Sediment Characterization Report
Terminal 6 Berths 603, 604, and 605
N Marine Drive, Portland, Oregon

Prepared for
Port of Portland

March 14, 2011
15737-00

HARTCROWSER

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ACRONYMS

ARI	Analytical Resources, Inc.
COC	chemical of concern
Corps	U.S. Army Corps of Engineers
CRD	Columbia River Datum
cy	cubic yard
DEHP	*bis*(2-ethylhexyl) phthalate
DEQ	Oregon Department of Environmental Quality
DMEF	Dredged Material Evaluation Framework
DMMU	Dredge material management unit
EPA	Environmental Protection Agency
GPS	global positioning system
HPAHs	high molecular weight polynuclear aromatic hydrocarbons
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LPAHs	low molecular weight polynuclear aromatic hydrocarbons
MDL	method detection limit
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
MRL	method reporting limit
MS	matrix spike
MSD	matrix spike duplicate
NSM	new surface material
NUC	Northwest Underwater Construction
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
Port	Port of Portland
PRG	Project Review Group
QA/QC	quality assurance/quality control
RM	river mile
SAP	Sampling and Analysis Plan
SEF	Sediment Evaluation Framework for the Pacific Northwest
SL	screening level
SVOC	semivolatile organic compound
TBT	tributyltin
TOC	total organic carbon
Total DDx	DDT, DDE, and DDD
TPH	total petroleum hydrocarbons

SEDIMENT CHARACTERIZATION REPORT
TERMINAL 6 BERTHS 603, 604, AND 605
N MARINE DRIVE, PORTLAND, OREGON

1.0 INTRODUCTION

The Port of Portland (Port) proposes to conduct a maintenance dredging event at Terminal 6, Berths 603, 604, and 605 along the south bank of the Columbia River on the Oregon Slough in Portland, Oregon (Figure 1). To provide chemical quality data on sediment to be dredged and the future "leave surface" or new surface material (NSM), sediment characterization activities were completed in accordance with the Sediment Evaluation Framework (SEF) for the Pacific Northwest (U.S. Army Corps of Engineers [Corps] et al., 2009) and our Sampling and Analysis Plan (SAP) (Hart Crowser, 2011) as modified by comments from the Project Review Group (PRG, 2011). This report presents the results and findings of these activities.

1.1 Terminal 6 and Berth Descriptions

Terminal 6 is located at 7201 N Marine Drive in Portland, Oregon, along the south bank of the Columbia River on the Oregon Slough. The terminal spans approximately 1.5 miles beginning at river mile (RM) 102 on the Columbia River and ending upstream at RM1 on the Oregon Slough (Figure 1). Terminal 6 has five berths (Berths 601, 603, 604, 605, and 607). Berths 601 and 607 are used for the unloading of Hyundai and Honda automobiles, respectively. Berths 603, 604, and 605, the focus of this report, are used to transfer containers and steel slabs between ocean-going ships and the dock. These berths are contiguous with a berthing area approximately 150 feet wide and 3,060 feet long across all the berths at its longest edge.

Figure 2 shows Berths 603, 604, and 605, along with a May 2010 bathymetric survey conducted by the Port. Sediment contours are relative to the Columbia River Datum (CRD). A description of these berths is as follows.

- *Berth 603.* This berth is approximately 1,180 feet long. Based on the survey, the river bottom within the berthing area varies from approximately -39 to -46 feet CRD. The design depth of Berth 603 is -40 feet CRD.
- *Berth 604.* This berth is approximately 900 feet long. The western portion (i.e., Berth 604-West) varies in river bottom depth from approximately -40 to -47 feet CRD. The design depth of Berth 604-West is -43 feet CRD. For the eastern portion (i.e., Berth 604-East), the river bottom varies from approximately -42 to -54 feet CRD. The design depth of Berth 603-East is -45 feet CRD.

- *Berth 605.* This berth is approximately 978 feet long. Based on the survey, the river bottom within the berthing area varies from approximately -42 to -49 feet CRD. The design depth of Berth 605 is -45 feet CRD.

1.2 Previous Sediment Characterization Activities

Previous sediment characterization and berth maintenance events for Berths 603, 604, and 605 are discussed in the SAP (Hart Crowser, 2011). In summary, the Port performed dredging of Berths 603, 604, and 605 in the 2002/2003 (maintenance dredging) and 2007/2008 (maintenance and deepening dredging) in-water work windows. Underwater grading had also been performed in February 2006 to remove high spots. Since 2004, sediment characterizations conducted prior to and after dredging detected the following chemical contaminants above either SEF or Dredged Material Evaluation Framework (DMEF) screening levels (SLs): tributyltin (TBT), *bis* (2-ethylhexyl) phthalate (DEHP), and total DDx (DDT and its breakdown products, DDD and DDE). These three compounds are the chemicals of concern (COCs) for sediment at Berths 603, 604, and 605.

1.3 Project Description

Maintenance dredging is needed due to the gradual and persistent deposition of river sediment in the berthing areas that compromises the authorized navigational depth clearances required for ships. The Port conducts maintenance dredging under Corps permit NWP-2006-635 (expiration January 31, 2017) issued under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act and Oregon DSL permit 34105-RF (expiration July 18, 2013).

In-water dredging activities will be performed during the Columbia River in-water work window from November 1 through February 28. Project specifics for each berth are presented below, including the authorized dredging depths (per Corps permit NWP-2006-635 and the water quality certification from the Oregon Department of Environmental Quality [DEQ]), the approximate leave surface elevation for NSM considering overdredge for maintenance and inherent dredging accuracy, and the estimated volume of sediment to be dredged. Figure 2 shows the sediment areas requiring dredging for Berths 603, 604, and 605.

- *Berth 603.* The permitted design depth is -40 feet CRD plus up to 2 feet of overdredge allowance for in-fill and dredging tolerance. The leave surface would likely average -41 feet CRD. The estimated volume of sediment to be dredged ranges from approximately 200 to 2,000 cubic yards (cy).
- *Berth 604-West.* The permitted design depth is -43 feet CRD plus up to 2 feet of overdredge allowance for in-fill and dredging tolerance. The leave surface

would likely average -44 feet CRD. The estimated volume of sediment to be dredged ranges from approximately 500 to 1,500 cy.

- *Berths 604-East and 605.* The permitted design depth is -45 feet CRD plus up to 3 feet of overdredge allowance for in-fill and dredging tolerance. The leave surface would likely average -46 feet CRD. The estimated volume of sediment to be dredged ranges from approximately 4,000 to 12,000 cy.

The Port will use its standard berth dredging methods, which are designed and have been previously demonstrated to minimize water quality impacts. A clamshell dredge will remove sediments using a close-lipped bucket operated either from the dock or from a floating crane. The depth and position of the bucket and dredge would be monitored by visual and positioning computer systems, including a global positioning system (GPS). The dredge material will be placed in a barge for transport and placement at an in-water placement site, an upland placement facility (West Hayden Island or Suttle Road Placement Facilities), or another approved beneficial use site. Placement of this dredged material at the upland placement facilities is not anticipated to generate return water to the Columbia River.

2.0 SEDIMENT CHARACTERIZATION OBJECTIVES

The overall objective of this sediment characterization study was to characterize the quality of the proposed dredge material and NSM. Specific objectives of the study were to:

- Characterize sediment affected by proposed dredging activities along the berths (i.e., the dredge prism) to document the quality of the sediments;
- Additionally, characterize the underlying NSM (a.k.a. leave surface) along the berths to document the chemical quality of these remaining sediments;
- Collect, handle, and analyze samples representative of the dredge prism and NSM sediments in accordance with the SEF;
- Compare the sediment analytical results to applicable SLs to evaluate the nature of the dredge prisms and NSM sediments; and
- Evaluate and report the results of the analytical sediment testing in a complete and timely manner to support the necessary maintenance dredging activities.

Sediment characterization activities were conducted in accordance with our SAP (Hart Crowser, 2011), comments from the PRG (PRG, 2011), the SEF, and an EPA technical manual for sediment sampling (EPA, 2001). Quality assurance/quality

control (QA/QC) procedures described in our Quality Assurance Project Plan in the SAP were followed.

3.0 SAMPLING AND ANALYSIS ACTIVITIES

This section summarizes the sampling activities and presents the analytical program for the dredge prism and NSM samples. Our activities also included collecting a reference sample in the Columbia River for contingency biological testing (based on chemical results on sediment, biological testing was not necessary).

3.1 Sediment Core Sampling

On February 1 and 4, 2011, Northwest Underwater Construction (NUC) of Vancouver, Washington (under subcontract to Hart Crowser), obtained five sediment cores from along Terminal 6. A representative of Hart Crowser was present to observe and document the coring activities and to collect dredge prism and NSM samples for analysis. Logs of the cores are included in Appendix A.

Locations. Cores C1 through C5 were obtained from along Berths 603, 604, and 605 at the locations shown on Figure 2. In our SAP, one core had been proposed within the berthing area of Berth 603. Due to the low volume of sediment to be dredged (as little as 200 cy) at Berth 603, the PRG recommended this core location be moved to Berth 604-East to better characterize the larger volume of dredge prism in this area. This recommended change was done and is represented by core C3. Positioning over each core location was performed using a global positioning system (GPS). Table 1 includes the coordinates of each core sample location.

Field Coring Procedures. Cores were obtained using a vibracorer with a 4-inch-diameter core barrel deployed from a sampling vessel operated by NUC. Cores were advanced to a depth of 6 feet, penetrating through the proposed dredge prism and the uppermost 1-foot of NSM that will remain after dredging. Sediment was contained in a polycarbonate liner inside of the core barrel. To obtain enough sediment for potential testing, two cores were obtained from each location except C4 where one core was completed. Upon retrieval of the vibracorer, the liner with core was removed from the core barrel, and the ends sealed with caps. The sediment core was examined for acceptance. Core recoveries ranged from 75 to 93 percent. Table 1 presents the sampling information, including core identification, mudline elevations, and target sample intervals. The sediment cores were then transported to our office for processing.

Core Processing for Samples. In the processing area, the core liners were split lengthwise and sediment photographed and described (including, as appropriate, physical description, odor, visual stratification, debris, and biological activity). As described further below, samples were collected from the dredge prism and NSM from each core. Containers for both chemical and contingency biological testing were filled with sediment. Samples were labeled with the core location (C1 to C5), and the depth of the sample horizon (e.g., no suffix for dredge prism, and the suffix Z for the NSM sample [a.k.a. a Z-sample]). At the recommendation of the PRG, three dredge material management units (DMMUs) were designed for characterization (Figure 2):

- *DMMU 1.* Consisting of dredge areas from Berths 603 and 604-West, and represented by core location C5. The estimated volume of sediment to be dredged from DMMU 1 ranges from approximately 700 to 3,500 cy.
- *DMMU 2.* Consisting of dredge areas from Berth 604-East and the western portion of Berth 605, and represented by core locations C2, C3, and C4. The estimated volume of sediment to be dredged from DMMU 2 ranges from approximately 4,000 to 9,500 cy.
- *DMMU 3.* Consisting of dredge areas from the eastern Berths 605, and represented by core location C1. The estimated volume of sediment to be dredged from DMMU 3 ranges from approximately 1,000 to 2,500 cy.

Dredge Prism Samples. After logging, sediment representing the entire depth of the dredge prism from each core was placed into a stainless steel bowl and homogenized with a stainless steel spoon until both color and texture were uniform. A discrete sample (e.g., C1) was then obtained. As samples C5 and C1 represented DMMUs 1 and 3, respectively, these samples were submitted for analysis. The other discrete samples (e.g., C2) were archived. For DMMU 2, equal portions of the homogenized contents of cores C2, C3, and C4 were then combined (composited) into composite sample C2-4 for analysis. Table 1 summarizes sampling scheme used for the DMMUs.

NSM Samples. The sampling procedure above was also used for the NSM samples. NSM consisted of the first 2 feet of sediment below the dredge prism of each core. After homogenization, discrete samples C5Z and C1Z were collected to represent the NSM beneath DMMUs 1 and 3, respectively. To compare data on the composite sample for DMMU 3 with the NSM beneath it, a composite sample of the NSM was collected (C2-4Z). Discrete samples of C2Z, C3Z, and C4Z were archived.

3.2 Reference Sediment Sampling

On February 9, 2011, we collected reference sediment for contingency biological testing from Columbia River RM 98.5 near Caterpillar Island on the north side of the river. NUC (under subcontract to Hart Crowser) used a grab sampler to obtain the sample from the upper foot of sediment. Reference sediment was comprised of a slightly silty sand, similar to sediment consistency observed at Terminal 6. Sediment retrieved by the grab sampler was placed in a stainless steel bowl, homogenized, and then transferred into sample containers for possible chemical and biological testing. Table 1 presents reference sample identification ("Reference B") , coordinates, and mudline depth.

3.3 Analytical Program

Samples collected in Section 3.1 and 3.2 for chemical analysis were submitted under chain of custody to Analytical Resources, Inc. (ARI), of Tukwila, Washington (under subcontract to Hart Crowser). Samples not analyzed and remaining sediment from analyzed samples were archived at ARI by freezing. We also archived sediment samples for contingency biological testing in a refrigerator at our office pending chemical analyses results.

3.3.1 Dredge Prism Samples

Dredge prism samples for the three DMMUs were analyzed to assess the chemical quality of newly deposited sediment, evaluate whether sediments could qualify for in-water placement, and perform a DEQ beneficial use determination for upland placement. The samples were analyzed for the physical and chemical analyses listed below.

- Grain size by ASTM D 422M;
- Total solids by EPA Method 160.3;
- Total organic carbon (TOC) by Plumb (1981);
- Ammonia by EPA Method 350.1M;
- Sulfide by EPA Method 376.2;
- Total petroleum hydrocarbons (TPH) as diesel and oil;
- Total metals (antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc) by EPA Method 200.8/6010B/7471A;
- TBT in bulk sediment by Krone, et al. (written 1988; published 1989);
- Polynuclear aromatic hydrocarbon (PAHs) by EPA Method 8270D-SIM;

- Semivolatile organic compounds (SVOCs) by EPA Method 8270D;
- Organochlorine pesticides by EPA Method 8081A; and
- Polychlorinated biphenyls (PCBs) by EPA Method 8082.

After receipt of chemical results, TBT in sample C5 (DMMU 1) was detected slightly above the SEF SL for bulk sediment. At the recommendation of the PRG, we analyzed this sample for TBT in porewater by Krone, et al., to assess the bioavailability (dissolved fraction) of TBT to the aquatic environment. This analysis was conducted in lieu of biological testing.

3.3.2 NSM Samples

The three NSM samples corresponding to the three DMMUs were analyzed for the COCs identified by previous characterization activities at the site. Due to holding time constraints and the possibility that biological testing might be performed, several convention parameters were also analyzed for. As such, the NSM samples were analyzed for the chemical compounds listed below using the methods indicated above in Section 3.3.1.

- Total solids;
- Total sulfides;
- Ammonia;
- TBT in bulk sediment;
- DEHP; and
- Total DDx (DDT, DDE, and DDD).

Because analytical results did not identify any other contaminants above SLs in the overlying dredge prism samples, no additional chemical analyses were performed on NSM samples. Biological testing was also not performed because no SLs were exceeded in NSM samples.

3.3.3 Reference Sample

No analyses were conducted on the reference sample. The sample was submitted to ARI for the chemical analyses specified in the SAP; however, when chemical results on the dredge prism and NSM samples were received which indicated that biological testing was not warranted, the requested analyses on the reference sample were cancelled.

3.4 Modifications to the SAP

Field activities and the analytical program were conducted in accordance with the SAP (Hart Crowser, 2011). Some modifications were made as explained below, including incorporation of recommendations from the PRG (PRG, 2011).

- Sample location A in the SAP was moved from the berthing area of Berth 603 to the berthing area of Berth 604-East (location C3) per the PRG's recommendation. The anticipated volume of dredge material at Berth 603 was relatively low, and moving this location to an area of greater dredging volume would better characterize the Berth 604-East area (DMMU 2).
- The SAP proposed one DMMU. The PRG recommended three DMMUs so that chemical results on each DMMU dredge prism samples could be directly compared with its underlying NSM sample.
- A grab sampler was used to obtain the reference sample instead of using a vibracore. This change was necessitated by equipment availability as the reference sample was obtained on a different mobilization. The intent of reference sampling is to obtain sediment similar to the site and is not depth or method dependent.
- The PRG recommended collecting sediment for possible analysis for TBT in porewater should TBT be detected in bulk sediment above its SEF SL. The analysis for TBT in porewater could be used to assess for bioavailability (dissolved fraction) of TBT in lieu of biological testing. This recommendation was incorporated into our sampling and analysis program.

4.0 SEDIMENT QUALITY

ARI completed analyses on three dredge prism samples and three NSM samples corresponding to the three DMMUs at Berths 603, 604, and 605. Tables 2 and 3 list the physical and chemical results, respectively. Chemical results were compared to SLs to assess the chemical quality of the dredge prism and NSM sediments. This section presents the results and provides an evaluation of them.

4.1 Data Quality Review

A QA review of the data is provided in Appendix B. Method detection limits (MDLs) were reported for all chemical analyses except conventional analyses. The laboratory analyzed QC samples, including surrogates, method blanks, laboratory control samples (LCS), matrix spikes (MS), and laboratory, LCS, and MS duplicates. Upon review, the overall data quality objectives for collection and chemical testing of sediment samples were met, and the data for this project are acceptable for use

as qualified. Laboratory reports for chemical analysis, including QC samples, are included in Appendix C.

4.2 Grain Size Characteristics

The grain size results on the dredge prism samples are presented in Table 2, and grain size distribution curves are provided in Appendix C. All samples are primarily comprised of grain sizes from a fine silt to medium sand. The sample from DMMU 1 (C5) was a sandy silt, consisting of 73.4 percent fines. DMMUs 2 and 3 were more of a silty sand, with 30.1 and 47.7 percent fines, respectively.

4.3 Comparison to SEF Screening Levels

Table 3 presents the chemical results on the sediment samples. These results were compared to the SEF SLs. These SLs were established in the SEF for protection of the aquatic environment and to provide a uniform framework for evaluating sediment quality of dredged material for unconfined aquatic disposal. Freshwater SEF SLs have not been finalized, so SLs in Table 3 are freshwater Screening Level 1 values from Table 7-1 of the Interim Final SEF (Corps, et al., 2006; table revised October 20, 2006). If freshwater SLs were not available, marine SLs from the Final SEF were used. No SEF SLs are listed for gamma-BHC and total DDx; in these cases, DMEF SLs are used (Corps, et al., 1998).

4.3.1 Dredge Prism Samples

Analytical results for the three dredge prism samples for DMMUs 1, 2, and 3 detected concentration of TOC; ammonia; sulfides; metals except antimony and silver; TBT in bulk sediment; several PAHs, and 4,4-DDE (Table 3). TPH, SVOCs, and PCBs were not detected. When compared to SLs, only the 90 µg/kg TBT detection in sample C5 (DMMU 1) slightly exceeded the SEF freshwater SL of 75 µg/kg. Because TBT can be present in flakes of biofouling paints from ships, analysis for TBT in porewater was performed on this sample to assess for dissolved TBT, a form that would be more bioavailable. This analysis was conducted in lieu of biological testing as recommended by the PRG. Results detected 0.048 µg/L TBT, which is well below the marine SEF SL of 0.15 µg/L (no freshwater SL is available for TBT in porewater).

4.3.2 NSM Samples

Analytical results for the three NSM samples underlying DMMUs 1, 2, and 3 detected concentration of ammonia; sulfides; and TBT in bulk sediment (Table 3). DEHP and total DDx were not detected. There were no exceedances of SLs.

4.4 Data Evaluation

Sediment data on dredge prism and NSM samples for the three DMMUs did not detect any contaminants exceeding SLs, except for TBT in bulk sediment for sample C5 (representing DMMU 1). Further analysis for TBT in porewater from sample C5 detected a dissolved TBT concentration below the marine SEF SL. While TBT may be present slightly above the SEF SL in bulk sediment, TBT in porewater, which is more bioavailable, is at a concentration that is unlikely to pose a detrimental effect to the aquatic environment. Based on the chemical data, sediment from the three DMMUs is suitable for unconfined aquatic placement. Comparison of chemical data for each DMMU with its respective underlying NSM indicates that detected COC concentrations are lower in the NSM, indicating that maintenance dredging would improve sediment conditions.

5.0 SUMMARY

The Port is proposing to conduct maintenance dredging at Berths 603, 604, and 605 to maintain the navigational depth clearances for vessels docking at these berths. An estimated total of approximately 12,000 cy of sediment will be dredged from these berths. In February 2011, five sediment cores were collected from these berths. Sediment from these cores was sampled to represent three DMMUs and the underlying NSM for each DMMU; as such, three dredge prism and three NSM samples were submitted for physical and chemical analyses.

Chemical results on the samples did not detect any contaminants exceeding SLs, except for 90 µg/kg TBT in sample C5 (representing DMMU 1) slightly exceeded its SEF freshwater SL of 75 µg/kg. Further analysis for TBT in porewater from this sample C5 detected a dissolved TBT at 0.048 µg/L well below the marine SEF SL of 0.15 µg/L. This result indicates that TBT is likely not bioavailable and does therefore not pose a concern to the aquatic environment. Overall, the data indicate that sediment from the three DMMUs is suitable for unconfined aquatic placement. Additionally, COC concentrations were lower in the NSM than the corresponding DMMUs.

6.0 REFERENCES

EPA, 2001. *Methods for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual*. Office of Water. EPA-823-B-01-002, October 2001.

Hart Crowser 2011. *Sampling and Analysis Plan, Sediment Characterization, Terminal 6, Berths 603, 604, and 605, N. Marine Drive, Portland, Oregon.* January 7, 2011.

Krone, C.A., D.W. Brown, D.G. Burrows, R.G. Bogar, S.-L. Chan, and U. Varanasi, 1989. *A method for analysis of butyltin species and the measurement of butyltins in sediment and English sole livers from Puget Sound*. Mar. Environ. Res. 27:1-18.

Plumb, Russell H., Jr., 1981. *Procedures for Handling and Chemical Analysis of Sediment and Water Samples.* U.S. Environmental Protection Agency/U.S. Army Corps of Engineers. May 1981.

PRG, 2011. Project Review Group Technical Memorandum Re: Review of the Port of Portland's January 7, 2001 Level 2 Sampling and Analysis Plan: Sediment Characterization – Terminal 6, Berths 603, 604, and 605, N Marine Drive, Portland, Oregon (SAP). January 26, 2011.

U.S. Army Corps of Engineers, Portland District and Seattle District; U.S. EPA, Region 10; Oregon Department of Environmental Quality; Washington State Department of Natural Resources and Department of Ecology, 1998. *Dredge Material Evaluation Framework for the Lower Columbia River Management Area.* November 1998.

U.S. Army Corps of Engineers, Seattle District, Portland District, Walla Walla District, and Northwestern Division; U.S. EPA, Region 10; Washington Departments of Ecology and Natural Resources; Oregon Department of Environmental Quality; Idaho Department of Environmental Quality; National Marine Fisheries Service; and U.S., Fish and Wildlife Service, 2006. *Northwest Region Sediment Evaluation Framework, Interim Final.* September 2006.

U.S. Army Corps of Engineers, Seattle District, Portland District, Walla Walla District, and Northwestern Division; U.S. EPA, Region 10; Washington Departments of Ecology and Natural Resources; Oregon Department of Environmental Quality; Idaho Department of Environmental Quality; National Marine Fisheries Service; and U.S., Fish and Wildlife Service, 2009. *Sediment Evaluation Framework for the Pacific Northwest.* September 2009.

Table 1 - Core and Sample Information
Terminal 6 Sediment Characterization
N Marine Drive, Portland, Oregon

Core Sample Location	Date	Location			Core Penetration in Feet	Number of Cores Obtained	Percent Sediment Recovery
		Berth	Northing (Latitude)	Easting (Longitude)			
Terminal 6							
C1	2/1/11	605	726732.5 (45° 38' 17.4")	7628097.0 (122° 44' 40.1")	6	2	84 to 93
C2	2/1/11	605	727144.4 (45° 38' 21.4")	7627584.6 (122° 44' 47.4")	6	2	86 to 88
C3	2/1/11	604-East	727313.8 (45° 38' 22.9")	7627429.6 (122° 44' 49.6")	6	2	88 to 89
C4	2/4/11	604-East	727516.1 (45° 38' 24.9")	7627248.6 (122° 44' 52.1")	6	1	75
C5	2/4/11	604-West	727886.8 (45° 38' 28.5")	7626913.1 (122° 44' 57.0")	6	2	81 to 82
Columbia River Reference Sediment							
Ref-B	2/9/11	-	747531.5 (45° 38' 41.4")	7624007.6 (122° 44' 45.7")	1	Grab Sample	-

Core Sample Location	Approximate Mudline Elevation*	Dredge Prism			NSM		
		Sample Interval	Individual Sample	Composite Sample for Analysis	Sample Interval	Individual Sample	Composite Sample for Analysis
Terminal 6							
C1	-44	-44 to -46	C1	-	-46 to -48	C1Z	-
C2	-43	-43 to -46	C2	C2-4	-46 to -48	C2Z	C2-4Z
C3	-42.5	-42.5 to -46	C3		-46 to -48	C3Z	
C4	-43	-43 to -46	C4		-46 to -48	C4Z	
C5	-42.5	-42.5 to -44	C5	-	-44 to -46	C5Z	-
Columbia River Reference Sediment							
Ref-B	**	-	-	-	-	Reference B	-

Notes:
1. Northing and easting based on North American Datum of 1983 (NAD 83/98), State Plane Coordinate System, Oregon North Zone.
2. All elevations, depths, and intervals are in feet CRD.
3. - = Not available, not applicable, or not sampled
4. *Based on May 2010 bathymetry survey.
5. **Depth of water to mudline was 3.5 feet.
6. Shaded samples submitted for chemical analysis. All others archived (frozen) at the laboratory.

Table 2 - Grain Size Distributions
Terminal 6 Sediment Characterization
N Marine Drive, Portland, Oregon

Sediment Horizon	Dredge Prism		
Berth	**601-West**	**604-East**	**605**
Sample	C5	C2-4	C1
Date	2/4/11	2/4/11	2/1/11
Grain Size in %			
Gravel	0.0	0.1	0.0
Very Coarse Sand	0.4	1.1	0.3
Coarse Sand	0.7	3.3	0.8
Medium Sand	2.0	17.1	6.1
Fine Sand	5.2	34.1	18.8
Very Fine Sand	18.3	14.1	26.1
Coarse Silt	26.6	11.8	22.1
Medium Silt	22.9	7.8	10.9
Fine Silt	9.3	3.7	5.3
Very Fine Silt	4.2	2.1	2.5
8-9 Phi Clay	3.1	1.5	2.1
9-10 Phi Clay	2.4	1.4	1.9
> 10 Phi Clay	4.7	1.9	2.9
Total Fines	73.4	30.1	47.7
Material Description	Slightly clayey, sandy SILT	Silty, very fine to fine SAND	Slightly clayey, very silty SAND

Note:
1. Sample C5 was run in triplicate as part of laboratory quality control. Results presented are the average of the three report grain sizes.

Table 3 - Sediment Chemical Analyses Results
Terminal 6 Sediment Characterization
N Marine Drive, Portland, Oregon

Sediment Horizon	Dredge Prism			New Surface Material (NSM)			
DMMU	1	2	3	1	2	3	
Approx. Berth	604-West	604-East	605	604-West	604-East	605	
Sample	C5	C2-4	C1	C5Z	C2-4Z	C1Z	**SEF Screening Levels**
Lab ID	SH66C	SH66E	SH66A	SH66D	SH66F	SH66B	
Date	2/4/11	2/4/11	2/1/11	2/4/11	2/4/11	2/1/11	
Conventional Parameters							
Total Solids (%)	51.6	69.2	69.5	75.1	78.8	79.6	-
Total Organic Carbon (%)	1.06	1.15	0.936	-	-	-	-
Ammonia (mg/kg)	74.0	44.5	54.4	18.7	37.9	36.7	-
Total Sulfides (mg/kg)	63.1	14.9	80.5	17.9	1.26 U	3.55	-
TPH in mg/kg							
Diesel-Range	0.9 U	0.7 U	0.7 U	-	-	-	-
Oil-Range	5.9 U	4.4 U	4.6 U	-	-	-	-
Total TPH	5.9 U	4.4 U	4.6 U	-	-	-	-
Metals in mg/kg							
Antimony	0.017 U	0.012 U	0.012 U	-	-	-	150[a]
Arsenic	**3.8**	**2.2**	**2.5**	-	-	-	20
Cadmium	**0.8**	**0.4**	**0.6**	-	-	-	1.1
Chromium	**19.0**	**14.4**	**17.0**	-	-	-	95
Copper	**27.9**	**19.2**	**22.8**	-	-	-	80
Lead	**9**	**5**	**7**	-	-	-	340
Mercury	**0.11**	**0.04**	**0.07**	-	-	-	0.28
Nickel	**17.0**	**14.4**	**15.7**	-	-	-	60
Silver	0.077 U	0.053 U	0.056 U	-	-	-	2.0
Zinc	**99**	**61**	**80**	-	-	-	130
Tributyltin (TBT)							
TBT in Bulk Sediment (µg/kg)	**90**	**11**	1.5 U	**61**	**8.1**	1.6 U	75
TBT in Porewater (µg/L)	**0.048**	-	-	-	-	-	0.15[a]
PAHs in µg/kg							
LPAHs							
Naphthalene	1.8 U	1.8 U	1.7 U	-	-	-	500
Acenaphthylene	1.4 U	1.4 U	1.3 U	-	-	-	470
Acenaphthene	1.5 U	1.6 U	1.5 U	-	-	-	1,100
Fluorene	1.4 U	1.4 U	1.3 U	-	-	-	1,000
Phenanthrene	**12**	**6.5**	**13**	-	-	-	6,100
Anthracene	1.3 U	1.4 U	1.3 U	-	-	-	1,200
2-Methylnaphthalene	**4.8**	2.1 U	2.0 U	-	-	-	470
Total LPAHs	**17**	**6.5**	**13**	-	-	-	6,600
HPAHs							
Fluoranthene	**21**	**7.5**	**26**	-	-	-	11,000
Pyrene	**16**	**7.0**	**23**	-	-	-	8,800
Benz(a)anthracene	**7.2**	2.2 U	**6.5**	-	-	-	4,300
Chrysene	**10**	1.7 U	**22**	-	-	-	5,900
Benzo(b)fluoranthene	**-**	**-** U	**-**	-	-	-	-
Benzo(k)fluoranthene	**-**	**-** U	**-**	-	-	-	-
Benzo(b+k)fluoranthenes	**3.2**	**6.5**	**11**	-	-	-	600
Benzo(a)pyrene	**7.7**	2.2 U	**5.1**	-	-	-	3,300
Indeno(1,2,3-cd)pyrene	**4.8**	1.7 U	1.6 U	-	-	-	4,100
Dibenz(a,h)anthracene	2.1 U	2.2 U	2.1 U	-	-	-	800
Benzo(g,h,i)perylene	**6.2**	2.0 U	**4.7**	-	-	-	4,000
Total HPAHs	**76**	**21**	**98**	-	-	-	31,000
SVOCs in µg/kg							
Chlorinated Hydrocarbons							
1,4-Dichlorobenzene	2.7 U	2.7 U	2.7 U	-	-	-	110[a]
1,2-Dichlorobenzene	2.9 U	2.9 U	2.9 U	-	-	-	35[a]
1,2,4-Trichlorobenzene	3.8 U	3.8 U	3.7 U	-	-	-	31[a]
Hexachlorobenzene	3.3 U	3.3 U	3.3 U	-	-	-	22[a]

Please refer to notes on the last page of this table.

