IHW ~~50343-RP~~
SWR 31547

Environmental
Resources
Management

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Houston, Texas 77084
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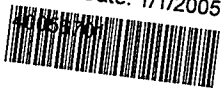
January 20, 2006



ERM

Dr. Ata-ur Rahman
Permits Section
Industrial and Hazardous Waste Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, MC 130
Austin, Texas 78753

Subject: Transmittal of the Semiannual Monitoring Report: First Semiannual Event 2006
Houston Wood Preserving Works, Houston, Texas

Dear Dr. Rahman:

On behalf of Union Pacific Railroad (UPRR), two copies of the referenced report are enclosed pursuant to the requirements of Section VII.C.2 of Compliance Plan No. CP-50343, issued in conjunction with Post-Closure Care Permit No. HW-50343-000.

Please call me at (281) 600-1000 if you have any questions regarding the enclosed report.

Sincerely,

Environmental Resources Management

Christopher M. Young, P.G.

CMY/jan
Enclosures

cc: Mark Arthur, TCEQ-Austin
Nicole Bealle, TCEQ Region 12 - Houston
Geoffrey B. Reeder, Union Pacific Railroad

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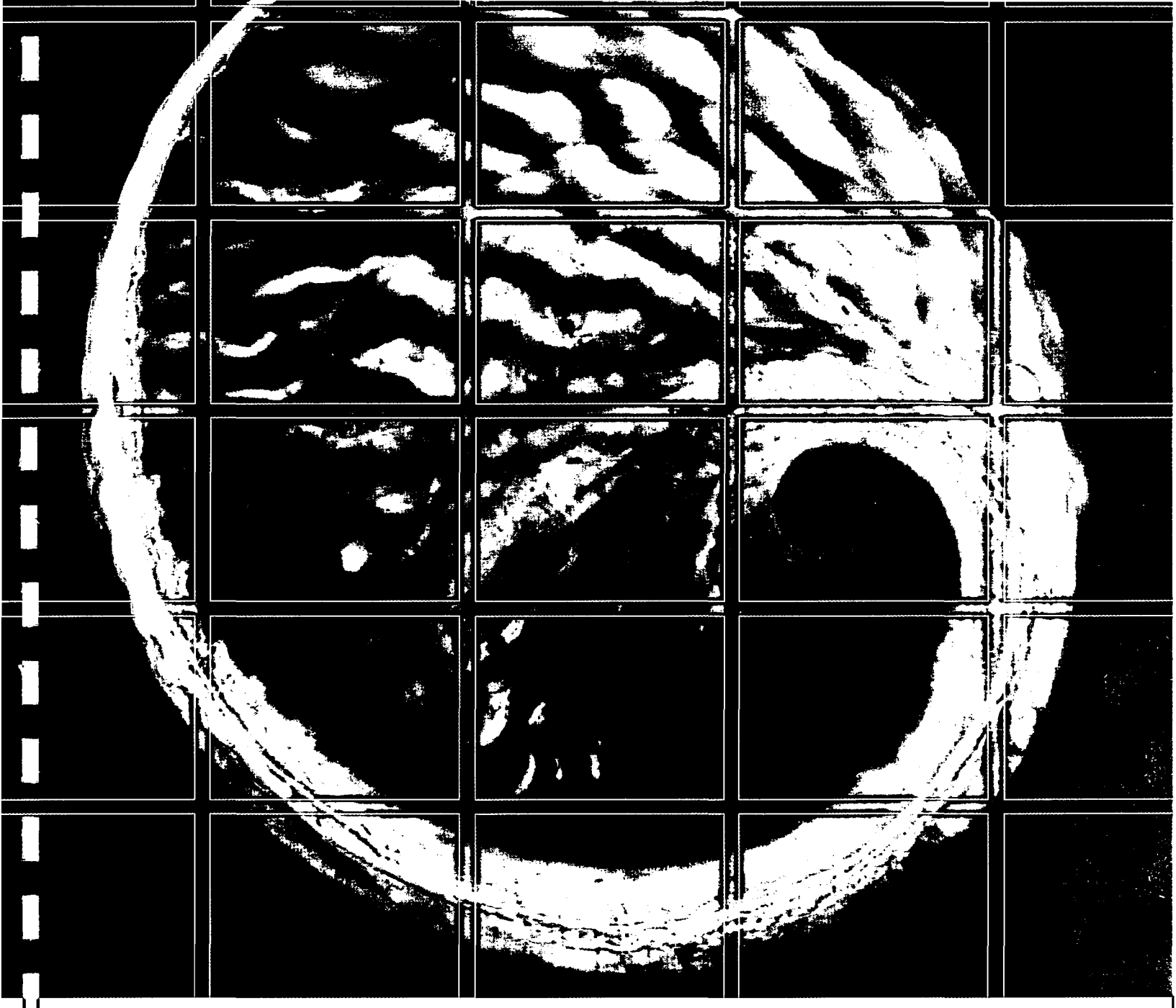

Semiannual Monitoring Report: Second Semiannual Event 2005

Houston Wood Preserving Works
Houston, Texas

Union Pacific Railroad Company

January 20, 2006

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IHW 50343 RP

Union Pacific Railroad Company

Semiannual Monitoring Report: Second Semiannual Event 2005: *Houston Wood Preserving Works, Houston, Texas*

January 20, 2006

Project No. 0014419

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1.0 INTRODUCTION

Routine semiannual ground water monitoring is required as a condition of the Compliance Plan (CP) for the former Houston Wood Preserving Works (HWPW) site, located at 4910 Liberty Road, Houston, Texas (Figure 1-1). These activities are performed to monitor ground water quality beneath a closed surface impoundment.

The surface impoundment was described in RCRA Permit No. HW-50343-000 and associated Compliance Plan (CP-50343) as Unit 001. The sampling event, analytical data, and this data evaluation report fulfill the semiannual reporting requirements for the second half of 2005 as described in the CP, Section VII.C.2. The CP and RCRA Permit were renewed on June 10, 2005 for this unit.

On July 18-19, 2005, Environmental Resources Management (ERM) conducted ground water gauging and sampling activities at the site. These activities included sampling the compliance plan wells and piezometers associated with the surface impoundment, along with collecting fluid elevation data.

Section VII.C.2 of the CP describes the technical information to be provided in each semiannual report. Those requirements include:

1. A narrative summary of the evaluations made in accordance with CP Sections V, VI, and VII for the preceding six-month period. These periods shall be January 1 through June 30 and July 1 through December 31 (VII.C.2.a.);
2. Summary of Methods utilized for management of recovered/purged water (VII.C.2.b.);
3. An updated table and map of the monitoring and corrective action system wells (VII.C.2.c.);
4. The results of the chemical analyses, submitted in a tabulated format in a form acceptable to the Executive Director, which clearly indicates each parameter that exceeds the Ground Water Protection Standard (GWPS). Copies of the original laboratory report for chemical analyses showing detection limits and quality control and quality assurance data shall be provided if requested by the Executive Director (VII.C.2.d.);
5. Tabulation of the water level elevations (relative to mean sea level), depth to water measurements, and total depth of well measurements collected since the data that was submitted in the previous semiannual report (VII.C.2.e.);
6. Potentiometric surface maps showing the elevation of the water table at the time of sampling and direction of ground water flow gradients (VII.C.2.f.);
7. A notation of the presence or absence of non-aqueous phase liquids (NAPLs), both light and dense phases, in each well during each sampling event since the last event covered in the previous semiannual report and tabulation of depth and thickness of NAPLs, if detected (VII.C.2.g.);

8. Quarterly tabulations of quantities of recovered ground water and NAPLs, and graphs of monthly recorded flow rates versus time for the recovery wells during each period. A narrative summary describing and evaluating the NAPL recovery program shall also be included (VII.C.2.h.);
9. Tabulation of the total contaminant mass recovered from each recovery system for each reporting period, if such a system is installed (VII.C.2.i.);
10. Tabulation of the data evaluation results pursuant to Section VI.D and status of each well listed on CP Table V with regard to compliance with the corrective action objectives and compliance with the GWPSs (VII.C.2.j.);
11. Maps of the contaminated area depicting concentrations of constituents listed in Table IV and any newly detected Table III constituents as isopleths contours or discrete concentrations if isopleths contours cannot be inferred (VII.C.2.k.);
12. Maps indicating the extent and thickness of the LNAPLs and DNAPLs, if detected (VII.C.2.l.);
13. An updated schedule summary as required by Section X (VII.C.2.m.);
14. Summary of any changes made to the monitoring/corrective action program and a summary of recovery well inspections, repairs, and any operational difficulties (VII.C.2.n.);
15. A table of the modifications and amendments made to this Compliance Plan with their corresponding approval dates by the executive director or the Commission and a brief description of each action (VII.C.2.o.);
16. Corrective Measures Implementation (CMI) Report to be submitted in accordance with Section VIII.F, if necessary (VII.C.2.p.);
17. Tabulation of well casing elevations in accordance with Attachment B No. 16 (VII.C.2.q.);
18. Recommendation for any changes (VII.C.2.r.);
19. Certification and well installation diagram for any new well installation or replacement and certification for any well plugging and abandonment (VII.C.2.s.);
20. A summary of any activity within an area subject to institutional control (VII.C.2.t.); and
21. Any other items requested by the Executive Director (VII.C.2.u.).

As of June 29, 2005, a recovery system had not been installed at this facility. Therefore, provisions 8, 9, and 10 that relate to recovery wells or recovery system, are not applicable to this reporting period.

2.0 SECOND SEMIANNUAL GROUND WATER SAMPLING EVENT FOR 2005

This section contains a discussion of each of the semiannual report provisions required by CP Section VII.C.2, by reference number to the list of provisions in Section 1.

2.1 NARRATIVE SUMMARY OF SECOND SEMIANNUAL ACTIVITIES

CP Section VII.C.2.a requires a narrative summary of evaluations completed in accordance with CP Sections V, VI, and VII. Section V relates to the Corrective Action Program in place for the permitted unit. Section VI relates to the Ground Water Monitoring Program designed to evaluate the effectiveness of the Corrective Action Program. Section VII includes provisions for response and reporting requirements. Each of these evaluations is provided below.

2.1.1 *Corrective Action Program*

Ground water samples were collected from the existing wells to assess affected ground water quality in the A-Transmissive Zone (A-TZ) and the B-Transmissive Zone (B-TZ). The definitions of the A-TZ and B-TZ are consistent with the Uppermost Transmissive Zone (UTZ) and Second Transmissive Zone (STZ), respectively, as defined in CP Provision I.A. and summarized as follows:

- A-TZ refers to the first sand unit encountered at approximately 13 feet below ground surface (bgs) and averages 7 feet in thickness; and
- B-TZ refers to the second sand unit encountered at approximately 30 feet bgs and averages 9 feet in thickness.

The following monitor wells were sampled (as designated by function in CP Table V; Appendix A to this report):

- A-TZ Point of Compliance (POC) wells: MW-01A, MW-02, MW-07, MW-10A, and MW-11A;
- A-TZ Background well: MW-08;
- B-TZ POC wells: MW-10B, MW-11B, and P-10; and
- B-TZ background well: P-12.

2.1.2 *Ground Water Monitoring*

ERM performed quarterly well inspections on July 18, 2005 and December 22 and 27, 2005 and ground water monitoring activities on July 18 and 19, 2005. Pursuant to provision VI.D.3 of the CP, MW-01A was resampled on September 8, 2005 to confirm results from the July 2005 sampling event. Ground water sampling was performed using procedures outlined in a U.S. EPA document titled *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* (EPA/540/S-95/504) published in April 1996.

The wells are equipped with dedicated polytetrafluoroethylene (PTFE) tubing for ground water sampling. A Master-Flex® peristaltic pump was used to collect the ground water samples. A one-foot section of disposable silicon tubing was placed around the pump head and attached to the PTFE tubing for proper operation of the pump. Ground water was pumped from the screened interval of the well at a flow rate of less than approximately 0.5 L/min. A flow-through cell and field meters were used to measure and evaluate field parameters including temperature, pH, specific conductivity, dissolved oxygen, and turbidity. When the field parameters had stabilized to the EPA-specified criteria, the well was sampled. The samples were also collected at a flow rate of less then 0.5 L/min. A compilation of recorded field parameters is included in Appendix B.

For each well, two 1,000-mL amber glass bottles [for semivolatile organic constituent (SVOC) analysis] were filled directly from the pumping apparatus described above. The bottles, containing laboratory-supplied preservatives, were sealed and packed in coolers with sufficient ice to maintain a sample temperature of approximately 4°C. The sample coolers were delivered to Severn Trent Laboratory, in Houston, Texas for analysis. Chain-of-Custody (COC) forms were completed and kept with their respective samples. Copies of the analytical data and COCs are included in Appendix C.

2.2 *PURGE WATER MANAGEMENT*

Purge water generated from the July 2005 low-flow ground water sampling event was containerized in Department of Transportation (DOT) certified, 55-gallon steel drums and temporary stored on site in a fenced and locked container storage area (NOR 006) pending removal for off-site disposal.

Drummed purge water and personal protective equipment (PPE) were removed from the site and disposed at the Clean Harbors Deer Park facility on October 14, 2005.

2.3 *MONITORING AND CORRECTIVE ACTION SYSTEM WELLS*

A summary of the current monitoring and corrective action wells is provided in Table 2-1 and 2-2. Configuration of the current monitoring and corrective action wells is provided as Figures 2-1 and 2-2.

2.4 *ANALYTICAL RESULTS*

The results of the chemical analyses for the second semiannual sampling event of 2005 are summarized in Tables 2-1 and 2-2, respectively. Compounds with concentrations reported above the Protective Concentration Limit (PCL) are indicated in boxes on the tables. The CP Section IV D defines the GWPS as the PCL. Table 2-3 summarizes the field blank, matrix spike and matrix spike duplicate results for quality assurance/quality control (QA/QC) purposes.

2.5 *WELL MEASUREMENTS*

During the sampling event, the following information was recorded at each monitor well:

Before Sampling

- The presence of light non-aqueous phase liquids (LNAPLs) was evaluated; and
- Depth to ground water was measured to the nearest 0.01 foot.

After Sampling

- The presence of dense non-aqueous phase liquids (DNAPLs) was evaluated; and
- Total well depths were determined.

Table 2-4 provides a summary of these measurements. None of the CP wells had measurable amounts of LNAPL or DNAPL.

2.6 *POTENTIOMETRIC SURFACE MAPS*

The ground water elevation data recorded during the second semiannual well gauging activities of 2005 were used to create potentiometric surface maps of the A-TZ and B-TZ (Figures 2-1 and 2-2, respectively). A review of Figure 2-1 indicates that ground water flow is toward the southeast with an estimated gradient of 0.004 feet/foot (ft/ft) in the A-TZ. The flow in the B-TZ is toward the southeast with a gradient of 0.003 ft/ft (Figure 2-2).

2.7 *NON-AQUEOUS PHASE LIQUIDS*

None of the CP wells had measurable amounts of LNAPL or DNAPL.

2.8 *RECOVERED GROUND WATER AND NAPL*

To date, a recovery system had not been installed at the closed surface impoundment. Therefore, this provision is not applicable.

2.9 *CONTAMINANT MASS RECOVERED*

To date, a recovery system had not been installed at the closed surface impoundment. Therefore, this provision is not applicable.

2.10 *ANALYTICAL DATA EVALUATION*

CP Section VI.D describes two methods which may be used to determine the compliance status of a given well. The analytical results may be either directly compared with the PCL (CP Table III; included in Appendix A herein), or statistically compared to the PCL using the Confidence Interval Procedure for

the mean concentration based on normal, log-normal, or non-parametric distribution in which the 95% confidence coefficient of the t-distribution will be used in construction the confidence interval. Tables 2-1 and 2-2 show the results of a direct comparison of data from the second semiannual sampling event with the PCL. A boxed value indicates an exceedance of the PCL. Wells and piezometers were considered to be compliant if each of the constituents listed in CP Table III was reported at a concentration less than or equal to the PCL.

Summary of monitor well compliance status is provided in Table 2-5. Reported concentrations for dibenzofuran were above respective PCLs for samples (primary and duplicate) collected at MW-01A. The exceedance at this monitor well was confirmed with results from confirmation sampling on September 8, 2005.

Samples P-12-2SA05, MW-10B-2SA05, FB-071905-2SA05, P-10-2SA05, P-10D-2SA05, and MW-11B-2SA05 were qualified as Not Detected (U) for di-n-butyl phthalate because of method blank detections above the MDL after data evaluation review. Samples P-12-2SA05 and MW-8-2SA05 were qualified as Not Detected (U) for bis(2-ethylhexyl)phthalate because of method blank detections. Sample P-10-2SA05 and P-10D-2SA05 was qualified as estimated (J) for anthracene, fluoranthene, acenaphthene, dibenzofuran, fluorene, and naphthalene because of sample/duplicate precision being outside acceptance limits.

Data usability summaries are included in Appendx C, and qualifers were added to the data tables in bold italics.

2.11 *REPORTED CONCENTRATION MAPS*

As specified by provision VIIC.2.k. of the CP, maps showing reported concentrations of each constituent analyzed are constructed using the data presented in Tables 2-1 and 2-2. The maps are presented in Figures 2-3 and 2-4.

2.12 *EXTENT OF NAPL*

None of the CP wells had measurable amounts of LNAPL or DNAPL.

2.13 *UPDATED COMPLIANCE SCHEDULE*

Section X of the CP required that the Permittee submit a schedule summarizing the activities required by the Compliance Plan issued on June 10, 2005. This schedule was submitted to the TCEQ on August 4, 2005. An updated compliance schedule from the August 4, 2005 submittal is included as Appendix D of this report.

2.14 *SUMMARY OF CHANGES MADE TO CORRECTIVE ACTION PROGRAM*

No changes were made to the corrective action program.

2.15 *MODIFCATIONS AND AMENDMENTS TO COMPLIANCE PLAN*

A compliance plan renewal application was submitted to TCEQ on December 23, 2003 consistent with the renewal requirements for the RCRA permit at the site. The RCRA permit and CP were issued June 10, 2005.

2.16 *CORRECTIVE MESSURES IMPLEMENTATION (CMI) REPORT*

A Response Action Plan (RAP) has not been submitted. Therefore, this provision does not apply.

2.17 *WELL CASING ELEVATIONS*

Top-of-casing elevations referenced to feet Mean Sea Level for each CP monitor well are summarized in Table 2-4.

2.18 *RECOMMENDATION FOR CHANGES*

There are no recommendations for changes to the monitoring program nor the Corrective Action Program.

2.19 *WELL INSTALLATION AND/OR ABANDONMENT*

No monitor wells were installed or abandoned as part of the monitoring program or the Corrective Action Program during the reporting period.

2.20 *ACTIVITIY WTHIN AREA SUBJECT TO INSTITUTIONAL CONTROL*

No areas are under institutional control; therefore this provision does not apply.

2.21 *OTHER REQUESTED ITEMS*

No other items were requested by the executive director.

