

FINAL CLEANUP ACTION REPORT

at the

STOREY GAS STATION FACILITY

1310 East First Street

Cle Elum, Washington

for

SUZANNE STOREY, MARILYN STOREY,

and

JOANNE STOREY MANKUS

Cle Elum, Washington 98922

prepared by



GALLOWAY ENVIRONMENTAL, INC.

Sammamish, Washington

(425) 688-8852

August 2002



GALLOWAY ENVIRONMENTAL, INC.

3102-220th PL SE
Sammamish, WA 98075-9540
galloway@aol.com e-mail

(425) 688-8852
(425) 688-8879 (fax)

8 August 2002

Storey Gas Station Facility
Attn. Ms. Suzanne Storey
1310 East First Street
Cle Elum, Washington 98922

SUBJECT: Final Cleanup Action Report – Storey Service Station, 1310 East First Street, Cle Elum, Washington

Dear Ms. Storey:

This Final Cleanup Action Report presents a summary of Galloway Environmental, Inc.'s (GEI's) findings from Groundwater Well Monitoring Sample Results at the above-referenced site.

This phase of work was targeted to test water samples collected from four on-site groundwater wells for petroleum contaminants. The scope of work for this phase of GEI's Cleanup Action Plan (approved by the WDOE June 19, 2000) included collecting and analyzing water samples from the wells.

BACKGROUND

The Washington Department of Ecology (WDOE or Ecology) issued an Agreed Order to the Storey Gas Station (the "Site") on or about October 24, 1997. Ecology's Findings of Fact concluded that water and soil samples confirmed the presence of "hazardous substances" as defined by the Model Toxics Control Act Cleanup Regulation Chapter 173-340 WAC (MTCA) on the subject property (*Phase I and Phase II Environmental Site Assessment, Former and Current Service Stations and Bulk Storage Facilities, Cle Elum, Washington, WDOE Central Region Office, December 1996*).

Attached to the Agreed Order was a Statement of Work for the Remedial Design/Feasibility Study (RI/FS) at the Site. The scope of work of the RI/FS was based on MTCA. The objective of the RI/FS was to develop data sufficient to characterize the contamination and identify remedial options for the environmental cleanup of the Site in accordance with WAC 173-340.

GEI completed an RI/FS for the subject property in March 2000. The RI/FS confirmed that petroleum compounds remained belowground at the Site above the WDOE's acceptable Model Toxics Control Act (MTCA) in soil. Based on the WDOE's acceptance of the RI/FS (May 2000), GEI developed a Cleanup Action Plan (CAP) for the site in May 2000. The Plan was approved by the WDOE in

June 2000. The remedial action activities outlined in the CAP included the following scope of work:

- 1) On-site bioremediation of approximately 600 cubic yards of petroleum-impacted soil in a secure, lined treatment cell;
- 2) Groundwater quality monitoring of four on-site groundwater wells; and
- 3) A Final Cleanup Action Report will be submitted to the Washington Department of Ecology ("WDOE" or "Ecology") within 30 days following the successful on-site remediation of petroleum-impacted soils currently stockpiled on-site.

BIOREMEDIATION SOIL SAMPLE RESULTS

The petroleum-impacted soils contained in the on-site bioremediation pad have been sampled and analyzed three times since the pad was constructed in July 2000 (see *Attachment A - Site Plan Map*). Laboratory results of the sampling confirmed that gasoline-range petroleum hydrocarbons were not detected in any of the soil samples, and heavy oil- and diesel-range hydrocarbons are below the currently acceptable MTCA Method A levels in the soil. These results are summarized as follows:

September 27, 2000 Soil Sample Results - GEI collected six discreet soil samples from representative grid cells evenly distributed throughout the pad (see *Attachment A - Figure 1 Sample Location Map, attached*). Diesel-range hydrocarbons averaged 453.33 mg/kg and Heavy Oil-range hydrocarbons averaged 208.33 mg/kg.

Based on these results, GEI added petroleum degrading microorganisms and nutrients into the soil to enhance the remediation of the soil. The soil was mixed approximately every week to assist in distributing the microbes and nutrients throughout the soil.

November 29, 2000 Soil Sample Results - GEI collected six discreet soil samples from representative grid cells evenly distributed throughout the pad (see *Attachment A - Figure 2 Sample Location Map, attached*). Diesel-range hydrocarbons averaged 356.67 mg/kg and Heavy Oil-range hydrocarbons averaged 218.33 mg/kg.

Based on these results, GEI has discontinued tilling the soil until the soil thaws early next spring and the microbial degradation of the petroleum becomes active.