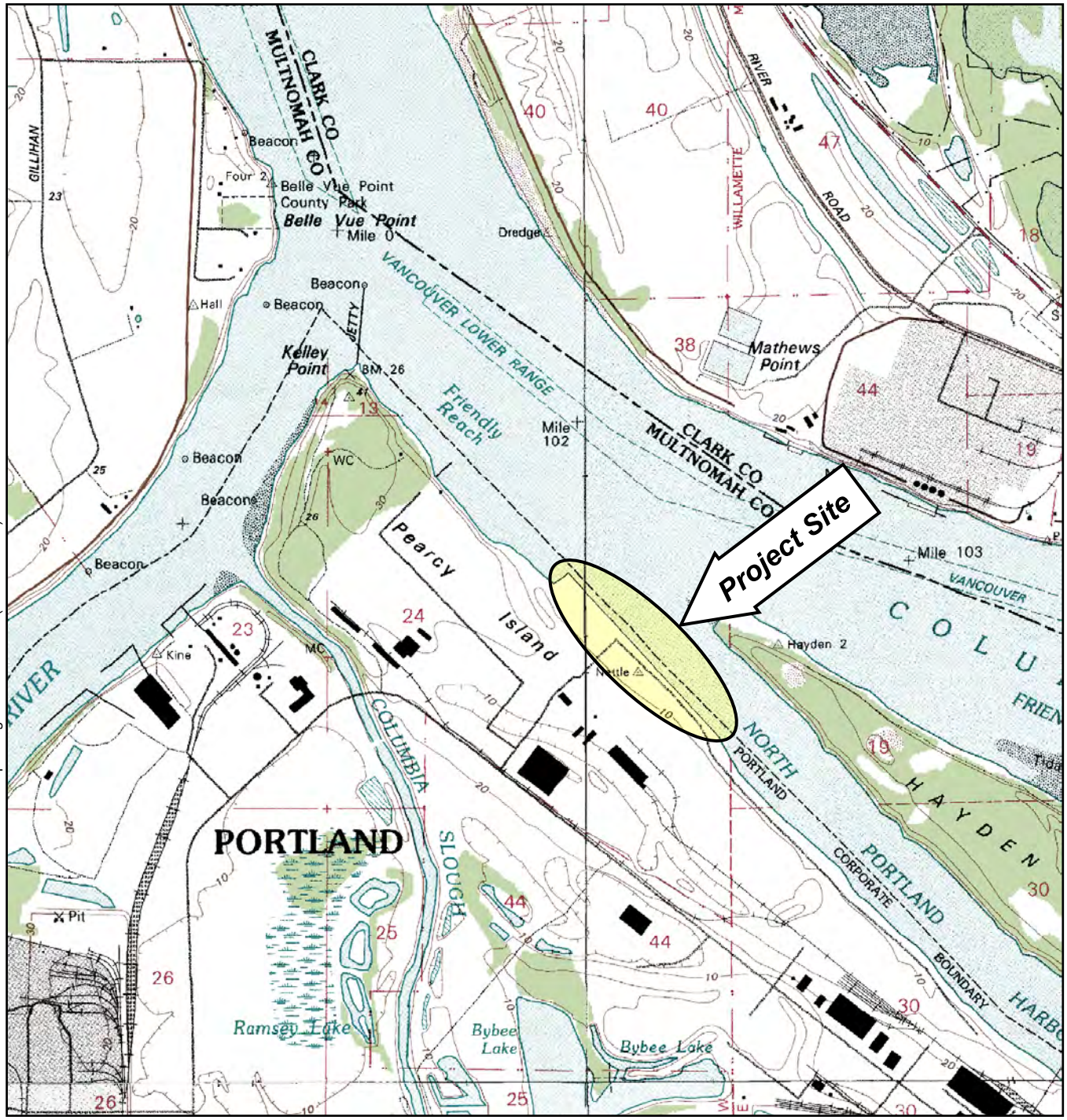
Table 3 - Sediment Chemical Analyses Results
Terminal 6 Sediment Characterization
N Marine Drive, Portland, Oregon

Sediment Horizon	Dredge Prism			New Surface Material (NSM)			
DMMU	1	2	3	1	2	3	
Approx. Berth	604-West	604-East	605	604-West	604-East	605	
Sample	C5	C2-4	C1	C5Z	C2-4Z	C1Z	**SEF Screening Levels**
Lab ID	SH66C	SH66E	SH66A	SH66D	SH66F	SH66B	
Date	2/4/11	2/4/11	2/1/11	2/4/11	2/4/11	2/1/11	
SVOCs in µg/kg (Continued)							
Phthalates							
Dimethyl Phthalate	3.7 U	3.7 U	3.6 U	-	-	-	46
Diethyl Phthalate	3.7 U	3.7 U	3.7 U	-	-	-	200[a]
Di-n-butyl Phthalate	4.6 U	4.6 U	4.6 U	-	-	-	1,400[a]
Butyl Benzyl Phthalate	4.1 U	4.1 U	4.0 U	-	-	-	260
Bis (2-ethylhexyl) Phthalate	8.6 U	8.6 U	8.5 U	8.4 U	8.5 U	8.5 U	220
Di-n-octyl Phthalate	5.2 U	5.2 U	5.1 U	-	-	-	26
Phenols							
2,4-Dimethylphenol	7.9 U	7.9 U	7.8 U	-	-	-	29[a]
2-Methylphenol	5.3 U	5.3 U	5.2 U	-	-	-	63[a]
4-Methylphenol	4.8 U	4.8 U	4.7 U	-	-	-	670[a]
Pentachlorophenol	27 U	27 U	27 U	-	-	-	400[a]
Phenol	3.8 U	3.8 U	3.7 U	-	-	-	420[a]
Miscellaneous Extractables							
Benzoic Acid	42 U	42 U	42 U	-	-	-	650[a]
Benzyl Alcohol	46 U	45 U	45 U	-	-	-	57[a]
Dibenzofuran	1.6 U	1.7 U	1.6 U	-	-	-	400
Hexachlorobutadiene	2.8 U	2.9 U	2.8 U	-	-	-	11[a]
n -Nitrosodiphenylamine	13 U	13 U	13 U	-	-	-	28[a]
Pesticides in µg/kg							
4,4'-DDD	0.13 U	0.13 U	0.12 U	0.13 U	0.13 U	0.13 U	16[a]
4,4'-DDE	**1.2 J**	0.12 U	**1.0 J**	0.12 U	0.12 U	0.12 U	9[a]
4,4'-DDT	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	12[a]
Total DDx	**1.2 J**	0.19 U	**1.0 J**	0.19 U	0.19 U	0.19 U	6.9[b]
Aldrin	0.054 U	0.055 U	0.054 U	-	-	-	9.5[a]
alpha -Chlordane	0.050 U	0.051 U	0.050 U	-	-	-	2.8[a]
Dieldrin	0.098 U	0.099 U	0.098 U	-	-	-	1.9[a]
Heptachlor	0.13 U	0.13 U	0.13 U	-	-	-	1.5[a]
gamma -BHC (Lindane)	0.047 U	0.048 U	0.047 U	-	-	-	10[b]
PCBs in µg/kg							
Aroclor 1016	1.0 U	1.0 U	0.99 U	-	-	-	-
Aroclor 1221	1.3 U	1.4 U	1.3 U	-	-	-	-
Aroclor 1232	1.3 U	1.4 U	1.3 U	-	-	-	-
Aroclor 1242	1.3 U	1.4 U	1.3 U	-	-	-	-
Aroclor 1248	1.3 U	1.4 U	1.3 U	-	-	-	-
Aroclor 1254	1.3 U	1.4 U	1.3 U	-	-	-	-
Aroclor 1260	1.3 U	1.4 U	1.3 U	-	-	-	-
Aroclor 1262	1.3 U	1.4 U	1.3 U	-	-	-	-
Aroclor 1268	1.3 U	1.4 U	1.3 U	-	-	-	-
Total PCBs	1.3 U	1.4 U	1.3 U	-	-	-	60

Notes:

1. Screening levels (SLs) are Freshwater Screening Levels 1 (no adverse effects) from the Sediment Evaluation Framework (SEF) (Corps, et al., 2006; Table 7-1, revised 10/20/06). If a freshwater value was not present, marine SLs from corrected Table 6-3 of the Final SEF (Corps, et al., 2009) are listed and flagged with an [a]. Gamma-BHC and Total DDx do not have a SEF SL; the values are flagged with a [b] and are from Table 8-1 of the Dredge Material Evaluation Framework (Corps, et al., 1998).
2. This table only lists compounds that are listed on Table 6-3 of the Final SEF, plus gamma-BHC and total DDx.
3. Bolded values are detected concentrations.
4. Shaded value is a concentration exceeding its respective SL (exceeded SL is also shaded).
5. For undetected compounds, method detections limits (MDLs) are shown.
6. - = Not analyzed or not available.
7. DMMU = Dredged material management unit.
8. J = Estimated concentration between MDL and method reporting limit (MRL).
9. U = Not detected at the indicated MDL.

Site Location Map
Terminal 6 Sediment Characterization
N Marine Drive, Portland, Oregon



F:\Data\Jobs\Port of Portland\15737 T6 Sed Char\Report\Figures\15737-001 (Site Location).cdr

Source: Base map prepared from the USGS 7.5-minute quadrangle of Sauvie Island, Oregon, dated 1990.

0 2,000 4,000

Scale in Feet
Contour Interval 10 Feet

N

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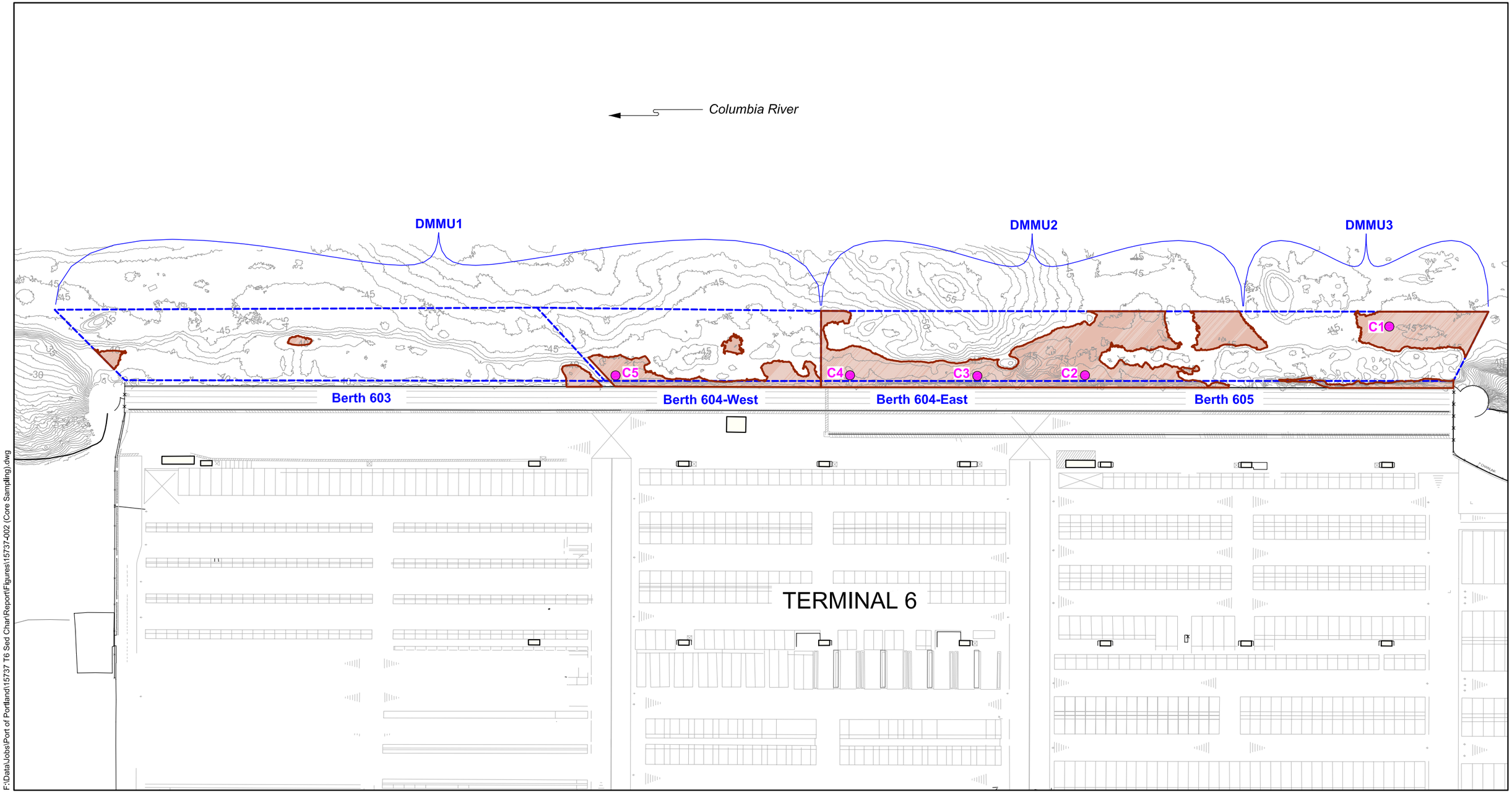
Figure 1

Site Plan and Core Sampling Locations
Terminal 6 Sediment Characterization
N Marine Drive, Portland, Oregon



Source: Port of Portland.

C-1 ● Core Sampling Location and Number

—45— Contours Based on a May 2010 Bathymetric Survey in Feet (CRD)

N

0 200 400

Scale in Feet

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Figure 2

APPENDIX A
SEDIMENT CORE LOGS

Key to Exploration Logs

Sample Description

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Soil descriptions consist of the following:
Density/consistency, moisture, color, minor constituents, MAJOR CONSTITUENT, additional remarks.

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits and probes is estimated based on visual observation and is presented parenthetically on the logs.

SAND or GRAVEL Density	Standard Penetration Resistance (N) in Blows/Foot	SILT or CLAY Consistency	Standard Penetration Resistance (N) in Blows/Foot	Approximate Shear Strength in TSF
Very loose	0 to 4	Very soft	0 to 2	<0.125
Loose	4 to 10	Soft	2 to 4	0.125 to 0.25
Medium dense	10 to 30	Medium stiff	4 to 8	0.25 to 0.5
Dense	30 to 50	Stiff	8 to 15	0.5 to 1.0
Very dense	>50	Very stiff	15 to 30	1.0 to 2.0
		Hard	>30	>2.0

Sampling Test Symbols

- 1.5" I.D. Split Spoon
- Grab (Jar)
- 3.0" I.D. Split Spoon
- Shelby Tube (Pushed)
- Bag
- Cuttings
- Core Run

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE			GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Moisture

Dry	Little perceptible moisture
Damp	Some perceptible moisture, likely below optimum
Moist	Likely near optimum moisture content
Wet	Much perceptible moisture, likely above optimum

Minor Constituents	Estimated Percentage
Trace	<5
Slightly (clayey, silty, etc.)	5 - 12
Clayey, silty, sandy, gravelly	12 - 30
Very (clayey, silty, etc.)	30 - 50

Laboratory Test Symbols

GS	Grain Size Classification
CN	Consolidation
UU	Unconsolidated Undrained Triaxial
CU	Consolidated Undrained Triaxial
CD	Consolidated Drained Triaxial
QU	Unconfined Compression
DS	Direct Shear
K	Permeability
PP	Pocket Penetrometer Approximate Compressive Strength in TSF
TV	Torvane Approximate Shear Strength in TSF
CBR	California Bearing Ratio
MD	Moisture Density Relationship
AL	Atterberg Limits
PID	Photoionization Detector Reading
CA	Chemical Analysis
DT	In Situ Density in PCF
OT	Tests by Others

Water Content in Percent
Liquid Limit
Natural
Plastic Limit

Groundwater Indicators

- Groundwater Level on Date or (ATD) At Time of Drilling
- Groundwater Seepage (Test Pits)

Sample Key

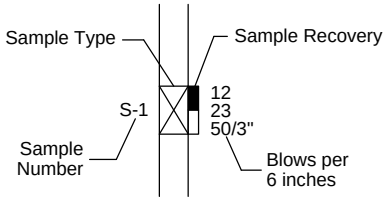

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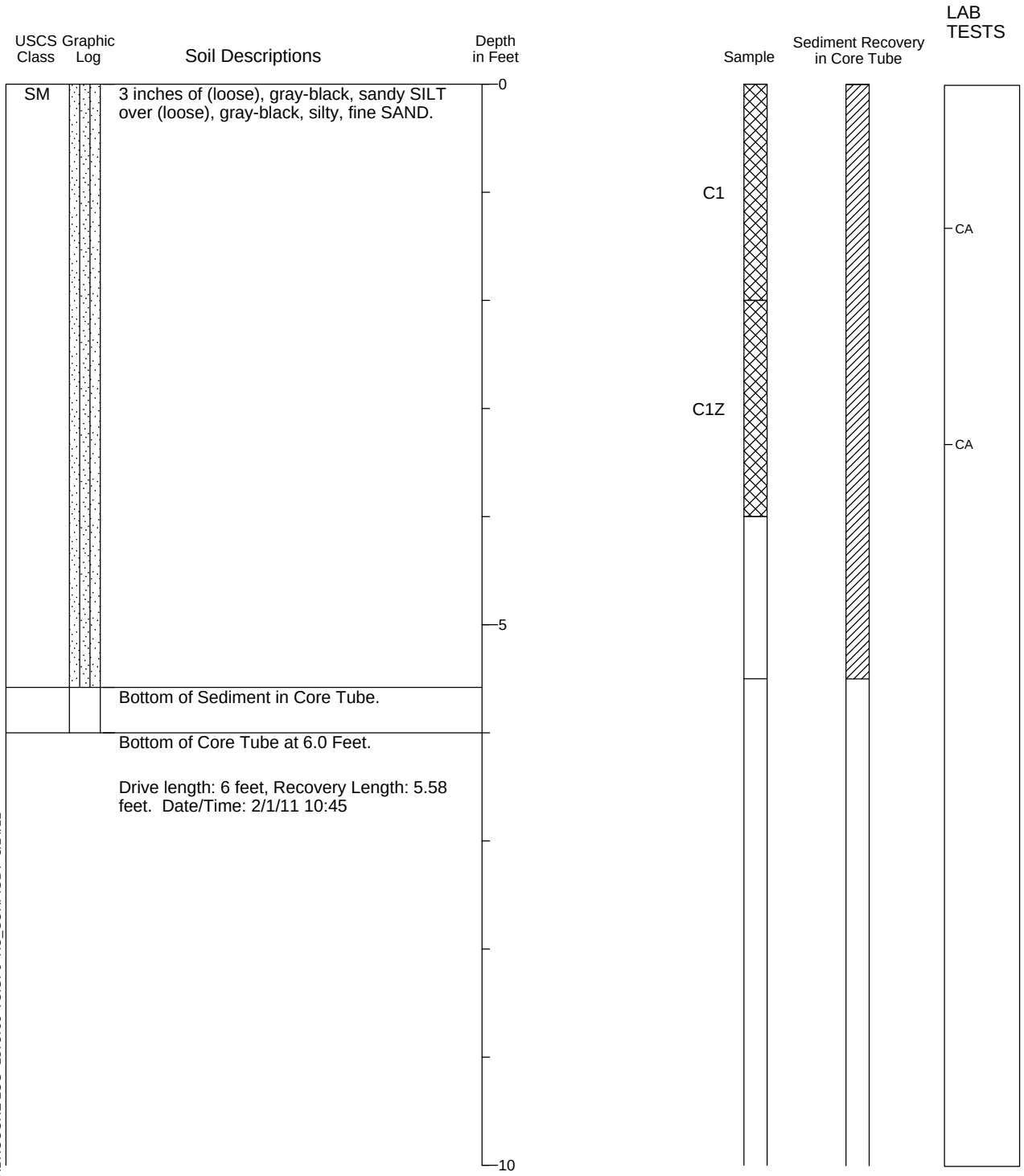
Figure A-1

KEY SHEET 1573700-VC.GPJ HC_CORP.GDT 3/14/11

Vibracore Log C1

Location: Berth 605
Mudline Elevation in Feet (MLLW): -44 Feet
Water Depth in Feet: 53.7 Feet

Type of Sample: Vibracore
Core Diameter: 4 inches
Northing: 726732.5
Easting: 7628097
Logged By: C. Rust Reviewed By: A. Goodwin



VIBROCORE LOG 1573700-VC.GPJ HC_CORP.GDT 3/14/11

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

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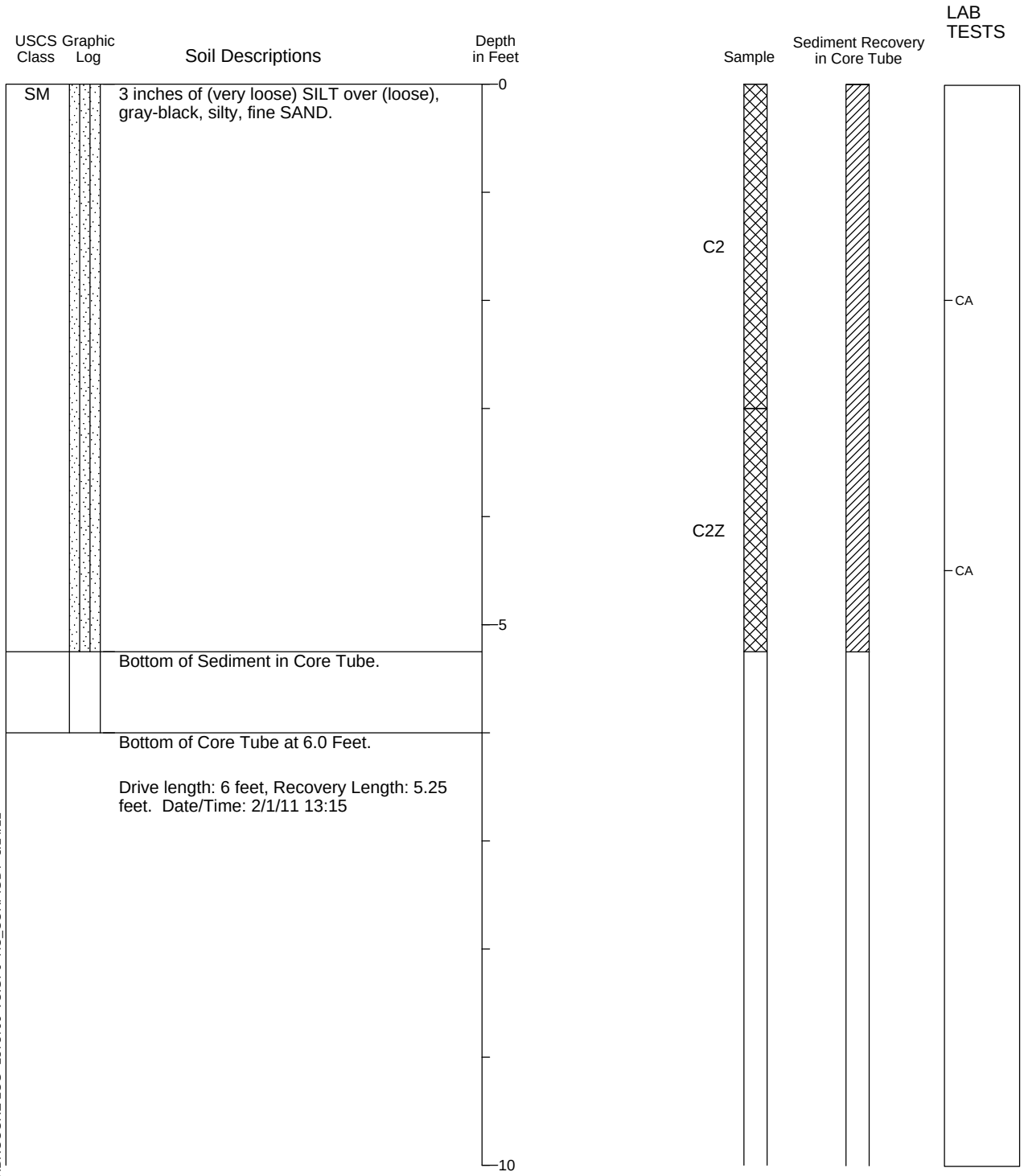
Figure A-2

Vibracore Log C2

Location: Berth 605
Mudline Elevation in Feet (MLLW): -43 Feet
Water Depth in Feet: 50.6 Feet

Type of Sample: Vibracore
Core Diameter: 4 inches
Northing: 727144.4
Easting: 7627584.6
Logged By: C. Rust Reviewed By: A. Goodwin



VIBROCORE LOG 1573700-VC.GPJ HC_CORP.GDT 3/14/11

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
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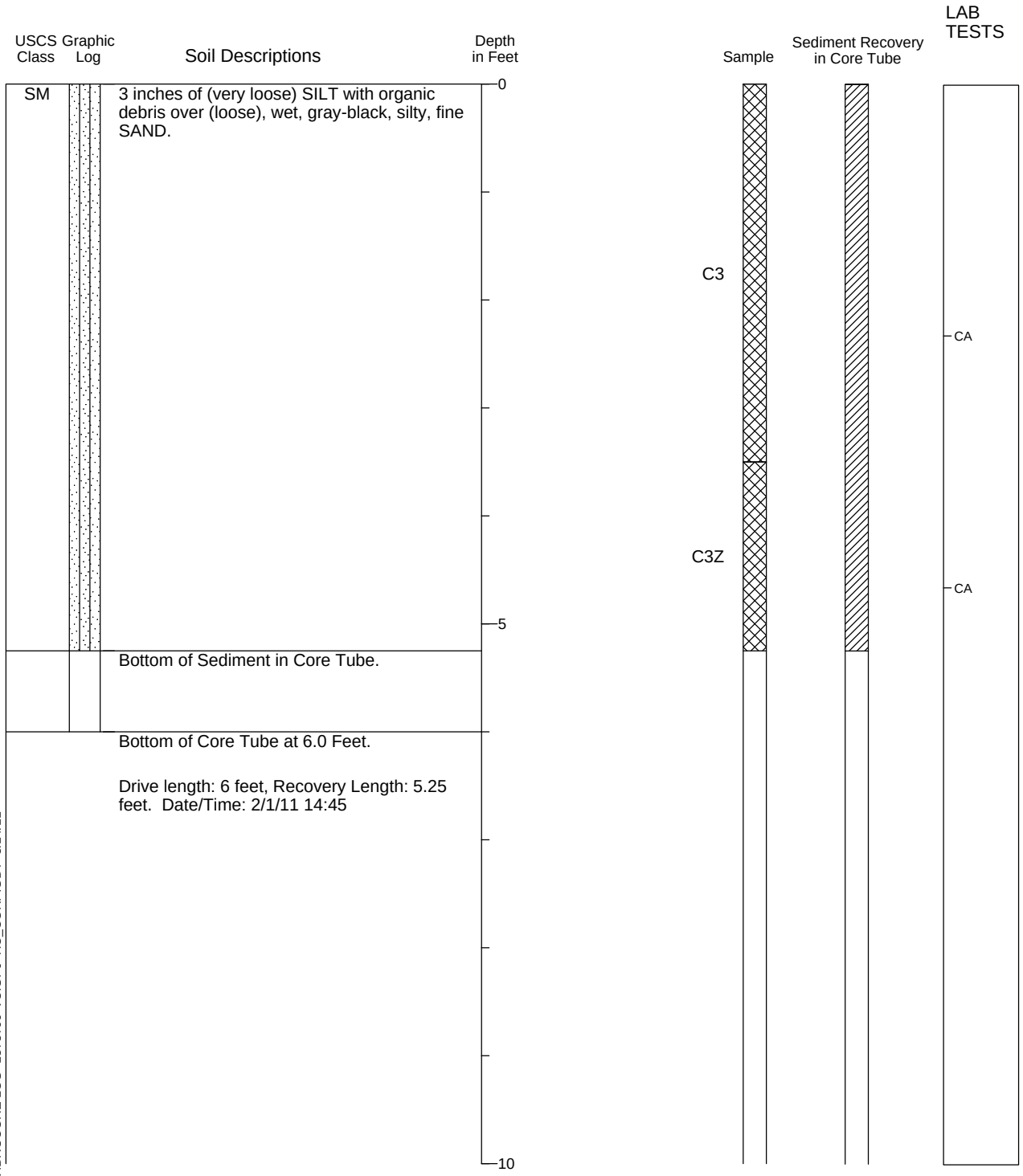
Figure A-3