Tables

January 20, 2006
Project No. 0014419

Environmental Resources Management
15810 Park Ten Place, Suite 300
Houston, Texas 77084-5140
(281) 600-1000

TABLE 2-1

Summary of Analytical Results for the A-Transmissive Zone (A-TZ)
Semiannual Monitoring Report: Second Semiannual Event 2005

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL Reporting Limit	Monitor Well ID: Sample Date:	MW-01A 7/19/05		MW-01AD[a] 7/19/05		MW-01A* 9/8/05	DUP-1[b] 9/8/05	MW-02 7/19/05		MW-07 7/19/05	
Acenaphthene	1.5		0.245		0.222		---	---	0.0031		0.0015	
Acenaphthylene	1.5		0.00221		0.00218		---	---	0.00006	U	0.00006	U
Anthracene	7.3		0.0101		0.0107		---	---	0.00032	J	0.000653	
Dibenzofuran	0.098		0.11		0.103		0.133	0.115	0.00245		0.00015	J
Di-n-butyl Phthalate	2.4		(1)		(1)		---	---	(1)		(1)	
bis(2-ethylhexyl)phthalate	0.006		0.000356	*U*	0.000352	*U*	---	---	0.000352	U	0.000352	U
Fluoranthene	0.98		0.0139		0.0141		---	---	0.000796		0.00017	J
Fluorene	0.98		0.137		0.125		---	---	0.00268		0.00007	U
2-Methylnaphthalene	0.098		0.0557		0.0479		---	---	0.00007	U	0.00007	U
Naphthalene	0.49		0.0216		0.0233		---	---	0.00006	U	0.00006	U
Phenanthrene	0.73		0.0233		0.0237		---	---	0.00036	J	0.00009	U
Phenol	7.3		(1)		(1)		---	---	(1)		(1)	
Pyrene	0.73		0.00593		0.00641		---	---	0.00042	J	0.00026	J

NOTES:

All values reported in mg/L.
PCL = Protective Concentration Limit
(1) Based on Tables III and IV, this constituent is not analyzed for A-Transmissive Zone wells.
(2) Based on Tables III and IV, this constituent is not analyzed for B Transmissive Zone wells
The Compliance Plan Section IV D defines the Ground Water Protection Standard (GWPS) as the PCL.
[ ] indicates value reported above the PCL
U = Analyte analyzed but not detected at sample Quantitation Limit (SQL)
J = Estimated value between the reporting limit and MDL.
* = MW-01A was resampled on September 8, 2005 and was analyzed only for Dibenzofuran.
a = The sample is a duplicate of MW-01A (7/19/05).
b = The sample is a duplicate of MW-01A (9/8/05).
U = Not detected due to blank contamination.
J = Estimated value due to inability to meet quality control criteria.

TABLE 2-1 (Cont'd)

Summary of Analytical Results for the A-Transmissive Zone (A-TZ)
Semiannual Monitoring Report: Second Semiannual Event 2005

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL Reporting Limit	Monitor Well ID: Sample Date:	MW-08 7/18/05		MW-10A 7/19/05		MW-11A 7/19/05	
Acenaphthene	1.5		0.00007	U	0.00011	J	0.0732	
Acenaphthylene	1.5		0.00006	U	0.00006	U	0.00074	
Anthracene	7.3		0.00026	J	0.00007	U	0.00201	
Dibenzofuran	0.098		0.00008	U	0.00008	U	0.00957	
Di-n-butyl Phthalate	2.4		(1)		(1)		(1)	
bis(2-ethylhexyl)phthalate	0.006		0.000356	J	0.000352	U	0.000352	U
Fluoranthene	0.98		0.00008	U	0.00008	U	0.0064	
Fluorene	0.98		0.00007	U	0.00007	U	0.0229	
2-Methylnaphthalene	0.098		0.00007	U	0.00007	U	0.00019	J
Naphthalene	0.49		0.00006	U	0.00006	U	0.00482	
Phenanthrene	0.73		0.00009	U	0.00009	U	0.00196	
Phenol	7.3		(1)		(1)		(1)	
Pyrene	0.73		0.00012	J	0.00009	U	0.00308	

NOTES:

All values reported in mg/L.
PCL = Protective Concentration Limit
(1) Based on Tables III and IV, this constituent is not analyzed for A-Transmissive Zone wells.
(2) Based on Tables III and IV, this constituent is not analyzed for B Transmissive Zone wells
The Compliance Plan Section IV D defines the Ground Water Protection Standard (GWPS) as the PCL.
[ ] indicates value reported above the PCL
U = Analyte analyzed but not detected at sample Quantitation Limit (SQL)
J = Estimated value between the reporting limit and MDL.
* = MW-01A was resampled on September 8, 2005 and was analyzed only for Dibenzofuran.
a = The sample is a duplicate of MW-01A (7/19/05).
b = The sample is a duplicate of MW-01A (9/8/05).
U = Not detected due to blank contamination.
J = Estimated value due to inability to meet quality control criteria.

TABLE 2-2

Summary of Analytical Results for the B-Transmissive Zone (B-TZ)
Semiannual Monitoring Report: Second Semiannual Event 2005

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL Reporting Limit	Monitor Well ID: / Sample Date:	MW-10B 7/19/05		MW-11B 7/19/05		P-10 7/19/05		P-10D[b] 7/19/05		P-12 7/18/05	
Acenaphthene	1.5		0.0739		0.0577		0.0737	J	0.0462	J	0.00007	U
Acenaphthylene	1.5		0.000953		0.000799		0.000476		0.00032	J	0.00006	U
Anthracene	7.3		0.00413		0.0024		0.00346	J	0.00169	J	0.00007	U
Dibenzofuran	0.098		0.0286		0.0289		0.0314	J	0.0168	J	0.00008	U
Di-n-butyl Phthalate	2.4		0.000648	U	0.000357	U	0.000481	U	0.000414	U	0.000533	U
bis(2-ethylhexyl)phthalate	0.006		0.000352	U	0.000352	U	0.000352	U	0.000352	J	0.000431	U
Fluoranthene	0.98		0.00288		0.00159		0.0024	J	0.00114	J	0.00008	U
Fluorene	0.98		0.0377		0.0261		0.0364	J	0.0198	J	0.00007	U
2-Methylnaphthalene	0.098		(2)		(2)		(2)		(2)		(2)	
Naphthalene	0.49		0.0789		0.186		0.464	J	0.283	J	0.00006	U
Phenanthrene	0.73		(2)		(2)		(2)		(2)		(2)	
Phenol	7.3		0.00004	U	0.00004	U	0.00004	U	0.0000400	U	0.00004	U
Pyrene	0.73		0.00125		0.000745		0.00102		0.000495		0.00767	

NOTES:

All values reported in mg/L.
PCL = Protective Concentration Limit
(1) Based on Tables III and IV, this constituent is not analyzed for A-Transmissive Zone wells.
(2) Based on Tables III and IV, this constituent is not analyzed for B-Transmissive Zone wells.
The Compliance Plan Section IV D defines the Ground Water Protection Standard (GWPS) as the PCL.
[ ] indicates value reported above the PCL
U =Analyte analyzed but not detected at sample Quatitation Limit (SQL).
J = Estimated value between the reporting limit and MDL.
b = The sample is a duplicate of P-10.
U = Not detected due to blank contamination.
J = Estimated value due to inability to meet quality control criteria.

TABLE 2-3

Summary of Analytical Results for Quality Assurance/Quality Control Samples
Semiannual Monitoring Report: Second Semiannual Event 2005

Houston Wood Preserving Works
Houston, Texas

	PCL Reporting Limit (mg/L)	Sample Sample Date:	Field Blank FB-071905 7/19/05		Matrix Spike MW-2MS 7/19/05	Matrix Spike Duplicate MW-2MSD 7/19/05
2-Methylnaphthalene	0.098		0.0000700	U	0.00617	0.00664
Acenaphthene	1.500		0.0000700	U	0.00935	0.00952
Acenaphthylene	1.500		0.0000600	U	0.00693	0.00701
Anthracene	7.300		0.0000700	U	0.00834	0.00812
bis(2-ethylhexyl)phthalate	0.006		0.000352	U	0.00688	0.00698
Dibenzofuran	0.098		0.0000800	U	0.00899	0.00904
Di-n-butyl Phthalate	2.4		0.000608	U	-	-
Fluoranthene	0.98		0.0000800	U	0.00864	0.00849
Fluorene	0.98		0.0000700	U	0.00953	0.00949
Naphthalene	0.49		0.0000600	U	0.00639	0.00676
Phenanthrene	0.73		0.0000900	U	0.00823	0.00820
Phenol	7.3		0.0000400	U	-	-
Pyrene	0.73		0.0000900	U	0.00855	0.00830

NOTES:

All concentration values are expressed in mg/L
U = Analyte analyzed but not detected at sample Quantitation Limit (SQL)
U = Not detected due to blank contamination.
J = Estimated value due to inability to meet quality control criteria.

TABLE 2-4

Water Level and Total Depth of Well Measurements
Semiannual Monitoring Report: Second Semiannual Event 2005

Houston Wood Preserving Works
Houston, Texas

Well ID	Top of Casing [1] Elevation (ft MSL)	Depth to Water (ft TOC)	Water Surface Elevation (ft MSL)	Total Depth of Well as Measured (ft TOC)	Total Depth as Completed (ft TOC) *
A-TZ Monitoring Locations					
MW-01A	47.92	3.73	44.19	19.90	20.2
MW-02	47.97	2.98	44.99	21.50	20.3
MW-07	48.86	5.27	43.59	23.83	N/A
MW-08	49.33	5.32	44.01	24.95	26.8
MW-10A	49.86	5.57	44.29	24.95	25.9
MW-11A	50.05	6.66	43.39	24.00	24.4
B-TZ Monitoring Locations					
MW-10B	49.94	5.97	43.97	46.49	48.8
MW-11B	50.18	5.45	44.73	46.78	46.8
P-10	47.69	4.20	43.49	42.95	40.0
P-12	48.78	5.06	43.72	42.92	40.0

NOTES:

Wells were gauged on July 18 and 19, 2005.
Non-aqueous phase liquids were not measured in any well.
ft MSL = feet above Mean Sea Level
ft TOC = feet below the Top Of (the well) Casing
* Reported during well installation and completion
N/A = Information not available
NM = Not Measured

TABLE 2-5

Compliance Status of Wells and Piezometers
Semiannual Monitoring Report: Second Semiannual Event 2005

Houston Wood Preserving Works
Houston, Texas

A-TZ Monitoring Location	Well Designation	Compliance Status
MW-01A	Point of compliance	Non-Compliant
MW-02	Point of compliance	Compliant
MW-11A	Point of compliance	Compliant
MW-10A	Point of compliance	Compliant
MW-08	Background Well	Compliant
MW-07	Point of compliance	Compliant
B-TZ Monitoring Location		
MW-10B	Point of compliance	Compliant
MW-11B	Point of compliance	Compliant
P-10	Point of compliance	Compliant
P-12	Background Well	Compliant

Figures

January 20, 2006
Project No. 0014419

Environmental Resources Management
15810 Park Ten Place, Suite 300
Houston, Texas 77084-5140
(281) 600-1000

SOURCE: U.S.G.S. 7.5 MINUTE QUADRANGLE, SETTEGAST, TEXAS, 1982.

0 2000 4000

SCALE FEET

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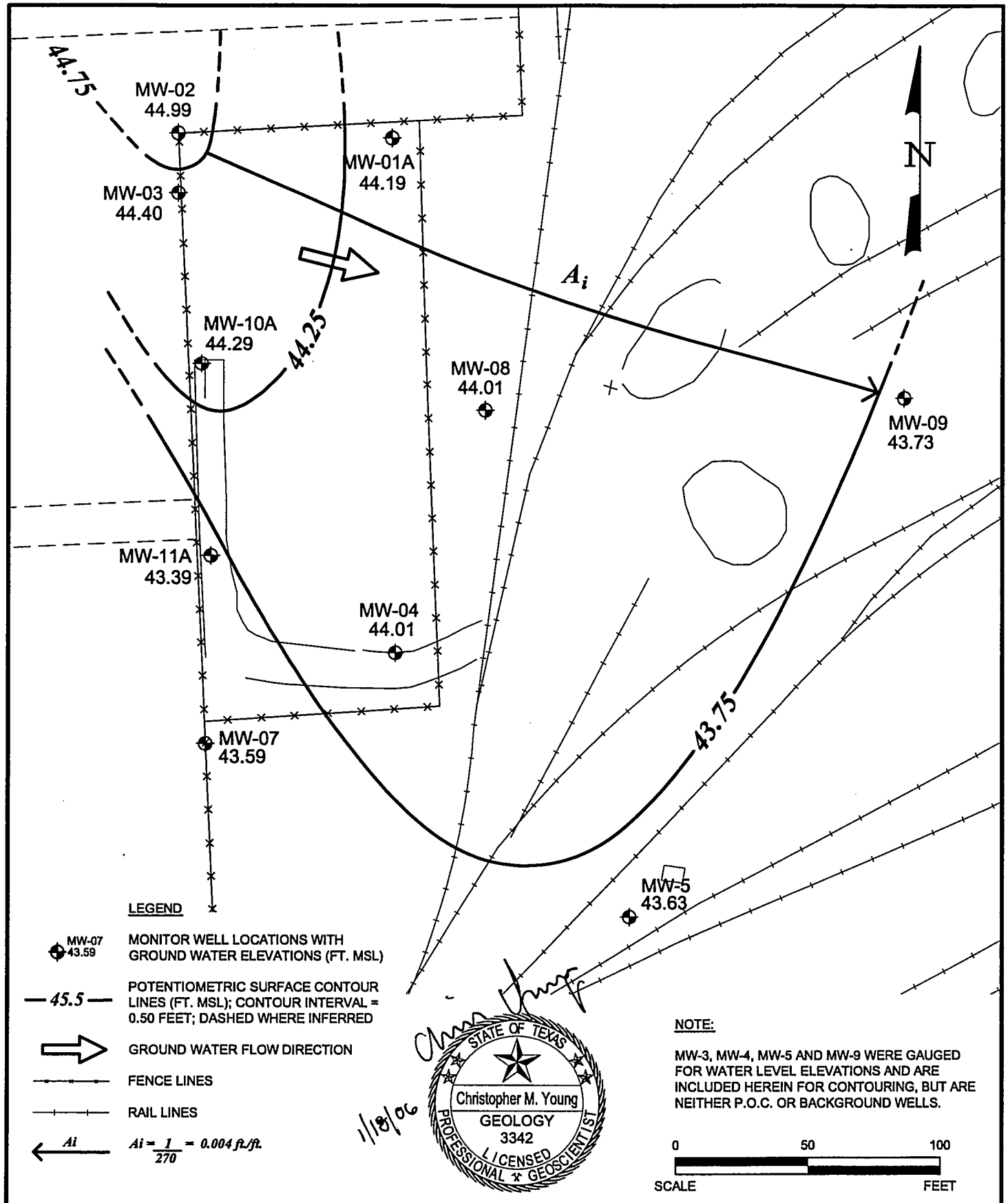
FIGURE 1-1
SITE LOCATION MAP
Houston Wood Preserving Works
Houston, Texas

DESIGN:	DRAWN: CAK	CHKD.: PJG
DATE: 07/23/02	SCALE: AS SHOWN	REV.:
W.O.NO.: H:\DWG\G02\422102A252.dwg, 7/23/2002 10:28:08 AM		

ERM



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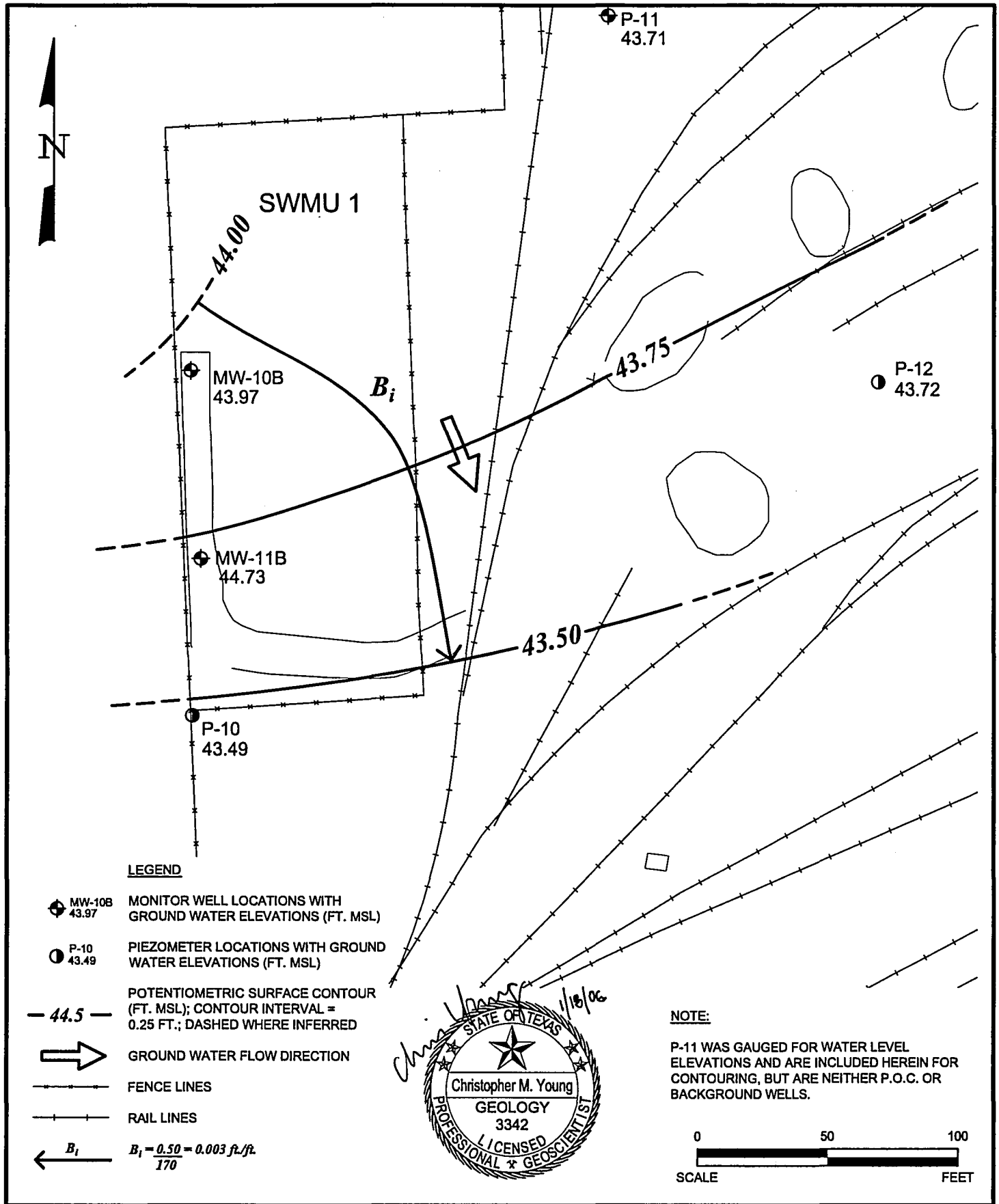
DESIGN: B. Ayele	DRAWN: EFC	CHKD.: CMY
DATE: 01/09/06	SCALE: AS SHOWN	REV.:
W.O.NO.: H:\dwg\A06\0014419a278.dwg, 1/9/2006 4:42:51 PM		