October 17, 2001 Soil Sample Results - GEI collected six discreet soil samples from representative grid cells evenly distributed throughout the pad (see *Attachment A - Figure 3 Sample Location Map, attached*). Diesel-range hydrocarbons averaged 268.33 mg/kg and Heavy Oil-range hydrocarbons averaged 140.00 mg/kg (see *Table 1 and Appendix A -Laboratory Data Sheets*).

Based on these results, GEI has discontinued tilling the soil.

Table 1 - Bioremediation Pad Sample Results Summary				
Date	Sample Number	Gasoline (mg/Kg) limit 100 mg/Kg	Diesel (mg/Kg) limit 200 mg/Kg	Heavy Oil (mg/Kg) limit 200 mg/Kg
9/27/00	SNW 9/27/00	ND	540	210
"	SNE 9/27/00	ND	320	180
"	SCN 9/27/00	ND	510	220
"	SCS 9/27/00	ND	580	240
"	SSW 9/27/00	ND	370	200
"	SSE 9/27/00	ND	400	200
11/29/00	SGS1129 1 @ CS	Not Tested	470	200
"	SGS1129 2 @ CS	Not Tested	300	180
"	SGS1129 3 @ CS	Not Tested	220	140
"	SGS1129 4 @ CS	Not Tested	410	300
"	SGS1129 5 @ CS	Not Tested	300	160
"	SGS1129 6 @ CS	Not Tested	440	330
10/17/01	STOREY BP-1	Not Tested	220	130
"	STOREY BP-2	Not Tested	240	130
"	STOREY BP-3	Not Tested	220	120
"	STOREY BP-4	Not Tested	260	120
"	STOREY BP-5	Not Tested	390	200
"	STOREY BP-6	Not Tested	280	140

GROUNDWATER SAMPLE RESULTS

Chemical results of water samples collected from monitor wells – MW-1, MW-2, MW-3 and MW-4 (in July 2002) resulted in non-detect for all compounds tested. These data confirm that petroleum compounds in all four wells have resulted in "No Detectable" petroleum compounds in any of the wells since water quality sampling began in January 1998 with the exception of one sample in MW-2 in June 4, 1998 (see Table 2).

[illegible]

CONCLUSIONS AND RECOMMENDATIONS

Based on soil and groundwater sample results, this site does not appear to pose any threat to human health and/or the environment.

Storey Gas Station has complied fully with the conditions of the October 24, 1997 Agreed Order with the WDOE, pending Storey's filing of the Restrictive Covenant/Deed Restriction for the property.

GEI recommends that the WDOE issue a "No Further Action" letter to the owners of the Storey Gas Station regarding this cleanup action.

Should you have any questions regarding this report or if you would like to discuss our findings, please call me at (425) 688-8852.

Respectfully Submitted,

GALLOWAY ENVIRONMENTAL, INC.