Vibracore Log C3

Location: Berth 604-East
Mudline Elevation in Feet (MLLW): -42.5 Feet
Water Depth in Feet: 50.5 Feet

Type of Sample: Vibracore
Core Diameter: 4 inches
Northing: 727313.8
Easting: 7627429.6
Logged By: C. Rust Reviewed By: A. Goodwin



VIBROCORE LOG 1573700-VC.GPJ HC_CORP.GDT 3/14/11

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

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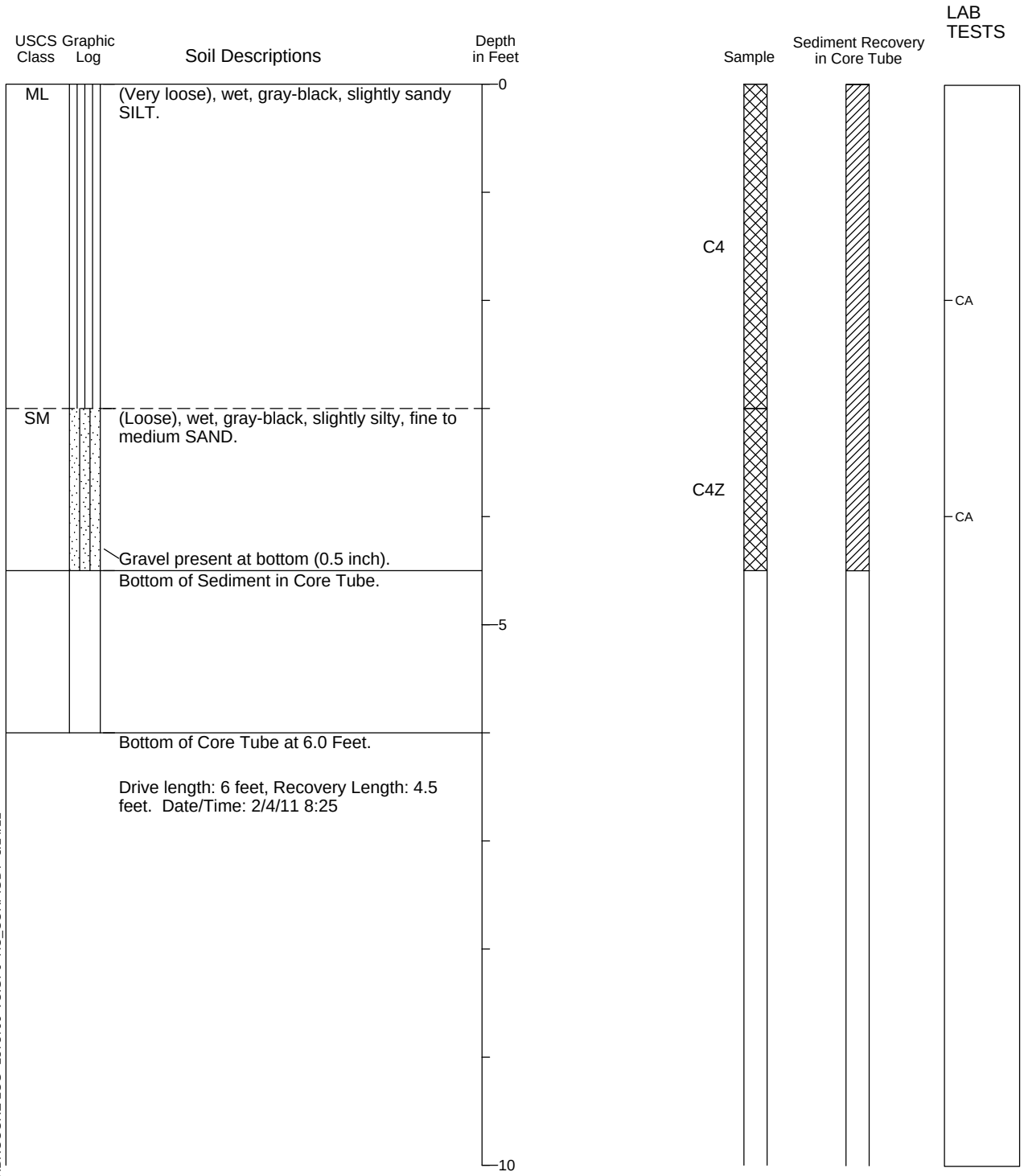
Figure A-4

Vibracore Log C4

Location: Berth 604-East
Mudline Elevation in Feet (MLLW): -43 Feet
Water Depth in Feet: 49.2 Feet

Type of Sample: Vibracore
Core Diameter: 4 inches
Northing: 727516.1
Easting: 7627248.6
Logged By: C. Rust Reviewed By: A. Goodwin



VIBROCORE LOG 1573700-VC.GPJ HC_CORP.GDT 3/14/11

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

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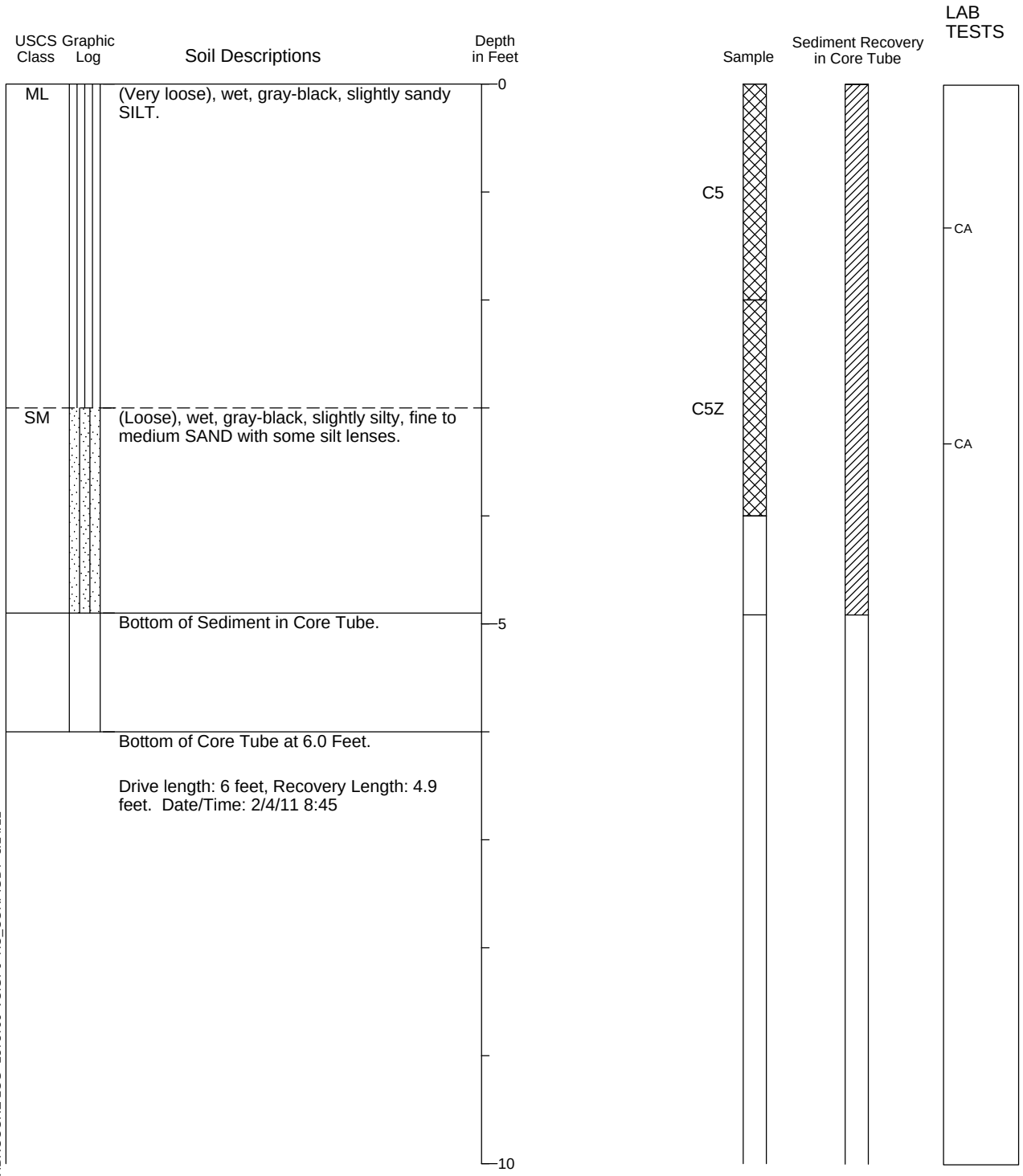
Figure A-5

Vibracore Log C5

Location: Berth 604-West
Mudline Elevation in Feet (MLLW): -42 Feet
Water Depth in Feet: 48.3 Feet

Type of Sample: Vibracore
Core Diameter: 4 inches
Northing: 727886.8
Easting: 7626913.1
Logged By: C. Rust Reviewed By: A. Goodwin



VIBROCORE LOG 1573700-VC.GPJ HC_CORP.GDT 3/14/11

1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. USCS designations are based on visual manual classification (ASTM D 2488) unless otherwise supported by laboratory testing (ASTM D 2487).
4. Groundwater level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

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15737-00 *2/11*

Figure A-6

APPENDIX B
QUALITY ASSURANCE REVIEW

APPENDIX B
QUALITY ASSURANCE REPORT

This appendix documents the results of a quality assurance (QA) review of the analytical data for dredge prism and new surface material (NSM) samples collected during the February 2011 sediment characterization at the Berths 603, 604, and 605. Field procedures used for sample collection are discussed in our Sampling and Analysis Plan (SAP; Hart Crowser, 2011). Hart Crowser submitted sediment samples to Analytical Resources, Inc. (ARI), of Tukwila, Washington, for chemical analysis. Copies of the analytical laboratory reports are included in Appendix C. Upon review, the analytical data are valid for their intended use. A Data Completeness (QA1) checklist is included as Table B-1 in this appendix.

The quality assurance review included examination and validation of the laboratories' summary report, including:

- Holding times;
- Method blanks;
- Surrogate recoveries;
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries;
- Standard reference material (SRM) recoveries;
- Matrix spike and matrix spike duplicate (MS/MSD) recoveries; and
- Laboratory duplicate relative percent difference (RPD).

The QA review did not include a review of raw data.

ANALYTICAL METHODS AND DETECTION LIMITS

Chemical Analyses on Sediment

A total of 12 sediment samples were collected from the five cores obtained during the sediment characterization fieldwork in February 2011 (i.e., a dredge prism sample each for the three dredge material management units [DMMUs] and a corresponding NSM sample from beneath each DMMU).

Dredge Prism Samples. To assess the chemical quality of the DMMUs, three dredge prism samples were analyzed for the following:

- Grain size by ASTM D 422M;
- Total solids by EPA Method 160.3;
- Total organic carbon (TOC) by Plumb (1981);
- Ammonia by EPA Method 350.1M;
- Sulfide by EPA Method 376.2;
- Total petroleum hydrocarbons (TPH) as diesel and oil by Northwest Method NWTPH-Dx with a silica gel cleanup;
- Total metals (antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc) by EPA Method 200.8/6010B/7471A;
- TBT in bulk sediment by Krone, et al. (written 1988; published 1989);
- Polynuclear aromatic hydrocarbon (PAHs) by EPA Method 8270D-SIM;
- Semivolatile organic compounds (SVOCs) by EPA Method 8270D;
- Organochlorine pesticides by EPA Method 8081A; and
- Polychlorinated biphenyls (PCBs) by EPA Method 8082.

These analytical test methods were the analytical methods specified in the SAP (Hart Crowser, 2011), except analysis for arsenic and antimony by EPA Method 200.8 was used to obtain lower method detection limits (MDLs) than EPA Method 6010B. Methods 200.8 and 6010B both use inductively coupled plasma to atomize and ionize the metals in the sample, but Method 200.8 follows with mass spectrometer to separate the metal ions for quantification. One sample (C5 from DMMU 1) was also analyzed for TBT in porewater by Krone, et al. (written 1988; published 1989).

NSM Samples. The NSM samples were analyzed only for chemicals of concern (COCs) and several convention parameters:

- Total solids by EPA Method 160.3;
- Ammonia by EPA Method 350.1M;
- Sulfide by EPA Method 376.2;
- TBT in bulk sediment by Krone, et al. (written 1988; published 1989);
- *Bis* (2-ethylhexyl) phthalate (DEHP) by EPA Method 8270D; and
- Total DDx (DDT and its breakdown products, DDD and DDE) by EPA Method 8081A.

Detection and Reporting Limits

MDLs are the minimum concentration of a chemical compound that can be measured and reported that the compound is present, and is based on instrumentation abilities and sample matrix. Method reporting limits (MRLs) are set by the laboratory and are based on the low standard of the initial calibration curve or low-level calibration check standard, and represent the concentration that can be accurately quantified. In some cases, MDLs and MRLs are raised due to high concentrations of analytes in the samples or matrix interferences. MDLs and MRLs were consistent with industry standards. Table 3 of this report lists the MDLs for undetected samples. For all compounds, MDLs were below Sediment Evaluation Framework (SEF) screening levels (SLs).

QA REVIEW RESULTS

The laboratory provided QC sample results, which underwent a QA review. QC samples were consistent with those specified in the SAP (Hart Crowser, 2011) to evaluate precision, accuracy, representativeness, comparability, and completeness. Upon review, the sample data and laboratory QC data were found to be suitable for their intended use in determining the chemical quality of sediments.

Physical and Chemical Analysis

The following section summarizes, by analyte or test, the results of our QA review of the analytical data.

Grain Size. Holding times were met. Samples were run in one batch along with triplicate analyses on one sample. QA ratios were acceptable. Results were reported to 0.1 percent for each sieve fraction. The laboratory noted that all samples contained organic matter, which could have broken down during the sieving process, thus affecting grain size analysis.

Total Solids. Holding times were met. No method blank contamination was detected. The laboratory duplicate RPD was acceptable.

TOC. Holding times were met. No method blank contamination was detected. The LCS and SRM recoveries were within control limits. The MS recovery and the laboratory duplicate RPD were acceptable.

Ammonia. Holding times were met. No method blank contamination was detected. The SRM recovery was within control limits. The MS recovery and the laboratory duplicate RPD were acceptable.

Sulfide. Holding times were met. No method blank contamination was detected. The LCS and SRM recoveries were within control limits. MS recovery and the laboratory duplicate RPD were acceptable.

TPH. Holding times were met. No method blank contamination was detected. Surrogate, LCS, and MS recoveries were within laboratory control limits. LCSD and MSD recoveries and RPDs were within control limits. ARI indicated in its case narrative that initial and continuing calibrations were within acceptance criteria.

Total Metals. Holding times were met. No method blank contamination was detected. LCS recoveries were within control limits for all elements. MS recoveries were within control limits with the following exception: antimony had a low recovery. Results for antimony in the associated samples were qualified as estimated (UJ). The laboratory duplicate RPD was acceptable. ARI indicated in its case narrative that initial and continuing calibrations were within acceptance criteria for both reports.

Tributyltin (Bulk Sediment). Holding times were met. No method blank contamination was detected. Surrogate, LCS, and MS recoveries were within laboratory control limits. LCSD and MSD recoveries and RPDs were within control limits. ARI indicated in its case narrative that initial and continuing calibrations were within acceptance criteria, except for dibutyltin which was above its limit on the continuing calibration associated with the MS and MSD analyses. As this compound is not a target analyte, no samples were qualified.

Tributyltin (Porewater). Holding times were met. No method blank contamination was detected. Surrogate and LCS recoveries were within laboratory control limits, except for one of two surrogates on the LCSD. In this case, the surrogate was slightly out of control limits. LCSD recoveries and RPDs were within control limits. ARI indicated in its case narrative that initial and continuing calibrations were within acceptance criteria. Based on review of the QC data, the test sample data were not flagged.

PAHs. Holding times were met. No method blank contamination was detected. Surrogate, LCS, and MS recoveries were within laboratory control limits. LCSD and MSD recoveries and RPDs were within control limits. ARI indicated in its case narrative that initial and continuing calibrations were within acceptance criteria.

SVOCs. Holding times were met. No method blank contamination was detected. Surrogate, LCS, and MS recoveries were within laboratory control limits (MS data only reported for DEHP only analyses). LCSD and MSD recoveries and RPDs were within control limits (MSD data only reported for DEHP only analyses). ARI indicated in its case narrative that initial and

continuing calibrations were within acceptance criteria, except for benzoic acid which was above its limit on the continuing calibration associated with the MS and MSD analyses. Benzoic acid was not detected in the associated samples, but were qualified as estimated (UJ)

Organochlorine Pesticides. Holding times were met. Samples C5 and C2-4 were analyzed first at a 5x dilution, then at a 1x. Both sample runs are presented in the laboratory report. No method blank contamination was detected. Surrogate, LCS, and MS recoveries were within laboratory control limits. LCSD and MSD recoveries and RPDs were within control limits. ARI indicated in its case narrative that initial and continuing calibrations were within acceptance criteria, except for 4,4'-DDT was low one of two columns on the continuing calibration and 4,4'-DDD was low on one calibration run for both columns. DDD and DDT were not detected in the associated samples, but were qualified as estimated (UJ).

PCBs. Holding times were met. No method blank contamination was detected. Surrogate, LCS, and MS recoveries were within laboratory control limits. LCSD and MSD recoveries and RPDs were within control limits. ARI indicated in its case narrative that initial and continuing calibrations were within acceptance criteria.

Sample Integrity

Samples were collected in accordance with the SAP, following quality control procedures to ensure that sample data were representative of site conditions. Samples were transported by the Hart Crowser representative to ARI for analysis. Chain of custody was maintained at all times. ARI noted that chain of custody seals were not on the outside of the sample cooler when delivered; however, the cooler was in possession of the Hart Crowser representative from packing until transfer to ARI. As such, custody was maintained. When received by ARI, the receiving temperature of the cooler was within or slightly below the 2 to 6 °C acceptance criteria. A lower, but unfrozen temperature, would not affect the sample integrity. The number of containers recorded on the chain of custody for C5 and C3Z did not match the container number counted by ARI, likely due to a miscount during cooler packing.

Table B-1 - QA1 Data Checklist
Terminal 6 Sediment Characterization
N Marine Drive, Portland, Oregon

	Test Sediment	Reference Sediment	Control Sediment	Water Control
Sample Locations and Compositing				
Latitude and Longitude (to nearest 0.1 second)	NAD 83	N/A	N/A	N/A
NAD 1983 HARN (requirement for SEDQUAL)	Yes	N/A	N/A	N/A
Station Name (e.g. Carr Inlet)	Yes	N/A	N/A	N/A
Water depth (corrected to MLLW)	Bathymetric	N/A		
Drawing showing sampling locations and ID numbers	Yes	N/A	N/A	N/A
Compositing scheme (sampling locations/depths for composites)	Yes	N/A	N/A	N/A
Sampling method	Yes	N/A	N/A	N/A
Sampling dates	Yes	N/A		
Estimated volume of dredged material represented by each DMMU	Yes	N/A	N/A	N/A
Positioning method	Yes	N/A	N/A	N/A
Sediment Conventionals				
Preparation and analysis methods	Yes	N/A	N/A	N/A
Sediment conventional data and QA/QC qualifiers	Yes	N/A	N/A	N/A
QA qualifier code definitions	Yes	N/A	N/A	N/A
Units (dry weight except total solids)	Yes	N/A	N/A	N/A
Method blank data (sulfides, ammonia, TOC)	Yes	N/A	N/A	N/A
Method blank units (dry weight)	Yes	N/A	N/A	N/A
Analysis dates (sediment conventionals, blanks, TOC CRM)	Yes	N/A	N/A	N/A
TOC CRM ID	Yes	N/A	N/A	N/A
TOC CRM analysis data	Yes	N/A	N/A	N/A
TOC CRM target values	Yes	N/A	N/A	N/A
Grain Size Analysis				
Fine grain analysis method	Yes	N/A	N/A	N/A
Analysis dates	Yes	N/A	N/A	N/A
Triplicate for each batch	Yes	N/A	N/A	N/A
Grain size data (complete sieve and phi size distribution)	Yes	N/A	N/A	N/A

	Metals	SVOCs/ PAHs	Pesticides/ PCBs	VOCs
Extraction/digestion method				N/A
Extraction/digestion dates (test sediment, blanks, matrix spike, reference material)	Yes	Yes	Yes	N/A
Analysis method	Yes	Yes	Yes	N/A
Data and QA qualifier included for:				
Test sediments	Yes	Yes	Yes	N/A
Reference materials including 95% confidence interval (each batch)				N/A
Method blanks (each batch)	Yes	Yes	Yes	N/A
Matrix spikes (each batch)	Yes	Yes	Yes	N/A
Matrix spike added (dry weight basis)	Yes	Yes	Yes	N/A
Replicates (each batch)	Yes			
Units (dry weight)	Yes	Yes	Yes	N/A
Method blank units (dry weight)	Yes	Yes	Yes	N/A
QA/QC qualifier definitions	Yes	Yes	Yes	N/A
Surrogate recovery for test sediment, blank, matrix spike, ref. material	Yes (TBT)	Yes	Yes	N/A
Analysis dates (test sediment, blanks, matrix spike, reference material)	Yes	Yes	Yes	N/A

Please refer to notes at the end of this table.

Table B-1 - QA1 Data Checklist
Terminal 2 Sediment Characterization
Portland, Oregon

Notes:
QA Checklist based on Figures 12-2 and 12-3 of the SEF (Corps, et al., 2006).
Shaded boxes indicated those type of data are not applicable for that column.
N/A = Not applicable or not analyzed.

Acronyms and Abbreviations:
CRM = Control Reference Material
DMMU = Dredge Material Management Unit
MLLW = Mean lower low water
NAD = North American Datum
PAHs = Polynuclear aromatic hydrocarbons
PCBs = Polychlorinated biphenyls
QA = Quality assurance
QC = Quality control
SEF = Sediment evaluation framework
SVOCs = Semivolatile organic compounds
TBT = Tributyltin
TOC = Total organic carbon
VOCs = Volatile organic compounds

APPENDIX C
ANALYTICAL LABORATORY REPORTS

Table of Contents: ARI Job SH66

Client: Hart Crowser

Project: 15737-00 Terminal 6

Signature

February-10-2011
Date

Table of Contents: ARI Job SH66

Client: Hart Crowser

Project: 15737-00 Terminal 6

Signature

February-10-2011
Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

February 17, 2011

Mr. Rick Ernst
Hart Crowser, Inc.
5 Centerpointe Dr #240
Lake Oswego, OR 97035

RE: Project: 15737-00 Terminal 6
ARI Job No: SH66

Dear Mr. Ernst:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted twelve sediment samples on February 5, 2011. The samples were received in good condition. There were no discrepancies between the sample containers' labels and the COC.

The samples were analyzed for Pesticides, PCBs, NWTPH-Dx, SVOCs, SIM PAHs, Grain size, TBT, select conventional analytes and Metals, as requested on the COC.

Please reference the Case Narrative for analytical details associated with this project.

An electronic copy of this data package will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
kellyb@arilabs.com
206/695-6211

Enclosures

cc: files SH66

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Documentation

ARI Job ID: SH66

Sample Custody Record

1 OF 1

SH66

Samples Shipped to: ARI

HARTCROWSER

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
Phone: 206-324-9530 FAX: 206-328-5581

JOB 15737-00 LAB NUMBER

PROJECT NAME TERMINAL 6

HART CROWSER CONTACT RICK ERNST

SAMPLED BY: CFR

LAB NO.	SAMPLE ID	DESCRIPTION	DATE	TIME	MATRIX	TOTAL SOLIDS	TOC	Metals	Ammonia	TPH	TBT (dry weight)	PAHs	SVOCs	ORGANOCHLORINE PESTICIDES	PCBs	Total Sulfides	Grain Size	TBT (Porewater)	NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
	C1	DISCRETE	2/1/11	1045	SEDIMENT	X	X	X	X	X	X	X	X	X	X	X	X		7	
	C1Z	DISCRETE	2/1/11	1045		X			X		X		X	X		X			6	
	C2	DISCRETE	2/1/11	1315															1	HOLD
	C3	" "	2/1/11	1445															1	HOLD
	C2Z	" "	2/1/11	1315															2	HOLD
	C3Z	" "	2/1/11	1445															2	HOLD
	C4	" "	2/4/11	825															1	HOLD
	C4Z	" "	2/4/11	825															2	HOLD
	C5	" "	2/4/11	845		X	X	X	X	X	X	X	X	X	X	X	X		7	
	C5Z	" "	2/4/11	845		X		X	X		X		X	X		X			6	
	C2-4	COMPOSITE	2/4/11	1500		X	X	X	X	X	X	X	X	X	X	X	X		6	
	C2-4Z	COMPOSITE	2/4/11	1510		X			X		X		X	X		X			6	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE	2/5/11	SIGNATURE	
PRINT NAME Colleen Rust	TIME	PRINT NAME VAN SPOHN	TIME
COMPANY HC	1500	COMPANY ARI	15:00
RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE		SIGNATURE	
PRINT NAME	TIME	PRINT NAME	TIME
COMPANY		COMPANY	

SPECIAL SHIPMENT HANDLING OR STORAGE REQUIREMENTS:

SEE SAP FOR METHOD DETAILS

ARCHIVE REMAINING VOLUME

47 TOTAL NUMBER OF CONTAINERS

SAMPLE RECEIPT INFORMATION
CUSTODY SEALS: ☐YES ☐NO ☐N/A
GOOD CONDITION ☐YES ☐NO
TEMPERATURE _____
SHIPMENT METHOD: ☐HAND ☐COURIER ☐OVERNIGHT

COOLER NO.: STORAGE LOCATION:

See Lab Work Order No. _____
for Other Contract Requirements

TURNAROUND TIME:
☐ 24 HOURS ☐ 1 WEEK
☐ 48 HOURS ☐ STANDARD
☐ 72 HOURS OTHER _____

White and Yellow Copies to Lab Pink to Project Manager Lab to Return White Copy to Hart Crowser Gold to Sample Custodian

SH66 : 00003

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Hart Crowser

Project Name: _____

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: SH66

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc.) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 2.8°C 2.2 1.9 0.9

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941619

Cooler Accepted by: VB Date: 2.5.11 Time: 15:00

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? (YES) NO

What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA (YES) NO

Were all bottles sealed in individual plastic bags? (YES) NO

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? YES (NO)

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... (NA) YES NO

Were all VOC vials free of air bubbles? (NA) YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI..... (NA) _____

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: MM Date: 2/7/11 Time: 0830

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

~~CS~~ has COC reads 7 containers sent but 8 container received for CS

COC reads 2 containers sent but 3 containers received for C3Z

By: MM Date: 2/7/11

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• • •	• • •	● ● ●

Small → "sm"

Peabubbles → "pb"

Large → "lg"

Headspace → "hs"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: SH66
Client: Hart Crowser
Project Event: 15737-00
Project Name: Terminal 6

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	C1	SH66A	11-2465	Sediment	02/01/11 10:45	02/05/11 15:00
2.	C1Z	SH66B	11-2466	Sediment	02/01/11 10:45	02/05/11 15:00
3.	C5	SH66C	11-2467	Sediment	02/04/11 08:45	02/05/11 15:00
4.	C5Z	SH66D	11-2468	Sediment	02/04/11 08:45	02/05/11 15:00
5.	C2-4	SH66E	11-2469	Sediment	02/04/11 15:00	02/05/11 15:00
6.	C2-4Z	SH66F	11-2470	Sediment	02/04/11 15:10	02/05/11 15:00
7.	C2	SH66G	11-2471	Sediment	02/01/11 13:15	02/05/11 15:00
8.	C3	SH66H	11-2472	Sediment	02/01/11 14:45	02/05/11 15:00
9.	C2Z	SH66I	11-2473	Sediment	02/01/11 13:15	02/05/11 15:00
10.	C3Z	SH66J	11-2474	Sediment	02/01/11 14:45	02/05/11 15:00
11.	C4	SH66K	11-2475	Sediment	02/04/11 08:25	02/05/11 15:00
12.	C4Z	SH66L	11-2476	Sediment	02/04/11 08:25	02/05/11 15:00

Printed 02/07/11

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: SH66

Case Narrative
Hart Crowser
Port Of Portland
ARI Job: SH66
February 17, 2011

Semivolatile Analysis (PSDDA 8270D):

The samples were extracted on 02/08/11 and the extracts were analyzed on 02/08/11 and 2/9/11 within the method recommended holding time for frozen samples.

Initial calibration (s): All analytes were within method acceptance criteria.

Continuing calibration (s): The 2/8/11 CCAL is out of control high for benzoic acid. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Method Blank (s): The method blank was free of contamination.

Surrogate(s): All surrogates are in control.

Samples: There were no anomalies associated with this analysis.

MS/MSD (s): Are in control.

LCS/LCSD (s): Are in control.

Tributyl Tin Analysis (GC/MS Krone):

The samples were extracted on 02/08/11 and the extracts were analyzed on 02/10/11 within the method recommended holding time for frozen samples.

Initial calibration (s): All analytes were within method acceptance criteria.

Continuing calibration (s): The dibutyl tin CCAL is out of control high. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Method Blank (s): The method blank was free of contamination.