FIGURE 2-1
A-TZ POTENTIOMETRIC SURFACE
JULY 18-19, 2005
TCEQ PERMIT UNIT No. II.B.1.
Houston Wood Preserving Works
Houston, Texas

ERM



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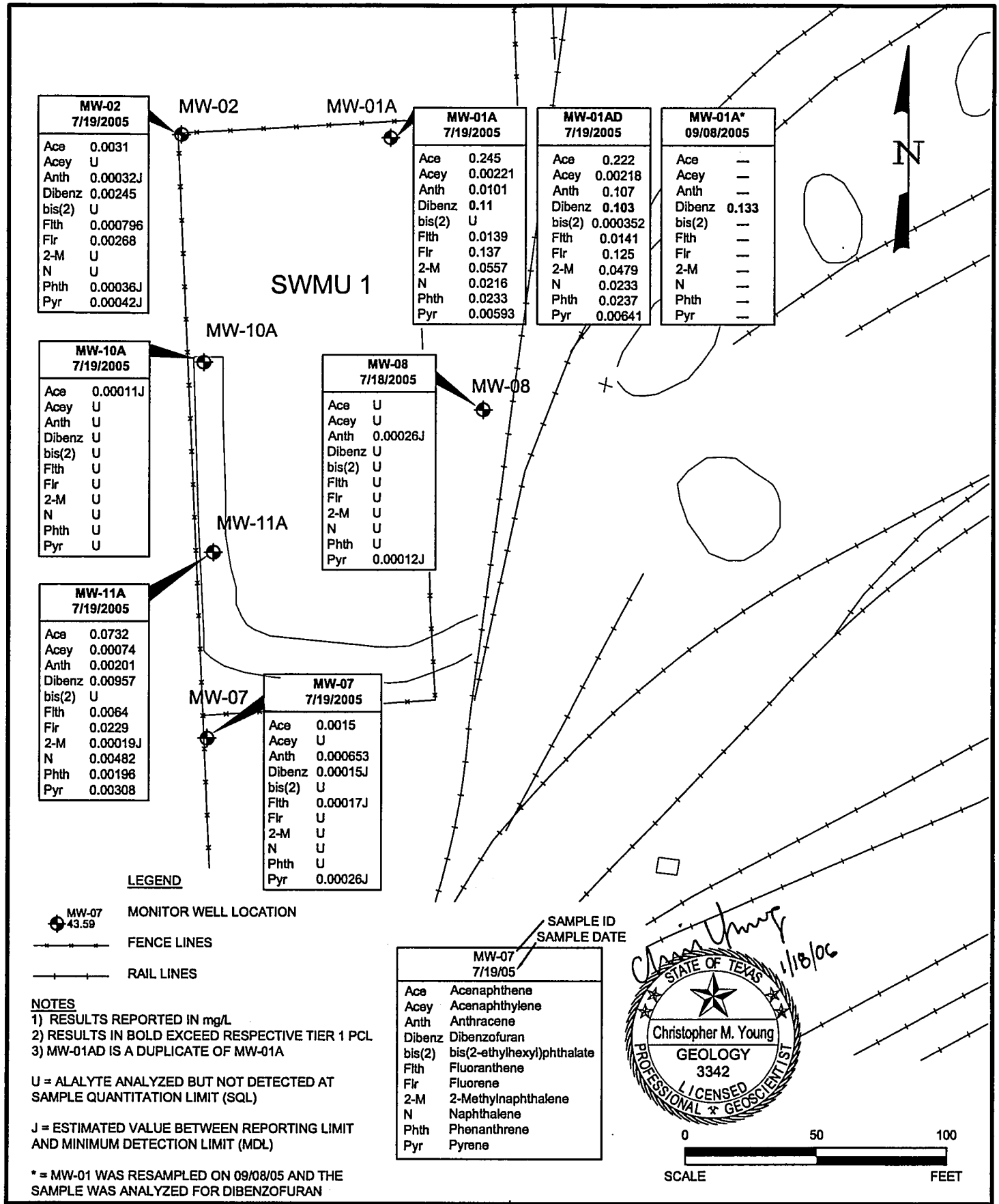
DESIGN: B. Ayele	DRAWN: EFC	CHKD.: CMY
DATE: 01/18/06	SCALE: AS SHOWN	REV.:
W.O.NO.: H:\dwg\A06\0014419a277.dwg, 1/18/2006 1:35:07 PM		

FIGURE 2-2
B-TZ POTENTIOMETRIC SURFACE
JULY 18-19, 2005
TCEQ PERMIT UNIT No. II.B.1.
Houston Wood Preserving Works
Houston, Texas

ERM



NOTES
1) RESULTS REPORTED IN mg/L
2) RESULTS IN BOLD EXCEED RESPECTIVE TIER 1 PCL
3) MW-01AD IS A DUPLICATE OF MW-01A

U = ALALYTE ANALYZED BUT NOT DETECTED AT SAMPLE QUANTITATION LIMIT (SQL)

J = ESTIMATED VALUE BETWEEN REPORTING LIMIT AND MINIMUM DETECTION LIMIT (MDL)

* = MW-01 WAS RESAMPLED ON 09/08/05 AND THE SAMPLE WAS ANALYZED FOR DIBENZOFURAN

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DESIGN: B. Ayele	DRAWN: EFC/RLM	CHKD.: CMY
DATE: 01/18/06	SCALE: AS SHOWN	REV.:
W.O.NO.: H:\dwg\A06\0014419a274-1.dwg, 1/18/2006 1:38:58 PM		

FIGURE 2-3
A-TZ REPORTED CONCENTRATIONS
JULY 18-19, 2005
TCEQ PERMIT UNIT No. II.B.1.
Houston Wood Preserving Works
Houston, Texas

ERM

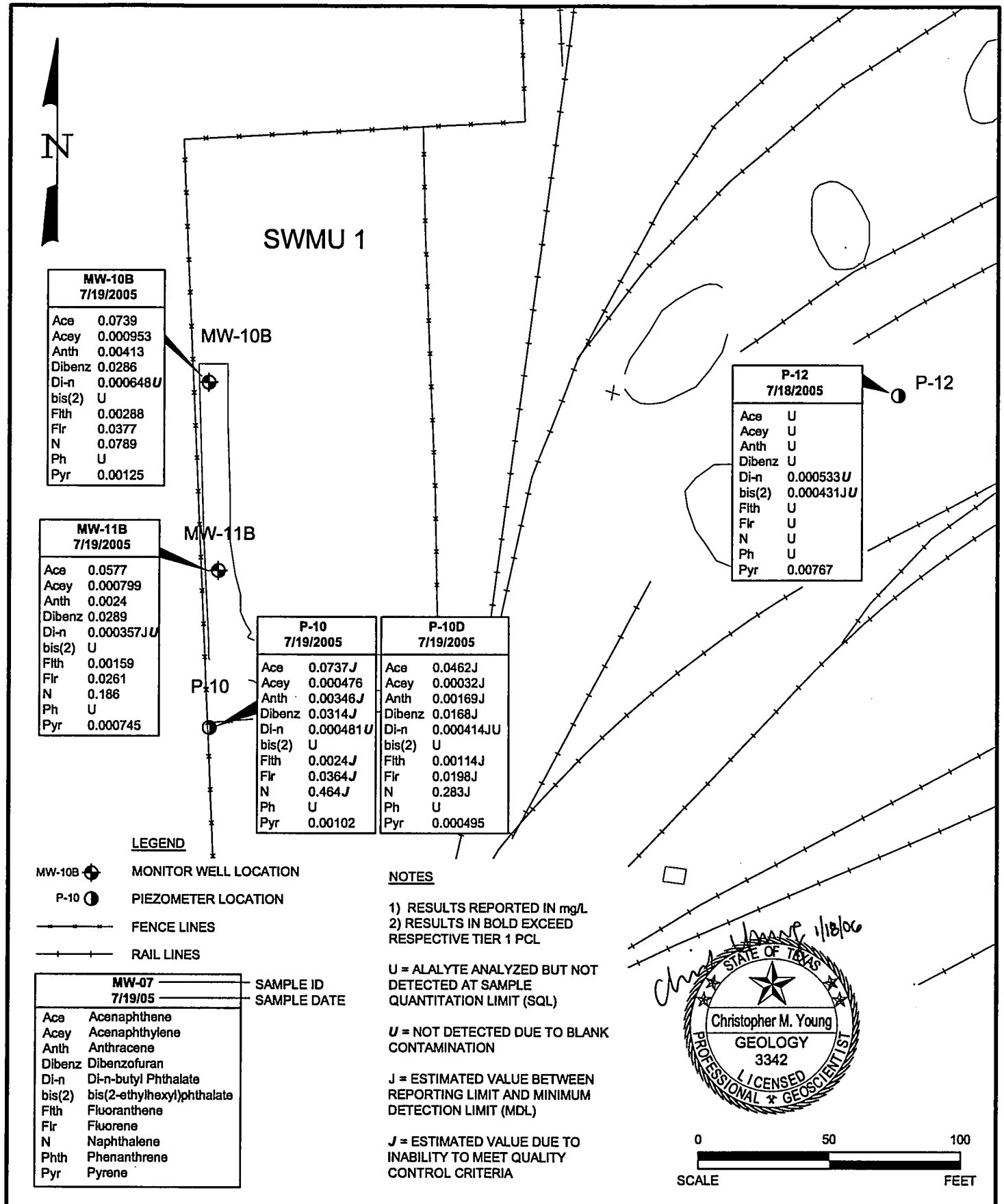

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FIGURE 2-4
B-TZ REPORTED CONCENTRATIONS
JULY 18-19, 2005
TCEQ PERMIT UNIT No. II.B.1.
Houston Wood Preserving Works
Houston, Texas

DESIGN: B. Ayele	DRAWN: EFC/RLM	CHKD.: CMY
DATE: 01/18/06	SCALE: AS SHOWN	REV.:
W.O.NO.: H:\dwg\A06\0014419a275-2.dwg, 1/18/2006 1:49:06 PM		

ERM

Compliance Plan Tables

Appendix A

January 20, 2006
Project No. 0014419

Environmental Resources Management
15810 Park Ten Place, Suite 300
Houston, Texas 77084-5140
(281) 600-1000

TABLE III - CORRECTIVE ACTION PROGRAM
Table of Detected Hazardous and Solid Waste Constituents and Concentration Limits for the Ground-Water Protection Standard

Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)

A-Transmissive Zone		B-Transmissive Zone	
COLUMN A Hazardous Constituents	COLUMN B Concentration Limits (mg/l)	COLUMN A Hazardous Constituents	COLUMN B Concentration Limits (mg/l)
Acenaphthene	1.5[PCL]	Acenaphthene	1.5[PCL]
Acenaphthylene	1.5[PCL]	Acenaphthylene	1.5[PCL]
Anthracene	7.3[PCL]	Anthracene	7.3[PCL]
Dibenzofuran	0.098[PCL]	Dibenzofuran	0.098[PCL]
Bis(2-ethylhexyl)phthalate	0.006[PCL]	Bis(2-ethylhexyl)phthalate	0.006[PCL]
Fluoranthene	0.98[PCL]	Fluoranthene	0.98[PCL]
Fluorene	0.98[PCL]	Fluorene	0.98[PCL]
2-Methylnaphthalene	0.098[PCL]	Di-n-butyl phthalate	2.4[PCL]
Naphthalene	0.49[PCL]	Naphthalene	0.49[PCL]
Phenanthrene	0.73[PCL]	Phenol	7.3[PCL]
Pyrene	0.73[PCL]	Pyrene	0.73[PCL]

PCL Alternate Concentration Limit pursuant to 30 TAC §335.160(b) based upon the Protective Concentration Level determined under 30 TAC Chapter 350 for Residential Land Use. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.

TABLE IV - CORRECTIVE ACTION PROGRAM
Table of Indicator Parameters and Concentration Limits for
the Ground-Water Protection Standard

Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)

A-Transmissive Zone		B-Transmissive Zone	
COLUMN A Hazardous Constituents	COLUMN B Concentration Limits (mg/l)	COLUMN A Hazardous Constituents	COLUMN B Concentration Limits (mg/l)
Acenaphthene	1.5[PCL]	Acenaphthene	1.5[PCL]
Acenaphthylene	1.5[PCL]	Acenaphthylene	1.5[PCL]
Anthracene	7.3[PCL]	Anthracene	7.3[PCL]
Dibenzofuran	0.098[PCL]	Dibenzofuran	0.098[PCL]
Bis(2-ethylhexyl)phthalate	0.006[PCL]	Bis(2-ethylhexyl)phthalate	0.006[PCL]
Fluoranthene	0.98[PCL]	Fluoranthene	0.98[PCL]
Fluorene	0.98[PCL]	Fluorene	0.98[PCL]
2-Methylnaphthalene	0.098[PCL]	Di-n-butyl phthalate	2.4[PCL]
Naphthalene	0.49[PCL]	Naphthalene	0.49[PCL]
Phenanthrene	0.73[PCL]	Phenol	7.3[PCL]
Pyrene	0.73[PCL]	Pyrene	0.73[PCL]

PCL Alternate Concentration Limit pursuant to 30 TAC §335.160(b) based upon the Protective Concentration Level determined under Remedy Standard A or B of 30 TAC Chapter 350. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.

TABLE V
Designation of Wells by Function

POINT OF COMPLIANCE WELLS

1. Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)
   A-Transmissive Zone: MW-01A, MW-02, MW-07, MW-10A, and MW-11A
   B-Transmissive Zone: MW-10B, MW-11B, and P-10

POINT OF EXPOSURE WELLS

1. Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)
   None

BACKGROUND WELLS

1. Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)
   A-Transmissive Zone: MW-8
   B-Transmissive Zone: P-12

Note: Wells and piezometers identified on Attachment A maps that are not listed in this table are subject to change, upon approval by the executive director, without modification to the Compliance Plan. The wells and piezometers for the Closed Surface Impoundment are depicted on Attachment A, Sheets 3 and 4.

Field Parameters

Appendix B

January 20, 2006
Project No. 0014419

Environmental Resources Management
15810 Park Ten Place, Suite 300
Houston, Texas 77084-5140
(281) 600-1000

TABLE B-1

Ground Water Sampling Field Parameters
Semiannual Monitoring Report: Second Semiannual Event 2005

Houston Wood Preserving Works
Houston, Texas

A-Transmissive Zone

Well ID:	MW-01A	MW-01A[2]	MW-02	MW-07	MW-10A	MW-11A	MW-08
Date Sampled:	7/19/05	9/8/05	7/19/05	7/19/05	7/19/05	7/19/05	7/18/05
Time Sampled (hrs CST)	1625	1120	1118	1130	1005	1508	1615
Temperature (°C)	25.7	27.5	25.9	28.1	27.4	25.1	26.5
pH (Standard Units)	6.64	6.68	7.03	5.96	6.91	6.80	6.86
Specific Conductivity (uS)	24.5	1508	420	914	1,081	20.7	675
Dissolved Oxygen (mg/L)*	-0.4	0.9	-0.5	-0.9	-0.7	-0.9	-0.6
Turbidity (NTU)	2.07	1.55	4.08	0.00	0.20	1.92	0.19

B-Transmissive Zone

Well ID:	MW-10B	MW-11B	P-10	P-12
Date Sampled:	7/19/05	7/19/05	7/19/05	7/18/05
Time Sampled (hrs CST)	942	1505	1640	1607
Temperature (°C)	24.6	25.6	26.3	25.0
pH (Standard Units)	6.85	6.75	6.30	6.73
Specific Conductivity (uS)	1,327	1,318	1,243	1,320
Dissolved Oxygen (mg/L)[1]	-0.4	-0.8	-1.1	-0.7
Turbidity (NTU)	3.34	3.10	0.95	0.67

NOTES:

CST = Central Standard Time
NTU = Nephalometric Turbidity Unit
[1] = Calibration error occurred during field measurement
[2] = MW-01A was resampled on September 08, 2005 and analyzed for dibenzofuran.

Laboratory Analytical Reports and Data Usability Summaries

Appendix C

January 20, 2006
Project No. 0014419

Environmental Resources Management
15810 Park Ten Place, Suite 300
Houston, Texas 77084-5140
(281) 600-1000

SEVERN TRENT STL

received
08.Aug.05

ANALYTICAL REPORT

JOB NUMBER: 299296
Project ID: UPRR-HWPW-0014419 60

Prepared For:

ERM Southwest, Inc.- Houston
15810 Park Ten Place
Suite 300
Houston, TX 77084

Attention: Chris Young

Date: 08/03/2005

Signature

08/03/05
Date

Name: Sachin G. Kudchadkar

Title: Project Manager III

E-Mail [redacted]

Severn Trent Laboratories
6310 Rothway Drive
Houston, TX 77040

PHONE: 713-690-4444

TOTAL NO. OF PAGES 34

SEVERN TRENT STL

08/03/2005

Chris Young
ERM Southwest, Inc.- Houston
15810 Park Ten Place
Suite 300
Houston, TX 77084

Reference:
Project : UPRR-HWPW-0014419/60
Project No. : 299296
Date Received : 07/19/2005
STL Job : 299296

Dear Chris Young:

Enclosed are the analytical results for your project referenced above. The following samples are included in the report.

1. P-12-2SA05
2. MW-8-2SA05
3. MW-10A-2SA05
4. MW-10B-2SA05
5. MW-2-2SA05
6. MW-2MS-2SA05
7. MW-2MSD-2SA05
8. MW-7-2SA05
9. FB-071905-2SA05
10. MW-11A-2SA05
11. MW-01A-2SA05
12. MW-01AD-2SA05
13. P-10-2SA05
14. P-10D-2SA05
15. MW-11B-2SA05

All holding times were met for the tests performed on these samples.

Enclosed, please find the Quality Control Summary. All quality control results for the QC batch that are applicable to the sample(s) are acceptable except as noted in the QC batch reports.

The test results in this report meet all NELAP requirements for STL Houston's NELAP accredited parameters. Any exceptions to NELAP requirements will be noted and included in a case narrative as a part of this report.

