted extraction vapor flow rates remained below the permit limit of 1,000 scfm. Measured effluent concentrations remain below the permit limit of 200 ppmv (as methane). Notice of construction completion for this system was sent to the APCD on October 26, 2004. Table 5 presents the west remediation system emissions data and table 6 presents the west system inlet/operating data.

Monthly well gauging for the western wells was conducted on February 27, 2007. Ten (10) groundwater monitoring wells were gauged for depth to groundwater and thickness of free product. Free product was not detected in any of the monitored wells. Several of the wells have been added to the system in order to dewater more effectively. Table 7 presents the individual results from monthly well gauging on the west side.

Groundwater discharge monitoring was conducted in accordance with the San Diego RWQCB NPDES Permit. The monthly groundwater discharge samples for the West system were collected on February 22, 2007. Laboratory results are all within permit limitations. Water treatment system discharge data estimates that 1,065,955 gallons of water have been treated and discharged in total, through March 1, 2007. The discharge log is included as Table 8. Filters that have been added to the water system now require twice weekly cleaning.

4. PERFORMANCE MONITORING

Following completion of installation of the Performance Monitoring Points (PMP) weekly performance monitoring has been conducted throughout the Site. Weekly performance monitoring was performed in accordance with the County of San Diego approved Corrective Action Workplan and consists of measuring vacuum and depth to water at ten locations across the site. The monitoring is conducted to confirm remediation system performance is meeting design specifications of 1) obtaining a minimum of 0.3 inches of water vacuum and 2) lowering the groundwater table to the historic depth of the smear zone.

Table 9 and table 10 presents the weekly PMP monitoring data for the East and West systems, respectively. Data from each system indicate that both the vacuum and water drawdown performance criteria have been surpassed at each PMP for the entire operating period. The tables have been amended to show days and cumulative days when both vacuum and drawdown criteria have been met for the PMP areas.

In addition, Terra Vac was requested to periodically monitor depth to water and vacuum at wells BB-MW-10, BB-MW-15, FVET-MW-24, and BB-MW-18. Readings are shown in the following table. Traffic limited data collection at BB-MW-18 and FVET-MW-24.

Well Designation	Date	Depth to Groundwater (feet below TOC)	Groundwater Elevation, MSL	Free Product Thickness (feet)	Vacuum (Inches H2O)	
BB-MW-15	1/20/2007	21.42	-3.38	None	Na	
BB-MW-15	1/29/2007	21.62	-3.58	None	1.24	
BB-MW-15	1/31/2007	21.65	-3.61	None	1.47	
BB-MW-15	2/8/2007	22.81	-4.77	None	1.56	
BB-MW-15	2/9/2007	22.83	-4.79	None	1.76	
BB-MW-15	2/13/2007	22.91	-4.87	None	1.81	
BB-MW-15	2/19/2007	22.92	-4.88	None	1.47	
BB-MW-15	2/23/2007	22.93	-4.89	None	1.62	
BB-MW-15	2/27/2007	22.95	-4.91	None	1.62	
BB-MW-18	1/20/2007	Na	Na	None	Na	no access due to traffic
BB-MW-18	1/31/2007	18.25	na, broken casing			in repair
BB-MW-18	2/13/2007	18.75	-1.39	None	2.64	
BB-MW-18	2/19/2007	18.78	-1.42	None	1.76	
BB-MW-10	1/12/2007	14.18	-2.29	None	0.42	
BB-MW-10	1/20/2007	14.19	-2.28	None	0.56	
BB-MW-10	1/29/2007	14.25	-2.34	None	0.48	
BB-MW-10	1/31/2007	14.26	-2.35	None	0.57	
BB-MW-10	2/8/2007	14.28	-2.37	None	0.62	
BB-MW-10	2/9/2007	14.28	-2.37	None	0.63	
BB-MW-10	2/13/2007	14.3	-2.39	None	0.58	
BB-MW-10	2/16/2007	14.3	-2.39	None	0.55	
BB-MW-10	2/19/2007	14.31	-2.4	None	0.42	
BB-MW-10	2/23/2007	14.3	-2.39	None	0.55	
BB-MW-10	2/27/2007	14.3	-2.39	None	0.55	
FVET-MW-24	1/20/2007	23.28	-1.9	None	na	
FVET-MW-24	1/29/2007	23.52	-2.14	None	0.82	
FVET-MW-24	1/31/2007	23.73	-2.35	None	1.04	
FVET-MW-24	2/8/2007	23.8	-2.42	None	1.11	
FVET-MW-24	2/9/2007	23.84	-2.46	None	1.15	

5. FINDINGS AND CONCLUSIONS

East Remediation System

- Thirty-five extraction wells online during this period, operating in DVE mode.
- Maximum mass removal rate of 171 lbs/day was recorded.
- Estimated 4,355 pounds of hydrocarbons have been removed through volatilization during this operating period based on FID data.