Surrogate(s): All surrogate recoveries were within control limits.

Samples: There were no anomalies associated with this analysis.

MS/MSD (s): All percent recoveries and RPDs were in control.

LCS/LCSD (s): All percent recoveries and RPDs were in control.

Semivolatile SIM Analysis (8270D):

The samples were extracted on 02/08/11 and the extracts were analyzed on 02/09/11 within the method recommended holding time.

Case Narrative
Hart Crowser
Port Of Portland
ARI Job: SH66
February 17, 2011

Initial calibration (s): All analytes were within method acceptance criteria.

Continuing calibration (s): All analytes of interest were within method acceptance criteria for the associated SIM Semivolatile organics list.

Method Blank (s): The method blank was free of contamination.

Surrogate(s): All surrogate recoveries were within control limits.

Samples: There were no anomalies associated with this analysis.

MS/MSD (s): Are in control.

LCS/LCSD (s): All percent recoveries and RPDs were in control.

Pesticides and PCB Analysis (PSDDA):

The pesticides samples were extracted on 02/08/11 and the extracts were analyzed on 02/9/11 within the method recommended holding time for frozen samples.

The PCBs samples were extracted on 02/08/11 and the extracts were analyzed on 02/10/11 within the method recommended holding time for frozen samples.

Initial calibration (s): All analytes were within method acceptance criteria.

Continuing calibration (s): The pesticides closing CCAL for the 1x analyses had DDT breakdowns outside of the < 15% limit with one column low for 4,4-DDT.

Continuing pesticides CCAL injection 41 was out of control low for both columns for 4,4-DDD.

Method Blank (s): All method blanks were free of contamination

Surrogate(s): All surrogate recoveries were within control limits.

Samples: Pesticide samples C5 and C24 were initially analyzed at dilutions and were re-analyzed at lesser dilutions to meet client reporting limits. Both sets of data have been included for your review.

MS/MSD (s): All percent recoveries and RPDs were in control.

LCS/LCSD (s): All percent recoveries and RPDs were in control.

Case Narrative
Hart Crowser
Port Of Portland
ARI Job: SH66
February 17, 2011

NWTPH-Dx Analysis:

The samples were extracted on 02/07/11 and the extracts were analyzed on 02/8/11 within the method recommended holding time for frozen samples.

Initial calibration (s): All analytes were within method acceptance criteria.

Continuing calibration (s): All analytes of interest were within method acceptance criteria for the associated analyses.

Method Blank (s): All method blanks were free of contamination

Surrogate(s): All surrogate recoveries were within control limits.

Samples: There were no anomalies associated with the analyses.

MS/MSD (s): All percent recoveries and RPDs were in control.

LCS/LCSD (s): All percent recoveries and RPDs were in control.

Total Metals Analysis:

The samples were digested on 02/7/11 and samples were analyzed on 2/8/11 within the method recommended holding time.

Initial calibration (s): All analytes were within method acceptance criteria.

Continuing calibration (s): All analytes of interest were within method acceptance criteria.

Method Blank: All method blanks were free of contamination

Samples: There were no anomalies associated with this analysis.

Matrix Spike: The matrix spike percent recoveries for antimony for sample C1 were outside control limits low. Post digestion spikes for antimony were performed and were within matrix spike control limits, therefore no further corrective action was required.

Duplicate: Are in control.

LCS/LCSD (s): All percent recoveries were in control.

Conventional analyses:

The samples were analyzed on 02/7/11 and 2/8/11 within the method recommended holding time.

Case Narrative
Hart Crowser
Port Of Portland
ARI Job: SH66
February 17, 2011

Initial calibration (s): All analytes were within method acceptance criteria.

Continuing calibration (s): All analytes of interest were within method acceptance criteria.

Method Blank: All method blanks were free of contamination

Samples: There were no anomalies associated with this analysis.

Matrix Spike: Are in control.

Duplicate: Are in control.

LCS/LCSD (s): All percent recoveries were in control.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Hart Crowser	**ARI Job No.:** SH66
Client Project: Terminal 6	**Client Project No.:** 15737-00

Case Narrative

1. Three samples were submitted for grain size analysis according to Puget Sound Estuary Protocol (PSEP) methodology on February 7, 2011.
2. The samples were run in a single batch and one sample from this job, C5, was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. All samples contained woody or other organic matter, which may have broken down during the sieving process, affecting grain size analysis.
4. The data is provided in summary tables and plots.
5. There were no other noted anomalies in this project.

Approved by: _____ Date: 2/11/2011
Geotechnical Laboratory Technician

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 7/10/2009

Inorganic Data

U Indicates that the target analyte was not detected at the reported concentration

* Duplicate RPD is not within established control limits

B Reported value is less than the CRDL but ≥ the Reporting Limit

N Matrix Spike recovery not within established control limits

NA Not Applicable, analyte not spiked

H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U Indicates that the target analyte was not detected at the reported concentration

* Flagged value is not within established control limits

B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J Estimated concentration when the value is less than ARI's established reporting limits

D The spiked compound was not detected due to sample extract dilution

E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

Y Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

SURR SOLUTIONS

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1817-1	ABN	100/150	MEOH	07/12/11
B	1771-1	SIM PNA	15/75	ACETONE	10/05/11
C	1705-4	SIM ABN	25/37.5	MEOH	03/08/11
D	1795-4	LOW PCB	0.2	ACETONE	12/16/11
E	1771-3	HERB	62.5	MEOH	10/06/11
F	1791-3	PCP	12.5	ACETONE	12/09/11
G	1758-4	1,4DIOXANE	100	MEOH	02/11/11
H	1723-2	OP-PEST	25	MEOH	04/02/11
I	1771-2	LOW S. PNA	1.5	ACETONE	10/05/11
J	1787-2	TBT-PORE	0.125	MECL2	11/27/11
K	1795-2	MED PCB	20	ACETONE	12/16/11
L	1785-4	TBT	2.5	MECL2	11/27/11
M	1767-1	EPH	1500	MECL2	06/02/11
N	1795-3	PCB	2	ACETONE	12/16/11
O	1821-3	TPH	450	MECL2	09/07/11
P	1813-2	HCID	2250	MECL2	08/05/11
Q	NA	EDB	1	MEOH	NA
R	1757-3	RESIN ACID	250	ACETONE	08/14/11
S*	1568-5	PBDE	.25	MEOH	01/13/11
T	1768-2	ALKYL PNA	10	MEOH	07/22/11
U	NA	CONGENER	2.5	ACETONE	NA
V	1791-4	LOW PCP	1.25	ACETONE	12/09/11
*reverified solution					

02/08/11

LCS SOLUTIONS

LABL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1820-2	PCB 1660	20	ACETONE	01/25/12
2#	NA	BCOC PEST	10	ACETONE	NA
3	1793-3	PEST	01/02/10	ACETONE	12/15/11
4	1806-2	LOW PEST	.1/.2/1	ACETONE	12/15/11
5	1779-1	EPH	1500	MECL2	11/11/11
6	1702-2	PCP	12.5/125	ACETONE	02/18/11
7	1789-2	ABN	100	MEOH	10/01/11
8	1785-3	TBT	2.5	MECL2	11/27/11
9	1786-3	PORE TBT	.125/.25	MECL2	11/27/11
10	1790-1	ABN ACID	100/200	MEOH	06/07/11
11	1777-2	TPHD	15000	ACETONE	11/01/11
12	1790-2	ABN BASE	200	MEOH	06/07/11
13	1716-2	LOW PCB	2	ACETONE	03/30/11
14	1753-3	LOW ABN ACID	10/20	MEOH	01/28/11
15	1814-2	SIM PNA	15/75	MEOH	01/04/12
16	1776-2	DIOXANE	100	MEOH	04/09/11
17	1772-3	1248 PCB	10	ACETONE	05/01/11
18	1814-3	LOW SIM PNA	1.5	ACETONE	01/04/12
19	1815-2	AK103	7500	ACETONE	06/02/11
20	1775-3	PNA	100	ACETONE	08/14/11
21	1725-1	SKY/BHT	100	MEOH	03/18/11
22	1781-1	HERB	05 to 4000	MEOH	04/15/11
23	1753-4	LW ABN BASE	20	MEOH	01/29/11
24	1758-2	LOW ABN	10	ACETONE	01/13/11
25#	NA	DIPHENYL	100	MEOH	NA
26	1789-1	OP-PEST	25	MEOH	04/02/11
27	NA	STEROLS	200	MEOH	NA
28#	1807-1	ADD. PEST	2	ACETONE	08/31/11
29#	NA	DECANES	100	MEOH	NA

LCS SOLUTIONS

30	NA	EDB/DBCP	0.2	MEOH	NA
31	1707-3	TERPINEOL	100	MEOH	03/19/11
32	1758-1	GUAIACOL	50-200	ACETONE	01/08/11
33	NA	RETENE	100	MEOH	NA
34	NA	CONGENERS	2.5	ACETONE	NA
35	NA	ALKYL PNA A	10	MEOH	NA
36	NA	ALKYL PNA B	10	MEOH	NA
37	1773-1	CAR/PERY	100	ACETONE	10/14/11
50	1757-4	FULL RESIN	250	ACETONE	08/14/11
51	1772-1	DDTS	0.01	ACETONE	04/24/11
52	NA	1232 PCB	20	ACETONE	NA
53	1780-1	DALAPON	50	MEOH	05/07/11
54	1753-1	T-CHLORDANE	10	ACETONE	07/21/11
55	1753-2	TOXAPHENE	50	ACETONE	07/21/11
#=PROJECT SPECIFIC SOLUTION					
*=REVERIFIED SOLUTION					

Analytical Resources,Incorporated
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Spike Recovery Control Limits for Analysis of Soil & Sediment Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Method 8270D with Microwave Extraction[1,8]

(Effective: 6/1/09)

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction / Analytical Method:	**8270D**	**8270D ME[2]**
Sample Weight / Final Volume:	7.5 g to 0.5 mL	7.5 g to 0.5 mL
LCS Spike Recovery [9]		
Phenol	37 - 116	24 - 129
Bis-(2-chloroethyl) ether	43 - 108	32 - 119
2-Chlorophenol	45 - 109	34 - 120
1,3-Dichlorobenzene	47 - 105	37 - 115
1,4-Dichlorobenzene	46 - 105	36 - 115
Benzyl Alcohol	16 - 108	**10** - 123
1,2-Dichlorobenzene	48 - 104	39 - 113
2-Methylphenol	45 - 112	34 - 123
2,2'-oxybis(1-chloropropane)	36 - 114	23 - 127
4-Methylphenol	47 - 114	36 - 125
N-Nitroso-di-n-propylamine	44 - 113	33 - 125
Hexachloroethane	43 - 104	33 - 114
Nitrobenzene	39 - 112	27 - 124
Isophorone	57 - 114	48 - 124
2-Nitrophenol	50 - 112	40 - 122
2,4-Dimethyphenol	40 - 110	28 - 122
Bis-(2-chloroethoxy) methane	49 - 111	39 - 121
Benzoic Acid [4]	**10** - 160	**10** - 185
2,4-Dichlorophenol	51 - 113	41 - 123
1,2,4-Trichlorobenzene	50 - 106	41 - 115
Naphthalene	50 - 108	40 - 118
4-Chloroaniline [4]	17 - 149	**10** - 171
2-Chloronaphthalene	48 - 116	37 - 127
Hexachlorobutadiene	46 - 112	35 - 123
4-Chloro-3-methylphenol	54 - 116	44 - 126
2-Methylnaphthalene	54 - 106	45 - 115
Hexachlorocyclopentadiene	23 - 149	**10** - 170
2,4,6-Trichlorophenol	51 - 114	41 - 125
2,4,5-Trichlorophenol	52 - 116	41 - 127
2-Nitroaniline	51 - 115	40 - 126
Dimethylphthalate	56 - 113	47 - 123
Acenaphthylene	56 - 115	46 - 125
2,6-Dinitrotoluene	54 - 124	42 - 136
3-Nitroaniline [4]	39 - 142	22 - 159
Acenaphthene	48 - 115	37 - 126

Spike Recovery Control Limits for Analysis of Soil & Sediment Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Method 8270D with Microwave Extraction[1,8]

(Effective: 6/1/09)

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction / Analytical Method:	**8270D**	**8270D ME[2]**
Sample Weight / Final Volume:	7.5 g to 0.5 mL	7.5 g to 0.5 mL
2,4-Dinitrophenol	15 - 169	**10** - 195
Dibenzofuran	55 - 111	46 - 120
4-Nitrophenol	23 - 130	**10** - 148
2,4-Dinitrotoluene	57 - 127	45 - 139
Fluorene	55 - 117	45 - 127
Diethylphthlalate	54 - 116	44 - 126
4-Chlorophenyl-phenyl ether	52 - 117	41 - 128
4-Nitroaniline	47 - 124	34 - 137
4,6-Dinitro-2-Methylphenol	**10** - 157	**10** - 182
N-Nitrosodiphenylamine	54 - 138	40 - 152
4-Bromophenyl-phenyl ether	50 - 117	39 - 128
Hexachlorobenzene	50 - 121	38 - 133
Pentachlorophenol	40 - 123	26 - 137
Phenanthrene	55 - 116	45 - 126
Anthracene	57 - 115	47 - 125
Carbazole	60 - 121	50 - 131
Di-n-butylphthalate	60 - 119	50 - 129
Fluoranthene	52 - 129	39 - 142
Pyrene	49 - 134	35 - 148
Butylbenzylphthalate	44 - 144	27 - 161
Benzo(a)Anthracene	56 - 124	45 - 135
3,3'-Dichlorbenzidine [4]	37 - 140	20 - 157
Chrysene	53 - 124	41 - 136
Bis(2-Ethylhexyl) phthalate	63 - 128	52 - 139
Di-n-octylphthalate	59 - 114	50 - 123
Benzofluoranthene(s) (Total)	30 - 160[10]	30 - 160[10]
Benzo(a)Pyrene	53 - 109	44 - 118
Indeno(1,2,3-cd)Pyrene	40 - 128	25 - 143
Dibenz(a,h)anthracene	47 - 123	34 - 136
Benzo(g,h,i)Perylene	44 - 125	31 - 139
Aniline [4]	**10** - 129	**10** - 149
1,2-Diphenylhydrazine (Azobenzene)	56 - 118	46 - 128
N-Nitrosodimethylamine	43 - 119	30 - 132
1-Methylnaphthalene	55 - 116	45 - 126
Pyridine	15 - 118	**10** - 135

Spike Recovery Control Limits for Analysis of Soil & Sediment Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Method 8270D with Microwave Extraction[1,8]

(Effective: 6/1/09)

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction / Analytical Method:	**8270D**	**8270D ME[2]**
Sample Weight / Final Volume:	7.5 g to 0.5 mL	7.5 g to 0.5 mL
MB/LCS Surrogate Recovery		
d4-2-Chlorophenol	50 - 103	(5)
d4-1,2-Dichlorobenzene	48 - 104	(5)
2,4,6-Tribromophenol	54 - 120	(5)
2-Fluorophenol	38 - 112	(5)
d5-Phenol [4]	44 - 110	33 - 121
d5-Nitrobenzene	46 - 102	(5)
2-Fluorobiphenyl	51 - 105	(5)
d14-p-Terphenyl	55 - 124	(5)
Sample Surrogate Recovery		
d4-2-Chlorophenol	36 - 104	(5)
d4-1,2-Dichlorobenzene	38 - 102	(5)
2,4,6-Tribromophenol	31 - 131	(5)
2-Fluorophenol	22 - 108	(5)
d5-Phenol [4]	27 - 112	13 - 126
d5-Nitrobenzene	32 - 106	(5)
2-Fluorobiphenyl	39 - 107	(5)
d14-p-Terphenyl	31 - 130	(5)

(1) Control Limits calculated using all data generated 7/1/08 through 6/30/09.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard [6] as beyond the CL but still within the ME limits. ARI defines ME limits as 4 standard deviations around the mean with upper limit ≥ 100%. A maximum of 4 marginal exceedances are acceptable. (≥ 5 marginal exceedances in an analysis require corrective action).
(3). Preparation includes Gel Permeation Chromatography (GPC) clean-up.
(4) These are "**poor performers**" defined in the DoD QSM [7] as compounds that "produce low mean recoveries and high standard deviations, resulting in wide LCS control limits with particularly low lower control limits (sometimes-negative values)". ARI does not control batch acceptance based on these compounds since there is a high level of uncertainty in their recovery."
(5) Marginal Exceedances not allowed for surrogate unless it is a "poor performer".
(6) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(7) Page 182 of: **Department of Defense Quality Systems Manual for Environmental Laboratories, Version 3 Final, March 2005** Prepared By Environmental Data Quality Workgroup, Department of Navy, Lead Service (Based NELAC Chapter 5 (Quality Systems) NELAC Voted Version – 5 June 2003
(8) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(9) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(10) Default limits pending generation of historic limits for total benzofluoranthrenes (7/29/10)

Analytical Resources,Incorporated
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Spike Recovery Control Limits for Polycyclic Aromatic Hydrocarbons Selected Ion Monitoring (SIM) EPA Method SW-846-8270D-Modified [1,7]

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Sample Matrix	Water		Soil	
Sample Volume / Final Volume	**500 mL to 0.5 mL**		**7.5 g / 0.5 mL**	
	Control Limits	**ME Limits [2]**	**Control Limits**	**ME Limits [2]**
LCS Spike Recovery [6]				
Napthalene	39 - **100**	30 - 102	37 - **100**	27 - 107
2-Methylnapthalene	39 - **100**	31 - **100**	37 - **100**	28 - **100**
1-Methylnapthalene	30 - 160 [3]	30 - 160 [3]	30 - 160 [3]	30 - 160 [3]
Acenaphthylene	37 - 100	27 - 111	35 - **100**	26 - 102
Acenapthene	42 - **100**	33 - 107	39 - **100**	31 - **100**
Dibenzofuran	46 - **100**	38 - 101	39 - **100**	31 - **100**
Fluorene	49 - 101	40 - 110	42 - **100**	33 - 106
Phenanthrene	55 - 101	47 - 109	47 - **100**	38 - 108
Anthracene	47 - 102	38 - 111	41 - 106	30 - 117
Fluoranthene	60 - 106	52 - 114	52 - 109	43 - 119
Pyrene	55 - 110	46 - 119	47 - 111	36 - 122
Benz(a)anthracene	56 - 104	48 - 112	47 - 114	36 - 125
Chrysene	58 - 104	50 - 112	51 - 106	42 - 115
Benzofluoranthene(s) (Total)	30 - 160 [8]	30 - 160 [8]	30 - 160 [8]	30 - 160 [8]
Benzo(a)pyrene	32 - 110	19 - 123	44 - 111	33 - 122
Indeno(1,2,3-cd)pyrene	50 - 114	39 - 125	41 - 114	29 - 126
Dibenzo(a,h)anthracene	42 - 121	29 - 134	42 - 116	30 - 128
Benzo(g,h,i)perylene	50 - 113	40 - 124	37 - 115	27 - 107
MB / LCS Surrogate Recovery				
d10-2-Methylnaphthalene	36 - 101	(4)	35 - **100**	(4)
d14-Dibenzo(a,h)anthracene	42 - 121	(4)	37 - 120	(4)
Sample Surrogate Recovery				
d10-2-Methylnaphthalene	30 - 106	(4)	34 - **100**	(4)
d14-Dibenzo(a,h)anthracene	**10** - 130	(4)	**10** - 117	(4)

(1) ARI's Control limits calculated using all available spike recovery data from 1/1/08 through 12/31/08.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard [5] as beyond the LCS-CL but still within the ME limits. ME limits are between 3 and 4 standard deviations around the mean. A maximum of one marginal exceedance is acceptable. Two or more marginal exceedances require corrective action.
(3) 30 – 160 are default, advisory control limits used when there is insufficient data to calculate historic control limits. **DO NOT** use these limits as the sole reason to reject the data from a batch of analyses.
(4) Marginal Exceedances not allowed for surrogate standards.
(5) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(6) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(7) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(8) Default limits pending generation of historic limits for total benzofluoranthrenes (7/29/10)

Analytical Resources,Incorporated
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Summary of Laboratory Control Limits - SIM Analysis for Butyl Tin Species [1, 2] **EPA Method SW-846-8270D (Modified)** Effective 2/4/11			
Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip			
	ARI's Calculated Control Limits		
Sample Matrix	**Pore Water [4]**	**Water [5]**	**Soil/Sediment[6]**
Sample Amount / Final Volume:	**150 mL / 0.5 mL**	**100 mL / 0.5 mL**	**5 g / 0.5 mL**
LCS Spike Recovery [3]			
Tributyl Tin	30 - 160	60 - 125	40 - 144
Dibutyl Tin	30 - 160	30 - 160 [7]	34 - 115
Butyl Tin	30 - 160	30 - 160 [7]	**10** - 111
Method Blank/LCS Surrogate Recovery			
Tripentyl Tin	30 - 160	48 - 110	35 - 130
Tripropyl Tin	30 - 160	42 - 113	28 - 106
Sample Surrogate Recovery			
Tripentyl Tin	30 - 160	35 - 124	25 - 140
Tripropyl Tin	30 - 160	41 - 112	32 - 104

1. Instrument calibrated using hexyl (C_6) derivatives. Results reported as butylated Tin ion.
2. Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
3. Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
4. Default limits due to insufficient number of data points to calculate historic limits.
5. Control limits calculated using all data generated 10/1/06 through 5/30/08.
6. Control Limits calculated using all data generated 6/1/06 through 6/1/08 (sample surrogates 6/1/07-6/1/08)
7. Default limits due to insufficient number of data points to calculate historic limits.

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Spike Recovery Control Limits for Chlorinated Pesticides EPA Method SW-846-8081B Analysis of Soil / Sediment Samples [1,2]

Effective 9/20/10

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Sample Dry Weight / Final Vol.	12 g to 4 mL		25 g to 5 mL	
Extraction Method	**EPA 3546 - Microwave**		**EPA 3550C - Sonication**	
LCS Spike Recovery [5]	**Control Limits**	**ME Limits[3]**	**Control Limits**	**ME Limits[3]**
alpha-BHC	65 - 114	57 - 122	59 - 119	49 - 129
beta-BHC	60 - 120	50 - 130	54 - 129	42 - 142
delta-BHC	37 - 139	20 - 156	40 - 124	26 - 138
gamma-BHC (Lindane)	66 - 126	56 - 136	61 - 130	50 - 142
Heptachlor	62 - 118	53 - 127	58 - 126	47 - 137
Aldrin	59 - 123	48 - 134	56 - 130	44 - 142
Hepachlor Epoxide	59 - 134	47 - 147	57 - 139	43 - 153
Endosulfan I	59 - 142	45 - 156	60 - 143	46 - 157
Dieldrin	61 - 146	47 - 160	61 - 147	47 - 161
4,4'-DDE	62 - 150	47 - 165	63 - 148	49 - 162
Endrin	67 - 136	56 - 148	64 - 122	54 - 132
Endosulfan II	67 - 128	57 - 138	64 - 120	55 - 129
4,4'-DDD	67 - 128	57 - 138	61 - 121	51 - 131
Endosulfan Sulfate	57 - 116	47 - 126	49 - 114	38 - 125
4,4'-DDT	63 - 132	52 - 144	60 - 124	49 - 135
Methoxychlor	66 - 124	56 - 134	57 - 121	46 - 132
Endrin Ketone	66 - 121	57 - 130	61 - 119	51 - 129
Endrin Aldehyde	16 - 107	**10** - 122	24 - **100**	12 - 110
trans-Chlordane (*beta*-Chlordane, *gamma*-Chlordane)	55 - 148	40 - 164	58 - 142	44 - 156
cis-Chlordane (*alpha*-chlordane)	58 - 141	44 - 155	58 - 142	44 - 156
Hexachlorobenzene	54 - 103	46 - 111	45 - 124	32 - 137
Hexachlorobutadiene	55 - **100**	48 - 105	21 - 110	**10** - 125
MB / LCS Surrogate Recovery				
Tetrachloro-*m*-xylene (TCMX)	53 - **100**	(4)	50 - 109	(4)
Decachlorobiphenyl	57 - 113	(4)	59 - 119	(4)
Sample Surrogate Recovery				
Tetrachloro-xylene (TCMX)	26 - 139	(4)	57 - 122	(4)
Decachlorobiphenyl	43 - 143	(4)	50 - 151	(4)

(1) ARI's Control limits calculated using all available spike recovery data from 9/1/09 or 8/31/10.
(2) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(3) **ME** = A **marginal exceedance** defined in the NELAC Standard [6] as beyond the LCS-CL but still within the ME limits. ME limits are between 3 and 4 standard deviations around the mean. A maximum of one marginal exceedance is acceptable. Two or more marginal exceedances require corrective action.
(4) Marginal Exceedances not allowed for a surrogate standard.
(5) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(6) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.

Analytical Resources,Incorporated
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Spike Recovery Control Limits - Analysis of PCB / Aroclors in Soil & Sediment Samples - EPA SW-846 Method 8082

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	Routine Analysis	PSDDA	Low Level	Low level	Soxhlet Extraction	Medium Level
Typical Reporting Limit (µg/kg):	**33**	**20**	**10**	**4**	**100**	**800**
Nominal Sample Wet Weight (g):	**12**	**25**	**25**	**25**	**10**	**5**
Final Extract Volume (mL):	**4**	**5**	**2.5**	**1**	**10**	**40**
LCS Spike Recovery [1,2]						
Aroclor 1016	48 - 106	52 - 101	53 - **100**	37 - 106	30 - 160[3]	59 - 108
Aroclor 1260	50 - 121	52 - 126	58 - 112	50 - 116	30 - 160[3]	43 - 177
Method Blank / LCS Surrogate Recovery						
Tetrachloro-*meta*-xylene (TCMX)	46 - 111	47 - 110	43 - 108	35 - 100	30 - 160[3]	49 - 110
Decachlorobiphenyl	51 - 112	48 - 119	48 - 118	40 - 109	30 - 160[3]	51 - 127
Sample Surrogate Recovery						
Tetrachloro-*meta*-xylene (TCMX)	50 - 114	46 - 113	35 - 119	38 - 102	30 - 160[3]	28 - 106
Decachlorobiphenyl	42 - 127	40 - 130	33 - 143	34 - 141	30 - 160[3]	22 - 168

(1) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(2) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(3) 30 – 160 are default, advisory control limits used when there is insufficient data to calculate historic control limits. **DO NOT** use these limits as the sole reason to reject the data from a batch of analyses.

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Spike Recovery Control Limits Hydrocarbon Identification (NWTPH-HCID) and Diesel Range Petroleum Hydrocarbons (NWTPH-D & AK-102) [1]

Effective 10/4/10

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Method:	NWTPH-HCID [2]	NWTPH-D		AK102 [2]
Sample Matrix:	Water& Soil	Water [3]	Soil[4]	Water & Soil
Preparation:	500 to 1 mL	500 to 1 mL	10g to 1 mL	500 to 1 mL or 10g to 1 mL
LCS Spike Recovery [5]				
Diesel	-	60 - 111	64 - 116	75 - 125
Diesel with Acid & Silica Clean-up	-	49 - 107	59 - 108	(6)
Diesel with Silica Clean-up		49 - 107	59 - 108	75 - 125
Method Blank/LCS Surrogate Recovery				
o-Terphenyl	-	56 - 130	64 - 134	60 - 120
o-Terphenyl with Acid & Silica Clean-up	-	53 - 123	59 - 134	(6)
o-Terphenyl Silica Clean-up		53 - 123	59 - 134	60 - 120
Sample Surrogate Recovery				
o-Terphenyl	50 - 150	52 - 134	52 - 130	50 - 150
o-Terphenyl with Acid & Silica Clean-up	-	49 - 118	43 - 137	(6)
o-Terphenyl with Silica Clean-up	-	49 - 118	43 - 137	50 - 150

1. Control Limits calculated using all data generated 1/1/10 through 9/1/10
2. Method specified, non-prescriptive limits. The NWTPH-HCID Method does not include LCS or MS analyses.
3. Separatory Funnel Extraction – EPA Method 3510C
4. Microwave Extraction – EPA Method 3546
5. Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
6. Alaska State UST Methods do not allow acid cleanup of sample extracts.