If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Severn-Trent Laboratories to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

Sincerely,

Sachin G. Kudchadkar
Project Manager

SEVERN TRENT STL

Table 1

Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification	8270C	Comment
P-12-2SA05	299296-1	X	
MW-8-2SA05	299296-2	X	
MW-10A-2SA05	299296-3	X	
MW-10B-2SA05	299296-4	X	
MW-2-2SA05	299296-5	X	
MW-2MS-2SA05	299296-6	X	Matrix Spike of MW-2-2SA05
MW-2MSD-2SA05	299296-7	X	Matrix Spike Duplicate of MW-2-2SA05
MW-7-2SA05	299296-8	X	
FB-071905-2SA05	299296-9	X	Field Blank
MW-11A-2SA05	299296-10	X	
MW-01A-2SA05	299296-11	X	
MW-01AD-2SA05	299296-12	X	
P-10-2SA05	299296-13	X	
P-10D-2SA05	299296-14	X	
MW-11B-2SA05	299296-15	X	

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Appendix A Laboratory Data Package Cover Page

This data package consists of:

- This signature page, the laboratory review checklist, and the following reportable data:
- R1 Field chain-of-custody documentation;
- R2 Sample identification cross-reference;
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
- R5 Test reports/summary forms for blank samples;
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) the amount of analyte measured in the duplicate,
  b) the calculated RPD, and
  c) the laboratory's QC limits for analytical duplicates.
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- R10 Other problems or anomalies.
- The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By me signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [ ] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Norman Flynn		Laboratory Director	8/3/05
Name (Printed)	Signature	Official Title (printed)	Date

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: STL-Houston	LRC Date: 07/27/05
Project Name: UPRR-HWPW-0014419 60	Laboratory Job Number: 299296
Reviewer Name: ACN	Prep Batch Number(s): 134262-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-custody (C-O-C)					
R1	OI	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample quantitation limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			X		
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SQL to minimize the matrix interference affects on the sample results?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: STL-Houston	LRC Date: 07/27/05
Project Name: UPRR-HWPW-0014419 60	Laboratory Job Number: 299296
Reviewer Name: ACN	Prep Batch Number(s): 134262-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?		X			1
S5	OI	**Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Exception Reports	
Laboratory Name: STL-Houston	LRC Date: 07/27/05
Project Name: UPRR-HWPW-0014419 60	Laboratory Job Number: 299296
Reviewer Name: ACN	Prep Batch Number(s): 134262-SV

ER #[1]	DESCRIPTION
1	The perylene-d12 internal standard area in the extraction blank was above acceptance limits. Per method requirements, no corrective action was necessary.

ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LRC)

SEVERN TRENT **STL**

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: ERM-SW	PROJECT NAME/NUMBER: 0014419
SEND REPORT TO: Chris Young	**BILLING INFORMATION**
ADDRESS: 15810 Park Ten Place	BILL TO: UPRR Geoffrey Reeder
Suite 300	ADDRESS: 24125 Aldine Westfield
Houston, TX 77084	Spring, TX. 77373
PHONE: 281-600-1097	PHONE: (281) 350-7197
FAX: 281-600-1001	FAX: (281)350-7362 PO NO:

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	ANALYSIS/METHOD REQUEST: A-Transmissive Zone	B-Transmissive Zone	REMARKS/PRECAUTIONS
	P-12-25A05	7-18-05	1607	Water	2-1L Bottles	None	2		X	see sample Specific Constituent List
	MW-8-25A05	↓	1615	Water	2-1L Bottles		2	X		"
	MW-10A-25A05	7-19-05	1005	Water	2-1L Bottles		2	X		"
	MW-10B-25A05		942				2		X	"
	MW-2-25A05		1118				2	X		"
	MW-2MS-25A05		1155				2	X		"
	MW-2MSD-25A05		1150				2	X		"
	MW-7-25A05		1130				2	X		"
	FB-071905-25A05		1130				2	X	X	"
	MW-11A-25A05	↓	1508	↓	↓	↓	2	X		"

LAB JOB NO. 299296

SAMPLER: Jeff Billingsley Carman J. Rogatz III — SHIPMENT METHOD: Hand Delivery — AIRBILL NO.:

REQUIRED TURNAROUND* ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☒ ROUTINE ☐ OTHER

1. RELINQUISHED BY:	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE:	7-19-05	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: Carman JRogatz/ERM	TIME 1830	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY:	DATE	1. RECEIVED BY:	DATE	1. RECEIVED BY:	DATE
SIGNATURE:	71905	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY:	TIME 1931	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME

*RUSH TURNAROUND MAY REQUIRE SURCHARGE

STL8222H-600 (0803)

* See Sample Specific Constituent List, Call Chris Young if any Questions

* TRRP 13 Data Package *

STL Houston
6310 Rothway Drive
Houston, TX 77040

SEVERN TRENT STL

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: ERM-SW	PROJECT NAME/NUMBER: 0014419
SEND REPORT TO: Chris Young	**BILLING INFORMATION**
ADDRESS: 15810 Park Ten Place Suite 300 Houston, TX 77084	BILL TO: UPRR Geoffrey Reeder ADDRESS: 24125 Aldine Westfield Spring, TX. 77373
PHONE: 281-600-1097	PHONE: (281) 350-7197
FAX: 281-600-1001	FAX: (281) 350-7362 PO NO:

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	ANALYSIS/METHOD REQUEST: A-Transmissive Zone; B-Transmissive Zone	REMARKS/PRECAUTIONS
	MW-01A-2SA05	7-19-05	1625	Water	2-1L Bottle	None	2	A	See sample specific constituent list
	MW-01AD-2SA05		730				2	A	"
	MW-11B-2SA05		1505				2	B	"
	~~MW~~		—				~~2~~	~~B~~	
	P-10-2SA05		1640				2	B	"
	P-10D-2SA05	↓	420	↓	↓	↓	2	B	"

LAB JOB NO. 299296

SAMPLER: [illegible] Jeff Billingsley [illegible] SHIPMENT METHOD: AIRBILL NO.:

REQUIRED TURNAROUND* ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☒ ROUTINE ☐ OTHER

1. RELINQUISHED BY:	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE: [illegible] Jeff Billingsley [illegible]	7-19-05	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: Carmon J Rogers III / ERM-SW	TIME 1830	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY:	DATE	1. RECEIVED BY:	DATE	1. RECEIVED BY:	DATE
SIGNATURE:	7/19/05	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: STL	TIME 1830	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME

*RUSH TURNAROUND MAY REQUIRE SURCHARGE

STL8222H-600 (0803)

8 * See Sample Specific Constituent List Call Chris Young if Questions

TRRP 13 Data Package

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Houston, TX 77040

rpjsckl	Job Sample Receipt Checklist Report	V2

Job Number.: 299296 Location.: 57216 Check List Number.: 1 Description.:
Customer Job ID.....: Job Check List Date.: 07/20/2005 Date of the Report..: 07/20/2005
Project Number.: 99000484 Project Description.: UPRR-HWPW-0014419/60 Project Manager.....: sgk
Customer.....: ERM Southwest, Inc.- Houston Contact.: Chris Young

Questions ?	(Y/N)	Comments
Chain of Custody Received?	Y	
...If "yes", completed properly?	Y	
Custody seal on shipping container?	Y	7.20-05
...If "yes", custody seal intact?	Y	mt
Custody seals on sample containers?	N	
...If "yes", custody seal intact?		
Samples chilled?	Y	
Temperature of cooler acceptable? (4 deg C +/- 2).	Y	4.8 4.3 4.1
...If "no", is sample an air matrix?(no temp req.)		
Thermometer ID	Y	428
Samples received intact (good condition)?	Y	
Volatile samples acceptable? (no headspace)		
Correct containers used?	Y	
Adequate sample volume provided?	Y	
Samples preserved correctly?	Y	
Samples received within holding-time?	Y	
Agreement between COC and sample labels?	Y	
Radioactivity at or below background levels?	Y	
Additional		
Comments		
Sample Custodian Signature/Date	Y	MT

STL HOUSTON - SAMPLE RECEIPT CHECKLIST

CLIENT NAME: ERM

CARRIER/DRIVER NAME:

PROJECT: 2005 JUL 19 PM 6:30

UNPACKED BY:

DATE RECEIVED:

UNPACKED STAMP:

TOTAL # COOLERS RECEIVED: 3

COOLER CHECKLIST

COOLER ID	COC PRESENT (Y/N)	CUSTODY TAPE		COOLER TEMP (°C)	THERM ID	TEMP BLK PRESENT (Y/N)	List Sample Bottles in Each Cooler if out of Temperature
		PRESENT (Y/N)	INTACT (Y/N)				
4822	Y	C Y	Y	4.8	428	Y	
		B					
4849	Y	C Y	Y	4.3	428	Y	
		B					
WGRLY	Y	C Y	Y	4.1	428	Y	
		B					

C = COOLER B = BOTTLES

COOLER(S) SCREENED FOR RADIATION? Yes ✓ No ____ IF TEMP BLK N, HOW WAS TEMP TAKEN: _____

SHORT HOLD / RUSH SAMPLES (include department delivered to and time delivered)

_____

_____

_____

****

SPECIFIC PROJECT INFORMATION

JOB NUMBER: 299296

VOLATILE HEADSPACE ACCEPTABLE? Yes ____ No ____ NA ____

(If ANY headspace is present, list details in INCONSISTENCIES section)

Marked As Preserved? Yes____ No ____

Number of VOA Vials:_____

pH OF WATER SAMPLES

PRESERVATION	# BOTTLES	CORRECT pH (Y/N)	If N, List sample ID and Corresponding pH
H2SO4 (<2)			
HNO3 (<2)			
HCL (<2) (Not VOA Vials)			
NaOH – Cyanide (>12)			
NaOH/Zn Acetate – Sulfide (>9)			
Other			

 # OF NEAT BOTTLES: _____ **# OF SOIL JARS:** _____

INCONSISTENCIES – Place in Job Notes as well (CTRL F-12)

_____

_____

_____

_____

ACTION TAKEN

PERSON CONTACTED:_____ DATE:_____

RESOLUTION_____

_____

_____

NOTES_____

_____

_____

(Use back of sheet if necessary)

Project Manager_____

SEVERN TRENT STL

CUSTODY SEAL

Date/Time 7-19-05/1750

Name/Company [illegible]/ERM

Seal broken by

Date

SEVERN TRENT STL

CUSTODY SEAL

Date/Time 7-19-05/1750

Name/Company [illegible]/ERM

Seal broken by

Date

SEVERN TRENT STL

CUSTODY SEAL

Date/Time 7-19-05/1750

Name/Company [illegible]/ERM

Seal broken by

Date

SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: P-12-2SA05
Date/Time Sampled .....: 07/18/2005 16:07
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-001
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:03	134505	1.00	kri
Acenaphthylene	208-96-8	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 10:03	134505	1.00	kri
Anthracene	120-12-7	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:03	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000431	J	U	0.000370	0.000500	0.000352	mg/L	07/26/2005 10:03	134505	1.00	kri
Dibenzofuran	132-64-9	0.0000800	U		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 10:03	134505	1.00	kri
Di-n-butyl Phthalate	84-74-2	0.000533		U	0.000110	0.000500	0.000105	mg/L	07/26/2005 10:03	134505	1.00	kri
Fluoranthene	206-44-0	0.0000800	U		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 10:03	134505	1.00	kri
Fluorene	86-73-7	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:03	134505	1.00	kri
Naphthalene	91-20-3	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 10:03	134505	1.00	kri
Phenol	108-95-2	0.0000400	U		0.0000400	0.000500	0.0000400	mg/L	07/26/2005 10:03	134505	1.00	kri
Pyrene	129-00-0	0.00767			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 10:03	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-8-2SA05
Date/Time Sampled .....: 07/18/2005 16:15
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-002
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:30	134505	1.00	kri
Acenaphthene	83-32-9	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:30	134505	1.00	kri
Acenaphthylene	208-96-8	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 10:30	134505	1.00	kri
Anthracene	120-12-7	0.000260	J		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:30	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000356	J	U	0.000370	0.000500	0.000352	mg/L	07/26/2005 10:30	134505	1.00	kri
Dibenzofuran	132-64-9	0.0000800	U		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 10:30	134505	1.00	kri
Fluoranthene	206-44-0	0.0000800	U		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 10:30	134505	1.00	kri
Fluorene	86-73-7	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:30	134505	1.00	kri
Naphthalene	91-20-3	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 10:30	134505	1.00	kri
Phenanthrene	85-01-8	0.0000900	U		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 10:30	134505	1.00	kri
Pyrene	129-00-0	0.000120	J		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 10:30	134505	1.00	kri

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TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-10A-2SA05
Laboratory Sample ID: 299296-003
Date/Time Sampled .....: 07/19/2005 10:05
Sample Matrix .....: Water
Date/Time Received .....: 07/19/2005 18:30

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:57	134505	1.00	kri
Acenaphthene	83-32-9	0.000110	J		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:57	134505	1.00	kri
Acenaphthylene	208-96-8	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 10:57	134505	1.00	kri
Anthracene	120-12-7	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:57	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 10:57	134505	1.00	kri
Dibenzofuran	132-64-9	0.0000800	U		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 10:57	134505	1.00	kri
Fluoranthene	206-44-0	0.0000800	U		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 10:57	134505	1.00	kri
Fluorene	86-73-7	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 10:57	134505	1.00	kri
Naphthalene	91-20-3	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 10:57	134505	1.00	kri
Phenanthrene	85-01-8	0.0000900	U		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 10:57	134505	1.00	kri
Pyrene	129-00-0	0.0000900	U		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 10:57	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-10B-2SA05
Date/Time Sampled .....: 07/19/2005 09:42
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-004
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0739			0.0000700	0.000500	0.000700	mg/L	07/27/2005 09:06	134505	10.0	kri
Acenaphthylene	208-96-8	0.000953			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 11:23	134505	1.00	kri
Anthracene	120-12-7	0.00413			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 11:23	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 11:23	134505	1.00	kri
Dibenzofuran	132-64-9	0.0286			0.0000800	0.000500	0.000800	mg/L	07/27/2005 09:06	134505	10.0	kri
Di-n-butyl Phthalate	84-74-2	0.000648		U	0.000110	0.000500	0.000105	mg/L	07/26/2005 11:23	134505	1.00	kri
Fluoranthene	206-44-0	0.00288			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 11:23	134505	1.00	kri
Fluorene	86-73-7	0.0377			0.0000700	0.000500	0.000700	mg/L	07/27/2005 09:06	134505	10.0	kri
Naphthalene	91-20-3	0.0789			0.0000600	0.000500	0.000600	mg/L	07/27/2005 09:06	134505	10.0	kri
Phenol	108-95-2	0.0000400	U		0.0000400	0.000500	0.0000400	mg/L	07/26/2005 11:23	134505	1.00	kri
Pyrene	129-00-0	0.00125			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 11:23	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-2-2SA05
Date/Time Sampled .....: 07/19/2005 11:18
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-005
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 11:50	134505	1.00	kri
Acenaphthene	83-32-9	0.00310			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 11:50	134505	1.00	kri
Acenaphthylene	208-96-8	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 11:50	134505	1.00	kri
Anthracene	120-12-7	0.000320	J		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 11:50	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 11:50	134505	1.00	kri
Dibenzofuran	132-64-9	0.00245			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 11:50	134505	1.00	kri
Fluoranthene	206-44-0	0.000796			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 11:50	134505	1.00	kri
Fluorene	86-73-7	0.00268			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 11:50	134505	1.00	kri
Naphthalene	91-20-3	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 11:50	134505	1.00	kri
Phenanthrene	85-01-8	0.000360	J		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 11:50	134505	1.00	kri
Pyrene	129-00-0	0.000420	J		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 11:50	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-2MS-2SA05
Laboratory Sample ID: 299296-006
Date/Time Sampled .....: 07/19/2005 11:35
Sample Matrix .....: Water
Date/Time Received .....: 07/19/2005 18:30

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.00617			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 12:17	134505	1.00	kri
Acenaphthene	83-32-9	0.00935			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 12:17	134505	1.00	kri
Acenaphthylene	208-96-8	0.00693			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 12:17	134505	1.00	kri
Anthracene	120-12-7	0.00834			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 12:17	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.00688			0.000370	0.000500	0.000352	mg/L	07/26/2005 12:17	134505	1.00	kri
Dibenzofuran	132-64-9	0.00899			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 12:17	134505	1.00	kri
Fluoranthene	206-44-0	0.00864			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 12:17	134505	1.00	kri
Fluorene	86-73-7	0.00953			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 12:17	134505	1.00	kri
Naphthalene	91-20-3	0.00639			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 12:17	134505	1.00	kri
Phenanthrene	85-01-8	0.00823			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 12:17	134505	1.00	kri
Pyrene	129-00-0	0.00855			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 12:17	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-2MSD-2SA05
Date/Time Sampled .....: 07/19/2005 11:50
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-007
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.00664			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 12:43	134505	1.00	kri
Acenaphthene	83-32-9	0.00952			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 12:43	134505	1.00	kri
Acenaphthylene	208-96-8	0.00701			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 12:43	134505	1.00	kri
Anthracene	120-12-7	0.00812			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 12:43	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.00698			0.000370	0.000500	0.000352	mg/L	07/26/2005 12:43	134505	1.00	kri
Dibenzofuran	132-64-9	0.00904			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 12:43	134505	1.00	kri
Fluoranthene	206-44-0	0.00849			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 12:43	134505	1.00	kri
Fluorene	86-73-7	0.00949			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 12:43	134505	1.00	kri
Naphthalene	91-20-3	0.00676			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 12:43	134505	1.00	kri
Phenanthrene	85-01-8	0.00820			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 12:43	134505	1.00	kri
Pyrene	129-00-0	0.00830			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 12:43	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-7-2SA05
Date/Time Sampled .....: 07/19/2005 11:30
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-008
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 13:10	134505	1.00	kri
Acenaphthene	83-32-9	0.00150			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 13:10	134505	1.00	kri
Acenaphthylene	208-96-8	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 13:10	134505	1.00	kri
Anthracene	120-12-7	0.000653			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 13:10	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 13:10	134505	1.00	kri
Dibenzofuran	132-64-9	0.000150	J		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 13:10	134505	1.00	kri
Fluoranthene	206-44-0	0.000170	J		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 13:10	134505	1.00	kri
Fluorene	86-73-7	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 13:10	134505	1.00	kri
Naphthalene	91-20-3	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 13:10	134505	1.00	kri
Phenanthrene	85-01-8	0.0000900	U		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 13:10	134505	1.00	kri
Pyrene	129-00-0	0.000260	J		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 13:10	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: FB-071905-2SA05
Laboratory Sample ID: 299296-009
Date/Time Sampled .....: 07/19/2005 11:30
Sample Matrix .....: Water
Date/Time Received .....: 07/19/2005 18:30

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: FB-071905-2SA05
Laboratory Sample ID: 299296-009
Date/Time Sampled .....: 07/19/2005 11:30
Sample Matrix .....: Water
Date/Time Received .....: 07/19/2005 18:30

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 13:37	134505	1.00	kri
Acenaphthene	83-32-9	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 13:37	134505	1.00	kri
Acenaphthylene	208-96-8	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 13:37	134505	1.00	kri
Anthracene	120-12-7	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 13:37	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 13:37	134505	1.00	kri
Dibenzofuran	132-64-9	0.0000800	U		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 13:37	134505	1.00	kri
Di-n-butyl Phthalate	84-74-2	0.000608		U	0.000110	0.000500	0.000105	mg/L	07/26/2005 13:37	134505	1.00	kri
Fluoranthene	206-44-0	0.0000800	U		0.0000800	0.000500	0.0000800	mg/L	07/26/2005 13:37	134505	1.00	kri
Fluorene	86-73-7	0.0000700	U		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 13:37	134505	1.00	kri
Naphthalene	91-20-3	0.0000600	U		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 13:37	134505	1.00	kri
Phenanthrene	85-01-8	0.0000900	U		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 13:37	134505	1.00	kri
Phenol	108-95-2	0.0000400	U		0.0000400	0.000500	0.0000400	mg/L	07/26/2005 13:37	134505	1.00	kri
Pyrene	129-00-0	0.0000900	U		0.0000900	0.000500	0.0000900	mg/L	07/26/2005 13:37	134505	1.00	kri