- Estimated 90,800 pounds of vapor phase hydrocarbons have been removed to date through volatilization.
- PMP criteria for vacuum and drawdown were met during the entire operating period. Cumulative total days meeting the dual criteria range from 48 to 59.
- System runtime over the period was 643 hours, or 26.8 days of 27.
- Carbon dioxide measurements indicate removal rates of an average 690 pounds per day of carbon mass from hydrocarbon biodegradation.
- Estimated total groundwater extracted and treated to date 1,065,955 gallons.
- The remediation system is operating in compliance with the APCD and NPDES permit.

West Remediation System

- Maximum mass removal rate of approximately 354 lbs./day was recorded.
- Estimated 8,300 pounds of hydrocarbons have been removed through volatilization since the last report by the west system based on PID data.
- Estimated 87,900 pounds of hydrocarbons have been removed to date by the west system based on PID data through volatilization.
- Forty-four wells across the site are online. Performance criteria were met at all PMPs during the entire operating period. Cumulative total days meeting the dual criteria range from 64 to 173 days at the five PMPs.
- System runtime over the period was 645.7 hours, or 26.9 days of 27.
- Carbon dioxide measurements indicate removal rates of over 1,300 pounds per day of carbon mass from hydrocarbon biodegradation.
- The remediation system is operating in compliance with the APCD permit.
- Water discharge samples show compliance with NPDES permit.

6. PLANNED ACTIVITIES FOR NEXT MONTH

Site activities planned for next month include:

- Performing scheduled daily, weekly and monthly monitoring of the east and west remediation systems.
- Optimizing operations to maintain target groundwater levels and maximize removal rates.
- Conduct quarterly groundwater monitoring and sampling.
- Continue investigation regarding variation in nickel concentrations due to analytical methods used for freshwater versus saline.
- Investigate feasibility of additional wells in Body Beautiful "crescent" area.

Payment Summary

Claim No: CP0004 Claimant: FOGERTY V EXXON
 Request No: 12 Reviewer: Wennilyn Fua *WFF*
 Region: 9 Date: 08/14/2006

Invoice No.	Invoice Date	Amount Requested	Eligible	Eligible Third Party	Pending	Ineligible	Foot Notes	Comments
1 31-0335-43	01/12/06	113,882.16	86,744.16		27,118.00	0.00	A,B,C,D	
2 107654	02/15/05	220.00	220.00			0.00		
3 114179	08/16/05	3,448.50			3,448.50	0.00		Private Oversight Program costs are pending the evaluation of the program by the Fund's legal counsel. Refer to line 3 comments.
4 116148	10/12/05	1,337.50	430.00		907.50	0.00		
5 117169	11/15/05	225.00	225.00			0.00		
6 120014	02/16/06	585.00	585.00			0.00		
7 5674-POP	02/15/06	138.00			138.00	0.00		Refer to line 3 comments.
Sect. 171 Subtotals:		119,816.16	88,204.16		31,612.00	0.00		

Eligible	Eligible Third Party
Previous Reimbursement Totals:	3,305,696.08
Current Reimbursement:	88,204.16
New Reimbursement Totals:	3,393,900.24
	0.00

← Carry these amounts forward to the next "Spreadsheet" in the "Amount Requested, Previous Total" and "Third Party Costs" columns.

FOOTNOTES

A - REMEDIATION EQUIPMENT USAGE COSTS

The Fund still has not received bids for the purchase of the carbon canisters, the electric skids, and the water storage tanks, as requested in the previous reimbursement requests. The monthly usage fees for these pieces of equipment are pending submittal of a minimum of three quotes indicating the purchase price of comparable equipment. RC 42 cost pending - \$3900

B - LABOR COSTS ASSOCIATED WITH THE ROI TESTING

\$17,302 in labor costs billed under RC42 associated with the radius of influence testing is pending. Provide a copy of the regulatory directive for conducting the test.

C - WORKPLAN ADDENDUM COST

\$5916 in workplan addendum cost (RC15) is pending. Submit a copy of the regulatory directive for the preparation of the workplan addendum and regulatory correspondence approving the workplan. Also provide documents supporting the claim that the proposed system re-design will result in approximately \$250,000 in savings.