Summary of Laboratory Control Limits Metals Analyses (All Methods & Sample Matrices)

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Element	Matrix Spike Recovery	LCS Recovery	Replicate RPD
Aluminum	75 - 125	80 - 120	≤ 20%
Antimony	75 - 125	80 - 120	≤ 20%
Arsenic	75 - 125	80 - 120	≤ 20%
Barium	75 - 125	80 - 120	≤ 20%
Beryllium	75 - 125	80 - 120	≤ 20%
Boron	75 - 125	80 - 120	≤ 20%
Cadmium	75 - 125	80 - 120	≤ 20%
Calcium	75 - 125	80 - 120	≤ 20%
Chromium	75 - 125	80 - 120	≤ 20%
Cobalt	75 - 125	80 - 120	≤ 20%
Copper	75 - 125	80 - 120	≤ 20%
Iron	75 - 125	80 - 120	≤ 20%
Lead	75 - 125	80 - 120	≤ 20%
Magnesium	75 - 125	80 - 120	≤ 20%
Manganese	75 - 125	80 - 120	≤ 20%
Mercury	75 - 125	80 - 120	≤ 20%
Nickel	75 - 125	80 - 120	≤ 20%
Potassium	75 - 125	80 - 120	≤ 20%
Selenium	75 - 125	80 - 120	≤ 20%
Silica	75 - 125	80 - 120	≤ 20%
Silver	75 - 125	80 - 120	≤ 20%
Sodium	75 - 125	80 - 120	≤ 20%
Strontium	75 - 125	80 - 120	≤ 20%
Thallium	75 - 125	80 - 120	≤ 20%
Vanadium	75 - 125	80 - 120	≤ 20%
Zinc	75 - 125	80 - 120	≤ 20%

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Conventional Wet Chemistry

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI's Control Limits	
Sample Matrix:	Water	Soil / Sediment
Matrix Spike Recoveries	% Recovery	% Recovery
Ammonia	75 - 125	75 - 125
Bromide	75 125	75 - 125
Chloride	75 125	75 - 125
Cyanide	75 - 125	75 - 125
Ferrous Iron	75 - 125	75 - 125
Fluoride	75 - 125	75 - 125
Formaldehyde	75 - 125	75 - 125
Hexane Extractable Material	-- - --	78 - 114
Hexavalent Chromium	75 - 125	75 - 125
Nitrate/Nitrite	75 - 125	75 - 125
Oil and Grease	75 - 125	75 - 125
Phenol	75 - 125	75 - 125
Phosphorous	75 - 125	75 - 125
Sulfate	75 - 125	75 - 125
Sulfide	75 - 125	75 - 125
Total Kjeldahl Nitrogen	75 - 125	75 - 125
Total Organic Carbon	75 - 125	75 - 125
Duplicate RPDs		
Acidity	±20%	±20%
Alkalinity	±20%	±20%
BOD	±20%	±20%
Cation Exchange	±20%	±20%
COD	±20%	±20%
Conductivity	±20%	±20%
Salinity	±20%	±20%
Solids	±20%	±20%
Turbidity	±20%	±20%

Semivolatile Analysis
Report and Summary QC Forms

ARI Job ID: SH66

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C1**
Page 1 of 1 **SAMPLE**

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/08/11 22:39
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 29.4%

CAS Number	Analyte	MDL	RL	Result
108-95-2	Phenol	3.7	20	< 20 U
541-73-1	1,3-Dichlorobenzene	2.6	20	< 20 U
106-46-7	1,4-Dichlorobenzene	2.7	20	< 20 U
100-51-6	Benzyl Alcohol	45	98	< 98 U
95-50-1	1,2-Dichlorobenzene	2.9	20	< 20 U
95-48-7	2-Methylphenol	5.2	20	< 20 U
106-44-5	4-Methylphenol	4.7	20	< 20 U
67-72-1	Hexachloroethane	4.8	20	< 20 U
105-67-9	2,4-Dimethylphenol	7.8	20	< 20 U
65-85-0	Benzoic Acid	42	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	3.7	20	< 20 U
91-20-3	Naphthalene	2.7	20	< 20 U
87-68-3	Hexachlorobutadiene	2.8	20	< 20 U
91-57-6	2-Methylnaphthalene	2.9	20	< 20 U
131-11-3	Dimethylphthalate	3.6	20	< 20 U
208-96-8	Acenaphthylene	2.9	20	< 20 U
83-32-9	Acenaphthene	3.2	20	< 20 U
132-64-9	Dibenzofuran	3.1	20	< 20 U
84-66-2	Diethylphthalate	3.7	20	< 20 U
86-73-7	Fluorene	3.5	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	13	20	< 20 U
118-74-1	Hexachlorobenzene	3.3	20	< 20 U
87-86-5	Pentachlorophenol	27	98	< 98 U
85-01-8	Phenanthrene	3.5	20	< 20 U
120-12-7	Anthracene	4.3	20	< 20 U
84-74-2	Di-n-Butylphthalate	4.6	20	< 20 U
206-44-0	Fluoranthene	4.3	20	< 20 U
129-00-0	Pyrene	4.7	20	< 20 U
85-68-7	Butylbenzylphthalate	4.0	20	< 20 U
56-55-3	Benzo(a)anthracene	4.5	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	8.5	20	< 20 U
218-01-9	Chrysene	5.7	20	< 20 U
117-84-0	Di-n-Octyl phthalate	5.1	20	< 20 U
50-32-8	Benzo(a)pyrene	5.0	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	4.4	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	4.7	20	< 20 U
90-12-0	1-Methylnaphthalene	2.6	20	< 20 U
TOTBFA	Total Benzofluoranthenes	20	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	68.0%	2-Fluorobiphenyl	71.2%
d14-p-Terphenyl	75.2%	d4-1,2-Dichlorobenzene	72.0%
d5-Phenol	70.1%	2-Fluorophenol	68.3%
2,4,6-Tribromophenol	77.1%	d4-2-Chlorophenol	69.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: C1Z
SAMPLE

Lab Sample ID: SH66B
LIMS ID: 11-2466
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 09:12
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 22.4%

CAS Number	Analyte	MDL	RL	Result
117-81-7	bis(2-Ethylhexyl)phthalate	8.5	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	71.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: C5
SAMPLE

Lab Sample ID: SH66C
LIMS ID: 11-2467
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 09:45
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 45.3%

CAS Number	Analyte	MDL	RL	Result
108-95-2	Phenol	3.8	20	< 20 U
541-73-1	1,3-Dichlorobenzene	2.6	20	< 20 U
106-46-7	1,4-Dichlorobenzene	2.7	20	< 20 U
100-51-6	Benzyl Alcohol	46	99	< 99 U
95-50-1	1,2-Dichlorobenzene	2.9	20	< 20 U
95-48-7	2-Methylphenol	5.3	20	< 20 U
106-44-5	4-Methylphenol	4.8	20	< 20 U
67-72-1	Hexachloroethane	4.8	20	< 20 U
105-67-9	2,4-Dimethylphenol	7.9	20	< 20 U
65-85-0	Benzoic Acid	42	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	3.8	20	< 20 U
91-20-3	Naphthalene	2.7	20	< 20 U
87-68-3	Hexachlorobutadiene	2.9	20	< 20 U
91-57-6	2-Methylnaphthalene	3.0	20	< 20 U
131-11-3	Dimethylphthalate	3.7	20	< 20 U
208-96-8	Acenaphthylene	3.0	20	< 20 U
83-32-9	Acenaphthene	3.3	20	< 20 U
132-64-9	Dibenzofuran	3.1	20	< 20 U
84-66-2	Diethylphthalate	3.7	20	< 20 U
86-73-7	Fluorene	3.5	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	13	20	< 20 U
118-74-1	Hexachlorobenzene	3.3	20	< 20 U
87-86-5	Pentachlorophenol	27	99	< 99 U
85-01-8	Phenanthrene	3.6	20	< 20 U
120-12-7	Anthracene	4.3	20	< 20 U
84-74-2	Di-n-Butylphthalate	4.6	20	< 20 U
206-44-0	Fluoranthene	4.3	20	< 20 U
129-00-0	Pyrene	4.7	20	< 20 U
85-68-7	Butylbenzylphthalate	4.1	20	< 20 U
56-55-3	Benzo(a)anthracene	4.6	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	8.6	20	< 20 U
218-01-9	Chrysene	5.8	20	< 20 U
117-84-0	Di-n-Octyl phthalate	5.2	20	< 20 U
50-32-8	Benzo(a)pyrene	5.1	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	4.5	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	4.7	20	< 20 U
90-12-0	1-Methylnaphthalene	2.7	20	< 20 U
TOTBFA	Total Benzofluoranthenes	20	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	63.6%	2-Fluorobiphenyl	67.2%
d14-p-Terphenyl	64.0%	d4-1,2-Dichlorobenzene	65.2%
d5-Phenol	68.3%	2-Fluorophenol	61.6%
2,4,6-Tribromophenol	71.5%	d4-2-Chlorophenol	65.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
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Sample ID: C5Z
SAMPLE

Lab Sample ID: SH66D
LIMS ID: 11-2468
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 10:18
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 24.5%

CAS Number	Analyte	MDL	RL	Result
117-81-7	bis(2-Ethylhexyl)phthalate	8.4	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	54.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C2-4**
Page 1 of 1 **SAMPLE**

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 11:56
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.3 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 28.4%

CAS Number	Analyte	MDL	RL	Result
108-95-2	Phenol	3.8	20	< 20 U
541-73-1	1,3-Dichlorobenzene	2.6	20	< 20 U
106-46-7	1,4-Dichlorobenzene	2.7	20	< 20 U
100-51-6	Benzyl Alcohol	45	99	< 99 U
95-50-1	1,2-Dichlorobenzene	2.9	20	< 20 U
95-48-7	2-Methylphenol	5.3	20	< 20 U
106-44-5	4-Methylphenol	4.8	20	< 20 U
67-72-1	Hexachloroethane	4.8	20	< 20 U
105-67-9	2,4-Dimethylphenol	7.9	20	< 20 U
65-85-0	Benzoic Acid	42	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	3.8	20	< 20 U
91-20-3	Naphthalene	2.7	20	< 20 U
87-68-3	Hexachlorobutadiene	2.9	20	< 20 U
91-57-6	2-Methylnaphthalene	3.0	20	< 20 U
131-11-3	Dimethylphthalate	3.7	20	< 20 U
208-96-8	Acenaphthylene	3.0	20	< 20 U
83-32-9	Acenaphthene	3.3	20	< 20 U
132-64-9	Dibenzofuran	3.1	20	< 20 U
84-66-2	Diethylphthalate	3.7	20	< 20 U
86-73-7	Fluorene	3.5	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	13	20	< 20 U
118-74-1	Hexachlorobenzene	3.3	20	< 20 U
87-86-5	Pentachlorophenol	27	99	< 99 U
85-01-8	Phenanthrene	3.6	20	< 20 U
120-12-7	Anthracene	4.3	20	< 20 U
84-74-2	Di-n-Butylphthalate	4.6	20	< 20 U
206-44-0	Fluoranthene	4.3	20	< 20 U
129-00-0	Pyrene	4.7	20	< 20 U
85-68-7	Butylbenzylphthalate	4.1	20	< 20 U
56-55-3	Benzo(a)anthracene	4.6	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	8.6	20	< 20 U
218-01-9	Chrysene	5.7	20	< 20 U
117-84-0	Di-n-Octyl phthalate	5.2	20	< 20 U
50-32-8	Benzo(a)pyrene	5.1	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	4.5	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	4.7	20	< 20 U
90-12-0	1-Methylnaphthalene	2.6	20	< 20 U
TOTBFA	Total Benzofluoranthenes	20	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	69.2%	2-Fluorobiphenyl	73.2%
d14-p-Terphenyl	70.4%	d4-1,2-Dichlorobenzene	68.4%
d5-Phenol	70.4%	2-Fluorophenol	63.2%
2,4,6-Tribromophenol	81.9%	d4-2-Chlorophenol	68.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
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Sample ID: C2-4Z
SAMPLE

Lab Sample ID: SH66F
LIMS ID: 11-2470
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 12:28
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 20.7%

CAS Number	Analyte	MDL	RL	Result
117-81-7	bis(2-Ethylhexyl)phthalate	8.5	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	68.0%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00

Client ID	NBZ	FBP	TPH	DCB	PHL	2FP	TBP	2CP	TOT OUT
MB-020811	79.2%	78.4%	90.8%	81.2%	87.7%	81.3%	93.1%	82.9%	0
LCS-020811	78.8%	81.2%	89.2%	76.4%	84.3%	76.0%	107%	77.6%	0
LCSD-020811	78.8%	80.0%	86.4%	76.0%	84.5%	76.8%	105%	78.4%	0
C1	68.0%	71.2%	75.2%	72.0%	70.1%	68.3%	77.1%	69.9%	0
C1Z	----	----	71.2%	----	----	----	----	----	0
C5	63.6%	67.2%	64.0%	65.2%	68.3%	61.6%	71.5%	65.9%	0
MB-020811	----	----	90.8%	----	----	----	----	----	0
LCS-020811	----	----	89.2%	----	----	----	----	----	0
LCSD-020811	----	----	86.4%	----	----	----	----	----	0
C5Z	----	----	54.0%	----	----	----	----	----	0
C5Z MS	----	----	70.8%	----	----	----	----	----	0
C5Z MSD	----	----	73.2%	----	----	----	----	----	0
C2-4	69.2%	73.2%	70.4%	68.4%	70.4%	63.2%	81.9%	68.8%	0
C2-4Z	----	----	68.0%	----	----	----	----	----	0

	LCS/MB LIMITS	QC LIMITS
(NBZ) = d5-Nitrobenzene	(46-102)	(32-106)
(FBP) = 2-Fluorobiphenyl	(51-105)	(39-107)
(TPH) = d14-p-Terphenyl	(55-124)	(31-130)
(DCB) = d4-1,2-Dichlorobenzene	(48-104)	(38-102)
(PHL) = d5-Phenol	(44-110)	(27-112)
(2FP) = 2-Fluorophenol	(38-112)	(22-108)
(TBP) = 2,4,6-Tribromophenol	(54-120)	(31-131)
(2CP) = d4-2-Chlorophenol	(50-103)	(36-104)

Prep Method: SW3546
Log Number Range: 11-2465 to 11-2470

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: C5Z
MS/MSD

Lab Sample ID: SH66D
LIMS ID: 11-2468
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted MS/MSD: 02/08/11

Date Analyzed MS: 02/09/11 10:50
MSD: 02/09/11 11:23
Instrument/Analyst MS: NT6/JZ
MSD: NT6/JZ
GPC Cleanup: No

Sample Amount MS: 25.8 g-dry-wt
MSD: 25.8 g-dry-wt
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00
Percent Moisture: 24.5 %

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
bis(2-Ethylhexyl)phthalate	< 19.4 U	384	484	79.3%	398	484	82.2%	3.6%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: C5Z
MATRIX SPIKE

Lab Sample ID: SH66D
LIMS ID: 11-2468
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 10:50
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 24.5%

CAS Number	Analyte	MDL	RL	Result
117-81-7	bis(2-Ethylhexyl)phthalate	8.4	19	---

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	70.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS **Sample ID: C5Z**
Page 1 of 1 **MATRIX SPIKE DUPLICATE**

Lab Sample ID: SH66D
LIMS ID: 11-2468
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 11:23
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 24.5%

CAS Number	Analyte	MDL	RL	Result
117-81-7	bis(2-Ethylhexyl)phthalate	8.4	19	---

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	73.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: LCS-020811
LCS/LCSD

Lab Sample ID: LCS-020811
LIMS ID: 11-2468
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted LCS/LCSD: 02/08/11

Date Analyzed LCS: 02/08/11 21:33
LCSD: 02/08/11 22:06
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: No

Sample Amount LCS: 25.0 g
LCSD: 25.0 g
Final Extract Volume LCS: 0.5 mL
LCSD: 0.5 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
bis(2-Ethylhexyl)phthalate	476	500	95.2%	474	500	94.8%	0.4%

Semivolatile Surrogate Recovery

	LCS	LCSD
d14-p-Terphenyl	89.2%	86.4%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

Sample ID: LCS-020811
LCS/LCSD

Lab Sample ID: LCS-020811
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted LCS/LCSD: 02/08/11

Date Analyzed LCS: 02/08/11 21:33
LCSD: 02/08/11 22:06
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ
GPC Cleanup: No

Sample Amount LCS: 25.0 g
LCSD: 25.0 g
Final Extract Volume LCS: 0.5 mL
LCSD: 0.5 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Phenol	454	500	90.8%	466	500	93.2%	2.6%
1,3-Dichlorobenzene	359	500	71.8%	372	500	74.4%	3.6%
1,4-Dichlorobenzene	362	500	72.4%	375	500	75.0%	3.5%
Benzyl Alcohol	821	1000	82.1%	838	1000	83.8%	2.0%
1,2-Dichlorobenzene	378	500	75.6%	389	500	77.8%	2.9%
2-Methylphenol	399	500	79.8%	414	500	82.8%	3.7%
4-Methylphenol	830	1000	83.0%	866	1000	86.6%	4.2%
Hexachloroethane	393	500	78.6%	403	500	80.6%	2.5%
2,4-Dimethylphenol	434	500	86.8%	441	500	88.2%	1.6%
Benzoic Acid	1430 Q	1500	95.3%	1400 Q	1500	93.3%	2.1%
1,2,4-Trichlorobenzene	386	500	77.2%	397	500	79.4%	2.8%
Naphthalene	429	500	85.8%	439	500	87.8%	2.3%
Hexachlorobutadiene	393	500	78.6%	397	500	79.4%	1.0%
2-Methylnaphthalene	402	500	80.4%	415	500	83.0%	3.2%
Dimethylphthalate	461	500	92.2%	457	500	91.4%	0.9%
Acenaphthylene	471	500	94.2%	474	500	94.8%	0.6%
Acenaphthene	443	500	88.6%	445	500	89.0%	0.5%
Dibenzofuran	430	500	86.0%	431	500	86.2%	0.2%
Diethylphthalate	488	500	97.6%	462	500	92.4%	5.5%
Fluorene	484	500	96.8%	486	500	97.2%	0.4%
N-Nitrosodiphenylamine	430	500	86.0%	437	500	87.4%	1.6%
Hexachlorobenzene	434	500	86.8%	436	500	87.2%	0.5%
Pentachlorophenol	496	500	99.2%	502	500	100%	1.2%
Phenanthrene	494	500	98.8%	500	500	100%	1.2%
Anthracene	470	500	94.0%	471	500	94.2%	0.2%
Di-n-Butylphthalate	463	500	92.6%	465	500	93.0%	0.4%
Fluoranthene	538	500	108%	536	500	107%	0.4%
Pyrene	463	500	92.6%	465	500	93.0%	0.4%
Butylbenzylphthalate	442	500	88.4%	445	500	89.0%	0.7%
Benzo(a)anthracene	501	500	100%	498	500	99.6%	0.6%
bis(2-Ethylhexyl)phthalate	476	500	95.2%	474	500	94.8%	0.4%
Chrysene	473	500	94.6%	479	500	95.8%	1.3%
Di-n-Octyl phthalate	448	500	89.6%	447	500	89.4%	0.2%
Benzo(a)pyrene	475	500	95.0%	469	500	93.8%	1.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS

Sample ID: LCSD-020811
LCS/LCSD

Lab Sample ID: LCS-020811
LIMS ID: 11-2465
Matrix: Sediment
Date Analyzed LCS: 02/08/11 21:33
LCSD: 02/08/11 22:06

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Indeno(1,2,3-cd)pyrene	461	500	92.2%	464	500	92.8%	0.6%
Dibenz(a,h)anthracene	448	500	89.6%	451	500	90.2%	0.7%
Benzo(g,h,i)perylene	410	500	82.0%	415	500	83.0%	1.2%
1-Methylnaphthalene	434	500	86.8%	446	500	89.2%	2.7%
Total Benzofluoranthenes	1020	1000	102%	1020	1000	102%	0.0%

Semivolatile Surrogate Recovery

	LCS	LCSD
d5-Nitrobenzene	78.8%	78.8%
2-Fluorobiphenyl	81.2%	80.0%
d14-p-Terphenyl	89.2%	86.4%
d4-1,2-Dichlorobenzene	76.4%	76.0%
d5-Phenol	84.3%	84.5%
2-Fluorophenol	76.0%	76.8%
2,4,6-Tribromophenol	107%	105%
d4-2-Chlorophenol	77.6%	78.4%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO. SH66MBS1

Lab Name: ANALYTICAL RESOURCES, INC — Client: HART CROWSER

ARI Job No: SH66 — Project: TERMINAL 6

Lab File ID: 02081119 — Date Extracted: 02/08/11

Instrument ID: NT6 — Date Analyzed: 02/08/11

Matrix: SOLID — Time Analyzed: 2100

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SH66LCSS1	SH66LCSS1	02081120	02/08/11
02	SH66LCSDS1	SH66LCSDS1	02081121	02/08/11
03	C1	SH66A	02081122	02/08/11
04	C1Z	SH66B	02091102	02/09/11
05	C5	SH66C	02091103	02/09/11
06	C5Z	SH66D	02091104	02/09/11
07	C5Z MS	SH66DMS	02091105	02/09/11
08	C5Z MSD	SH66DMSD	02091106	02/09/11
09	C2-4	SH66E	02091107	02/09/11
10	C2-4Z	SH66F	02091108	02/09/11
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FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MB-020811
METHOD BLANK

Lab Sample ID: MB-020811
LIMS ID: 11-2468
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Date Extracted: 02/08/11
Date Analyzed: 02/08/11 21:00
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	MDL	RL	Result
117-81-7	bis(2-Ethylhexyl)phthalate	8.7	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery	
d14-p-Terphenyl	90.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MB-020811
METHOD BLANK

Lab Sample ID: MB-020811
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Date Extracted: 02/08/11
Date Analyzed: 02/08/11 21:00
Instrument/Analyst: NT6/JZ
GPC Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	MDL	RL	Result
108-95-2	Phenol	3.8	20	< 20 U
541-73-1	1,3-Dichlorobenzene	2.7	20	< 20 U
106-46-7	1,4-Dichlorobenzene	2.7	20	< 20 U
100-51-6	Benzyl Alcohol	46	100	< 100 U
95-50-1	1,2-Dichlorobenzene	3.0	20	< 20 U
95-48-7	2-Methylphenol	5.3	20	< 20 U
106-44-5	4-Methylphenol	4.8	20	< 20 U
67-72-1	Hexachloroethane	4.9	20	< 20 U
105-67-9	2,4-Dimethylphenol	8.0	20	< 20 U
65-85-0	Benzoic Acid	43	200	< 200 U
120-82-1	1,2,4-Trichlorobenzene	3.8	20	< 20 U
91-20-3	Naphthalene	2.7	20	< 20 U
87-68-3	Hexachlorobutadiene	2.9	20	< 20 U
91-57-6	2-Methylnaphthalene	3.0	20	< 20 U
131-11-3	Dimethylphthalate	3.7	20	< 20 U
208-96-8	Acenaphthylene	3.0	20	< 20 U
83-32-9	Acenaphthene	3.3	20	< 20 U
132-64-9	Dibenzofuran	3.2	20	< 20 U
84-66-2	Diethylphthalate	3.8	20	< 20 U
86-73-7	Fluorene	3.6	20	< 20 U
86-30-6	N-Nitrosodiphenylamine	13	20	< 20 U
118-74-1	Hexachlorobenzene	3.4	20	< 20 U
87-86-5	Pentachlorophenol	27	100	< 100 U
85-01-8	Phenanthrene	3.6	20	< 20 U
120-12-7	Anthracene	4.4	20	< 20 U
84-74-2	Di-n-Butylphthalate	4.7	20	< 20 U
206-44-0	Fluoranthene	4.4	20	< 20 U
129-00-0	Pyrene	4.8	20	< 20 U
85-68-7	Butylbenzylphthalate	4.1	20	< 20 U
56-55-3	Benzo(a)anthracene	4.6	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	8.7	20	< 20 U
218-01-9	Chrysene	5.8	20	< 20 U
117-84-0	Di-n-Octyl phthalate	5.2	20	< 20 U
50-32-8	Benzo(a)pyrene	5.1	20	< 20 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	20	< 20 U
53-70-3	Dibenz(a,h)anthracene	4.5	20	< 20 U
191-24-2	Benzo(g,h,i)perylene	4.8	20	< 20 U
90-12-0	1-Methylnaphthalene	2.7	20	< 20 U
TOTBFA	Total Benzofluoranthenes	20	20	< 20 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	79.2%	2-Fluorobiphenyl	78.4%
d14-p-Terphenyl	90.8%	d4-1,2-Dichlorobenzene	81.2%
d5-Phenol	87.7%	2-Fluorophenol	81.3%
2,4,6-Tribromophenol	93.1%	d4-2-Chlorophenol	82.9%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT6 Project: TERMINAL 6

DFTPP Injection Date: 01/28/11 DFTPP Injection Time: 0950

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	35.6
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	34.3
70	Less than 2.0% of mass 69	0.2 (0.6)1
127	10.0 - 80.0% of mass 198	44.3
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.3
275	10.0 - 60.0% of mass 198	25.1
365	Greater than 1.0% of mass 198	2.96
441	0.0 - 24.0% of mass 442	11.8 (14.7)2
442	50.0 - 200.0% of mass 198	80.2
443	15.0 - 24.0% of mass 442	15.0 (18.7)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC250128	IC250128	01281101	01/28/11	0950
02	IC010128	IC010128	01281102	01/28/11	1023
03	IC050128	IC050128	01281103	01/28/11	1056
04	IC100128	IC100128	01281104	01/28/11	1129
05	IC400128	IC400128	01281105	01/28/11	1202
06	IC600128	IC600128	01281106	01/28/11	1235
07	IC800128	IC800128	01281107	01/28/11	1308
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5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT6 Project: TERMINAL 6

DFTPP Injection Date: 02/08/11 DFTPP Injection Time: 1104

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	49.2
68	Less than 2.0% of mass 69	0.6 (1.6)1
69	Mass 69 relative abundance	37.3
70	Less than 2.0% of mass 69	0.7 (1.8)1
127	10.0 - 80.0% of mass 198	56.3
197	Less than 2.0% of mass 198	0.1
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	8.6
275	10.0 - 60.0% of mass 198	23.5
365	Greater than 1.0% of mass 198	2.77
441	0.0 - 24.0% of mass 442	10.8 (14.6)2
442	50.0 - 200.0% of mass 198	73.7
443	15.0 - 24.0% of mass 442	13.8 (18.8)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC0208	CC0208	02081101	02/08/11	1104
02	SH66MBS1	SH66MBS1	02081119	02/08/11	2100
03	SH66LCSS1	SH66LCSS1	02081120	02/08/11	2133
04	SH66LCSDS1	SH66LCSDS1	02081121	02/08/11	2206
05	C1	SH66A	02081122	02/08/11	2239
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FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT6 Project: TERMINAL 6

DFTPP Injection Date: 02/09/11 DFTPP Injection Time: 0838

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	47.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	37.5
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	52.5
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	8.5
275	10.0 - 60.0% of mass 198	23.0
365	Greater than 1.0% of mass 198	2.63
441	0.0 - 24.0% of mass 442	9.9 (14.8)2
442	50.0 - 200.0% of mass 198	67.0
443	15.0 - 24.0% of mass 442	13.7 (20.5)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC0209	CC0209	02091101	02/09/11	0838
02	C1Z	SH66B	02091102	02/09/11	0912
03	C5	SH66C	02091103	02/09/11	0945
04	C5Z	SH66D	02091104	02/09/11	1018
05	C5Z MS	SH66DMS	02091105	02/09/11	1050
06	C5Z MSD	SH66DMSD	02091106	02/09/11	1123
07	C2-4	SH66E	02091107	02/09/11	1156
08	C2-4Z	SH66F	02091108	02/09/11	1228
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FORM V SV

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT6 Calibration Date: 01/28/11

LAB FILE ID: RRF1 =01281102 RRF5 =01281103 RRF10 =01281104
RRF25 =01281101 RRF40 =01281105 RRF60 =01281106
RRF80 =01281107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	___ RRF	%RSD /R^2
Phenol	1.676	1.429	1.422	1.537	1.498	1.422	1.416	1.486	6.5
Bis(2-Chloroethyl)ether	1.384	1.252	1.209	1.275	1.188	1.184	1.201	1.242	5.7
2-Chlorophenol	1.451	1.214	1.227	1.308	1.282	1.198	1.208	1.270	7.1
1,3-Dichlorobenzene	1.724	1.645	1.589	1.649	1.556	1.552	1.529	1.606	4.3
1,4-Dichlorobenzene	1.684	1.689	1.602	1.678	1.583	1.567	1.521	1.618	4.1
1,2-Dichlorobenzene	1.674	1.548	1.499	1.544	1.432	1.413	1.383	1.499	6.7
Benzyl alcohol	0.971	0.859	0.902	0.964	0.920	0.912	0.899	0.918	4.2
2,2'-oxybis(1-Chloropropane)	1.621	1.499	1.466	1.542	1.453	1.459	1.427	1.495	4.5
2-Methylphenol	1.392	1.190	1.213	1.314	1.295	1.218	1.200	1.260	6.0
Hexachloroethane	0.610	0.588	0.568	0.588	0.554	0.546	0.537	0.570	4.6
N-Nitroso-di-n-propylamine	0.872	0.870	0.837	0.871	0.818	0.806	0.784	0.837	4.3
4-Methylphenol	1.412	1.256	1.257	1.365	1.325	1.244	1.218	1.297	5.5
Nitrobenzene	0.451	0.405	0.400	0.417	0.398	0.389	0.395	0.408	5.1
Isophorone	0.651	0.636	0.615	0.632	0.611	0.609	0.616	0.624	2.5
2-Nitrophenol	0.197	0.189	0.200	0.216	0.214	0.202	0.207	0.204	4.7
2,4-Dimethylphenol	0.370	0.322	0.330	0.354	0.353	0.328	0.335	0.342	5.2
Bis(2-Chloroethoxy)methane	0.482	0.446	0.434	0.446	0.426	0.423	0.425	0.440	4.8
2,4-Dichlorophenol	0.320	0.298	0.314	0.331	0.328	0.306	0.311	0.315	3.7
1,2,4-Trichlorobenzene	0.426	0.403	0.389	0.402	0.379	0.374	0.372	0.392	5.0
Naphthalene	1.186	1.085	1.046	1.069	0.989	0.932	0.883	1.027	9.9
Benzoic acid		0.199	0.239	0.283	0.288	0.282	0.288	0.263	13.8
4-Chloroaniline	0.495	0.456	0.462	0.454	0.425	0.404	0.393	0.441	8.1
Hexachlorobutadiene	0.234	0.216	0.217	0.226	0.219	0.217	0.218	0.221	3.0
4-Chloro-3-methylphenol	0.264	0.252	0.272	0.293	0.296	0.276	0.270	0.275	5.7
2-Methylnaphthalene	0.697	0.605	0.630	0.660	0.621	0.598	0.585	0.628	6.2
Hexachlorocyclopentadiene		0.278	0.325	0.389	0.389	0.396	0.425	0.367	14.9
2,4,6-Trichlorophenol	0.387	0.360	0.390	0.435	0.440	0.435	0.448	0.414	8.2
2,4,5-Trichlorophenol	0.371	0.418	0.451	0.512	0.506	0.466	0.478	0.457	10.9
2-Chloronaphthalene	1.301	1.256	1.207	1.258	1.155	1.140	1.126	1.206	5.6
2-Nitroaniline	0.280	0.325	0.332	0.381	0.354	0.356	0.358	0.341	9.5
Acenaphthylene	1.920	1.874	1.786	1.846	1.721	1.656	1.586	1.770	6.9
Dimethylphthalate	1.352	1.326	1.282	1.322	1.240	1.217	1.200	1.277	4.6
2,6-Dinitrotoluene	0.288	0.313	0.307	0.333	0.315	0.312	0.318	0.312	4.3
Acenaphthene	1.227	1.168	1.129	1.157	1.090	1.071	1.066	1.130	5.2
3-Nitroaniline	0.330	0.312	0.317	0.318	0.266	0.253	0.236	0.290	12.9
2,4-Dinitrophenol		0.043	0.093	0.134	0.170	0.174	0.187	0.134	0.996
Dibenzofuran	1.902	1.683	1.728	1.807	1.697	1.632	1.605	1.722	6.0