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TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419.60 ATTN: Chris Young

Customer Sample ID: MW-11A-2SA05
Date/Time Sampled .....: 07/19/2005 15:08
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-010
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.000190	J		0.0000700	0.000500	0.0000700	mg/L	07/26/2005 14:03	134505	1.00	kri
Acenaphthene	83-32-9	0.0732			0.0000700	0.000500	0.000700	mg/L	07/27/2005 09:33	134505	10.0	kri
Acenaphthylene	208-96-8	0.000740			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 14:03	134505	1.00	kri
Anthracene	120-12-7	0.00201			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 14:03	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 14:03	134505	1.00	kri
Dibenzofuran	132-64-9	0.00957			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 14:03	134505	1.00	kri
Fluoranthene	206-44-0	0.00640			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 14:03	134505	1.00	kri
Fluorene	86-73-7	0.0229			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 14:03	134505	1.00	kri
Naphthalene	91-20-3	0.00482			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 14:03	134505	1.00	kri
Phenanthrene	85-01-8	0.00196			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 14:03	134505	1.00	kri
Pyrene	129-00-0	0.00308			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 14:03	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-01A-2SA05
Laboratory Sample ID: 299296-011
Date/Time Sampled .....: 07/19/2005 16:25
Sample Matrix .....: Water
Date/Time Received .....: 07/19/2005 18:30

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0557			0.0000700	0.000500	0.00100	mg/L	07/27/2005 09:59	134505	20.0	kri
Acenaphthene	83-32-9	0.245			0.0000700	0.000500	0.00100	mg/L	07/27/2005 09:59	134505	20.0	kri
Acenaphthylene	208-96-8	0.00221			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 14:30	134505	1.00	kri
Anthracene	120-12-7	0.0101			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 14:30	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000356	U		0.000370	0.000500	0.000356	mg/L	07/26/2005 14:30	134505	1.00	kri
Dibenzofuran	132-64-9	0.110			0.0000800	0.000500	0.00200	mg/L	07/27/2005 09:59	134505	20.0	kri
Fluoranthene	206-44-0	0.0139			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 14:30	134505	1.00	kri
Fluorene	86-73-7	0.137			0.0000700	0.000500	0.00100	mg/L	07/27/2005 09:59	134505	20.0	kri
Naphthalene	91-20-3	0.0216			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 14:30	134505	1.00	kri
Phenanthrene	85-01-8	0.0233			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 14:30	134505	1.00	kri
Pyrene	129-00-0	0.00593			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 14:30	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-01AD-2SA05
Laboratory Sample ID: 299296-012
Date/Time Sampled .....: 07/19/2005 07:30
Sample Matrix .....: Water
Date/Time Received .....: 07/19/2005 18:30

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0479			0.0000700	0.000500	0.000700	mg/L	07/26/2005 18:04	134505	10.0	kri
Acenaphthene	83-32-9	0.222			0.0000700	0.000500	0.000700	mg/L	07/26/2005 18:04	134505	10.0	kri
Acenaphthylene	208-96-8	0.00218			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 14:57	134505	1.00	kri
Anthracene	120-12-7	0.0107			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 14:57	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 14:57	134505	1.00	kri
Dibenzofuran	132-64-9	0.103			0.0000800	0.000500	0.000800	mg/L	07/26/2005 18:04	134505	10.0	kri
Fluoranthene	206-44-0	0.0141			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 14:57	134505	1.00	kri
Fluorene	86-73-7	0.125			0.0000700	0.000500	0.000700	mg/L	07/26/2005 18:04	134505	10.0	kri
Naphthalene	91-20-3	0.0233			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 14:57	134505	1.00	kri
Phenanthrene	85-01-8	0.0237			0.0000900	0.000500	0.000900	mg/L	07/26/2005 18:04	134505	10.0	kri
Pyrene	129-00-0	0.00641			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 14:57	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: P-10-2SA05
Date/Time Sampled .....: 07/19/2005 16:40
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-013
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0737		J	0.0000700	0.000500	0.00100	mg/L	07/26/2005 18:30	134505	20.0	kri
Acenaphthylene	208-96-8	0.000476		J	0.0000600	0.000500	0.0000600	mg/L	07/26/2005 15:24	134505	1.00	kri
Anthracene	120-12-7	0.00346		J	0.0000700	0.000500	0.0000700	mg/L	07/26/2005 15:24	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 15:24	134505	1.00	kri
Dibenzofuran	132-64-9	0.0314		J	0.0000800	0.000500	0.00200	mg/L	07/26/2005 18:30	134505	20.0	kri
Di-n-butyl Phthalate	84-74-2	0.000481		J	0.000110	0.000500	0.000105	mg/L	07/26/2005 15:24	134505	1.00	kri
Fluoranthene	206-44-0	0.00240		J	0.0000800	0.000500	0.0000800	mg/L	07/26/2005 15:24	134505	1.00	kri
Fluorene	86-73-7	0.0364		J	0.0000700	0.000500	0.00100	mg/L	07/26/2005 18:30	134505	20.0	kri
Naphthalene	91-20-3	0.464		J	0.0000600	0.000500	0.00100	mg/L	07/26/2005 18:30	134505	20.0	kri
Phenol	108-95-2	0.0000400	U		0.0000400	0.000500	0.0000400	mg/L	07/26/2005 15:24	134505	1.00	kri
Pyrene	129-00-0	0.00102			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 15:24	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: P-10D-2SA05
Date/Time Sampled .....: 07/19/2005 04:20
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-014
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0462		J	0.0000700	0.000500	0.00100	mg/L	07/26/2005 18:57	134505	20.0	kri cmk 9/13/05
Acenaphthylene	208-96-8	0.000320	J		0.0000600	0.000500	0.0000600	mg/L	07/26/2005 15:50	134505	1.00	kri
Anthracene	120-12-7	0.00169		J	0.0000700	0.000500	0.0000700	mg/L	07/26/2005 15:50	134505	1.00	kri cmk 9/13/05
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 15:50	134505	1.00	kri
Dibenzofuran	132-64-9	0.0168		J	0.0000800	0.000500	0.0000800	mg/L	07/26/2005 15:50	134505	1.00	kri cmk 9/13/05
Di-n-butyl Phthalate	84-74-2	0.000414	J	J	0.000110	0.000500	0.000105	mg/L	07/26/2005 15:50	134505	1.00	kri cmk 9/13/05
Fluoranthene	206-44-0	0.00114		J	0.0000800	0.000500	0.0000800	mg/L	07/26/2005 15:50	134505	1.00	kri cmk 9/13/05
Fluorene	86-73-7	0.0198		J	0.0000700	0.000500	0.0000700	mg/L	07/26/2005 15:50	134505	1.00	kri cmk 9/13/05
Naphthalene	91-20-3	0.283		J	0.0000600	0.000500	0.00100	mg/L	07/26/2005 18:57	134505	20.0	kri cmk 9/13/05
Phenol	108-95-2	0.0000400	U		0.0000400	0.000500	0.0000400	mg/L	07/26/2005 15:50	134505	1.00	kri
Pyrene	129-00-0	0.000495			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 15:50	134505	1.00	kri

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-11B-2SA05
Date/Time Sampled .....: 07/19/2005 15:05
Date/Time Received .....: 07/19/2005 18:30

Laboratory Sample ID: 299296-015
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	07/25/2005 08:00	134262	1.00	mra
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0577			0.0000700	0.000500	0.000700	mg/L	07/26/2005 19:24	134505	10.0	kri
Acenaphthylene	208-96-8	0.000799			0.0000600	0.000500	0.0000600	mg/L	07/26/2005 16:17	134505	1.00	kri
Anthracene	120-12-7	0.00240			0.0000700	0.000500	0.0000700	mg/L	07/26/2005 16:17	134505	1.00	kri
bis(2-ethylhexyl)phthalate	117-81-7	0.000352	U		0.000370	0.000500	0.000352	mg/L	07/26/2005 16:17	134505	1.00	kri
Dibenzofuran	132-64-9	0.0289			0.0000800	0.000500	0.000800	mg/L	07/26/2005 19:24	134505	10.0	kri
Di-n-butyl Phthalate	84-74-2	0.000357	J	U	0.000110	0.000500	0.000105	mg/L	07/26/2005 16:17	134505	1.00	kri
Fluoranthene	206-44-0	0.00159			0.0000800	0.000500	0.0000800	mg/L	07/26/2005 16:17	134505	1.00	kri
Fluorene	86-73-7	0.0261			0.0000700	0.000500	0.000700	mg/L	07/26/2005 19:24	134505	10.0	kri
Naphthalene	91-20-3	0.186			0.0000600	0.000500	0.000600	mg/L	07/26/2005 19:24	134505	10.0	kri
Phenol	108-95-2	0.0000400	U		0.0000400	0.000500	0.0000400	mg/L	07/26/2005 16:17	134505	1.00	kri
Pyrene	129-00-0	0.000745			0.0000900	0.000500	0.0000900	mg/L	07/26/2005 16:17	134505	1.00	kri

cmk 9/13/05

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 299296 Report Date.: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: SW-846 8270C Units.....: ug/L Analyst...: kri
Method Description.: Semivolatile Organics, Low Level Batch(s)...: 134505

LCS	Laboratory Control Sample	SVS061305A	134262		07/26/2005	0937

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	8.86560		10.0	0	88.7		32-165	
Acenaphthylene, Water	8.81640		10.0	0	88.2		10-150	
Anthracene, Water	9.60563		10.0	0	96.1		23-178	
bis(2-ethylhexyl)phthalate, Water	10.2353		10.0	0.23097	102.4		25-173	
Dibenzofuran, Water	8.85560		10.0	0	88.6		35-153	
Di-n-butyl Phthalate, Water	10.0085		10.0	0.48901	100.1		28-185	
Fluoranthene, Water	9.59051		10.0	0	95.9		28-180	
Fluorene, Water	8.95079		10.0	0	89.5		30-189	
2-Methylnaphthalene, Water	8.63665		10.0	0	86.4		26-168	
Naphthalene, Water	8.95499		10.0	0	89.5		36-139	
Phenanthrene, Water	9.34871		10.0	0	93.5		26-166	
Pyrene, Water	9.26175		10.0	0	92.6		28-173	
Phenol, Water	5.08816		10.0	0	50.9		20-83	

MB	Method Blank	SVS060305A	134262		07/26/2005	0910

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	0							
Acenaphthylene, Water	0							
Anthracene, Water	0							
bis(2-ethylhexyl)phthalate, Water	0.23097							
Dibenzofuran, Water	0							
Di-n-butyl Phthalate, Water	0.48901							
Fluoranthene, Water	0							
Fluorene, Water	0							
2-Methylnaphthalene, Water	0							
Naphthalene, Water	0							
Phenanthrene, Water	0							
Pyrene, Water	0							
Phenol, Water	0							

MS	Matrix Spike	SVS061305A	299296-6		07/26/2005	1217

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	9.82031		10.0	3.25925	66		46-118	
Acenaphthylene, Water	7.27589		10.0	0	73		30-130	
Anthracene, Water	8.76090		10.0	0.34020	84		30-130	
bis(2-ethylhexyl)phthalate, Water	7.22978		10.0	0.28573	69		60-140	
Dibenzofuran, Water	9.44712		10.0	2.57133	69		30-130	
Di-n-butyl Phthalate, Water	9.14218		10.0	0.69248	84		30-130	
Fluoranthene, Water	9.07425		10.0	0.83660	82		30-130	
Fluorene, Water	10.0106		10.0	2.81621	72		30-130	
2-Methylnaphthalene, Water	6.48050		10.0	0	65		60-140	
Naphthalene, Water	6.71021		10.0	0	67		30-130	
Phenanthrene, Water	8.64221		10.0	0.38215	83		30-130	
Pyrene, Water	8.97862		10.0	0.44525	85		26-115	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 299296 Report Date.: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	SVS061305A	299296-6		07/26/2005	1217

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Phenol, Water	3.04373		10.0	0	30		10-112	

MSD	Matrix Spike Duplicate	SVS061305A	299296-7		07/26/2005	1243

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	9.99713	9.82031	10.0	3.25925	67		46-118	
					1.8		31.0	
Acenaphthylene, Water	7.36702	7.27589	10.0	0	74		30-130	
					1.2		50.0	
Anthracene, Water	8.52681	8.76090	10.0	0.34020	82		30-130	
					2.7		50.0	
bis(2-ethylhexyl)phthalate, Water	7.33141	7.22978	10.0	0.28573	70		60-140	
					1.4		30.0	
Dibenzofuran, Water	9.49312	9.44712	10.0	2.57133	69		30-130	
					0.5		50.0	
Di-n-butyl Phthalate, Water	8.91232	9.14218	10.0	0.69248	82		30-130	
					2.5		50.0	
Fluoranthene, Water	8.92219	9.07425	10.0	0.83660	81		30-130	
					1.7		50.0	
Fluorene, Water	9.97121	10.0106	10.0	2.81621	72		30-130	
					0.4		50.0	
2-Methylnaphthalene, Water	6.97089	6.48050	10.0	0	70		60-140	
					7.3		30.0	
Naphthalene, Water	7.10452	6.71021	10.0	0	71		30-130	
					5.7		50.0	
Phenanthrene, Water	8.61138	8.64221	10.0	0.38215	82		30-130	
					0.4		50.0	
Pyrene, Water	8.71519	8.97862	10.0	0.44525	83		26-115	
					3.0		31.0	
Phenol, Water	3.50423	3.04373	10.0	0	35		10-112	
					14.1		23.0	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SEVERN TRENT STL

SURROGATE RECOVERIES REPORT

Job Number.: 299296 Report Date.: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Method.....: Semivolatile Organics, Low Level Method Code...: 8270LL Prep Batch....: 134262
Batch(s).....: 134505 Test Matrix...: Water Equipment Code: EGCMS07

Lab ID	DT	Sample ID	Date	246TBP	2FLUBP	2FLUPH	NITRD5	PHEND6	TERD14
299296- 1		P-12-2SA05	07/26/2005	84.7	77.2	40.5	75.1	28.3	88.3
299296- 2		MW-8-2SA05	07/26/2005	86.5	77.7	39.8	76.4	28.1	89.4
299296- 3		MW-10A-2SA05	07/26/2005	100.2	80.8	46.0	68.7	32.0	94.7
299296- 4		MW-10B-2SA05	07/26/2005	99.0	88.2	42.3	71.0	32.8	95.5
299296- 4		MW-10B-2SA05	07/27/2005	86.9	91.8	53.9	73.5	36.3	114.6
299296- 5		MW-2-2SA05	07/26/2005	70.0	73.1	29.7	74.9	23.0	88.0
299296- 6		MW-2MS-2SA05	07/26/2005	72.8	79.4	33.8	73.5	28.1	86.7
299296- 6	MS	MW-2MS-2SA05	07/26/2005	72.8	79.4	33.8	73.5	28.1	86.7
299296- 7		MW-2MSD-2SA05	07/26/2005	73.9	76.5	34.1	71.2	29.0	82.6
299296- 7	MSD	MW-2MSD-2SA05	07/26/2005	73.9	76.5	34.1	71.2	29.0	82.6
299296- 8		MW-7-2SA05	07/26/2005	97.7	85.0	47.6	81.8	36.2	86.8
299296- 9		FB-071905-2SA05	07/26/2005	103.7	90.9	57.9	84.6	38.6	95.9
299296- 10		MW-11A-2SA05	07/26/2005	98.4	82.8	40.9	79.4	31.3	89.8
299296- 10		MW-11A-2SA05	07/27/2005	65.6	82.2	47.6	52.2	28.6	93.2
299296- 11		MW-01A-2SA05	07/26/2005	90.2	79.0	51.8	83.9	31.8	93.7
299296- 11		MW-01A-2SA05	07/27/2005	88.3	86.6	39.4	73.3	28.5	96.1
299296- 12		MW-01AD-2SA05	07/26/2005	94.9	74.9	39.5	76.8	31.4	96.2
299296- 12		MW-01AD-2SA05	07/26/2005	92.1	79.5	41.8	70.2	29.0	82.6
299296- 13		P-10-2SA05	07/26/2005	85.6	80.9	48.6	82.0	30.8	96.4
299296- 13		P-10-2SA05	07/26/2005	75.7	69.4	38.5	81.5	25.6	89.9
299296- 14		P-10D-2SA05	07/26/2005	85.8	72.9	40.0	75.0	30.6	94.9
299296- 14		P-10D-2SA05	07/26/2005	52.7	69.7	33.4	52.3	29.1	85.0
299296- 15		MW-11B-2SA05	07/26/2005	77.5	68.9	39.3	72.0	31.5	74.2
299296- 15		MW-11B-2SA05	07/26/2005	77.0	69.5	37.0	59.9	24.1	71.4
134262--21	LCS		07/26/2005	112.4	98.2	77.4	91.8	53.5	99.3
134262--21	MB		07/26/2005	94.9	85.5	60.6	92.8	49.8	94.9

Test	Test Description	Limits
246TBP	2,4,6-Tribromophenol	10 - 123
2FLUBP	2-Fluorobiphenyl	43 - 116
2FLUPH	2-Fluorophenol	21 - 100
NITRD5	Nitrobenzene-d5	35 - 114
PHEND6	Phenol-d6	10 - 94
TERD14	Terphenyl-d14	33 - 141

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SEVERN TRENT STL

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 08/03/2005

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
3) According to 40CFR Part 136.3, pH, Chlorine Residual, and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field,(e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.
4) For all USACE projects, the QC limits are based on "mean +/- 2 sigma", which are the warning limits.

General Information:

- Cresylic Acid is the combination of o,m and p-Cresol. The combination is reportesd as the final result.
- m-Cresol and p-Cresol co-elute. The result of the two is reported as either m&p-cresol or as p-cresol.
- m-Xylene and p-Xylene co-elute. The result of the two is reported as m,p-Xylene.
- N-Nitrosodiphenylamine decomposes in the gas chromatograph inlet forming dipheylamine and, consequently, may be detected as diphenylamine.
- Methylene Chloride and Acetone are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
- Trimethysilyl(Diazomethane) is used to esterify acid herbicides in Method SW-846 8151A.
- For Inorganic analyses, duplicate QC limits are determined as follows: If the sample result is less than or equal to 5 times the reporting limit, the RPD limit is equal to the reporting limit. If the sample result is greater than 5 times the reporting limit, the RPD limit is the method defined RPD.

Explanation of Qualifiers:

U - This qualifier indicates that the analyte was analyzed but not detected.
J - (Organics only) This qualifier indicates that the analyte is an estimated value between the RL and the MDL.
B - (Inorganics only) This Qualifier indicates that the analyte is an estimated value between the RL and the MDL.
N - (Organics only) This flag indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic charachterization of a TIC, such as "chlorinated hydrocarbon", the "N" flag is not used.