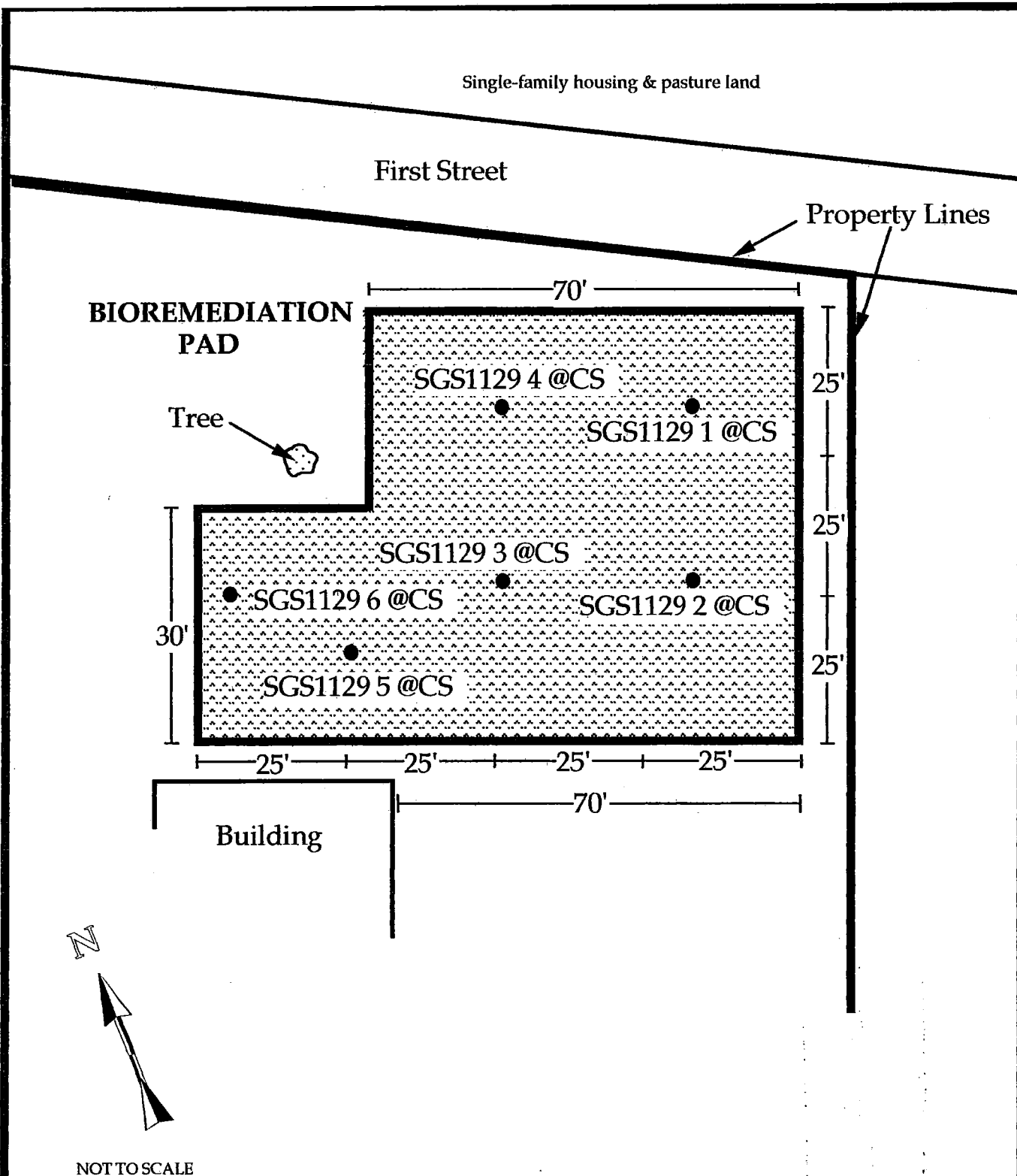
A handwritten signature in black ink, appearing to read "Gary Galloway", with a stylized flourish at the end.

Gary L. Galloway, RG, CHMM, REA
President

cc: Tom Myler - Marine Vacuum Services
Chung Ki Yee, WDOE Central Division

ATTACHMENTS A

***Bioremediation Pad
Sample Location Maps
(Figures 1 thru 3)***



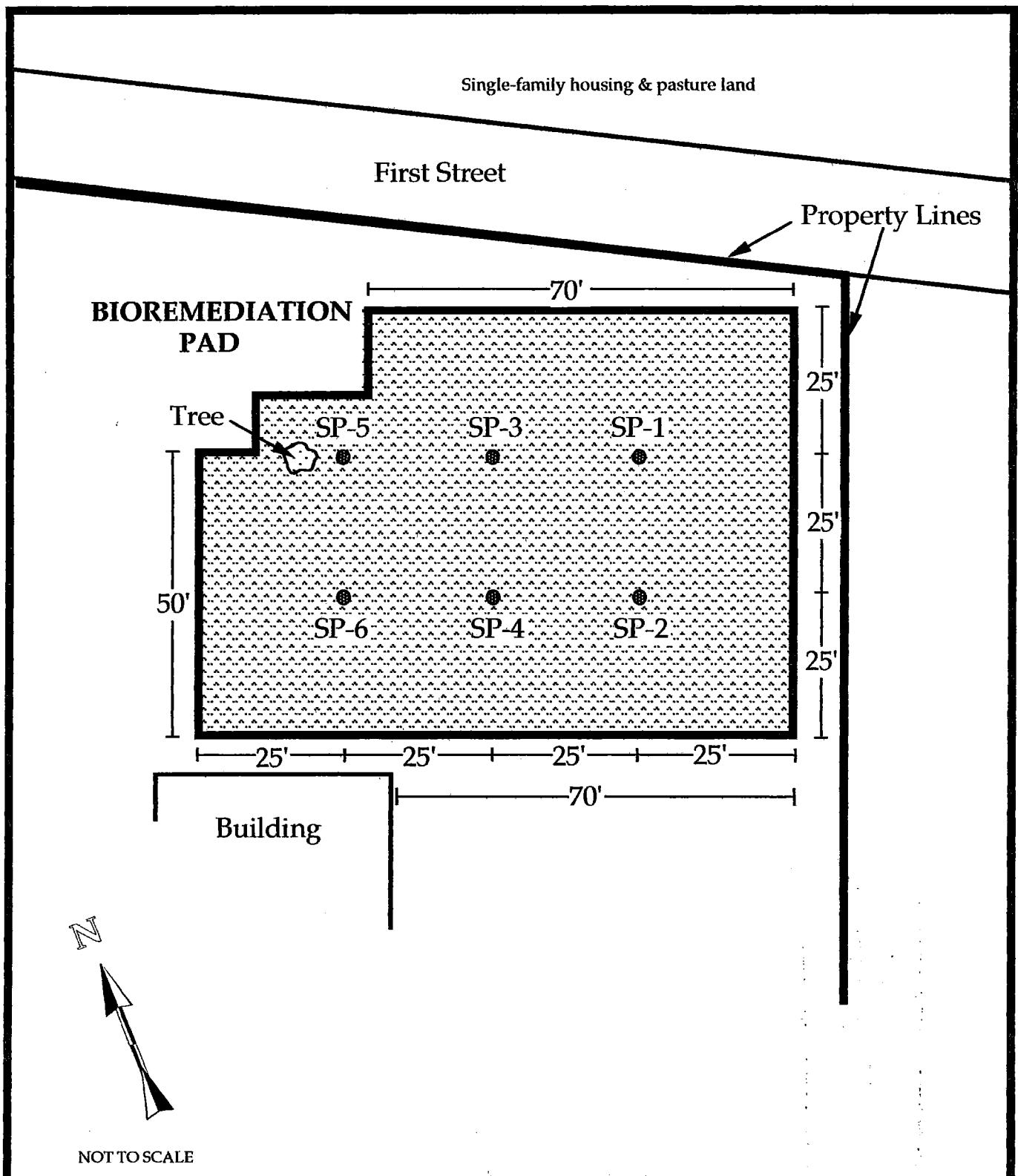
**FIGURE 2 — BIOREMEDIATION PAD 11/29/00
SAMPLE LOCATION MAP**