<- Outside QC limits: %RSD <20% or R^2 > 0.990

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT6 Calibration Date: 01/28/11

LAB FILE ID: RRF1 =01281102 RRF5 =01281103 RRF10 =01281104
RRF25 =01281101 RRF40 =01281105 RRF60 =01281106
RRF80 =01281107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	___ RRF	%RSD /R^2
4-Nitrophenol	0.137	0.130	0.139	0.161	0.157	0.147	0.150	0.146	7.6
2,4-Dinitrotoluene	0.340	0.377	0.375	0.411	0.391	0.399	0.394	0.384	6.0
Fluorene	1.396	1.319	1.270	1.311	1.229	1.199	1.183	1.272	5.9
4-Chlorophenyl-phenylether	0.695	0.674	0.661	0.696	0.663	0.663	0.670	0.674	2.2
Diethylphthalate	1.293	1.214	1.175	1.212	1.124	1.092	1.072	1.169	6.7
4-Nitroaniline	0.287	0.294	0.280	0.285	0.269	0.269	0.276	0.280	3.4
4,6-Dinitro-2-methylphenol		0.092	0.124	0.153	0.158	0.152	0.158	0.140	19.2
N-Nitrosodiphenylamine (1)	0.627	0.600	0.585	0.614	0.581	0.571	0.579	0.594	3.4
4-Bromophenyl-phenylether	0.263	0.252	0.249	0.264	0.250	0.255	0.264	0.257	2.7
Hexachlorobenzene	0.285	0.267	0.270	0.291	0.280	0.284	0.292	0.281	3.5
Pentachlorophenol	0.139	0.149	0.168	0.185	0.189	0.184	0.192	0.172	12.3
Phenanthrene	1.274	1.150	1.116	1.142	1.070	1.047	1.038	1.120	7.3
Anthracene	1.259	1.189	1.147	1.195	1.106	1.052	1.023	1.139	7.4
Carbazole	1.086	1.026	0.938	0.970	0.892	0.893	0.894	0.957	7.9
Di-n-butylphthalate	1.331	1.251	1.205	1.260	1.181	1.124	1.089	1.206	6.9
Fluoranthene	1.171	1.113	1.111	1.189	1.107	1.086	1.052	1.118	4.2
Pyrene	1.351	1.266	1.187	1.203	1.111	1.030	1.000	1.164	10.8
Butylbenzylphthalate	0.534	0.525	0.505	0.526	0.493	0.475	0.475	0.505	4.8
Benzo(a)anthracene	1.122	1.042	1.008	1.063	0.990	0.975	0.968	1.024	5.4
3,3'-Dichlorobenzidine	0.461	0.408	0.425	0.432	0.385	0.380	0.378	0.410	7.7
Chrysene	1.128	1.038	0.984	1.014	0.963	0.912	0.914	0.993	7.6
bis(2-Ethylhexyl)phthalate	0.565	0.583	0.575	0.606	0.579	0.565	0.566	0.577	2.5
Di-n-octylphthalate	1.090	1.046	1.000	1.050	0.978	0.946	0.927	1.005	5.9
Benzo(b)fluoranthene	1.251	1.155	1.126	1.193	1.179	1.134	1.134	1.167	3.8
Benzo(k)fluoranthene	1.282	1.232	1.179	1.272	1.139	1.101	1.068	1.182	7.1
Benzo(a)pyrene	1.118	1.113	1.081	1.150	1.094	1.070	1.061	1.098	2.8
Indeno(1,2,3-cd)pyrene	1.361	1.334	1.323	1.382	1.321	1.333	1.356	1.344	1.7
Dibenzo(a,h)anthracene	1.114	1.097	1.076	1.160	1.100	1.085	1.073	1.101	2.7
Benzo(g,h,i)perylene	1.271	1.213	1.185	1.243	1.180	1.191	1.197	1.211	2.8
N-Nitrosodimethylamine	0.826	0.764	0.758	0.803	0.774	0.786	0.794	0.786	3.0
Aniline	2.048	1.830	1.903	1.956	1.882	1.812	1.791	1.889	4.8
Benzidine		0.421	0.313	0.208	0.226	0.218	0.218	0.267	0.993
Pyridine	1.247	1.370	1.347	1.459	1.345	1.358	1.385	1.359	4.6
1-methylnaphthalene	0.678	0.624	0.596	0.614	0.590	0.573	0.559	0.605	6.5
Azobenzene (1,2-DP-Hydrazine	1.321	1.310	1.248	1.312	1.232	1.305	1.292	1.288	2.7
Total Benzofluoranthenes	1.208	1.132	1.101	1.161	1.095	1.054	1.033	1.112	5.5
2-Fluorophenol	1.232	1.122	1.154	1.271	1.207	1.192		1.196	4.5

(1) Cannot be seperated from Diphenylamine

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-2

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT6 Calibration Date: 01/28/11

LAB FILE ID: RRF1 =01281102 RRF5 =01281103 RRF10 =01281104
RRF25 =01281101 RRF40 =01281105 RRF60 =01281106
RRF80 =01281107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	___ RRF	%RSD /R^2
Phenol-d5	1.566	1.412	1.451	1.555	1.503	1.453		1.490	4.2
2-Chlorophenol-d4	1.394	1.213	1.231	1.300	1.243	1.196		1.263	5.8
1,2-Dichlorobenzene-d4	0.979	0.855	0.872	0.911	0.880	0.843		0.890	5.6
Nitrobenzene-d5	0.402	0.351	0.375	0.386	0.384	0.367		0.378	4.7
2-Fluorobiphenyl	1.472	1.284	1.327	1.391	1.321	1.254		1.342	5.9
2,4,6-Tribromophenol	0.178	0.164	0.185	0.205	0.210	0.205		0.191	9.6
Terphenyl-d14	0.804	0.678	0.704	0.736	0.711	0.662		0.716	7.0

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-3

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT6 Cont. Calib. Date: 02/08/11

Init. Calib. Date: 01/28/11 Cont. Calib. Time: 1104

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Phenol	1.486	1.659	0.800	AVRG	11.6	
Bis(2-Chloroethyl)ether	1.242	1.277	0.700	AVRG	2.8	
2-Chlorophenol	1.270	1.332	0.800	AVRG	4.9	
1,3-Dichlorobenzene	1.606	1.621	0.010	AVRG	0.9	
1,4-Dichlorobenzene	1.618	1.671	0.010	AVRG	3.3	
1,2-Dichlorobenzene	1.499	1.562	0.010	AVRG	4.2	
Benzyl alcohol	0.918	1.036	0.010	AVRG	12.8	
2,2'-oxybis(1-Chloropropane)	1.495	1.639	0.010	AVRG	9.6	
2-Methylphenol	1.260	1.387	0.700	AVRG	10.1	
Hexachloroethane	0.570	0.621	0.300	AVRG	8.9	
N-Nitroso-di-n-propylamine	0.837	0.926	0.500	AVRG	10.6	
4-Methylphenol	1.297	1.484	0.600	AVRG	14.4	
Nitrobenzene	0.408	0.396	0.200	AVRG	-2.9	
Isophorone	0.624	0.637	0.400	AVRG	2.1	
2-Nitrophenol	0.204	0.220	0.100	AVRG	7.8	
2,4-Dimethylphenol	0.342	0.355	0.200	AVRG	3.8	
Bis(2-Chloroethoxy)methane	0.440	0.453	0.300	AVRG	3.0	
2,4-Dichlorophenol	0.315	0.344	0.200	AVRG	9.2	
1,2,4-Trichlorobenzene	0.392	0.400	0.010	AVRG	2.0	
Naphthalene	1.027	1.065	0.700	AVRG	3.7	
Benzoic acid	0.263	0.316	0.010	AVRG	20.2	<-
4-Chloroaniline	0.441	0.437	0.010	AVRG	-0.9	
Hexachlorobutadiene	0.221	0.224	0.010	AVRG	1.4	
4-Chloro-3-methylphenol	0.275	0.311	0.200	AVRG	13.1	
2-Methylnaphthalene	0.628	0.673	0.400	AVRG	7.2	
Hexachlorocyclopentadiene	0.367	0.419	0.050	AVRG	14.2	
2,4,6-Trichlorophenol	0.414	0.474	0.200	AVRG	14.5	
2,4,5-Trichlorophenol	0.457	0.490	0.200	AVRG	7.2	
2-Chloronaphthalene	1.206	1.243	0.800	AVRG	3.1	
2-Nitroaniline	0.341	0.348	0.010	AVRG	2.0	
Acenaphthylene	1.770	1.859	0.900	AVRG	5.0	
Dimethylphthalate	1.277	1.247	0.010	AVRG	-2.3	
2,6-Dinitrotoluene	0.312	0.321	0.200	AVRG	2.9	
Acenaphthene	1.130	1.178	0.900	AVRG	4.2	
3-Nitroaniline	0.290	0.245	0.010	AVRG	-15.5	
2,4-Dinitrophenol	50.00	70.10	0.010	2ORDR	40.2	<- NC
Dibenzofuran	1.722	1.845	0.800	AVRG	7.1	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

02/09/11

FORM VII SV-1

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT6 Cont. Calib. Date: 02/08/11

Init. Calib. Date: 01/28/11 Cont. Calib. Time: 1104

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
4-Nitrophenol	0.146	0.157	0.010	AVRG	7.5
2,4-Dinitrotoluene	0.384	0.410	0.200	AVRG	6.8
Fluorene	1.272	1.352	0.900	AVRG	6.3
4-Chlorophenyl-phenylether	0.674	0.694	0.400	AVRG	3.0
Diethylphthalate	1.169	1.163	0.010	AVRG	-0.5
4-Nitroaniline	0.280	0.251	0.010	AVRG	-10.4
4,6-Dinitro-2-methylphenol	0.140	0.143	0.010	AVRG	2.1
N-Nitrosodiphenylamine(1)	0.594	0.588	0.010	AVRG	-1.0
4-Bromophenyl-phenylether	0.257	0.267	0.100	AVRG	3.9
Hexachlorobenzene	0.281	0.293	0.100	AVRG	4.3
Pentachlorophenol	0.172	0.182	0.050	AVRG	5.8
Phenanthrene	1.120	1.305	0.700	AVRG	16.5
Anthracene	1.139	1.171	0.700	AVRG	2.8
Carbazole	0.957	1.026	0.010	AVRG	7.2
Di-n-butylphthalate	1.206	1.317	0.010	AVRG	9.2
Fluoranthene	1.118	1.264	0.600	AVRG	13.0
Pyrene	1.164	1.120	0.600	AVRG	-3.8
Butylbenzylphthalate	0.505	0.527	0.010	AVRG	4.4
Benzo(a)anthracene	1.024	1.081	0.800	AVRG	5.6
3,3'-Dichlorobenzidine	0.410	0.340	0.010	AVRG	-17.1
Chrysene	0.993	1.027	0.700	AVRG	3.4
bis(2-Ethylhexyl)phthalate	0.577	0.596	0.010	AVRG	3.3
Di-n-octylphthalate	1.005	1.037	0.010	AVRG	3.2
Benzo(b)fluoranthene	1.167	1.207	0.700	AVRG	3.4
Benzo(k)fluoranthene	1.182	1.333	0.700	AVRG	12.8
Benzo(a)pyrene	1.098	1.168	0.700	AVRG	6.4
Indeno(1,2,3-cd)pyrene	1.344	1.278	0.500	AVRG	-4.9
Dibenzo(a,h)anthracene	1.101	1.063	0.400	AVRG	-3.4
Benzo(g,h,i)perylene	1.211	1.091	0.500	AVRG	-9.9
N-Nitrosodimethylamine	0.786	0.816	0.010	AVRG	3.8
Aniline	1.889	1.660	0.010	AVRG	-12.1
Benzidine	25.00	0.000	0.010	2ORDR	
Pyridine	1.359	1.395	0.010	AVRG	2.6
1-methylnaphthalene	0.605	0.632	0.010	AVRG	4.5
Azobenzene (1,2-DP-Hydrazine	1.288	1.413	0.010	AVRG	9.7
Total Benzofluoranthenes	1.112	1.194	0.010	AVRG	7.4

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT6 Cont. Calib. Date: 02/08/11

Init. Calib. Date: 01/28/11 Cont. Calib. Time: 1104

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
2-Fluorophenol	1.196	1.301	0.010	AVRG	8.8
Phenol-d5	1.490	1.627	0.010	AVRG	9.2
2-Chlorophenol-d4	1.263	1.320	0.010	AVRG	4.5
1,2-Dichlorobenzene-d4	0.890	0.928	0.010	AVRG	4.3
Nitrobenzene-d5	0.378	0.379	0.010	AVRG	0.3
2-Fluorobiphenyl	1.342	1.336	0.010	AVRG	-0.4
2,4,6-Tribromophenol	0.191	0.207	0.010	AVRG	8.4
Terphenyl-d14	0.716	0.695	0.010	AVRG	-2.9

<- Exceeds QC limit of 20% D
* RF less than minimum RF

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT6 Cont. Calib. Date: 02/09/11

Init. Calib. Date: 01/28/11 Cont. Calib. Time: 0838

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Phenol	1.486	1.680	0.800	AVRG	13.0	
Bis(2-Chloroethyl)ether	1.242	1.321	0.700	AVRG	6.4	
2-Chlorophenol	1.270	1.335	0.800	AVRG	5.1	
1,3-Dichlorobenzene	1.606	1.653	0.010	AVRG	2.9	
1,4-Dichlorobenzene	1.618	1.712	0.010	AVRG	5.8	
1,2-Dichlorobenzene	1.499	1.569	0.010	AVRG	4.7	
Benzyl alcohol	0.918	1.022	0.010	AVRG	11.3	
2,2'-oxybis(1-Chloropropane)	1.495	1.622	0.010	AVRG	8.5	
2-Methylphenol	1.260	1.409	0.700	AVRG	11.8	
Hexachloroethane	0.570	0.635	0.300	AVRG	11.4	
N-Nitroso-di-n-propylamine	0.837	0.932	0.500	AVRG	11.4	
4-Methylphenol	1.297	1.480	0.600	AVRG	14.1	
Nitrobenzene	0.408	0.409	0.200	AVRG	0.2	
Isophorone	0.624	0.644	0.400	AVRG	3.2	
2-Nitrophenol	0.204	0.217	0.100	AVRG	6.4	
2,4-Dimethylphenol	0.342	0.357	0.200	AVRG	4.4	
Bis(2-Chloroethoxy)methane	0.440	0.459	0.300	AVRG	4.3	
2,4-Dichlorophenol	0.315	0.338	0.200	AVRG	7.3	
1,2,4-Trichlorobenzene	0.392	0.399	0.010	AVRG	1.8	
Naphthalene	1.027	1.072	0.700	AVRG	4.4	
Benzoic acid	0.263	0.315	0.010	AVRG	19.8	
4-Chloroaniline	0.441	0.469	0.010	AVRG	6.3	
Hexachlorobutadiene	0.221	0.226	0.010	AVRG	2.3	
4-Chloro-3-methylphenol	0.275	0.310	0.200	AVRG	12.7	
2-Methylnaphthalene	0.628	0.664	0.400	AVRG	5.7	
Hexachlorocyclopentadiene	0.367	0.389	0.050	AVRG	6.0	
2,4,6-Trichlorophenol	0.414	0.462	0.200	AVRG	11.6	
2,4,5-Trichlorophenol	0.457	0.518	0.200	AVRG	13.3	
2-Chloronaphthalene	1.206	1.280	0.800	AVRG	6.1	
2-Nitroaniline	0.341	0.396	0.010	AVRG	16.1	
Acenaphthylene	1.770	1.899	0.900	AVRG	7.3	
Dimethylphthalate	1.277	1.354	0.010	AVRG	6.0	
2,6-Dinitrotoluene	0.312	0.336	0.200	AVRG	7.7	
Acenaphthene	1.130	1.209	0.900	AVRG	7.0	
3-Nitroaniline	0.290	0.353	0.010	AVRG	21.7	<-
2,4-Dinitrophenol	50.00	70.26	0.010	2ORDR	40.5	<- NC
Dibenzofuran	1.722	1.857	0.800	AVRG	7.8	

<- Exceeds QC limit of 20% D

* RF less than minimum RF

02/09/11

FORM VII SV-1

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT6 Cont. Calib. Date: 02/09/11

Init. Calib. Date: 01/28/11 Cont. Calib. Time: 0838

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.146	0.160	0.010	AVRG	9.6	
2,4-Dinitrotoluene	0.384	0.426	0.200	AVRG	10.9	
Fluorene	1.272	1.350	0.900	AVRG	6.1	
4-Chlorophenyl-phenylether	0.674	0.704	0.400	AVRG	4.4	
Diethylphthalate	1.169	1.236	0.010	AVRG	5.7	
4-Nitroaniline	0.280	0.339	0.010	AVRG	21.1	<- MC
4,6-Dinitro-2-methylphenol	0.140	0.147	0.010	AVRG	5.0	
N-Nitrosodiphenylamine(1)	0.594	0.602	0.010	AVRG	1.3	
4-Bromophenyl-phenylether	0.257	0.259	0.100	AVRG	0.8	
Hexachlorobenzene	0.281	0.286	0.100	AVRG	1.8	
Pentachlorophenol	0.172	0.187	0.050	AVRG	8.7	
Phenanthrene	1.120	1.174	0.700	AVRG	4.8	
Anthracene	1.139	1.180	0.700	AVRG	3.6	
Carbazole	0.957	1.053	0.010	AVRG	10.0	
Di-n-butylphthalate	1.206	1.304	0.010	AVRG	8.1	
Fluoranthene	1.118	1.239	0.600	AVRG	10.8	
Pyrene	1.164	1.205	0.600	AVRG	3.5	
Butylbenzylphthalate	0.505	0.533	0.010	AVRG	5.5	
Benzo(a)anthracene	1.024	1.084	0.800	AVRG	5.8	
3,3'-Dichlorobenzidine	0.410	0.443	0.010	AVRG	8.0	
Chrysene	0.993	1.035	0.700	AVRG	4.2	
bis(2-Ethylhexyl)phthalate	0.577	0.608	0.010	AVRG	5.4	
Di-n-octylphthalate	1.005	1.044	0.010	AVRG	3.9	
Benzo(b)fluoranthene	1.167	1.235	0.700	AVRG	5.8	
Benzo(k)fluoranthene	1.182	1.304	0.700	AVRG	10.3	
Benzo(a)pyrene	1.098	1.147	0.700	AVRG	4.5	
Indeno(1,2,3-cd)pyrene	1.344	1.311	0.500	AVRG	-2.4	
Dibenzo(a,h)anthracene	1.101	1.090	0.400	AVRG	-1.0	
Benzo(g,h,i)perylene	1.211	1.172	0.500	AVRG	-3.2	
N-Nitrosodimethylamine	0.786	0.866	0.010	AVRG	10.2	
Aniline	1.889	1.739	0.010	AVRG	-7.9	
Benzidine	25.00	0.000	0.010	2ORDR		
Pyridine	1.359	1.481	0.010	AVRG	9.0	
1-methylnaphthalene	0.605	0.628	0.010	AVRG	3.8	
Azobenzene (1,2-DP-Hydrazine	1.288	1.472	0.010	AVRG	14.3	
Total Benzofluoranthenes	1.112	1.191	0.010	AVRG	7.1	

(1) Cannot be separated from Diphenylamine
<- Exceeds QC limit of 20% D
* RF less than minimum RF

02/09/11

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT6 Cont. Calib. Date: 02/09/11

Init. Calib. Date: 01/28/11 Cont. Calib. Time: 0838

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
2-Fluorophenol	1.196	1.236	0.010	AVRG	3.3
Phenol-d5	1.490	1.688	0.010	AVRG	13.3
2-Chlorophenol-d4	1.263	1.315	0.010	AVRG	4.1
1,2-Dichlorobenzene-d4	0.890	0.931	0.010	AVRG	4.6
Nitrobenzene-d5	0.378	0.390	0.010	AVRG	3.2
2-Fluorobiphenyl	1.342	1.391	0.010	AVRG	3.6
2,4,6-Tribromophenol	0.191	0.221	0.010	AVRG	15.7
Terphenyl-d14	0.716	0.731	0.010	AVRG	2.1

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Ical Midpoint ID: 01281101 Ical Date: 01/28/11

Instrument ID: NT6 Cont. Cal Date: 02/08/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	458851	7.33	1522936	9.39	864539	12.23
	UPPER LIMIT	917702		3045872		1729078	
	LOWER LIMIT	229426		761468		432270	
	CCAL	451277	6.65	1583127	8.72	977354	11.54
	UPPER LIMIT		7.15		9.22		12.04
	LOWER LIMIT		6.15		8.22		11.04
01	SH66MBS1	400533	6.65	1423873	8.72	864595	11.55
02	SH66LCSS1	435157	6.65	1521236	8.72	940789	11.55
03	SH66LCSDS1	445814	6.65	1580163	8.72	979911	11.55
04	C1	420605	6.65	1477409	8.72	900236	11.54
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IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Ical Midpoint ID: 01281101 Ical Date: 01/28/11

Instrument ID: NT6 Cont. Cal Date: 02/08/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1378528	14.58	1421586	18.86	1361193	21.00
	UPPER LIMIT	2757056		2843172		2722386	
	LOWER LIMIT	689264		710793		680596	
	CCAL	1605820	13.86	1892761	18.10	1682624	20.21
	UPPER LIMIT		14.36		18.60		20.71
	LOWER LIMIT		13.36		17.60		19.71
01	SH66MBS1	1524135	13.86	1729657	18.10	1577623	20.20
02	SH66LCSS1	1656307	13.87	1887703	18.10	1708981	20.21
03	SH66LCSDS1	1704767	13.87	1940535	18.10	1772414	20.21
04	C1	1598123	13.86	1798357	18.09	1635899	20.20
05							
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IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Ical Midpoint ID: 01281101 Ical Date: 01/28/11

Instrument ID: NT6 Cont. Cal Date: 02/08/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1679951	20.09				
	UPPER LIMIT	3359902					
	LOWER LIMIT	839976					
	CCAL	2292146	19.40				
	UPPER LIMIT		19.90				
	LOWER LIMIT		18.90				
01	SH66MBS1	2032748	19.39				
02	SH66LCSS1	2155473	19.40				
03	SH66LCSDS1	2226673	19.40				
04	C1	2160392	19.39				
05							
06							
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25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Ical Midpoint ID: 01281101 Ical Date: 01/28/11

Instrument ID: NT6 Cont. Cal Date: 02/09/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	458851	7.33	1522936	9.39	864539	12.23
	UPPER LIMIT	917702		3045872		1729078	
	LOWER LIMIT	229426		761468		432270	
	CCAL	325292	6.56	1139089	8.63	668318	11.45
	UPPER LIMIT		7.06		9.13		11.95
	LOWER LIMIT		6.06		8.13		10.95
01	C1Z	371620	6.56	1285597	8.63	769916	11.45
02	C5	347685	6.56	1194621	8.63	702534	11.45
03	C5Z	338962	6.55	1151659	8.62	690038	11.45
04	C5Z MS	330798	6.56	1109525	8.63	658107	11.45
05	C5Z MSD	372248	6.56	1302869	8.63	786556	11.46
06	C2-4	368829	6.56	1253686	8.63	747216	11.45
07	C2-4Z	338687	6.55	1097000	8.63	634989	11.45
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25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Ical Midpoint ID: 01281101 Ical Date: 01/28/11

Instrument ID: NT6 Cont. Cal Date: 02/09/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1378528	14.58	1421586	18.86	1361193	21.00
	UPPER LIMIT	2757056		2843172		2722386	
	LOWER LIMIT	689264		710793		680596	
	CCAL	1130531	13.77	1217579	17.99	1098437	20.09
	UPPER LIMIT		14.27		18.49		20.59
	LOWER LIMIT		13.27		17.49		19.59
01	C1Z	1317664	13.76	1412915	17.99	1337066	20.09
02	C5	1177922	13.76	1395787	17.99	1446870	20.10
03	C5Z	1148667	13.76	1276724	17.98	1274744	20.09
04	C5Z MS	1091669	13.76	1342726	17.99	1388393	20.10
05	C5Z MSD	1326022	13.77	1550800	17.99	1523135	20.10
06	C2-4	1257046	13.76	1530287	17.99	1505081	20.10
07	C2-4Z	1063789	13.76	1413862	17.98	1454819	20.09
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IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Ical Midpoint ID: 01281101 Ical Date: 01/28/11

Instrument ID: NT6 Cont. Cal Date: 02/09/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1679951	20.09				
	UPPER LIMIT	3359902					
	LOWER LIMIT	839976					
	CCAL	1432252	19.30				
	UPPER LIMIT		19.80				
	LOWER LIMIT		18.80				
01	C1Z	1719949	19.30				
02	C5	1636745	19.30				
03	C5Z	1542751	19.30				
04	C5Z MS	1540587	19.30				
05	C5Z MSD	1842452	19.30				
06	C2-4	1843615	19.30				
07	C2-4Z	1663006	19.30				
08							
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25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

SIM PAH Analysis
Report and Summary QC Forms

ARI Job ID: SH66

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Selected Ion Monitoring GC/MS **Sample ID: C1**
Page 1 of 1 **SAMPLE**

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 12:33
Instrument/Analyst: NT2/YZ
GPC Cleanup: No

Sample Amount: 10.7 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Percent Moisture: 29.4 %

CAS Number	Analyte	MDL	RL	Result
91-20-3	Naphthalene	1.7	4.7	< 4.7 U
91-57-6	2-Methylnaphthalene	2.0	4.7	< 4.7 U
90-12-0	1-Methylnaphthalene	1.3	4.7	< 4.7 U
208-96-8	Acenaphthylene	1.3	4.7	< 4.7 U
83-32-9	Acenaphthene	1.5	4.7	< 4.7 U
86-73-7	Fluorene	1.3	4.7	< 4.7 U
85-01-8	**Phenanthrene**	**1.3**	**4.7**	**13**
120-12-7	Anthracene	1.3	4.7	< 4.7 U
206-44-0	**Fluoranthene**	**1.3**	**4.7**	**26**
129-00-0	**Pyrene**	**1.3**	**4.7**	**23**
56-55-3	**Benzo(a)anthracene**	**2.1**	**4.7**	**6.5**
218-01-9	**Chrysene**	**1.6**	**4.7**	**22**
50-32-8	**Benzo(a)pyrene**	**2.1**	**4.7**	**5.1**
193-39-5	Indeno(1,2,3-cd)pyrene	1.6	4.7	< 4.7 U
53-70-3	Dibenz(a,h)anthracene	2.1	4.7	< 4.7 U
191-24-2	**Benzo(g,h,i)perylene**	**1.9**	**4.7**	**4.7**
132-64-9	Dibenzofuran	1.6	4.7	< 4.7 U
TOTBFA	**Total Benzofluoranthenes**	**3.1**	**4.7**	**11**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	67.3%
d14-Dibenzo(a,h)anthracen	82.3%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Selected Ion Monitoring GC/MS
Page 1 of 1

Sample ID: C5
SAMPLE

Lab Sample ID: SH66C
LIMS ID: 11-2467
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 12:56
Instrument/Analyst: NT2/YZ
GPC Cleanup: No

Sample Amount: 10.4 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Percent Moisture: 45.3 %

CAS Number	Analyte	MDL	RL	Result
91-20-3	Naphthalene	1.8	4.8	< 4.8 U
91-57-6	**2-Methylnaphthalene**	**2.0**	**4.8**	**8.6**
90-12-0	**1-Methylnaphthalene**	**1.3**	**4.8**	**4.8**
208-96-8	Acenaphthylene	1.4	4.8	< 4.8 U
83-32-9	Acenaphthene	1.5	4.8	< 4.8 U
86-73-7	Fluorene	1.4	4.8	< 4.8 U
85-01-8	**Phenanthrene**	**1.3**	**4.8**	**12**
120-12-7	Anthracene	1.3	4.8	< 4.8 U
206-44-0	**Fluoranthene**	**1.4**	**4.8**	**21**
129-00-0	**Pyrene**	**1.4**	**4.8**	**16**
56-55-3	**Benzo(a)anthracene**	**2.1**	**4.8**	**7.2**
218-01-9	**Chrysene**	**1.7**	**4.8**	**10**
50-32-8	**Benzo(a)pyrene**	**2.1**	**4.8**	**7.7**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**1.6**	**4.8**	**4.8**
53-70-3	Dibenz(a,h)anthracene	2.1	4.8	< 4.8 U
191-24-2	**Benzo(g,h,i)perylene**	**1.9**	**4.8**	**6.2**
132-64-9	Dibenzofuran	1.6	4.8	< 4.8 U
TOTBFA	**Total Benzofluoranthenes**	**3.2**	**4.8**	**18**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	74.0%
d14-Dibenzo(a,h)anthracen	88.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Selected Ion Monitoring GC/MS **Sample ID: C2-4**
Page 1 of 1 **SAMPLE**