Explanation of General QC Outliers:

A - Matrix interference present in sample.
a - MS/MSD analyses yielded comparable poor recoveries, indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recoveries.
b - Target analyte was found in the method blank.
M - QC sample analysis yielded recoveries outside QC acceptance criteria. This sample was reanalyzed.
L - LCS analysis yielded high recoveries, indicating a potential high bias. No target analytes were observed above the RL in the associated samples.
G - Marginal outlier within 1% of acceptance criteria.
r - RPD value is outside method acceptance criteria.
C - Poor RPD values observed due to the non-homogenous nature of the sample.
O - Sample required dilution due to matrix interference.
D - Sample reported from a dilution.
d - Spike and/or surrogate diluted.
P - The recovery of this analyte is outside default QC limits. The data is accepted and will be used to calculate in-house statistical limits.
E - The reported concentration exceeds the instrument calibration.
F - The analyte is outside QC limits. The sample data is accepted since this analyte is not reported in associated samples.
H - Continuing Calibration Verification (CCV) standard is not associated with the samples reported.
q - See the subcontract final report for qualifier explanation.

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QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

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W - The MS/MSD recoveries are outside QC acceptance criteria because the amount spiked is much less than the amount found in the sample.
K - High recovery will not affect the quality of reported results.
Z - See case narrative.

Explanation of Organic QC Outliers:

e - Method blank analysis yielded phthalate concentrations above the RL. Phthlates are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
S - Sample reanalyzed/reextracted due to poor surrogate recovery. Reanalysis confirmed original analysis indicating a possible matrix interference.
T - Sample analysis yielded poor surrogate recovery.
R - The RPD between the two GC columns is greater than 40% and no anomalies are present. The higher result is reported as per EPA Method 8000B.
I - The RPD between the two GC columns is greater than 40% and anomalies are present. The lower of the two results has been reported.
X - Gaseous compound. In-house QC limits are advisory.
Y - Ketone compounds have poor purge efficiency. In-house QC limits are advisory.
f - Surrogate not associated with reported analytes.

Explanation of Inorganic QC Outliers:

Q - Method blank analysis yielded target analytes above the RL. Associated sample results are greater than 10 times the concentrations observed in the method blank.
V - The RPD control limit for sample results less than 5 times the RL is +/- the RL value. Sample and duplicate results are within method acceptance criteria.
e - Serial dilution failed due to matrix interference.
g - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficent for the MSA is greater than or equal to 0.995.
s - BOD/cBOD seed value is not within method acceptance criteria. Due to the nature of the test method, the sample cannot be reanalyzed.
l - BOD/cBOD LCS value is not within method acceptance criteria. Due to the nature of the test method, sample cannot be reanalyzed.
N - Spiked sample recovery is not within control limits.
n - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficient for the MSA is less than 0.995.
* - Duplicate analysis is not within control limits.

Abbreviations:

Batch	- Designation given to identify a specific extraction, digestion, preparation, or analysis set.
CCV	- Continuing Calibration Verification
CRA	- Low level standard check - GFAA, Mercury
CRI	- Low level standard check - ICP
Dil Fac	- Dilution Factor - Secondary dilution analysis
DLFac	- Detection Limit Factor
DU	- Duplicate
EB	- Extraction Blank (TCLP, SPLP, etc.)
ICAL	- Initial Calibration
ICB	- Initial Calibration Blank
ICV	- Initial Calibration Verification
ISA	- Interference Check Sample A - ICP
ISB	- Interference Check Sample B - ICP
LCD	- Laboratory Control Duplicate
LCS	- Laboratory Control Sample
MB	- Method Blank

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SEVERN TRENT STL

QUALITY ASSURANCE METHODS
REFERENCES AND NOTES
Report Date: 08/03/2005

MD	- Method Duplicate
MDL	- Method Detection Limit
MQL	- Method Quantitation Limit (TRRP)
MS	- Matrix Spike
MSD	- Matrix Spike Duplicate
ND	- Not Detected
PB	- Preparation Blank
PREPF	- Preparation Factor
RL	- Reporting Limit
RPD	- Relative Percent Difference
RRF	- Relative Response Factor
RT	- Retention Time
SQL	- Sample Quantitation Limit (TRRP)
TIC	- Tentatively Identified Compound

Method References:

(1) EPA 600/4-79-020 Methods for the Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-94-111 Methods for the Determination of MEtals in Environmental Samples, Supplement I, May 1994.
(3) EPA SW846 Test Methods for Evaluating Solid Waste, Third Edition, September 1986; Update I July 1992; Update II, September 1994, Update IIA August 1993; Update IIB, January 1995; Update III, December 1996, Update IVA January 1998, Update IVB November 2000.
(4) Standard Methods for the Examination of Water and Wastewater, 16th Edition (1985), 17th Edition (1989), 18th Edition (1992), 19th Edition (1995), 20th Edition (1998).
(5) HACH Water Analysis Handbook 3rd Edition (1997).
(6) Federal Register, July 1, 1990 (40 CFR Part 136 Appendix A).
(7) Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd Edition, January 1997.
(8) ASTM Annual Book of Methods (Various Years)
(9) Diagnosis and Improvement of Saline and Alkali Soils, Agriculture Handbook No. 60, United States Department of Agriculture, 1954.

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SEVERN TRENT STL

LABORATORY CHRONICLE

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Lab ID: 299296-1 Client ID: P-12-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/18/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
	Data Package Validation	1	134973		08/03/2005 0000	
	Electronic Data Deliverables	1	81662		08/01/2005 1320	
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
	GC/MS Semi-Volatile Package Production	1	134512		07/27/2005 1320	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1003	1.00000

Lab ID: 299296-2 Client ID: MW-8-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/18/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1030	1.00000

Lab ID: 299296-3 Client ID: MW-10A-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1057	1.00000

Lab ID: 299296-4 Client ID: MW-10B-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1123	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/27/2005 0906	10.0000

Lab ID: 299296-5 Client ID: MW-2-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1150	1.00000

Lab ID: 299296-6 Client ID: MW-2MS-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1217	1.00000

Lab ID: 299296-7 Client ID: MW-2MSD-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1243	1.00000

Lab ID: 299296-8 Client ID: MW-7-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1310	1.00000

Lab ID: 299296-9 Client ID: FB-071905-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1337	1.00000

Lab ID: 299296-10 Client ID: MW-11A-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1403	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/27/2005 0933	10.0000

Lab ID: 299296-11 Client ID: MW-01A-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	

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SEVERN TRENT STL

LABORATORY CHRONICLE

Job Number: 299296 Date: 08/03/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Lab ID: 299296-11 Client ID: MW-01A-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1430	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/27/2005 0959	20.0000

Lab ID: 299296-12 Client ID: MW-01AD-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1457	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1804	10.0000

Lab ID: 299296-13 Client ID: P-10-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1524	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1830	20.0000

Lab ID: 299296-14 Client ID: P-10D-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1550	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1857	20.0000

Lab ID: 299296-15 Client ID: MW-11B-2SA05 Date Recvd: 07/19/2005 Sample Date: 07/19/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	134262		07/25/2005 0800	
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1617	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	134505	134262	07/26/2005 1924	10.0000

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SEVERN TRENT STL

ANALYTICAL REPORT

JOB NUMBER: 302323
Project ID: UPRR-HWPW-0014419 60

Prepared For:

ERM Southwest, Inc.- Houston
15810 Park Ten Place
Suite 300
Houston, TX 77084

Attention: Chris Young

Date: 09/28/2005

Signature

09/28/05
Date

Name: Sachin G. Kudchadkar

Title: Project Manager III

E-Mail: [redacted]

Severn Trent Laboratories
6310 Rothway Drive
Houston, TX 77040

PHONE: 713-690-4444

TOTAL NO. OF PAGES 18

SEVERN TRENT STL

09/28/2005

Chris Young
ERM Southwest, Inc.- Houston
15810 Park Ten Place
Suite 300
Houston, TX 77084

Reference:
Project : UPRR-HWPW-0014419 60
Project No. : 302323
Date Received : 09/08/2005
STL Job : 302323

Dear Chris Young:

Enclosed are the analytical results for your project referenced above. The following samples are included in the report.

1. TRIP Blank
2. Dup-1
3. MW-1A

All holding times were met for the tests performed on these samples.

Enclosed, please find the Quality Control Summary. All quality control results for the QC batch that are applicable to the sample(s) are acceptable except as noted in the QC batch reports.

The test results in this report meet all NELAP requirements for STL Houston's NELAP accredited parameters. Any exceptions to NELAP requirements will be noted and included in a case narrative as a part of this report.

If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Severn-Trent Laboratories to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

Sincerely,

Sachin G. Kudchadkar
Project Manager

SEVERN TRENT STL

Table 1

Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification	8270C	Comment
TRIP Blank	302323-1		Trip Blank; No tests assigned.
Dup-1	302323-2	X	Field Duplicate
MW-1A	302323-3	X	

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02

Appendix A Laboratory Data Package Cover Page

This data package consists of:

- This signature page, the laboratory review checklist, and the following reportable data:
- R1 Field chain-of-custody documentation;
- R2 Sample identification cross-reference;
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
- R5 Test reports/summary forms for blank samples;
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) the amount of analyte measured in the duplicate,
  b) the calculated RPD, and
  c) the laboratory's QC limits for analytical duplicates.
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- R10 Other problems or anomalies.
- The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By me signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [ ] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Norman Flynn		Laboratory Director	9/26/06
Name (Printed)	Signature	Official Title (printed)	Date

03

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: STL-Houston	LRC Date: 09/27/05
Project Name: UPRR-HWPW-0014419 60	Laboratory Job Number: 302323
Reviewer Name: KRI	Prep Batch Number(s): 138028-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-custody (C-O-C)					
R1	OI	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample quantitation limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			X		
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2,3
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SQL to minimize the matrix interference affects on the sample results?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: STL-Houston	LRC Date: 09/27/05
Project Name: UPRR-HWPW-0014419 60	Laboratory Job Number: 302323
Reviewer Name: KRI	Prep Batch Number(s): 138028-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Exception Reports	
Laboratory Name: STL-Houston	LRC Date: 09/27/05
Project Name: UPRR-HWPW-0014419 60	Laboratory Job Number: 302323
Reviewer Name: KRI	Prep Batch Number(s): 138028-SV

ER #[1]	DESCRIPTION
1	The 2,4,6-tribromophenol surrogate recoveries in samples 302323-2 and 3 were above acceptance limits due to the dilutions necessary for analyses.
2	The laboratory inadvertently did not spike the MS with dibenzofuran. Since the recovery of dibenzofuran was within acceptance limits in the LCS, no corrective action was necessary.
3	The dibenzofuran recovery in the MSD was below acceptance limits due to matrix interference.

ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LRC)

SEVERN TRENT **STL**

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: ERM	PROJECT NAME/NUMBER:
SEND REPORT TO: Chris Young	**BILLING INFORMATION**
ADDRESS: 15810 Park Ten Place	BILL TO: Same
Houston TX 77084	ADDRESS:
PHONE: 281 600 1000	PHONE:
FAX: 281 600 1001	FAX: PO NO:

LAB JOB NO. 302323

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	ANALYSIS/METHOD REQUEST: 8270 Dibenzofuran	REMARKS/PRECAUTIONS
	TRIP Blank	9/8	—	W	V	HCl	2	X	
	DUP-1	9/8	—	W	L	None	2	X	
	MW-2A	9/8	1120	W	L	None	2	X	

SAMPLER: Mike Robbins SHIPMENT METHOD: Drop off AIRBILL NO.:

REQUIRED TURNAROUND* ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☒ ROUTINE ☐ OTHER

1. RELINQUISHED BY:	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE:	9/8/05	SIGNATURE:	9/8/05	SIGNATURE:	
PRINTED NAME/COMPANY: Mike Robbins ERM	TIME 1330	PRINTED NAME/COMPANY:	TIME 3:34	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY:	DATE	1. RECEIVED BY:	DATE	1. RECEIVED BY:	DATE
SIGNATURE:	9/8/05	SIGNATURE:	9/8/05	SIGNATURE:	
PRINTED NAME/COMPANY: SRL	TIME 15:00	PRINTED NAME/COMPANY: SRL	TIME 3:34	PRINTED NAME/COMPANY:	TIME

*RUSH TURNAROUND MAY REQUIRE SURCHARGE

STL8222H-600 (0803)

STL Houston
6310 Rothway Drive
Houston, TX 77040

07

rpjsckl	Job Sample Receipt Checklist Report	V2

Job Number.: 302323 Location.: 57216 Check List Number.: 1 Description.:
Customer Job ID.....: Job Check List Date.: 09/08/2005 Date of the Report..: 09/08/2005
Project Number.: 99000484 Project Description.: UPRR-HWPW-0014419/60 Project Manager.....: sgk
Customer.....: ERM Southwest, Inc.- Houston Contact.: Chris Young

Questions ?	(Y/N)	Comments
Chain of Custody Received?	Y	
...If "yes", completed properly?	Y	
Custody seal on shipping container?	Y	
...If "yes", custody seal intact?	Y	
Custody seals on sample containers?	N	
...If "yes", custody seal intact?		
Samples chilled?	Y	
Temperature of cooler acceptable? (4 deg C +/- 2).	Y	4.2
...If "no", is sample an air matrix?(no temp req.)		
Thermometer ID	Y	429
Samples received intact (good condition)?	Y	
Volatile samples acceptable? (no headspace)	Y	
Correct containers used?	Y	
Adequate sample volume provided?	Y	
Samples preserved correctly?	Y	
Samples received within holding-time?	Y	
Agreement between COC and sample labels?	Y	
Radioactivity at or below background levels?	Y	
Additional		
Comments		
Sample Custodian Signature/Date	Y	TFC

R 9/8/05

STL HOUSTON - SAMPLE RECEIPT CHECKLIST

CLIENT NAME: E. R. M CARRIER/DRIVER NAME: FF

PROJECT: UNPACKED BY:

DATE RECEIVED: 2005 SEP -8 PM 3:34 UNPACKED STAMP: 2005 SEP -8 PM 4:30

TOTAL # COOLERS RECEIVED: 1

COOLER CHECKLIST

COOLER ID	COC PRESENT (Y/N)	CUSTODY TAPE		COOLER TEMP (°C)	THERM ID	TEMP BLK PRESENT (Y/N)	List Sample Bottles in Each Cooler if out of Temperature
		PRESENT (Y/N)	INTACT (Y/N)				
Rv/704	Y	C Y B Y	Y	4.2	429	NO	
		C					
		B					
		C					
		B					

C = COOLER B = BOTTLES

COOLER(S) SCREENED FOR RADIATION? Yes ✓ No ___ IF TEMP BLK N, HOW WAS TEMP TAKEN: —

SHORT HOLD / RUSH SAMPLES (include department delivered to and time delivered)

SPECIFIC PROJECT INFORMATION

JOB NUMBER: 302323

VOLATILE HEADSPACE ACCEPTABLE? Yes ✓ No ___ NA ___
(If ANY headspace is present, list details in INCONSISTENCIES section)

Marked As Preserved? Yes ✓ No ___

Number of VOA Vials: 2

pH OF WATER SAMPLES

PRESERVATION	# BOTTLES	CORRECT pH (Y/N)	If N, List sample ID and Corresponding pH
H2SO4 (<2)			
HNO3 (<2)			
HCL (<2) (Not VOA Vials)			
NaOH – Cyanide (>12)			
NaOH/Zn Acetate – Sulfide (>9)			
Other			

 # OF NEAT BOTTLES: 4 **# OF SOIL JARS:** ___

INCONSISTENCIES – Place in Job Notes as well (CTRL F-12)

ACTION TAKEN

PERSON CONTACTED: ___ DATE: ___

RESOLUTION ___

NOTES ___

(Use back of sheet if necessary)

Project Manager ___

SEVERN TRENT STL

CUSTODY SEAL

Date/Time 9/8/05 1230

Name/Company Mike Rubbing / ERA

Seal broken by

Date

Note Number	: 31241	JOB
Date	: 9/28/2005	
Author	: sgk	
Subject	: Trip Blank	

Project Code....:		
Location Code...:	57216	
Job/Sales Order.:	302323	UPRR-HWPW-0014419 60
Customer.....:	ERMSW	ERM Southwest, Inc.- Houston
Contact Location:	HOUSTON	Houston, TX
Contact.....:	C. YOUNG	Chris Young
Invoice.....:		
Batch.....:		
Note For.....:		

302323-1 is a trip blank, we received (2) 40 ml vials with HCL. COC requested PAH analysis. With the given sample volume, 8270 cannot be performed.

SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 302323 Date: 09/28/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: Dup-1
Date/Time Sampled .....: 09/08/2005 00:00
Date/Time Received .....: 09/08/2005 15:34

Laboratory Sample ID: 302323-002
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	09/09/2005 13:00	138028	1.00	enc
Method: SW-846 8270C, Water												
Dibenzofuran	132-64-9	0.115			0.0000800	0.000500	0.000400	mg/L	09/14/2005 19:18	138378	5.00	acn

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 302323 Date: 09/28/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Customer Sample ID: MW-1A
Date/Time Sampled .....: 09/08/2005 11:20
Date/Time Received .....: 09/08/2005 15:34

Laboratory Sample ID: 302323-003
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	09/09/2005 13:00	138028	1.00	enc
Method: SW-846 8270C, Water												
Dibenzofuran	132-64-9	0.133			0.0000800	0.000500	0.000800	mg/L	09/14/2005 19:45	138378	10.0	acn

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 302323 Report Date.: 09/28/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: SW-846 8270C Units.....: ug/L Analyst...: acn
Method Description.: Semivolatile Organics, Low Level Batch(s)...: 138378

LCS	Laboratory Control Sample	SVS082305B	138028		09/13/2005	1034

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Dibenzofuran, Water	8.59526		10.0	0	86.0		35-153	

MB	Method Blank	SVS080305C	138028		09/13/2005	1007

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Dibenzofuran, Water	0							

MS	Matrix Spike	SVS082305B	302323-3		09/13/2005	1129

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Dibenzofuran, Water	96.6403		10.0	104.223	-76		30-130	Z

MSD	Matrix Spike Duplicate	SVS082305B	302323-3		09/13/2005	1155

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Dibenzofuran, Water	91.0581	96.6403	10.0	104.223	-132		30-130	A
					5.9		50.0	

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SEVERN TRENT STL

SURROGATE RECOVERIES REPORT

Job Number.: 302323 Report Date.: 09/28/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419 60 ATTN: Chris Young

Method.....: Semivolatile Organics, Low Level Method Code...: 8270LL Prep Batch....: 138028
Batch(s).....: 138341 138378 Test Matrix...: Water Equipment Code: EGCMS07

Lab ID	DT	Sample ID	Date	246TBP	2FLUBP	2FLUPH	NITRD5	PHEND6	TERD14
302323- 2		Dup-1	09/14/2005	132.6d	99.6	31.0	101.5	38.8	104.3
302323- 3		MW-1A	09/14/2005	126.0d	100.6	50.2	87.9	45.4	120.4
302323- 3	MS	MW-1A	09/13/2005	90.5	83.9	32.2	73.2	39.8	99.6
302323- 3	MS	MW-1A	09/13/2005	103.8	81.0	37.3	68.7	39.3	96.7
302323- 3	MSD	MW-1A	09/13/2005	76.8	67.7	33.5	68.4	39.5	68.2
302323- 3	MSD	MW-1A	09/13/2005	81.5	68.7	42.1	68.6	31.2	67.8
138028--21	LCS		09/13/2005	98.6	90.0	54.4	88.6	38.9	103.1
138028--21	LCS		09/13/2005	112.5	92.7	48.9	95.2	34.4	94.8
138028--21	MB		09/13/2005	93.7	87.4	42.2	88.5	26.0	101.4
138028--21	MB		09/13/2005	110.3	89.7	37.1	100.2	21.0	101.0

Test	Test Description	Limits
246TBP	2,4,6-Tribromophenol	10 - 123
2FLUBP	2-Fluorobiphenyl	43 - 116
2FLUPH	2-Fluorophenol	21 - 100
NITRD5	Nitrobenzene-d5	35 - 114
PHEND6	Phenol-d6	10 - 94
TERD14	Terphenyl-d14	33 - 141

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SEVERN TRENT STL

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 09/28/2005

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
3) According to 40CFR Part 136.3, pH, Chlorine Residual, and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field,(e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.
4) For all USACE projects, the QC limits are based on "mean +/- 2 sigma", which are the warning limits.