Storey Service Station Site, Cle Elum, Washington

Source: Galloway Environmental Inc

January 2002, Project #20008





NOT TO SCALE

**FIGURE 3 — BIOREMEDIATION PAD 10/17/01
SAMPLE LOCATION MAP**

Storey Service Station Site, Cle Elum, Washington

Source: Galloway Environmental Inc

January 2002, Project #20008



ATTACHMENT B

Laboratory Chemical Results

(recent water samples- see interim status reports for earlier lab sheets)



**OnSite
Environmental Inc.**

Analytical Testing and Mobile Laboratory Services

July 16, 2002

Gary Galloway
Galloway Environmental, Inc.
3102 220th Place SE
Samamish, WA 98075

Re: Analytical Data for Project 19735
Laboratory Reference No. 0207-076

Dear Gary:

Enclosed are the analytical results and associated quality control data for samples submitted on July 10, 2002.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 16, 2002
Samples Submitted: July 10, 2002
Lab Traveler: 07-076
Project: 19735

**NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL**

Date Extracted: 7-11-02
Date Analyzed: 7-11-02

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0711W1

	Result	Flags	PQL
Benzene	ND		1.0
Toluene	ND		1.0
Ethyl Benzene	ND		1.0
m,p-Xylene	ND		1.0
o-Xylene	ND		1.0
TPH-Gas	ND		100
Surrogate Recovery: Fluorobenzene	78%		

Date of Report: July 16, 2002
Samples Submitted: July 10, 2002
Lab Traveler: 07-076
Project: 19735

**NWTPH-Gx/BTEX
MS/MSD QUALITY CONTROL**

Date Extracted: 7-11-02
Date Analyzed: 7-11-02

Matrix: Water
Units: ug/L (ppb)

Spike Level: 50.0 ppb

Lab ID:	07-075-10 MS	Percent Recovery	07-075-10 MSD	Percent Recovery	RPD	Flags
Benzene	48.9	98	49.2	98	0.65	
Toluene	48.2	96	48.8	98	1.2	
Ethyl Benzene	48.4	97	48.9	98	1.1	
m,p-Xylene	48.1	96	48.5	97	0.87	
o-Xylene	48.2	96	48.4	97	0.41	

Surrogate Recovery:

Fluorobenzene	86%	85%
---------------	-----	-----



DATA QUALIFIERS AND ABBREVIATIONS

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- D - Data from 1:____ dilution.
- E - The value reported exceeds the quantitation range, and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- G - Insufficient sample quantity for duplicate analysis.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- O - Hydrocarbons outside the defined gasoline range are present in the sample.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a silica gel cleanup procedure.
- Y - Sample extract treated with an acid cleanup procedure.
- Z -
- ND - Not Detected at PQL
- MRL - Method Reporting Limit
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference