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 13:20
Instrument/Analyst: NT2/YZ
GPC Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Percent Moisture: 28.4 %

CAS Number	Analyte	MDL	RL	Result
91-20-3	Naphthalene	1.8	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	2.1	5.0	< 5.0 U
90-12-0	1-Methylnaphthalene	1.3	5.0	< 5.0 U
208-96-8	Acenaphthylene	1.4	5.0	< 5.0 U
83-32-9	Acenaphthene	1.6	5.0	< 5.0 U
86-73-7	Fluorene	1.4	5.0	< 5.0 U
85-01-8	**Phenanthrene**	**1.4**	**5.0**	**6.5**
120-12-7	Anthracene	1.4	5.0	< 5.0 U
206-44-0	**Fluoranthene**	**1.4**	**5.0**	**7.5**
129-00-0	**Pyrene**	**1.4**	**5.0**	**7.0**
56-55-3	Benzo(a)anthracene	2.2	5.0	< 5.0 U
218-01-9	Chrysene	1.7	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	2.2	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.7	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	2.2	5.0	< 5.0 U
191-24-2	Benzo(g,h,i)perylene	2.0	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.7	5.0	< 5.0 U
TOTBFA	**Total Benzofluoranthenes**	**3.3**	**5.0**	**6.5**

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	68.7%
d14-Dibenzo(a,h)anthracen	79.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00

Client ID	MNP	DBA	TOT OUT
C1	67.3%	82.3%	0
C5	74.0%	88.3%	0
MB-020811	78.7%	70.3%	0
LCS-020811	73.3%	76.3%	0
LCSD-020811	77.3%	92.7%	0
C2-4	68.7%	79.0%	0
C2-4 MS	74.0%	88.7%	0
C2-4 MSD	66.0%	87.3%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(35-100)	(34-100)
(DBA) = d14-Dibenzo(a,h)anthracene	(37-120)	(10-117)

Prep Method: SW3546
Log Number Range: 11-2465 to 11-2469

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: C2-4
MATRIX SPIKE

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted MS/MSD: 02/08/11

Date Analyzed MS: 02/09/11 13:43
MSD: 02/09/11 14:07
Instrument/Analyst MS: NT2/YZ
MSD: NT2/YZ

Sample Amount MS: 10.1 g-dry-wt
MSD: 10.1 g-dry-wt
Final Extract Volume MS: 0.50 mL
MSD: 0.50 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Naphthalene	< 5.0 U	102	149	68.5%	94.1	149	63.2%	8.1%
2-Methylnaphthalene	< 5.0 U	103	149	69.1%	94.6	149	63.5%	8.5%
1-Methylnaphthalene	< 5.0 U	99.7	149	66.9%	95.0	149	63.8%	4.8%
Acenaphthylene	< 5.0 U	113	149	75.8%	106	149	71.1%	6.4%
Acenaphthene	< 5.0 U	114	149	76.5%	107	149	71.8%	6.3%
Fluorene	< 5.0 U	116	149	77.9%	111	149	74.5%	4.4%
Phenanthrene	6.5	129	149	82.2%	125	149	79.5%	3.1%
Anthracene	< 5.0 U	123	149	82.6%	123	149	82.6%	0.0%
Fluoranthene	7.5	135	149	85.6%	134	149	84.9%	0.7%
Pyrene	7.0	125	149	79.2%	125	149	79.2%	0.0%
Benzo(a)anthracene	< 5.0 U	125	149	83.9%	127	149	85.2%	1.6%
Chrysene	< 5.0 U	123	149	82.6%	120	149	80.5%	2.5%
Benzo(a)pyrene	< 5.0 U	118	149	79.2%	122	149	81.9%	3.3%
Indeno(1,2,3-cd)pyrene	< 5.0 U	122	149	81.9%	122	149	81.9%	0.0%
Dibenz(a,h)anthracene	< 5.0 U	117	149	78.5%	118	149	79.2%	0.9%
Benzo(g,h,i)perylene	< 5.0 U	120	149	80.5%	123	149	82.6%	2.5%
Dibenzofuran	< 5.0 U	112	149	75.2%	106	149	71.1%	5.5%
Total Benzofluoranthenes	6.5	231	298	75.3%	235	297	76.9%	1.7%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Selected Ion Monitoring GC/MS **Sample ID: C2-4**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 13:43
Instrument/Analyst: NT2/YZ
GPC Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Percent Moisture: 28.4 %

CAS Number	Analyte	MDL	RL	Result
91-20-3	Naphthalene	1.8	5.0	---
91-57-6	2-Methylnaphthalene	2.1	5.0	---
90-12-0	1-Methylnaphthalene	1.3	5.0	---
208-96-8	Acenaphthylene	1.4	5.0	---
83-32-9	Acenaphthene	1.6	5.0	---
86-73-7	Fluorene	1.4	5.0	---
85-01-8	Phenanthrene	1.4	5.0	---
120-12-7	Anthracene	1.4	5.0	---
206-44-0	Fluoranthene	1.4	5.0	---
129-00-0	Pyrene	1.4	5.0	---
56-55-3	Benzo(a)anthracene	2.2	5.0	---
218-01-9	Chrysene	1.7	5.0	---
50-32-8	Benzo(a)pyrene	2.2	5.0	---
193-39-5	Indeno(1,2,3-cd)pyrene	1.7	5.0	---
53-70-3	Dibenz(a,h)anthracene	2.2	5.0	---
191-24-2	Benzo(g,h,i)perylene	2.0	5.0	---
132-64-9	Dibenzofuran	1.7	5.0	---
TOTBFA	Total Benzofluoranthenes	3.3	5.0	---

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	74.0%
d14-Dibenzo(a,h)anthracen	88.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Selected Ion Monitoring GC/MS **Sample ID: C2-4**
Page 1 of 1 **MATRIX SPIKE DUP**

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 14:07
Instrument/Analyst: NT2/YZ
GPC Cleanup: No

Sample Amount: 10.1 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Percent Moisture: 28.4 %

CAS Number	Analyte	MDL	RL	Result
91-20-3	Naphthalene	1.8	5.0	---
91-57-6	2-Methylnaphthalene	2.1	5.0	---
90-12-0	1-Methylnaphthalene	1.3	5.0	---
208-96-8	Acenaphthylene	1.4	5.0	---
83-32-9	Acenaphthene	1.6	5.0	---
86-73-7	Fluorene	1.4	5.0	---
85-01-8	Phenanthrene	1.4	5.0	---
120-12-7	Anthracene	1.4	5.0	---
206-44-0	Fluoranthene	1.4	5.0	---
129-00-0	Pyrene	1.4	5.0	---
56-55-3	Benzo(a)anthracene	2.2	5.0	---
218-01-9	Chrysene	1.7	5.0	---
50-32-8	Benzo(a)pyrene	2.2	5.0	---
193-39-5	Indeno(1,2,3-cd)pyrene	1.7	5.0	---
53-70-3	Dibenz(a,h)anthracene	2.2	5.0	---
191-24-2	Benzo(g,h,i)perylene	2.0	5.0	---
132-64-9	Dibenzofuran	1.7	5.0	---
TOTBFA	Total Benzofluoranthenes	3.3	5.0	---

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.0%
d14-Dibenzo(a,h)anthracen	87.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: LCS-020811
LAB CONTROL SAMPLE

Lab Sample ID: LCS-020811
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: NA
Date Received: NA

Date Extracted: 02/08/11

Date Analyzed LCS: 02/09/11 11:46
LCSD: 02/09/11 12:10
Instrument/Analyst LCS: NT2/YZ
LCSD: NT2/YZ

Sample Amount LCS: 10.0 g-dry-wt
LCSD: 10.0 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	104	150	69.3%	113	150	75.3%	8.3%
2-Methylnaphthalene	100	150	66.7%	112	150	74.7%	11.3%
1-Methylnaphthalene	100	150	66.7%	112	150	74.7%	11.3%
Acenaphthylene	103	150	68.7%	114	150	76.0%	10.1%
Acenaphthene	110	150	73.3%	115	150	76.7%	4.4%
Fluorene	110	150	73.3%	117	150	78.0%	6.2%
Phenanthrene	120	150	80.0%	124	150	82.7%	3.3%
Anthracene	136	150	90.7%	130	150	86.7%	4.5%
Fluoranthene	128	150	85.3%	131	150	87.3%	2.3%
Pyrene	137	150	91.3%	139	150	92.7%	1.4%
Benzo(a)anthracene	128	150	85.3%	132	150	88.0%	3.1%
Chrysene	125	150	83.3%	132	150	88.0%	5.4%
Benzo(a)pyrene	126	150	84.0%	134	150	89.3%	6.2%
Indeno(1,2,3-cd)pyrene	114	150	76.0%	126	150	84.0%	10.0%
Dibenz(a,h)anthracene	109	150	72.7%	125	150	83.3%	13.7%
Benzo(g,h,i)perylene	122	150	81.3%	129	150	86.0%	5.6%
Dibenzofuran	106	150	70.7%	114	150	76.0%	7.3%
Total Benzofluoranthenes	258	300	86.0%	276	300	92.0%	6.7%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	73.3%	77.3%
d14-Dibenzo(a,h)anthracen	76.3%	92.7%

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

SH66MBS1

Lab Name: ANALYTICAL RESOURCES, INC — Client: HART CROWSER

ARI Job No: SH66 — Project: TERMINAL 6

Lab File ID: SH66MB — Date Extracted: 02/08/11

Instrument ID: NT2 — Date Analyzed: 02/09/11

Matrix: SOLID — Time Analyzed: 1123

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SH66LCSS1	SH66LCSS1	SH66SB	02/09/11
02	SH66LCSDS1	SH66LCSDS1	SH67SBD	02/09/11
03	C1	SH66A	SH66A	02/09/11
04	C5	SH66C	SH66C	02/09/11
05	C2-4	SH66E	SH66E	02/09/11
06	C2-4 MS	SH66EMS	SH66EMS	02/09/11
07	C2-4 MSD	SH66EMSD	SH66EMSD	02/09/11
08				
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FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Selected Ion Monitoring GC/MS
Page 1 of 1

Sample ID: MB-020811
METHOD BLANK

Lab Sample ID: MB-020811
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 11:23
Instrument/Analyst: NT2/YZ
GPC Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	MDL	RL	Result
91-20-3	Naphthalene	1.8	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	2.1	5.0	< 5.0 U
90-12-0	1-Methylnaphthalene	1.3	5.0	< 5.0 U
208-96-8	Acenaphthylene	1.4	5.0	< 5.0 U
83-32-9	Acenaphthene	1.6	5.0	< 5.0 U
86-73-7	Fluorene	1.4	5.0	< 5.0 U
85-01-8	Phenanthrene	1.4	5.0	< 5.0 U
120-12-7	Anthracene	1.4	5.0	< 5.0 U
206-44-0	Fluoranthene	1.4	5.0	< 5.0 U
129-00-0	Pyrene	1.4	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	2.2	5.0	< 5.0 U
218-01-9	Chrysene	1.7	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	2.2	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.7	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	2.2	5.0	< 5.0 U
191-24-2	Benzo(g,h,i)perylene	2.0	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.7	5.0	< 5.0 U
TOTBFA	Total Benzofluoranthenes	3.4	5.0	< 5.0 U

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	78.7%
d14-Dibenzo(a,h)anthracen	70.3%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT2 Project: TERMINAL6

DFTPP Injection Date: 02/04/11 DFTPP Injection Time: 1234

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	62.3
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	76.2
70	Less than 2.0% of mass 69	0.5 (0.6)1
127	10.0 - 80.0% of mass 198	61.0
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.0
275	10.0 - 60.0% of mass 198	27.7
365	Greater than 1.0% of mass 198	3.54
441	0.0 - 24.0% of mass 442	9.3 (14.7)2
442	50.0 - 200.0% of mass 198	63.2
443	15.0 - 24.0% of mass 442	12.2 (19.3)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		IC0204A	IC0204A	02/04/11	1248
02		IC0204B	IC0204B	02/04/11	1312
03		IC0204C	IC0204C	02/04/11	1335
04		IC0204D	IC0204D	02/04/11	1358
05		IC0204E	IC0204E	02/04/11	1422
06		IC0204F	IC0204F	02/04/11	1445
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FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT2 Project: TERMINAL6

DFTPP Injection Date: 02/09/11 DFTPP Injection Time: 0956

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	65.0
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	76.5
70	Less than 2.0% of mass 69	0.4 (0.5)1
127	10.0 - 80.0% of mass 198	61.0
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.2
275	10.0 - 60.0% of mass 198	26.5
365	Greater than 1.0% of mass 198	3.91
441	0.0 - 24.0% of mass 442	9.3 (14.5)2
442	50.0 - 200.0% of mass 198	64.5
443	15.0 - 24.0% of mass 442	12.8 (19.8)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		CC0209A	CC0209A	02/09/11	1037
02	SH66MBS1	SH66MBS1	SH66MB	02/09/11	1123
03	SH66LCSS1	SH66LCSS1	SH66SB	02/09/11	1146
04	SH66LCSDS1	SH66LCSDS1	SH67SBD	02/09/11	1210
05	C1	SH66A	SH66A	02/09/11	1233
06	C5	SH66C	SH66C	02/09/11	1256
07	C2-4	SH66E	SH66E	02/09/11	1320
08	C2-4 MS	SH66EMS	SH66EMS	02/09/11	1343
09	C2-4 MSD	SH66EMSD	SH66EMSD	02/09/11	1407
10					
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22					

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL6

Instrument ID: NT2 Calibration Date: 02/04/11

LAB FILE ID: RRF0.1=IC0204C RRF0.5=IC0204E RRF1 =IC0204F
RRF2.5=IC0204A RRF5 =IC0204D RRF10 =IC0204B

COMPOUND	RRF 0.1	RRF 0.5	RRF 1	RRF 2.5	RRF 5	RRF 10	___ RRF	%RSD /R^2
Naphthalene	1.022	0.999	0.936	0.866	0.921	0.855	0.933	7.3
2-Methylnaphthalene	0.618	0.618	0.576	0.544	0.579	0.539	0.579	6.0
Acenaphthylene	1.619	1.646	1.572	1.561	1.715	1.661	1.629	3.5
Acenaphthene	1.044	1.101	1.036	0.976	1.063	1.025	1.041	4.0
Dibenzofuran	1.482	1.440	1.384	1.330	1.408	1.378	1.404	3.8
Fluorene	1.120	1.163	1.139	1.084	1.175	1.148	1.138	2.9
Phenanthrene	1.068	1.043	0.993	0.917	0.985	0.974	0.997	5.3
Anthracene	0.941	0.989	0.930	0.912	1.002	1.001	0.962	4.1
Fluoranthene	0.952	0.972	0.958	0.916	1.010	1.031	0.973	4.3
Pyrene	1.077	1.050	0.986	0.939	1.039	0.988	1.013	5.0
Benzo(a)anthracene	0.985	0.868	0.814	0.808	0.897	0.878	0.875	7.4
Chrysene	1.048	0.892	0.841	0.803	0.905	0.894	0.897	9.3
Benzo(a)pyrene	1.023	0.878	0.850	0.838	0.942	0.945	0.913	7.7
Indeno(1,2,3-cd)pyrene	1.105	1.105	1.022	1.038	1.209	1.228	1.118	7.6
Dibenz(a,h)anthracene	0.864	0.906	0.864	0.839	0.955	0.978	0.901	6.2
Benzo(g,h,i)perylene	1.053	0.939	0.900	0.887	1.010	0.994	0.964	6.8
1-Methylnaphthalene	0.634	0.610	0.574	0.533	0.572	0.536	0.576	6.9
Perylene	1.086	0.761	0.718	0.713	0.785	0.799	0.810	17.2
Total Benzofluoranthenes	1.150	1.069	1.037	0.951	1.083	1.077	1.061	6.2
2-Methylnaphthalene-d10		0.518	0.522	0.487	0.523	0.491	0.508	3.5
Dibenz(a,h)anthrancene-d14		0.734	0.600	0.727	0.821	0.805	0.737	11.9

<- Outside QC limits: %RSD <20% or R^2 > 0.990

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL6

Instrument ID: NT2 Cont. Calib. Date: 02/09/11

Init. Calib. Date: 02/04/11 Cont. Calib. Time: 1037

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Naphthalene	0.933	0.863	0.700	AVRG	-7.5	
2-Methylnaphthalene	0.579	0.526	0.400	AVRG	-9.2	
Acenaphthylene	1.629	1.473	0.900	AVRG	-9.6	
Acenaphthene	1.041	0.965	0.900	AVRG	-7.3	
Dibenzofuran	1.404	1.272	0.800	AVRG	-9.4	
Fluorene	1.138	1.025	0.900	AVRG	-9.9	
Phenanthrene	0.997	0.931	0.700	AVRG	-6.6	
Anthracene	0.962	0.899	0.700	AVRG	-6.5	
Fluoranthene	0.973	0.871	0.600	AVRG	-10.5	
Pyrene	1.013	0.964	0.600	AVRG	-4.8	
Benzo(a)anthracene	0.875	0.774	0.800	AVRG	-11.5	*
Chrysene	0.897	0.835	0.700	AVRG	-6.9	
Benzo(a)pyrene	0.913	0.790	0.700	AVRG	-13.5	
Indeno(1,2,3-cd)pyrene	1.118	0.988	0.500	AVRG	-11.6	
Dibenz(a,h)anthracene	0.901	0.746	0.010	AVRG	-17.2	
Benzo(g,h,i)perylene	0.964	0.866	0.500	AVRG	-10.2	
1-Methylnaphthalene	0.576	0.531	0.010	AVRG	-7.8	
Perylene	0.810	0.774	0.010	AVRG	-4.4	
Total Benzofluoranthenes	1.061	0.990	0.010	AVRG	-6.7	
2-Methylnaphthalene-d10	0.508	0.486	0.010	AVRG	-4.3	
Dibenz(a,h)anthrancene-d14	0.737	0.619	0.010	AVRG	-16.0	

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL6

Ical Midpoint ID: IC0204A Ical Date: 02/04/11

Instrument ID: NT2 Cont. Cal Date: 02/09/11

		IS1(NPT) AREA	#	RT	#	IS2(ANT) AREA	#	RT	#	IS3(PHN) AREA	#	RT	#
	ICAL MIDPT	241676		6.31		121967		8.49		198986		10.32	
	UPPER LIMIT	483352				243934				397972			
	LOWER LIMIT	120838				60984				99493			
	CCAL	202329		6.31		102455		8.48		154772		10.31	
	UPPER LIMIT			6.81				8.98				10.81	
	LOWER LIMIT			5.81				7.98				9.81	
01	SH66MBS1	186486		6.31		93800		8.48		148003		10.32	
02	SH66LCSS1	206816		6.31		105207		8.48		164352		10.31	
03	SH66LCSDS1	211922		6.30		107338		8.48		167863		10.31	
04	C1	201055		6.31		100071		8.48		151885		10.31	
05	C5	218584		6.31		110975		8.48		172557		10.31	
06	C2-4	227828		6.31		115145		8.48		177119		10.31	
07	C2-4 MS	217665		6.31		108765		8.48		172975		10.31	
08	C2-4 MSD	255333		6.31		126326		8.48		198276		10.31	
09													
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IS1 = Naphthalene-d8
IS2 = Acenaphthene-d10
IS3 = Phenanthrene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL6

Ical Midpoint ID: IC0204A Ical Date: 02/04/11

Instrument ID: NT2 Cont. Cal Date: 02/09/11

		IS4(CRY) AREA #	RT #	IS5(PRY) AREA #	RT #	AREA #	RT #
	ICAL MIDPT	199983	13.63	169098	15.59		
	UPPER LIMIT	399966		338196			
	LOWER LIMIT	99992		84549			
	CCAL	144793	13.62	121240	15.57		
	UPPER LIMIT		14.12		16.07		
	LOWER LIMIT		13.12		15.07		
01	SH66MBS1	136267	13.62	113225	15.57		
02	SH66LCSS1	154975	13.62	127569	15.57		
03	SH66LCSDS1	158252	13.62	129350	15.57		
04	C1	143940	13.62	132276	15.57		
05	C5	174599	13.62	162653	15.57		
06	C2-4	183387	13.62	171659	15.57		
07	C2-4 MS	180247	13.62	170006	15.57		
08	C2-4 MSD	209826	13.62	195485	15.57		
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21							
22							
23							
24							
25							

IS4 = Chrysene-d12
IS5 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

Butyl Tin Analysis
Report and Summary QC Forms

ARI Job ID: SH66

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: C1
SAMPLE

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 09:02
Instrument/Analyst: NT8/VTS
Silica Gel Cleanup: No

Sample Amount: 5.75 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 29.4%

CAS Number	Analyte	MDL	RL	Result	Q
36643-28-4	Tributyltin Ion	1.5	3.4	< 3.4	U
14488-53-0	Dibutyltin Ion	2.8	5.0	< 5.0	U
78763-54-9	Butyltin Ion	3.6	3.6	< 3.6	U

Reported in µg/kg (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	40.8%
Tripentyl Tin Chloride	90.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: C1Z**
Page 1 of 1 **SAMPLE**

Lab Sample ID: SH66B
LIMS ID: 11-2466
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 16:03
Instrument/Analyst: NT8/VTS
Silica Gel Cleanup: No

Sample Amount: 5.49 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 22.4%

CAS Number	Analyte	MDL	RL	Result	Q
36643-28-4	Tributyltin Ion	1.6	3.5	< 3.5	U
14488-53-0	Dibutyltin Ion	2.9	5.3	< 5.3	U
78763-54-9	Butyltin Ion	3.7	3.7	< 3.7	U

Reported in µg/kg (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	43.6%
Tripentyl Tin Chloride	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: C5
SAMPLE

Lab Sample ID: SH66C
LIMS ID: 11-2467
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 09:28
Instrument/Analyst: NT8/VTS
Silica Gel Cleanup: No

Sample Amount: 5.52 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 45.3%

CAS Number	Analyte	MDL	RL	Result	Q
36643-28-4	**Tributyltin Ion**	**1.6**	**3.5**	**90**	
14488-53-0	**Dibutyltin Ion**	**2.9**	**5.2**	**9.9**	
78763-54-9	Butyltin Ion	3.7	3.7	< 3.7	U

Reported in µg/kg (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	43.1%
Tripentyl Tin Chloride	99.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: C5Z
SAMPLE

Lab Sample ID: SH66D
LIMS ID: 11-2468
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 09:42
Instrument/Analyst: NT8/VTS
Silica Gel Cleanup: No

Sample Amount: 5.34 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 24.5%

CAS Number	Analyte	MDL	RL	Result	Q
36643-28-4	**Tributyltin Ion**	**1.7**	**3.6**	**61**	
14488-53-0	Dibutyltin Ion	3.0	5.4	< 5.4	U
78763-54-9	Butyltin Ion	3.8	3.8	< 3.8	U

Reported in µg/kg (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	39.6%
Tripentyl Tin Chloride	95.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: C2-4
SAMPLE

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 16:45
Instrument/Analyst: NT8/VTS
Silica Gel Cleanup: No

Sample Amount: 5.13 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 28.4%

CAS Number	Analyte	MDL	RL	Result	Q
36643-28-4	**Tributyltin Ion**	**1.7**	**3.8**	**11**	
14488-53-0	Dibutyltin Ion	3.1	5.6	< 5.6	U
78763-54-9	Butyltin Ion	4.0	4.0	< 4.0	U

Reported in µg/kg (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	38.1%
Tripentyl Tin Chloride	105%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: C2-4Z
SAMPLE

Lab Sample ID: SH66F
LIMS ID: 11-2470
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 16:59
Instrument/Analyst: NT8/VTS
Silica Gel Cleanup: No

Sample Amount: 5.64 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 20.7%

CAS Number	Analyte	MDL	RL	Result	Q
36643-28-4	**Tributyltin Ion**	**1.6**	**3.4**	**8.1**	
14488-53-0	Dibutyltin Ion	2.8	5.1	< 5.1	U
78763-54-9	Butyltin Ion	3.6	3.6	< 3.6	U

Reported in µg/kg (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	46.5%
Tripentyl Tin Chloride	105%

ANALYTICAL RESOURCES INCORPORATED

TBT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00

Client ID	TPRT	TPNT	TOT OUT
C1	40.8%	90.0%	0
C1Z	43.6%	101%	0
C5	43.1%	99.5%	0
C5Z	39.6%	95.5%	0
C2-4	38.1%	105%	0
MB-020811	47.8%	108%	0
LCS-020811	49.9%	113%	0
LCSD-020811	50.2%	102%	0
C2-4Z	46.5%	105%	0
C2-4Z MS	41.7%	108%	0
C2-4Z MSD	43.2%	110%	0

	LCS/MB LIMITS	QC LIMITS
(TPRT) = Tripropyl Tin Chloride	(30-160)	(30-160)
(TPNT) = Tripentyl Tin Chloride	(30-160)	(30-160)

Prep Method: SW3546
Analytical Method: TBT (Hexyl) Krone 1988
Log Number Range: 11-2465 to 11-2470

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
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Sample ID: C2-4Z
MATRIX SPIKE

Lab Sample ID: SH66F
LIMS ID: 11-2470
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted MS: 02/08/11

Date Analyzed MS: 02/09/11 17:13
MSD: 02/09/11 17:27
Instrument/Analyst MS: NT8/VTS
MSD: NT8/VTS
Silica Gel Cleanup: No

Sample Amount MS: 5.65 g-dry-wt
MSD: 5.66 g-dry-wt
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00
Alumina Cleanup: Yes
Moisture: 20.7%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Tributyltin Ion	8.1	36.3	39.5	71.4%	38.4	39.4	76.9%	5.6%
Dibutyltin Ion	< 5.1 U	36.2 Q	34.0	106%	38.5 Q	33.9	114%	6.2%
Butyltin Ion	< 3.6 U	23.1	27.6	83.7%	22.6	27.6	81.9%	2.2%

Results reported in µg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: C2-4Z
MATRIX SPIKE

Lab Sample ID: SH66F
LIMS ID: 11-2470
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 17:13
Instrument/Analyst: NT8/VTS
Silica Gel Cleanup: No

Sample Amount: 5.65 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 20.7%

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	3.4	---	
14488-53-0	Dibutyltin Ion	5.1	---	
78763-54-9	Butyltin Ion	3.6	---	

Reported in µg/kg (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	41.7%
Tripentyl Tin Chloride	108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: C2-4Z
MATRIX SPIKE DUP

Lab Sample ID: SH66F
LIMS ID: 11-2470
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 17:27
Instrument/Analyst: NT8/VTS
Silica Gel Cleanup: No

Sample Amount: 5.66 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 20.7%

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	3.4	---	
14488-53-0	Dibutyltin Ion	5.1	---	
78763-54-9	Butyltin Ion	3.6	---	

Reported in µg/kg (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	43.2%
Tripentyl Tin Chloride	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
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Sample ID: LCS-020811
LAB CONTROL SAMPLE

Lab Sample ID: LCS-020811
LIMS ID: 11-2470
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Date Extracted LCS: 02/08/11

Date Analyzed LCS: 02/10/11 10:14
LCSD: 02/10/11 10:29
Instrument/Analyst LCS: NT8/VTS
LCSD: NT8/VTS
Silica Gel Cleanup: No

Sample Amount LCS: 5.00 g-dry-wt
LCSD: 5.00 g-dry-wt
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: Yes

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Tributyltin Ion	34.4	44.6	77.1%	34.1	44.6	76.5%	0.9%
Dibutyltin Ion	41.1	38.4	107%	38.9	38.4	101%	5.5%
Butyltin Ion	25.1	31.2	80.4%	23.3	31.2	74.7%	7.4%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

TBT Surrogate Recovery

	LCS	LCSD
Tripropyl Tin Chloride	49.9%	50.2%
Tripentyl Tin Chloride	113%	102%

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

SH66MBS1

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Lab File ID: SH66MB Date Extracted: 02/08/11

Instrument ID: NT8 Date Analyzed: 02/10/11

Matrix: SOLID Time Analyzed: 1000

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	C1Z	SH66B	SH66B	02/09/11
02	C2-4	SH66E	SH66E	02/09/11
03	C2-4Z	SH66F	SH66F	02/09/11
04	C2-4Z MS	SH66FMS	SH66FMS	02/09/11
05	C2-4Z MSD	SH66FMSD	SH66FMSD	02/09/11
06	C1	SH66A	SH66A	02/10/11
07	C5	SH66C	SH66C	02/10/11
08	C5Z	SH66D	SH66D	02/10/11
09	SH66LCSS1	SH66LCSS1	SH66SB	02/10/11
10	SH66LCSDS1	SH66LCSDS1	SH66SBD	02/10/11
11				
12				
13				
14				
15				
16				
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28				
29				
30				

FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
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Sample ID: MB-020811
METHOD BLANK

Lab Sample ID: MB-020811
LIMS ID: 11-2470
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: NA
Date Received: NA

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 10:00
Instrument/Analyst: NT8/VTS
Silica Gel Cleanup: No

Sample Amount: 5.00 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	MDL	RL	Result	Q
36643-28-4	Tributyltin Ion	1.8	3.9	< 3.9	U
14488-53-0	Dibutyltin Ion	3.2	5.8	< 5.8	U
78763-54-9	Butyltin Ion	4.1	4.1	< 4.1	U

Reported in µg/kg (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	47.8%
Tripentyl Tin Chloride	108%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT8 Project: TERMINAL 6