D - REGULATORY DIRECTION OF WORK CONDUCTED

Based on the supplied documentation, it is not apparent that the activities conducted had regulatory approval prior to the work being initiated. Per Fund Regulation Section 2812.1(a)(5), the claimant must provide documentation that the activities were performed in accordance with the oral or written directives of the appropriate regulatory agency and with any permits obtained to conduct the work described. Documentation needs to be provided before payment can be authorized for this invoice that all work performed had prior regulatory approval.

PAYMENT SUMMARY

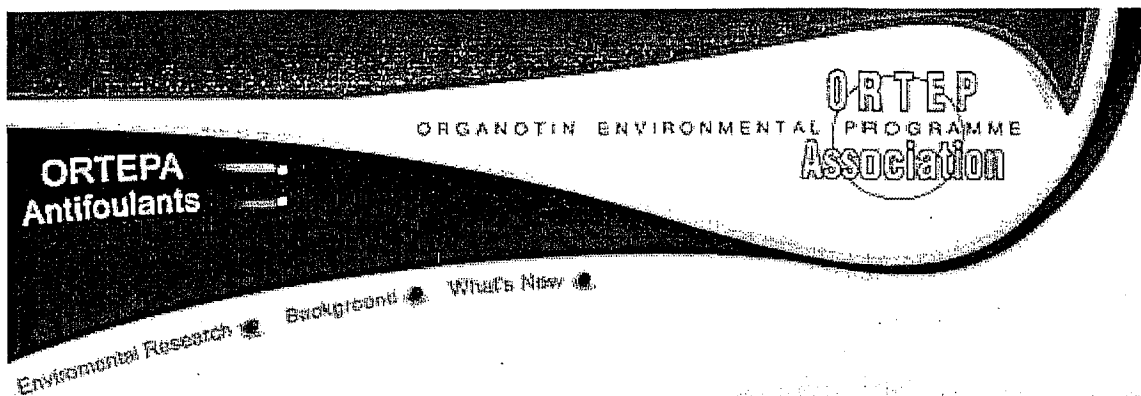
Claimant: **Robert V Exxon**
 Claim No: **CP0004**
 Request No: **5**
 Region: **9**

Reviewer: **Casby Weavil**
 Date: **10/1/03**

Invoice No.	Invoice Date (Last Reimbursement)	Amount Requested	Eligible	Eligible Third Party	Pending	Ineligible	Foot Notes	USTCF Spreadsheet Comments
Previous Total (Last Reimbursement)								
			573,543.71					
1	31-0335-07	11/11/02	78,436.48	48,827.82	24,051.00	5,757.66	1,2,3, 4,5,6	Administration and other management unrelated to corrective action is ineligible for reimbursement. Bonding issues are not eligible corrective action and are not eligible for reimbursement. Shipping and mailing are considered ancillary to business. These costs are built into the hourly rates charged in the course of conducting work. The cost to prepare the remediation workplan is excessive (\$1,525.24 is ineligible). The maximum rate allowed by the Fund for RTA is \$68/hr. Eligible reimbursement has been reduced to that rate. Other rates have been reduced to those identified in the USTCF Cost Guidelines. The 1st page of the April through September 2002 invoice was not submitted with this package (\$10,504 pending submission of complete information). Reports were not provided. Please explain how it took 231 hours to conduct groundwater sampling between 5/13/02 and 8/19/02. Please provide corresponding report. (\$13,547 pending). Testing for and remediation of non-petroleum contaminants are not eligible for reimbursement. Please explain how the APCD permit for the Body Beautiful site is eligible for reimbursement through this claim.
2	31-0335-08	11/19/02	20,183.44	13,571.65	3,144.00	3,457.79	6,7	Town hall meetings are not considered eligible corrective action. Please provide regulatory directive for the installation of 35 wells.
3	31-0335-09	12/07/02	26,740.56	25,911.14		829.42	8,8	Town hall meetings and presentation materials are not considered eligible corrective action. Substantial time has been changed for encroachment permits. Please explain why so much effort was required to obtain the encroachment permits. Please explain how "fencing private" applies to corrective action for this site.
4	31-0335-10	01/13/03	55,879.99	41,132.41	6,464.50	8,383.08	1,2,6	Significant time was spent installing wells. Please provide workplan, regulatory approval letter and well installation report. Per diem expenses are not approved for reimbursement. Reimbursement for vehicle use is based on actual miles travelled at a rate not more than \$0.50/mile not to exceed \$60/day. Markup of vehicle use charges is not eligible for reimbursement. There was no designation of which receipts applied to "field supplies". A car wash is not an eligible field supply cost.
5	31-0335-11	02/06/03	2,977.16	2,977.16		0.00		
6	31-0335-12	02/18/03	163,039.64	126,551.27	32,727.18	3,761.19	2,4,5	
7	31-0335-13	02/21/03	828.52	828.52		0.00		
8	31-0335-14	03/17/03	64,881.03	79,212.10		5,668.93	1,2,4, 6,7	Well permitting (RC22) is excessive. Please explain why it took 43 hours to get well permits. Similarly, city of San Diego permit (RC23) is excessive. Please explain why it took 32 hours to obtain city permits. The documentation for RC32 expenses is a combination of RC31 and RC32. Please correct and resubmit.
9	31-0335-15	04/14/03	103,046.13	92,691.99	7,424.72	2,928.42	4,5,6	The invoice and amount requested do not match.
10	31-0335-16	05/13/03	110,713.21	105,706.25		5,006.96	1,2,4, 6,7	
11	91264	12/10/02	148.75	148.75		148.75		
12	91630	01/14/03	679.00	679.00		0.00		
13	90916	11/12/02	157.50	157.50		157.50		
14	092354	03/12/03	1,067.50	1,067.50		0.00		
15	92705	04/15/03	2,586.75	2,586.75		0.00		
Total of this Request								
			531,546.59	470,814.40	70,814.40	15,917.79		

claimant will carry these amount(s) forward to next "spreadsheet" as "Amount Requested, Previous Total" and "Third Party Costs" columns.

\$1,115,090.27 **\$0.00**



Environmental Research:

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Background:

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Common Laboratory Difficulties with TBT Analysis

The following text discusses problems encountered during analysis for tributyltin (TBT). It is specific to analytical procedures that use extraction with an organic solvent (i.e., hexane, toluene, or methylene chloride), derivatization with a Grignard reagent, and gas chromatograph detection using either flame photometric or mass spectrometric detection (See Figure 1). Similar difficulties may be encountered using other procedures (i.e., hydride derivatization/graphite furnace), but these issues relate specifically to the procedure mentioned above, which is used on the U.S. EPA-required environmental monitoring program. Figure 1 presents a schematic of a typical analytical procedure.

Achieving Low Parts Per Trillion Detection Limits

The first area that causes difficulty is that the level of concern in water samples is very low; the U.S. EPA chronic marine water quality criterion for TBT is 10 ng/L and some State standards are even lower. This requires that a large volume (at least two liters is required) water sample be concentrated down to ~100 μ L (a concentration factor of 20,000) and causes any contaminant or interferant to be magnified by a similar factor.

Problems with the analytical method are generally of two types:

contamination and interferences.

Contamination

Contamination with butyltins generally comes from one of two sources: 1) incompletely cleaned glassware, or 2) reagents containing low levels of the target analytes. Common sources of contamination are listed below:

- Dibutyltin is commonly used as a stabilizer in the production of polyvinylchloride (PVC) plastics. PVC materials should not contact samples or reagents used during organotin analyses.
- Laboratory water may contain low levels of butyltins.
- The commercially purchased Grignard reagent can contain butyltins.
- Other materials and reagents used in the analysis such as the organic solvent, tropolone, and florisil should be tested to ensure that they are free of butyltins. A simple way to determine if there is a problem is to analyze a blank sample before processing environmental samples.
- Polycarbonate containers are difficult to clean when exposed to high levels of butyltins. Therefore, containers should not be reused if samples collected contain high levels of butyltins.

To give an example of how contamination can occur, one laboratory noted contamination of water samples because a staff member was painting a wooden deck with a preservative paint containing butyltins. Sufficient butyltins were being transferred on feet or clothing to contaminate water samples.

Incompletely cleaned glassware can also cause contamination of samples. Typical cleaning procedures for glassware have been found to be insufficient to remove residual traces of butyltins. Baking glassware in a muffle furnace, or similar oven, can alleviate carryover problems. Prior to baking, glassware is cleaned using a detergent, and rinsed with an organic solvent.

Interferences

Interferences generally occur with sediment samples due to the

presence of sulfur compounds that co-elute with the butyltins or the internal standards. Methods, such as USEPA Method 3660 (1986), that utilize activated copper to bind and remove sulfur compounds are effective, but unfortunately can also remove quantities of the internal standards and possibly the target analytes. Careful dilution of samples to remove/dilute the interference to acceptable levels or selection of internal standards that do not co-elute with the interference are potential solutions. However, even with a careful selection of procedures, it may be impossible to analyze some sediment samples.