General Information:

- Cresylic Acid is the combination of o,m and p-Cresol. The combination is reportesd as the final result.
- m-Cresol and p-Cresol co-elute. The result of the two is reported as either m&p-cresol or as p-cresol.
- m-Xylene and p-Xylene co-elute. The result of the two is reported as m,p-Xylene.
- N-Nitrosodiphenylamine decomposes in the gas chromatograph inlet forming dipheylamine and, consequently, may be detected as diphenylamine.
- Methylene Chloride and Acetone are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
- Trimethysilyl(Diazomethane) is used to esterify acid herbicides in Method SW-846 8151A.
- For Inorganic analyses, duplicate QC limits are determined as follows: If the sample result is less than or equal to 5 times the reporting limit, the RPD limit is equal to the reporting limit. If the sample result is greater than 5 times the reporting limit, the RPD limit is the method defined RPD.

Explanation of Qualifiers:

U - This qualifier indicates that the analyte was analyzed but not detected.
J - (Organics only) This qualifier indicates that the analyte is an estimated value between the RL and the MDL.
B - (Inorganics only) This Qualifier indicates that the analyte is an estimated value between the RL and the MDL.
N - (Organics only) This flag indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic charachterization of a TIC, such as "chlorinated hydrocarbon", the "N" flag is not used.

Explanation of General QC Outliers:

A - Matrix interference present in sample.
a - MS/MSD analyses yielded comparable poor recoveries, indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recoveries.
b - Target analyte was found in the method blank.
M - QC sample analysis yielded recoveries outside QC acceptance criteria. This sample was reanalyzed.
L - LCS analysis yielded high recoveries, indicating a potential high bias. No target analytes were observed above the RL in the associated samples.
G - Marginal outlier within 1% of acceptance criteria.
r - RPD value is outside method acceptance criteria.
C - Poor RPD values observed due to the non-homogenous nature of the sample.
O - Sample required dilution due to matrix interference.
D - Sample reported from a dilution.
d - Spike and/or surrogate diluted.
P - The recovery of this analyte is outside default QC limits. The data is accepted and will be used to calculate in-house statistical limits.
E - The reported concentration exceeds the instrument calibration.
F - The analyte is outside QC limits. The sample data is accepted since this analyte is not reported in associated samples.
H - Continuing Calibration Verification (CCV) standard is not associated with the samples reported.
q - See the subcontract final report for qualifier explanation.

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W - The MS/MSD recoveries are outside QC acceptance criteria because the amount spiked is much less than the amount found in the sample.
K - High recovery will not affect the quality of reported results.
Z - See case narrative.

Explanation of Organic QC Outliers:

e - Method blank analysis yielded phthalate concentrations above the RL. Phthlates are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
S - Sample reanalyzed/reextracted due to poor surrogate recovery. Reanalysis confirmed original analysis indicating a possible matrix interference.
T - Sample analysis yielded poor surrogate recovery.
R - The RPD between the two GC columns is greater than 40% and no anomalies are present. The higher result is reported as per EPA Method 8000B.
I - The RPD between the two GC columns is greater than 40% and anomalies are present. The lower of the two results has been reported.
X - Gaseous compound. In-house QC limits are advisory.
Y - Ketone compounds have poor purge efficiency. In-house QC limits are advisory.
f - Surrogate not associated with reported analytes.

Explanation of Inorganic QC Outliers:

Q - Method blank analysis yielded target analytes above the RL. Associated sample results are greater than 10 times the concentrations observed in the method blank.
V - The RPD control limit for sample results less than 5 times the RL is +/- the RL value. Sample and duplicate results are within method acceptance criteria.
e - Serial dilution failed due to matrix interference.
g - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficent for the MSA is greater than or equal to 0.995.
s - BOD/cBOD seed value is not within method acceptance criteria. Due to the nature of the test method, the sample cannot be reanalyzed.
l - BOD/cBOD LCS value is not within method acceptance criteria. Due to the nature of the test method, sample cannot be reanalyzed.
N - Spiked sample recovery is not within control limits.
n - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficient for the MSA is less than 0.995.
* - Duplicate analysis is not within control limits.

Abbreviations:

Batch - Designation given to identify a specific extraction, digestion, preparation, or analysis set.
CCV - Continuing Calibration Verification
CRA - Low level standard check - GFAA, Mercury
CRI - Low level standard check - ICP
Dil Fac - Dilution Factor - Secondary dilution analysis
DLFac - Detection Limit Factor
DU - Duplicate
EB - Extraction Blank (TCLP, SPLP, etc.)
ICAL - Initial Calibration
ICB - Initial Calibration Blank
ICV - Initial Calibration Verification
ISA - Interference Check Sample A - ICP
ISB - Interference Check Sample B - ICP
LCD - Laboratory Control Duplicate
LCS - Laboratory Control Sample
MB - Method Blank

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MD	- Method Duplicate
MDL	- Method Detection Limit
MQL	- Method Quantitation Limit (TRRP)
MS	- Matrix Spike
MSD	- Matrix Spike Duplicate
ND	- Not Detected
PB	- Preparation Blank
PREPF	- Preparation Factor
RL	- Reporting Limit
RPD	- Relative Percent Difference
RRF	- Relative Response Factor
RT	- Retention Time
SQL	- Sample Quantitation Limit (TRRP)
TIC	- Tentatively Identified Compound

Method References:

(1) EPA 600/4-79-020 Methods for the Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-94-111 Methods for the Determination of MEtals in Environmental Samples, Supplement I, May 1994.
(3) EPA SW846 Test Methods for Evaluating Solid Waste, Third Edition, September 1986; Update I July 1992; Update II, September 1994, Update IIA August 1993; Update IIB, January 1995; Update III, December 1996, Update IVA January 1998, Update IVB November 2000.
(4) Standard Methods for the Examination of Water and Wastewater, 16th Edition (1985), 17th Edition (1989), 18th Edition (1992), 19th Edition (1995), 20th Edition (1998).
(5) HACH Water Analysis Handbook 3rd Edition (1997).
(6) Federal Register, July 1, 1990 (40 CFR Part 136 Appendix A).
(7) Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd Edition, January 1997.
(8) ASTM Annual Book of Methods (Various Years)
(9) Diagnosis and Improvement of Saline and Alkali Soils, Agriculture Handbook No. 60, United States Department of Agriculture, 1954.

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SEVERN TRENT STL

LABORATORY CHRONICLE

Job Number: 302323 Date: 09/28/2005

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: UPRR-HWPW-0014419.60 ATTN: Chris Young

Lab ID: 302323-1 Client ID: TRIP Blank Date Recvd: 09/08/2005 Sample Date: 09/08/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
	Data Package Validation	1	138985		09/28/2005 0000	
	GC/MS Semi-Volatile Package Production	1	138779		09/26/2005 0000	

Lab ID: 302323-2 Client ID: Dup-1 Date Recvd: 09/08/2005 Sample Date: 09/08/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	138028		09/09/2005 1300	
SW-846 8270C	Semivolatile Organics, Low Level	1	138378	138028	09/14/2005 1918	5.00000

Lab ID: 302323-3 Client ID: MW-1A Date Recvd: 09/08/2005 Sample Date: 09/08/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	138028		09/09/2005 1300	
SW-846 8270C	Semivolatile Organics, Low Level	1	138378	138028	09/14/2005 1945	10.0000

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APPENDIX C

Data Usability Summary for Laboratory Package 299296

Houston Wood Preserving Works
Union Pacific Railroad
Houston, Texas

Environmental Resources Management reviewed one data package (Job Number 299296) from Severn Trent Laboratories for the analysis of ground water samples collected on July 18, 2005 and July 19, 2005 at the Union Pacific Railroad's Houston Wood Preserving Works Site. Data were reviewed for conformance to the requirements of the guidance document, *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13) dated December 2002.

Intended Use of Data

To provide concentrations of constituents in the ground water for comparison to Practical Quantitation Limits (PQLs) or background.

Analyses requested included:

SW-846 8270C LL – Semivolatile Organic Compounds (SVOCs) by Gas Chromatography-Mass Spectrometry (GC/MS) Low Level

Data were reviewed and validated as described in *Review and Reporting of COC Concentration Data,* (RG-366/TRRP-13) dated December 2002 and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- The reportable data,
- The laboratory review checklists and associated exception reports, and
- The field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized on the Laboratory Review Checklists (LRCs), Exception Reports (ERs) and in the case narratives, all of which were included in this review. The LRCs, associated ERs, and reportable data covered by this review are included in the laboratory report provided in Appendix B.

Introduction

Ten (10) ground water samples, two (2) blind duplicates, and one (1) field blank were analyzed for SVOCs by SW-846 8270C LL. Six (6) ground water samples and one (1) blind duplicate were analyzed for acenaphthene, acenaphthylene, anthracene, dibenzofuran, bis(2-ethylhexyl)phthalate, fluoranthene, fluorene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene. Four (4) ground water samples and one (1) blind duplicate were analyzed for acenaphthene, acenaphthylene, anthracene, dibenzofuran, di-n-butyl phthalate, bis(2-

ethylhexyl)phthalate, fluoranthene, fluorene, naphthalene, phenol, and pyrene. One (1) field blank was analyzed for acenaphthene, acenaphthylene, anthracene, dibenzofuran, di-n-butyl phthalate, bis(2-ethylhexyl)phthalate, fluoranthene, fluorene, 2-methylnaphthalene, naphthalene, phenanthrene, phenol, and pyrene. Table C1-1 lists the sample identifications cross-referenced to laboratory identifications.

Data Review / Validation Results

Analytical Results
Ground water results are reported in mg/L. Qualified data are provided in Table C1-2. Non-detected results are reported as less than the value of the sample quantitation limit (SQL) as defined by the TRRP rule.

Preservation and Holding Times
Samples were evaluated for agreement with the chain-of-custody. All samples were received in the appropriate containers and in good condition with the accompanying paperwork filled out properly. Sample receipt temperatures (4.8, 4.3 and 4.1°C) were within the acceptance criteria of 4+/-2°C. Samples were preserved in the field as specified in SW-846 Table 2-36. Samples were prepared and analyzed within holding times specified in SW-846 Table 2-36.

Calibrations
According to the LRC, initial calibration and continuing calibration verification data met SW-846 method requirements for SVOC analyses. Instrument performance calibrations (GC/MS tunes) for SVOC analysis were satisfactory as noted in the LRCs.

Blanks
The SVOC method blank (MB) analyzed on July 25, 2005 at 9:10 had a detection (0.00048901 mg/L of di-n-butyl phthalate above the MDL. Samples P-12-2SA05, MW-10B-2SA05, FB-071905-2SA05, P-10-2SA05, P-10D-2SA05, and MW-11B-2SA05 had reported di-n-butyl phthalate detections less than ten times the MB concentration and were qualified as not-detected (U).

The SVOC method blank (MB) analyzed on July 25, 2005 at 9:10 had a detection (0.00023097 mg/L of bis(2-ethylhexyl)phthalate. Samples P-12-2SA05 and MW-8-2SA05 had reported di-n-butyl phthalate detections less than ten times the MB concentration and were qualified as not-detected (U).

The field blank (FB-071905-2SA05) had a detection (0.000608 mg/L) of di-n-butyl phthalate above the MDL. Associated samples P-12-2SA05, MW-10B-2SA05, P-10-2SA05, P-10D-2SA05, and MW-11B-2SA05 had reported di-n-butyl phthalate detections less than ten times the field blank concentration and were qualified as not-detected (U).

Internal Standard and Surrogate Recoveries
According to the LRC, SVOC internal standards were outside acceptance limits. The perylene-d12 internal standard area was above the laboratory acceptance limits for the extraction blank.

SVOCs associated with perylene-d12 were not requested or reported; therefore, qualifiers were not added to the data.

Surrogate recoveries for ground water SVOC analyses were within the laboratory QC objectives.

Laboratory Control Samples
SVOC laboratory control sample recoveries met the laboratory QC objectives.

Matrix Spike/Matrix Spike Duplicates
Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy results were within laboratory QC acceptance criteria for SVOC analysis.

Field Precision
Two (2) field duplicate samples were collected during this sampling event (MW-01A-2SA05/MW-01AD-2SA05 and P-10-2SA05/P-10D-2SA05). Field precision calculations are provided in Table C1-3. Both sample and duplicate (MW-01A-2SA05/MW-01AD-2SA05) were reported as detected for acenaphthene, acenaphthylene, anthracene, dibenzofuran, fluoranthene, fluorene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene. The calculated relative percent differences (RPDs) were within acceptance limits (20%).

Both sample and duplicate (P-10-2SA05/P-10D-2SA05) were reported as detected for acenaphthene, acenaphthylene, anthracene, dibenzofuran, di-n-butyl phthalate, fluoranthene, fluorene, naphthalene, and pyrene. The di-n-butyl phthalate RPD was within acceptance limits (20%). Acenaphthylene and pyrene RPDs exceeded 20%. The sample and duplicate concentrations were less than five times the sample adjusted MQL, and the difference in sample and duplicate concentrations were within two times the sample adjusted MQL. Therefore, qualifiers were not added to the data. Anthracene, acenaphthene, and fluoranthene RPDs exceeded 20%. The sample and duplicate concentrations were less than five times the sample adjusted MQL, but the difference in sample and duplicate concentrations were not within two times the sample adjusted MQL. Therefore, qualifiers were added to the samples P-10-2SA05 and P-10D-2SA05. Dibenzofuran, fluorine, and naphthalene RPDs exceeded 20%. The sample and duplicate sample concentrations were greater than five times the sample adjusted MQL. Additionally, the RPDs exceeded 30%. Therefore, qualifiers were added to the sample P-10-2SA05 and P-10D-2SA05.

Field Precision
Samples were collected using the TCEQ-approved Ground Water Sampling and Analysis Plan.

Summary

Ground water analytical data are usable for the purpose of determining constituent concentrations in ground water for comparison to PQLs or background. The user is advised that samples P-12-2SA05, MW-10B-2SA05, FB-071905-2SA05, P-10-2SA05, P-10D-2SA05, and MW-11B-2SA05 were qualified as not-detected (U) for di-n-butyl phthalate due to method blank detections above the MDL. Samples P-12-2SA05 and MW-8-2SA05 were qualified as not-detected (U) for bis(2-ethylhexyl)phthalate due to method blank detections. Sample P-10-2SA05 and P-10D-2SA05 was qualified as estimated (J) for anthracene, fluoranthene, acenaphthene, dibenzofuran, fluorine, and naphthalene due to sample/duplicate precision outside acceptance limits.

Table C1-1 - Cross-Reference Field Sample Identification and Laboratory Identification

Field Identification	*Laboratory Identification*
P-12-2SA05	299296-1
MW-8-2SA05	299296-2
MW-10A-2SA05	299296-3
MW-10B-2SA05	299296-4
MW-2-2SA05	299296-5
MW-2MS-2SA05	299296-6
MW-2MSD-2SA05	299296-7
MW-7-2SA05	299296-8
FB-071905-2SA05	299296-9
MW-11A-2SA05	299296-10
MW-01A-2SA05	299296-11
MW-01AD-2SA05	299296-12
P-10-2SA05	299296-13
P-10D-2SA05	299296-14
MW-11B-2SA05	299296-15

NOTES:
FB-071905 is a distilled water field blank.
MW-01AD-2SA05 is a blind duplicate of MW-01A-2SA05.
P-10D-2SA05 is a blind duplicate of P-10-2SA05.
MW-2MS-2SA05 is a matrix spike.
MW-2MSD-2SA05 is a matrix spike duplicate.

TABLE C-2

Qualified Analytical Data
Laboratory Package 299296

Houston Wood Preserving Works Site
Union Pacific RailRoad

Field Identification	Analyte	Qualification	Reason for Qualification
P-12-2SA05	di-n-butyl phthalate	U	Method Blank (MB) detection above MDL
MW-10B-2SA05	di-n-butyl phthalate	U	Method Blank (MB) detection above MDL
FB-071905-2SA05	di-n-butyl phthalate	U	Method Blank (MB) detection above MDL
P-10-2SA05	di-n-butyl phthalate	U	Method Blank (MB) detection above MDL
P-10D-2SA05	di-n-butyl phthalate	U	Method Blank (MB) detection above MDL
MW-11B-2SA05	di-n-butyl phthalate	U	Method Blank (MB) detection above MDL
P-12-2SA05	bis(2-ethylhexyl)phthalate	U	Method Blank (MB) detection
MW-8-2SA05	bis(2-ethylhexyl)phthalate	U	Method Blank (MB) detection
P-12-2SA05	di-n-butyl phthalate	U	Field Blank detection above MDL
MW-10B-2SA05	di-n-butyl phthalate	U	Field Blank detection above MDL
FB-071905-2SA05	di-n-butyl phthalate	U	Field Blank detection above MDL
P-10-2SA05	di-n-butyl phthalate	U	Field Blank detection above MDL
P-10D-2SA05	di-n-butyl phthalate	U	Field Blank detection above MDL
MW-11B-2SA05	di-n-butyl phthalate	U	Field Blank detection above MDL
P-10-2SA05	anthracene	J	Sample/Duplicate precision outside criteria
P-10-2SA05	fluoranthene	J	Sample/Duplicate precision outside criteria
P-10-2SA05	acenaphthene	J	Sample/Duplicate precision outside criteria
P-10-2SA05	dibenzofuran	J	Sample/Duplicate precision outside criteria
P-10-2SA05	fluorene	J	Sample/Duplicate precision outside criteria
P-10-2SA05	naphthalene	J	Sample/Duplicate precision outside criteria
P-10D-2SA05	anthracene	J	Sample/Duplicate precision outside criteria
P-10D-2SA05	fluoranthene	J	Sample/Duplicate precision outside criteria
P-10D-2SA05	acenaphthene	J	Sample/Duplicate precision outside criteria
P-10D-2SA05	dibenzofuran	J	Sample/Duplicate precision outside criteria
P-10D-2SA05	fluorene	J	Sample/Duplicate precision outside criteria
P-10D-2SA05	naphthalene	J	Sample/Duplicate precision outside criteria

NOTES:

U = Not detected
J = Estimated data: the reported quantitation limit or sample concentration is approximated due to exceedance of one or more QC requirements.
H = Bias in sample result likely to be high.
L = Bias in sample result likely to be low.

TABLE C-3

Field Precision
Laboratory Package 299296

Houston Wood Preserving Works Site
Union Pacific RailRoad

Field Identification	Analyte	Sample Result	Duplicate Result	RPD	Qualified
MW-01A-2SA05/MW-01AD-2SA05	2-methylnaphthalene	0.0557	0.0479	15	A
MW-01A-2SA05/MW-01AD-2SA05	acenaphthene	0.245	0.222	10	A
MW-01A-2SA05/MW-01AD-2SA05	acenaphthylene	0.00221	0.00218	1	A
MW-01A-2SA05/MW-01AD-2SA05	anthracene	0.0101	0.0107	-6	A
MW-01A-2SA05/MW-01AD-2SA05	dibenzofuran	0.110	0.103	7	A
MW-01A-2SA05/MW-01AD-2SA05	fluoranthene	0.0139	0.0141	-1	A
MW-01A-2SA05/MW-01AD-2SA05	fluorene	0.137	0.125	9	A
MW-01A-2SA05/MW-01AD-2SA05	naphthalene	0.0216	0.0233	-8	A
MW-01A-2SA05/MW-01AD-2SA05	phenanthrene	0.0233	0.0237	-2	A
MW-01A-2SA05/MW-01AD-2SA05	pyrene	0.00593	0.00641	-8	A
P-10-2SA05/P-10D-2SA05	acenaphthene	0.0737	0.0462	46	J
P-10-2SA05/P-10D-2SA05	acenaphthylene	0.000476	0.000320	39	A*
P-10-2SA05/P-10D-2SA05	anthracene	0.00346	0.00169	69	J
P-10-2SA05/P-10D-2SA05	dibenzofuran	0.0314	0.0168	61	J
P-10-2SA05/P-10D-2SA05	di-n-butyl phthalate	0.000481	0.000414	15	A
P-10-2SA05/P-10D-2SA05	fluoranthene	0.00240	0.00114	71	J
P-10-2SA05/P-10D-2SA05	fluorene	0.0364	0.0198	59	J
P-10-2SA05/P-10D-2SA05	naphthalene	0.464	0.283	48	J
P-10-2SA05/P-10D-2SA05	pyrene	0.00102	0.00050	69	A*

NOTES:

All results in mg/L.

RPD = ((SR-DR)*200)/(SR+DR)
A = Acceptable data
A* = Acceptable data based on Tables D-1 and D-2 of the TRRP-13 guidance.
J = Estimated data due to inability to meet QC criteria.

APPENDIX C

Data Usability Summary for Laboratory Package 302323

Houston Wood Preserving Works
Union Pacific Railroad
Houston, Texas

Environmental Resources Management reviewed one laboratory analytical data package (302323) from Severn Trent Laboratories of Houston, Texas for the analysis of three water samples collected on September 8, 2005 at the Union Pacific Railroad Houston Wood Preserving Works Site. Data were reviewed to assess conformance with the requirements of the *Review and Reporting of COC Concentration Data* TRRP-13 (December 2002), and adherence to project data quality objectives.

Intended Use of Data: To provide data on current concentration of dibenzofuran in ground water at site well MW-1A for comparison to TRRP protective concentration level (PCL).

The data generated were evaluated in terms of representativeness, precision, accuracy, completeness and comparability.

Analysis requested included:

SW-846 8270C – Semi-Volatile Organic Compounds (SVOCs) by Gas Chromatography/Mass Spectrometry (GC/MS).

Data were reviewed and validated as described in the TRRP-13 Guidance Document and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals were reviewed by ERM:

- Analytical data report and chain-of-custody,
- Laboratory review checklists (LRC), and
- Laboratory quality control (QC) data.

The laboratory data package is provided as an attachment to this evaluation.

Introduction

One ground water sample and one field duplicate were collected and analyzed for dibenzofuran. One trip blank was also collected as part of this sampling event, but analysis was not performed. Table C2-1 lists the sample identifications cross-referenced to laboratory identifications.

Project Data Quality Objectives (DQO)

Organic Compounds
Recovery 60-140%
Relative Percent Difference 0-40%

Data Review / Validation Results

Analytical Results
Water analytical results are reported in mg/L. Non-detected results are reported as less than the value of the sample quantitation limits (SQLs) as defined by the TRRP Rule. Method detection limits (MDLs) and method quantitation limits (MQLs) were provided as part of the analytical report.

Preservation and Holding Times
The samples were evaluated for agreement with the chain-of-custody. The samples were received in the appropriate containers and in good condition with the paperwork filled out properly. The laboratory noted that the trip blank (two 40-ml vials preserved with HCl) had insufficient sample volume for analysis. Therefore, SVOC analysis was not performed for the trip blank. Sample receipt temperature (4.2 degrees Celsius) was within the acceptance criteria of 4 +/- 2 degrees Celsius. The samples were preserved in the field as specified in SW-846 Table 2-36. The samples were prepared and analyzed within holding times as specified in SW-846 Table 2-36.

Calibrations, Internal Standards, and Instrument Tunes
According to the LRC, initial calibration, continuing calibration, and calibration verification data were within the method QC limits for SVOC analysis, as were the internal standards. The LRC also documented satisfactory mass spectral tunes for SVOC analysis.

Blanks
Dibenzofuran was not reported detected above the MDL in the method blank.

Surrogate Recoveries
Surrogate recoveries were within DQO limits for base-neutral SVOC analysis. Recoveries for acid surrogates (i.e., 2-fluorophenol and phenol-d6) were less than DQO limits. However, no acid SVOCs were reported for this laboratory analytical package. Therefore, no qualification of the data was necessary.

Laboratory Control Samples
Laboratory control sample recovery for dibenzofuran was within DQO limits.

Matrix Spike/Matrix Spike Duplicates
MS/MSD recoveries for dibenzofuran were below DQO limits. The laboratory selected sample MW-1A for the MS/MSD analysis. The spiking amount was less than one-fourth the unspiked, parent sample concentration. Based on professional judgment, the

MS/MSD results did not represent the matrix effect. Therefore no qualifiers were assigned. The relative percent difference was within DQO limits.

Laboratory Sample Duplicate
The MSD served as a duplicate sample. An additional laboratory sample duplicate was not required by the method.

Post Digestion Spike and Serial Dilution Test
A post digestion spike and serial dilution test were not required by the method.

Field Precision
A field duplicate was collected for this sampling event. DUP-1 was a field duplicate of sample MW-1A. Dibenzofuran was reported detected at 0.133 mg/L in sample MW-1A and at 0.115 mg/L in sample DUP-1. The calculated RPD of 14.5% was within QC acceptance limit.

Field Procedures
The samples were collected using TCEQ-approved sampling procedures.

Summary

The water analytical data are useable for the purpose of providing data on current concentration of dibenzofuran at well MW-1A at the Union Pacific Railroad Houston Wood Preserving Works Site in Houston, Texas. No qualifiers were assigned during this data review.

Table C2-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
Trip Blank	302323-1
DUP-1	302323-2
MW-1A	302323-3
Note: DUP-1 is a field duplicate of MW-1A.	

Appendix C Example Data Usability Review Evaluation Tool

All of the QC criteria in the following evaluation tools are for examples only. The QC criteria in these evaluation tools should be replaced with project specific criteria developed during the planning process (See the TCEQ document, *Assessment Planning* (See RG-366/TRRP-6)). Also, if the item addresses supporting data beyond what is included in the LRC, and a supplementary data usability review was not necessary, an entry in the "NA" column is recommended.

Data Usability Review Evaluation Tool: Data Package				
Client Name: Union Pacific Railroad	Project Number: 0014419 / 0006			
Affected Property Location: Houston Wood Preserving Works	Project Manager: Chris Young			
Laboratory: Severn Trent Laboratories	Laboratory Job No: 302323			
Reviewer: ERM (HTV)	Date Checked: October 11, 2005			
ITEM	**YES**	**NO**	**N/A**	**COMMENTS**
R1 Date of sample collection included?	X			September 8, 2005
R1 Sample receipt temperature 2-6°C?	X			4.2 degrees Celsius
R1 Signed C-O-Cs included?	X			
R2 Field I.D. included?	X			
R2 Laboratory I.D. included?	X			
R3 Date of analysis included?	X			
R3 Date of sample prep. included?	X			
R3 Detection levels included?	X			
R3 Holding time to analysis expired?		X		
R3 Holding time to prep expired?		X		
R3 Met method quantitation limits?	X			
R3 Method reference included?	X			SW-846 8270C
R3 Sample matrix included?	X			Ground water
R3 Sample results included?	X			mg/L
R9 Evaluate unadjusted MQLs?			X	
R10 Exception reports included, where required?	X			
R10 Are justifications for elevated SQLs provided?			X	
Definitions: AA – Atomic Absorption; %D – Percent Difference; ICP – Inductively Coupled Plasma; IDL – Instrument Detection Limit; MDL – Method Detection Limit; %R – Percent Recovery; RF – Response Factor; RPD – Relative Percent Difference; RRT – Relative Retention Times; RSD – Relative Standard Deviation				
COMMENTS				
1 ground water sample; 1 field duplicate; 1 trip blank.				
DUP-1 is a field dup of MW-1A.				
DQO limits: 60-140% recovery; 40% RPD				
Dibenzofuran by 8270.				
Lab noted that not enough sample volume was available for trip blank analysis.				

Note: Submittal of Appendix D tables to the TCEQ is not required. Appendix D is intended as an example checklist tool the data reviewer may find helpful for documenting the rationale used to determine data usability.

All of the QC criteria in the following evaluation tool are for examples only. The QC criteria in these evaluation tools should be replaced with project specific criteria developed during the planning process (See the TCEQ document, *Assessment Planning* (See RG-366/TRRP-6)). Also, if the item addresses supporting data beyond what is included in the LRC, and a supplementary data usability review was not necessary, an entry in the "NA" column is recommended.

Data Usability Review Evaluation Tool: GC/MS QC (Dibenzofuran by 8270C)				
Client Name: Union Pacific Railroad	Project Number: 0014419 / 0006			
Affected Property Location: Houston Wood Preserving Works	Project Manager: Chris Young			
Laboratory: Severn Trent Laboratories	Laboratory Job No: 302323			
Reviewer: ERM (HTV)	Date Checked: October 11, 2005			
ITEM	**YES**	**NO**	**N/A**	**COMMENTS**
R4 Surrogate Data Included in Lab Package?	X			Recoveries for base-neutral surrogates within DQO limits.
Required surrogates included?	X			
Recoveries within limits (see below OR Lab Limits or DQO Limits)? (Reject <10%R)	X			Recoveries for acid surroages were below DQO limits. No acid SVOCs reported.
Areas within limits? (within -50% to+100% of last calibration check)			X	Per LRC, QC data ok.
RRT within limits? (< 30 sec. difference from last calibration check)			X	Per LRC, QC data ok.
R5 Method Blank Data Included in Lab Package?	X			
Criteria met? (<5X RL for lab contamination; <RL for others))	X			
R6 QC Check Samples/LCS Data Included in Lab Package?	X			
% Recovery criteria met? 70-130%R OR Lab Limits or DQO Limits	X			
R7 Matrix Spike Data Included in Lab Package?	X			MS/MSD sample was MW-1A.
%R criteria met? 70-130% OR Lab Limits or DQO Limits		X		MS was not spiked with dibenzofuran. Spike amount for MSD < ¼ parent concentration.
RPD criteria met? 25 RPD H_20, 50 RPD Soils or Lab	X			
S1 Initial Calibration Data Included in Lab Package?		X		
RF criteria met for SPCC?*; RRF < 0.05 must be rejected			X	Per LRC, QC data ok.
%RSD criteria met for CCC?**; (<30%RSD for CCC; >15% RSD must have fit)			X	Per LRC, QC data ok.
S2 Continuing Calibration Data Included in Lab Package?		X		
RF criteria met for SPCC?*; RRF < 0.05 must be rejected			X	Per LRC, QC data ok.
% Difference (%D) criteria met for CCC?** 20% D Max; Qualify if >25%D			X	Per LRC, QC data ok.
S3 Instrument Tune for GC-MS Included In Lab Package?		X		Per LRC, QC data ok.
S4 Internal Standard Data Included in Lab Package?		X		Per LRC, QC data ok.

Note: Submittal of Appendix D tables to the TCEQ is not required. Appendix D is intended as an example checklist tool the data reviewer may find helpful for documenting the rationale used to determine data usability.

Data Usability Review Evaluation Tool: GC/MS QC (continued)

Client Name: Union Pacific Railroad	Project Number: 0014419 / 0006
Affected Property Location: Houston Wood Preserving Works	Project Manager: Chris Young
Laboratory: Severn Trent Laboratories	Laboratory Job No: 302323
Reviewer: ERM (HTV)	Date Checked: October 11, 2005

SURROGATE	H_2O (%R)	SOIL (%R)	NOTES:
1,2-Dichloroethane-d_4	80-120	80-120	
Dibromofluoromethane	86-118	80-120	
Toluene-d_8	88-110	81-117	
Bromofluorobenzene	86-115	74-121	
Nitrobenzene-d_5	35-114	23-120	X
2-Fluorobiphenyl	43-116	30-115	X
Terphenyl-d_{14}	33-141	18-137	X
Phenol-d_5	10-94	24-113	X
2-Fluorophenol	21-100	25-121	X
2,4,6-Tribromophenol	10-123	19-122	X
2-Chlorophenol-d_4	33-110	20-130	
1,2-Dichlorobenzene-d_4	16-110	20-130	

Notes:

1. Circle applicable QC criteria.
2. Repeat form as needed.

* SPCC (System Performance Check Compounds): chloromethane (0.1), 1,1-dichloroethane (0.1), bromoform (0.1), 1,1,2,2-tetrachloroethane (0.3) and chlorobenzene (0.3) (volatiles); nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2-4-dinitrophenol and 4-nitrophenol (semi-volatiles.)

** CCC (Calibration Check Compounds) are 1,1-dichloroethene, chloroform, 1,2-dichloropropane, toluene, ethylbenzene, and vinyl chloride (volatiles); acenaphthene, 1,4-dichlorobenzene, hexachlorobutadiene, nitroso-di-n-phenylamine, di-n-octylphthalate, fluoranthene, benzo(a)pyrene, 4-chloro-3-methylphenol, 2,4-dichlorophenol, 2-nitrophenol, phenol, pentachlorophenol, and 2,4,6-trichlorophenol.

Note: Submittal of Appendix D tables to the TCEQ is not required. Appendix D is intended as an example checklist tool the data reviewer may find helpful for documenting the rationale used to determine data usability.

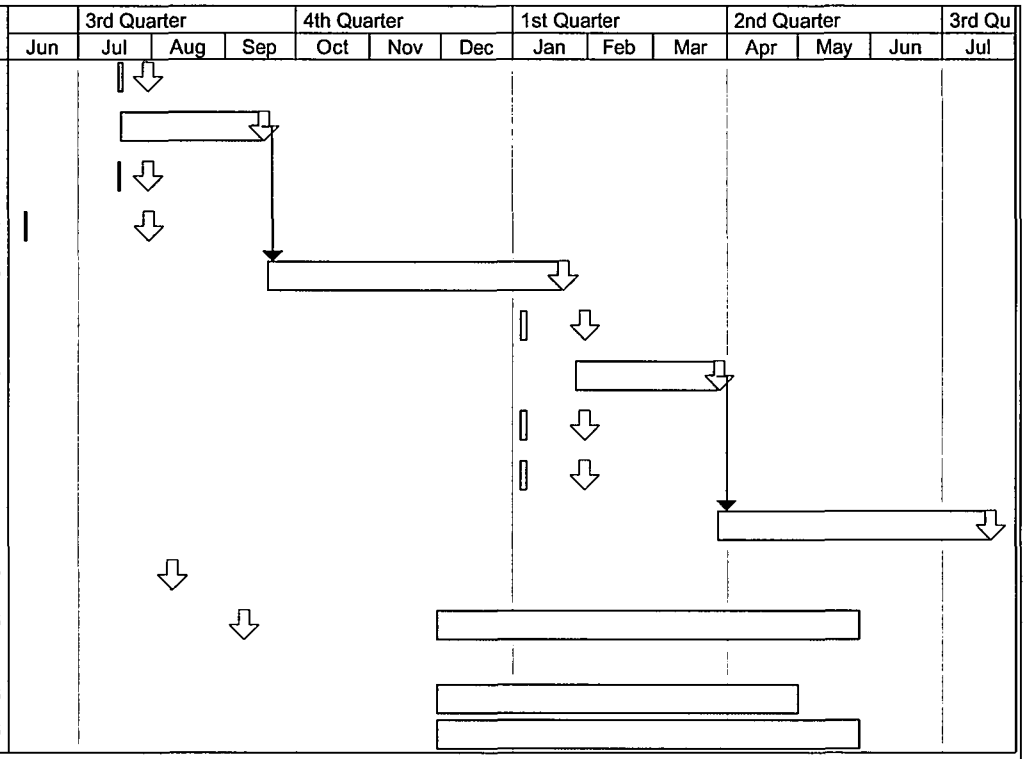
Updated Compliance Schedule

Appendix D

January 20, 2006
Project No. 0014419

Environmental Resources Management
15810 Park Ten Place, Suite 300
Houston, Texas 77084-5140
(281) 600-1000

ID	Task Name	Start	Finish
1	Corrective Action Monitoring: Ground Water Monitoring Program (2H05): Section VI.C.	7/18/05	7/19/05
2	Ground Water Monitoring Program Data Evaluation (2H05): Section VI.C.	7/19/05	9/17/05
3	Water Level Measurements (2H05) Section: VI.C.4.a	7/18/05	7/18/05
4	Well Inspections (2H05) Section: VI.C.4.e	6/8/05	6/8/05
5	Ground Water Monitoring Program (2H05) Reporting: Section VII.C.2	9/19/05	1/20/06
6	Corrective Action Monitoring: Ground Water Monitoring Program (1H06): Section VI.C.	1/4/06	1/6/06
7	Ground Water Monitoring Program Data Evaluation Section (1H06): Section VI.C.	1/27/06	3/28/06
8	Water Level Measurements (1H06): Section VI.C.4.a	1/4/06	1/6/06
9	Well Inspections (1H06): Section VI.C.4.e	1/4/06	1/6/06
10	Ground Water Monitoring Program (1H06) Reporting: Section VII.C.2	3/28/06	7/21/06
11	Compliance Activity Schedule to TCEQ: Section X.A	8/9/05	8/9/05
12	Results of ground water delineation downgradient of POC Wells to TCEQ: Section X.A.	11/29/05	5/26/06
13	Affected Property Assessment	11/29/05	4/30/06
14	Addebdum to APAR to TCEQ	11/29/05	5/26/06



Project:HWPW Compliance Schedule
Date: 1/9/06

Task
Split
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Split
Rolled Up Milestone
Rolled Up Progress
External Tasks
Project Summary
External Milestone
Deadline

G:/2006/0014419/7916AppD.pdf