DFTPP Injection Date: 02/08/11 DFTPP Injection Time: 1633

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	29.3
68	Less than 2.0% of mass 69	0.8 (1.4)1
69	Mass 69 relative abundance	55.6
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	10.0 - 80.0% of mass 198	51.7
197	Less than 2.0% of mass 198	0.4
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.1
275	10.0 - 60.0% of mass 198	23.3
365	Greater than 1.0% of mass 198	3.25
441	0.0 - 24.0% of mass 442	16.5 (13.7)2
442	50.0 - 200.0% of mass 198	120.2
443	15.0 - 24.0% of mass 442	23.6 (19.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		TBT1	IC0208A	02/08/11	1650
02		TBT4	IC0208B	02/08/11	1705
03		TBT.05	IC0208C	02/08/11	1719
04		TBT2	IC0208D	02/08/11	1733
05		TBT.2	IC0208E	02/08/11	1747
06		TBT.5	IC0208F	02/08/11	1801
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT8 Project: TERMINAL 6

DFTPP Injection Date: 02/09/11 DFTPP Injection Time: 0903

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	29.0
68	Less than 2.0% of mass 69	1.0 (1.7)1
69	Mass 69 relative abundance	56.7
70	Less than 2.0% of mass 69	0.4 (0.7)1
127	10.0 - 80.0% of mass 198	52.2
197	Less than 2.0% of mass 198	0.4
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.5
275	10.0 - 60.0% of mass 198	23.0
365	Greater than 1.0% of mass 198	3.34
441	0.0 - 24.0% of mass 442	15.7 (14.0)2
442	50.0 - 200.0% of mass 198	112.2
443	15.0 - 24.0% of mass 442	22.0 (19.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		TBT1	CC0209A	02/09/11	0917
02	C1Z	SH66B	SH66B	02/09/11	1603
03	C2-4	SH66E	SH66E	02/09/11	1645
04	C2-4Z	SH66F	SH66F	02/09/11	1659
05	C2-4Z MS	SH66FMS	SH66FMS	02/09/11	1713
06	C2-4Z MSD	SH66FMSD	SH66FMSD	02/09/11	1727
07					
08					
09					
10					
11					
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14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT8 Project: TERMINAL 6

DFTPP Injection Date: 02/10/11 DFTPP Injection Time: 0824

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	30.1
68	Less than 2.0% of mass 69	0.6 (1.1)1
69	Mass 69 relative abundance	55.0
70	Less than 2.0% of mass 69	0.1 (0.2)1
127	10.0 - 80.0% of mass 198	54.0
197	Less than 2.0% of mass 198	0.3
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.6
275	10.0 - 60.0% of mass 198	21.3
365	Greater than 1.0% of mass 198	3.20
441	0.0 - 24.0% of mass 442	17.4 (14.3)2
442	50.0 - 200.0% of mass 198	121.3
443	15.0 - 24.0% of mass 442	24.0 (19.8)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		TBT1	CC0210	02/10/11	0838
02	C1	SH66A	SH66A	02/10/11	0902
03	C5	SH66C	SH66C	02/10/11	0928
04	C5Z	SH66D	SH66D	02/10/11	0942
05	SH66MBS1	SH66MBS1	SH66MB	02/10/11	1000
06	SH66LCSS1	SH66LCSS1	SH66SB	02/10/11	1014
07	SH66LCSDS1	SH66LCSDS1	SH66SBD	02/10/11	1029
08					
09					
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14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT8 Calibration Date: 02/08/11

LAB FILE ID: RRF0.05=IC0208C RRF0.2=IC0208E RRF0.5=IC0208F
RRF1 =IC0208A RRF2 =IC0208D RRF4 =IC0208B

COMPOUND	RRF 0.05	RRF 0.2	RRF 0.5	RRF 1	RRF 2	RRF 4	___ RRF	%RSD /R^2
Tributyl Tin (Hexyl)	0.768	0.726	0.807	0.795	0.763	0.700	0.760	5.4
Dibutyl Tin (Hexyl)	0.054	0.052	0.056	0.051	0.047	0.038	0.050	13.1
Butyl Tin (Hexyl)	0.083	0.082	0.092	0.087	0.077	0.061	0.080	13.1
Tetrabutyl Tin	1.060	0.975	1.090	1.017	0.958	0.866	0.994	8.1
Tripropyl Tin (Hexyl)	1.194	1.091	1.219	1.119	1.079	0.976	1.113	7.9
Tripentyl Tin (Hexyl)	0.074	0.073	0.080	0.075	0.068	0.054	0.071	12.8

<- Outside QC limits: %RSD <20% or R^2 > 0.990

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT8 Cont. Calib. Date: 02/09/11

Init. Calib. Date: 02/08/11 Cont. Calib. Time: 0917

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Tributyl Tin (Hexyl)	0.760	0.806	0.010	AVRG	6.0	
Dibutyl Tin (Hexyl)	0.050	0.061	0.010	AVRG	22.0	<-
Butyl Tin (Hexyl)	0.080	0.091	0.010	AVRG	13.8	
Tetrabutyl Tin	0.994	1.042	0.010	AVRG	4.8	
Tripropyl Tin (Hexyl)	1.113	1.109	0.010	AVRG	-0.4	
Tripentyl Tin (Hexyl)	0.071	0.079	0.010	AVRG	11.3	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Instrument ID: NT8 Cont. Calib. Date: 02/10/11

Init. Calib. Date: 02/08/11 Cont. Calib. Time: 0838

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Tributyl Tin (Hexyl)	0.760	0.870	0.010	AVRG	14.5
Dibutyl Tin (Hexyl)	0.050	0.056	0.010	AVRG	12.0
Butyl Tin (Hexyl)	0.080	0.093	0.010	AVRG	16.2
Tetrabutyl Tin	0.994	1.087	0.010	AVRG	9.4
Tripropyl Tin (Hexyl)	1.113	1.160	0.010	AVRG	4.2
Tripentyl Tin (Hexyl)	0.071	0.082	0.010	AVRG	15.5

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Ical Midpoint ID: IC0208A Ical Date: 02/08/11

Instrument ID: NT8 Cont. Cal Date: 02/09/11

		IS1 AREA #	RT #	IS2 AREA #	RT #	AREA #	RT #
	ICAL MIDPT	335492	7.52	258686	8.51		
	UPPER LIMIT	670984		517372			
	LOWER LIMIT	167746		129343			
	CCAL	325268	7.52	210665	8.51		
	UPPER LIMIT		8.02		9.01		
	LOWER LIMIT		7.02		8.01		
01	C1Z	205857	7.52	135217	8.51		
02	C2-4	209259	7.52	131483	8.50		
03	C2-4Z	207272	7.52	141090	8.50		
04	C2-4Z MS	205386	7.52	135231	8.50		
05	C2-4Z MSD	210675	7.52	138432	8.50		
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = Tetrapentyl Tin
IS2 = p-Terphenyl-d14

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SH66 Project: TERMINAL 6

Ical Midpoint ID: IC0208A Ical Date: 02/08/11

Instrument ID: NT8 Cont. Cal Date: 02/10/11

		IS1 AREA #	RT #	IS2 AREA #	RT #	AREA #	RT #
	ICAL MIDPT	335492	7.52	258686	8.51		
	UPPER LIMIT	670984		517372			
	LOWER LIMIT	167746		129343			
	CCAL	313386	7.52	220743	8.51		
	UPPER LIMIT		8.02		9.01		
	LOWER LIMIT		7.02		8.01		
01	C1	236996	7.52	172287	8.51		
02	C5	236097	7.52	163288	8.51		
03	C5Z	241347	7.52	166900	8.50		
04	SH66MBS1	244156	7.52	176399	8.50		
05	SH66LCSS1	240305	7.52	178134	8.50		
06	SH66LCSDS1	241981	7.52	180072	8.50		
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = Tetrapentyl Tin
IS2 = p-Terphenyl-d14

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

Pesticide Analysis
Report and Summary QC Forms

ARI Job ID: SH66

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C1
SAMPLE

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 17:32
Instrument/Analyst: ECD6/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: 29.4%

CAS Number	Analyte	MDL	RL	Result
58-89-9	gamma-BHC (Lindane)	0.047	0.98	< 0.98 U
76-44-8	Heptachlor	0.13	0.98	< 0.98 U
309-00-2	Aldrin	0.054	0.98	< 0.98 U
60-57-1	Dieldrin	0.098	2.0	< 2.0 U
72-55-9	**4,4'-DDE**	**0.12**	**2.0**	**1.0 J**
72-54-8	4,4'-DDD	0.13	2.0	< 2.0 U
50-29-3	4,4'-DDT	0.19	2.0	< 2.0 U
5103-74-2	trans-Chlordane	0.075	0.98	< 0.98 U
5103-71-9	cis-Chlordane	0.050	0.98	< 0.98 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	86.8%
Tetrachlorometaxylene	79.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C1Z
SAMPLE

Lab Sample ID: SH66B
LIMS ID: 11-2466
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 17:49
Instrument/Analyst: ECD6/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: 22.4%

CAS Number	Analyte	MDL	RL	Result
72-55-9	4,4'-DDE	0.12	1.9	< 1.9 U
72-54-8	4,4'-DDD	0.13	1.9	< 1.9 U
50-29-3	4,4'-DDT	0.19	1.9	< 1.9 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	83.2%
Tetrachlorometaxylene	81.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C5
SAMPLE

Lab Sample ID: SH66C
LIMS ID: 11-2467
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 22:45
Instrument/Analyst: ECD6/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: 45.3%

CAS Number	Analyte	MDL	RL	Result
58-89-9	gamma-BHC (Lindane)	0.047	0.98	< 0.98 U
76-44-8	Heptachlor	0.13	0.98	< 0.98 U
309-00-2	Aldrin	0.054	0.98	< 0.98 U
60-57-1	Dieldrin	0.098	2.0	< 2.0 U
72-55-9	**4,4'-DDE**	**0.12**	**2.0**	**1.2 J**
72-54-8	4,4'-DDD	0.13	2.0	< 2.0 U
50-29-3	4,4'-DDT	0.19	2.0	< 2.0 U
5103-74-2	trans-Chlordane	0.076	0.98	< 0.98 U
5103-71-9	cis-Chlordane	0.050	0.98	< 0.98 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	84.5%
Tetrachlorometaxylene	84.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C5
DILUTION

Lab Sample ID: SH66C
LIMS ID: 11-2467
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 18:38
Instrument/Analyst: ECD6/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 5.00
Silica Gel: Yes

Percent Moisture: 45.3%

CAS Number	Analyte	MDL	RL	Result
58-89-9	gamma-BHC (Lindane)	0.24	4.9	< 4.9 U
76-44-8	Heptachlor	0.65	4.9	< 4.9 U
309-00-2	Aldrin	0.27	4.9	< 4.9 U
60-57-1	Dieldrin	0.49	9.8	< 9.8 U
72-55-9	4,4'-DDE	0.61	9.8	< 9.8 U
72-54-8	4,4'-DDD	0.66	9.8	< 9.8 U
50-29-3	4,4'-DDT	0.94	9.8	< 9.8 U
5103-74-2	trans-Chlordane	0.38	4.9	< 4.9 U
5103-71-9	cis-Chlordane	0.25	4.9	< 4.9 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	124%
Tetrachlorometaxylene	94.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C5Z
SAMPLE

Lab Sample ID: SH66D
LIMS ID: 11-2468
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 18:54
Instrument/Analyst: ECD6/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: 24.5%

CAS Number	Analyte	MDL	RL	Result
72-55-9	4,4'-DDE	0.12	2.0	< 2.0 U
72-54-8	4,4'-DDD	0.13	2.0	< 2.0 U
50-29-3	4,4'-DDT	0.19	2.0	< 2.0 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	83.8%
Tetrachlorometaxylene	97.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C2-4
SAMPLE

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 23:02
Instrument/Analyst: ECD6/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: 28.4%

CAS Number	Analyte	MDL	RL	Result
58-89-9	gamma-BHC (Lindane)	0.048	0.99	< 0.99 U
76-44-8	Heptachlor	0.13	0.99	< 0.99 U
309-00-2	Aldrin	0.055	0.99	< 0.99 U
60-57-1	Dieldrin	0.099	2.0	< 2.0 U
72-55-9	4,4'-DDE	0.12	2.0	< 2.0 U
72-54-8	4,4'-DDD	0.13	2.0	< 2.0 U
50-29-3	4,4'-DDT	0.19	2.0	< 2.0 U
5103-74-2	trans-Chlordane	0.076	0.99	< 0.99 U
5103-71-9	cis-Chlordane	0.051	0.99	< 0.99 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	86.8%
Tetrachlorometaxylene	75.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C2-4
DILUTION

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 20:17
Instrument/Analyst: ECD6/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 5.00
Silica Gel: Yes

Percent Moisture: 28.4%

CAS Number	Analyte	MDL	RL	Result
58-89-9	gamma-BHC (Lindane)	0.24	5.0	< 5.0 U
76-44-8	Heptachlor	0.65	5.0	< 5.0 U
309-00-2	Aldrin	0.27	5.0	< 5.0 U
60-57-1	Dieldrin	0.50	9.9	< 9.9 U
72-55-9	4,4'-DDE	0.62	9.9	< 9.9 U
72-54-8	4,4'-DDD	0.67	9.9	< 9.9 U
50-29-3	4,4'-DDT	0.95	9.9	< 9.9 U
5103-74-2	trans-Chlordane	0.38	5.0	< 5.0 U
5103-71-9	cis-Chlordane	0.25	5.0	< 5.0 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	114%
Tetrachlorometaxylene	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C2-4Z
SAMPLE

Lab Sample ID: SH66F
LIMS ID: 11-2470
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 20:33
Instrument/Analyst: ECD6/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.9 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: 20.7%

CAS Number	Analyte	MDL	RL	Result
72-55-9	4,4'-DDE	0.12	1.9	< 1.9 U
72-54-8	4,4'-DDD	0.13	1.9	< 1.9 U
50-29-3	4,4'-DDT	0.19	1.9	< 1.9 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	85.2%
Tetrachlorometaxylene	80.5%

ANALYTICAL RESOURCES INCORPORATED

SW8081 PESTICIDE SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00

Client ID	DCBP	TCMX	TOT OUT
MB-020811	86.0%	75.5%	0
LCS-020811	86.8%	75.0%	0
LCSD-020811	84.2%	72.8%	0
C1	86.8%	79.8%	0
MB-020811	86.0%	75.5%	0
LCS-020811	86.8%	75.0%	0
LCSD-020811	84.2%	72.8%	0
C1Z	83.2%	81.0%	0
C1Z MS	81.2%	77.8%	0
C1Z MSD	83.8%	78.0%	0
C5	84.5%	84.2%	0
C5 DL	124%	94.6%	0
C5Z	83.8%	97.0%	0
C2-4	86.8%	75.5%	0
C2-4 DL	114%	104%	0
C2-4Z	85.2%	80.5%	0

	LCS/MB LIMITS	QC LIMITS
(DCBP) = Decachlorobipheny1	(59-119)	(50-151)
(TCMX) = Tetrachlorometaxylene	(50-109)	(57-122)

Prep Method: SW3550C
Log Number Range: 11-2465 to 11-2470

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C1Z
MS/MSD

Lab Sample ID: SH66B
LIMS ID: 11-2466
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted MS/MSD: 02/08/11

Date Analyzed MS: 02/09/11 18:05
MSD: 02/09/11 18:22
Instrument/Analyst MS: ECD6/AAR
MSD: ECD6/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount MS: 25.7 g-dry-wt
MSD: 26.0 g-dry-wt
Final Extract Volume MS: 5.0 mL
MSD: 5.0 mL
Dilution Factor MS: 1.00
MSD: 1.00
Silica Gel: Yes

Percent Moisture: 22.4%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
4,4'-DDE	< 1.94	7.09	7.79	91.0%	7.16	7.70	93.0%	1.0%
4,4'-DDD	< 1.94	5.92	7.79	76.0%	6.22	7.70	80.8%	4.9%
4,4'-DDT	< 1.94	5.65	7.79	72.5%	5.87	7.70	76.2%	3.8%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C1Z
MATRIX SPIKE

Lab Sample ID: SH66B
LIMS ID: 11-2466
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 18:05
Instrument/Analyst: ECD6/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: 22.4%

CAS Number	Analyte	MDL	RL	Result
72-55-9	4,4'-DDE	0.12	2.0	---
72-54-8	4,4'-DDD	0.13	2.0	---
50-29-3	4,4'-DDT	0.19	2.0	---

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	81.2%
Tetrachlorometaxylene	77.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: C1Z
MATRIX SPIKE DUP

Lab Sample ID: SH66B
LIMS ID: 11-2466
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 18:22
Instrument/Analyst: ECD6/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 26.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: 22.4%

CAS Number	Analyte	MDL	RL	Result
72-55-9	4,4'-DDE	0.12	1.9	---
72-54-8	4,4'-DDD	0.13	1.9	---
50-29-3	4,4'-DDT	0.18	1.9	---

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	83.8%
Tetrachlorometaxylene	78.0%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: LCS-020811
LCS/LCSD

Lab Sample ID: LCS-020811
LIMS ID: 11-2466
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted LCS/LCSD: 02/08/11

Date Analyzed LCS: 02/09/11 16:43
LCSD: 02/09/11 16:59
Instrument/Analyst LCS: ECD6/AAR
LCSD: ECD6/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount LCS: 25.0 g-dry-wt
LCSD: 25.0 g-dry-wt
Final Extract Volume LCS: 5.0 mL
LCSD: 5.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Silica Gel: Yes

Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
4,4'-DDE	7.46	8.00	93.2%	7.34	8.00	91.8%	1.6%
4,4'-DDD	5.94	8.00	74.2%	5.80	8.00	72.5%	2.4%
4,4'-DDT	6.22	8.00	77.8%	5.92	8.00	74.0%	4.9%

Pest/PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	86.8%	84.2%
Tetrachlorometaxylene	75.0%	72.8%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: LCS-020811
LCS/LCSD

Lab Sample ID: LCS-020811
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted LCS/LCSD: 02/08/11

Date Analyzed LCS: 02/09/11 16:43
LCSD: 02/09/11 16:59
Instrument/Analyst LCS: ECD6/YZ
LCSD: ECD6/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount LCS: 25.0 g-dry-wt
LCSD: 25.0 g-dry-wt
Final Extract Volume LCS: 5.0 mL
LCSD: 5.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Silica Gel: Yes

Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
gamma-BHC (Lindane)	3.42	4.00	85.5%	3.38	4.00	84.5%	1.2%
Heptachlor	3.10	4.00	77.5%	3.06	4.00	76.5%	1.3%
Aldrin	3.36	4.00	84.0%	3.38	4.00	84.5%	0.6%
Dieldrin	7.40	8.00	92.5%	7.28	8.00	91.0%	1.6%
4,4'-DDE	7.46	8.00	93.2%	7.34	8.00	91.8%	1.6%
4,4'-DDD	5.94	8.00	74.2%	5.80	8.00	72.5%	2.4%
4,4'-DDT	6.22	8.00	77.8%	5.92	8.00	74.0%	4.9%
trans-Chlordane	3.58	4.00	89.5%	3.52	4.00	88.0%	1.7%
cis-Chlordane	3.86	4.00	96.5%	3.80	4.00	95.0%	1.6%

Pest/PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	86.8%	84.2%
Tetrachlorometaxylene	75.0%	72.8%

Reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

FORM 4
PESTICIDE METHOD BLANK SUMMARY

BLANK NO.

SH65MBS1

Lab Name: ANALYTICAL RESOURCES, INC
Client: HART CROWSER

ARI Job No.: SH66
Project: TERMINAL 5

Lab Sample ID: SH65MBS1
Lab File ID: 0209A010

Date Extracted: 02/08/11
Matrix: SOLID

Date Analyzed: 02/09/11
Instrument ID: ECD6

Time Analyzed: 1626
GC Columns: STX-CLP1/STX-CLP2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	SH65LCSS1	SH65LCSS1	02/09/11
02	SH65LCSDS1	SH65LCSDS1	02/09/11
03	C1	SH66A	02/09/11
04	C1Z	SH66B	02/09/11
05	C1Z MS	SH66BMS	02/09/11
06	C1Z MSD	SH66BMSD	02/09/11
07	C5	SH66C	02/09/11
08	C5Z	SH66D	02/09/11
09	C2-4	SH66E	02/09/11
10	C2-4Z	SH66F	02/09/11
11	C-6D	SH65A	02/09/11
12	C-11D	SH65B	02/09/11
13	C-7D	SH65C	02/09/11
14	C5	SH66C	02/09/11
15	C2-4	SH66E	02/09/11
16	C-6D	SH65A	02/09/11
17	C-11D	SH65B	02/09/11
18	C-7D	SH65C	02/09/11

ALL RUNS ARE DUAL COLUMN

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: MB-020811
METHOD BLANK

Lab Sample ID: MB-020811
LIMS ID: 11-2466
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 16:26
Instrument/Analyst: ECD6/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: NA

CAS Number	Analyte	MDL	RL	Result
72-55-9	4,4'-DDE	0.12	2.0	< 2.0 U
72-54-8	4,4'-DDD	0.14	2.0	< 2.0 U
50-29-3	4,4'-DDT	0.19	2.0	< 2.0 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	86.0%
Tetrachlorometaxylene	75.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: MB-020811
METHOD BLANK

Lab Sample ID: MB-020811
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/11/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Date Extracted: 02/08/11
Date Analyzed: 02/09/11 16:26
Instrument/Analyst: ECD6/YZ
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes

Percent Moisture: NA

CAS Number	Analyte	MDL	RL	Result
58-89-9	gamma-BHC (Lindane)	0.048	1.0	< 1.0 U
76-44-8	Heptachlor	0.13	1.0	< 1.0 U
309-00-2	Aldrin	0.055	1.0	< 1.0 U
60-57-1	Dieldrin	0.10	2.0	< 2.0 U
72-55-9	4,4'-DDE	0.12	2.0	< 2.0 U
72-54-8	4,4'-DDD	0.14	2.0	< 2.0 U
50-29-3	4,4'-DDT	0.19	2.0	< 2.0 U
5103-74-2	trans-Chlordane	0.077	1.0	< 1.0 U
5103-71-9	cis-Chlordane	0.051	1.0	< 1.0 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	86.0%
Tetrachlorometaxylene	75.5%

6D

8081 INITIAL CALIBRATION RETENTION TIMES

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP1 ID: 0.53 (mm) Instrument ID: ECD6

Calibration Date: 01/18/11

	RT OF STANDARDS							MEAN	RT WINDOW	
COMPOUND	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	RT	FROM	TO
alpha-BHC	3.59	3.60	3.60	3.60	3.59	3.60	3.60	3.60	3.54	3.64
beta-BHC	3.96	3.96	3.96	3.95	3.95	3.95	3.95	3.95	3.90	4.00
delta-BHC	4.12	4.13	4.13	4.13	4.12	4.12	4.12	4.12	4.07	4.17
gamma-BHC (Lindane)	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.83	3.93
Heptachlor	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.28	4.38
Aldrin	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.55	4.65
Heptachlor epoxide b	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.08	5.18
Endosulfan I	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.42	5.51
Dieldrin	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.61	5.71
4,4'-DDE	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.35	5.45
Endrin	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.80	5.90
Endosulfan II	6.02	6.02	6.02	6.02	6.02	6.02	6.02	6.02	5.97	6.07
4,4'-DDD	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.83	5.93
Endosulfan sulfate	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.62	6.72
4,4'-DDT	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.04	6.14
Methoxychlor	6.45	6.45	6.45	6.45	6.44	6.44	6.45	6.45	6.39	6.50
Endrin ketone	6.88	6.88	6.88	6.88	6.88	6.88	6.88	6.88	6.83	6.93
Endrin aldehyde	6.34	6.34	6.34	6.34	6.34	6.34	6.34	6.34	6.29	6.39
gamma-Chlordane	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.24	5.19	5.29
alpha-Chlordane	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.30	5.40
Hexachlorobutadiene	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.73	1.83
Hexachlorobenzene	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.41	3.51
Tetrachloro-m-xylene	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.08	3.18
Decachlorobiphenyl	7.59	7.59	7.59	7.59	7.59	7.59	7.59	7.59	7.54	7.64

6D

8081 INITIAL CALIBRATION RETENTION TIMES

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP2 ID: 0.53 (mm) Instrument ID: ECD6

Calibration Date: 01/18/11

	RT OF STANDARDS							MEAN	RT WINDOW	
COMPOUND	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	RT	FROM	TO
alpha-BHC	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.65	3.75
beta-BHC	4.11	4.11	4.11	4.11	4.10	4.10	4.10	4.11	4.05	4.15
delta-BHC	4.38	4.38	4.38	4.38	4.38	4.38	4.37	4.38	4.32	4.42
gamma-BHC (Lindane)	4.02	4.02	4.02	4.02	4.02	4.02	4.01	4.02	3.96	4.06
Heptachlor	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.37	4.47
Aldrin	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.67	4.77
Heptachlor epoxide b	5.21	5.21	5.21	5.21	5.21	5.21	5.21	5.21	5.16	5.26
Endosulfan I	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.50	5.60
Dieldrin	5.77	5.77	5.77	5.77	5.77	5.77	5.77	5.77	5.72	5.82
4,4'-DDE	5.62	5.63	5.63	5.63	5.62	5.62	5.62	5.62	5.57	5.67
Endrin	6.02	6.02	6.02	6.02	6.02	6.02	6.02	6.02	5.97	6.07
Endosulfan II	6.18	6.18	6.18	6.18	6.18	6.18	6.18	6.18	6.13	6.23
4,4'-DDD	6.09	6.09	6.09	6.09	6.08	6.08	6.08	6.09	6.03	6.13
Endosulfan sulfate	6.65	6.65	6.65	6.65	6.65	6.65	6.64	6.65	6.59	6.69
4,4'-DDT	6.32	6.32	6.32	6.32	6.32	6.32	6.32	6.32	6.27	6.37
Methoxychlor	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.77	6.87
Endrin ketone	7.05	7.05	7.05	7.05	7.05	7.05	7.05	7.05	7.00	7.10
Endrin aldehyde	6.44	6.44	6.44	6.44	6.44	6.44	6.44	6.44	6.39	6.49
gamma-Chlordane	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.32	5.42
alpha-Chlordane	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.44	5.54
Hexachlorobutadiene	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.75	1.85
Hexachlorobenzene	3.61	3.61	3.61	3.60	3.60	3.60	3.59	3.60	3.54	3.64
Tetrachloro-m-xylene	3.20	3.20	3.19	3.19	3.19	3.19	3.18	3.19	3.13	3.23
Decachlorobiphenyl	7.95	7.95	7.95	7.95	7.95	7.95	7.95	7.95	7.90	8.00

6E

8081 PESTICIDE INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP1 ID: 0.53 (mm) Instrument ID: ECD6

Calibration Date: 01/18/11

	CALIBRATION FACTORS								R^2
COMPOUND	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	MEAN	%RSD
alpha-BHC	1.4108	1.3171	1.3126	1.3672	1.3798	1.4467	1.4680	1.3860	4.3
beta-BHC	0.7744	0.6213	0.5723	0.5698	0.5386	0.5494	0.5461	0.5960	14.0
delta-BHC	1.4138	1.1006	1.0802	1.1262	1.1053	1.2098	1.2489	1.1835	10.1
gamma-BHC (Lindane)	1.3872	1.2356	1.2234	1.2574	1.2545	1.3078	1.3200	1.2837	4.5
Heptachlor	1.5609	1.2804	1.2459	1.2729	1.2376	1.2681	1.2450	1.3015	8.9
Aldrin	1.2462	1.1432	1.1156	1.1476	1.1370	1.1729	1.1615	1.1606	3.6
Heptachlor epoxide b	1.2808	1.1177	1.1000	1.1186	1.0611	1.0619	1.0385	1.1112	7.3
Endosulfan I	1.0730	1.0072	1.0183	1.0345	0.9782	1.0023	0.9830	1.0138	3.2
Dieldrin	1.1238	1.0664	1.0394	1.0761	1.0214	1.0564	1.0219	1.0579	3.4
4,4'-DDE	0.9948	0.9542	0.9722	1.0124	0.9844	1.0212	0.9993	0.9912	2.3
Endrin	1.4016	1.3153	1.2491	1.2234	1.2338	1.1793	1.1409	1.2490	6.9
Endosulfan II	1.6026	1.2807	1.1591	1.1276	1.0957	1.0707	1.0478	1.1977	16.2
4,4'-DDD	1.1625	1.0946	1.1003	1.0907	1.1017	1.0712	1.4252	1.1494	10.9
Endosulfan sulfate	1.4052	1.0339	0.9707	0.9500	0.8659	0.9178	0.9200	1.0091	18.1
4,4'-DDT	1.1248	1.1008	1.0684	1.0584	1.0409	1.0558	1.0644	1.0734	2.7
Methoxychlor	0.6820	0.5996	0.5499	0.5219	0.5092	0.4724	0.4666	0.5431	14.1
Endrin ketone	1.6782	1.3390	1.2309	1.2092	1.1527	1.1654	1.1615	1.2767	14.8
Endrin aldehyde	1.2060	0.9977	0.9360	0.9220	0.8468	0.8662	0.8576	0.9475	13.3
gamma-Chlordane	1.8096	1.1424	1.0784	1.1006	1.0562	1.0940	1.0981	1.1970	0.9997
alpha-Chlordane	1.3843	1.1240	1.0847	1.0986	1.0483	1.0750	1.0705	1.1265	10.3
Hexachlorobutadiene	2.1028	1.8099	1.6948	1.6896	1.6330	1.6488	1.6277	1.7438	9.7
Hexachlorobenzene	1.4814	1.2281	1.1478	1.1238	1.0613	1.0500	1.0280	1.1600	13.6
Tetrachloro-m-xylene	1.1110	1.0201	0.9448	0.9355	0.8728	0.8845	0.8741	0.9490	9.3
Decachlorobiphenyl	1.6280	1.2027	1.0498	0.9087	0.8508	0.8031	0.7894	1.0332	0.9979

FORM VI PEST-2

6E
8081 PESTICIDE INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP2 ID: 0.53 (mm) Instrument ID: ECD6

Calibration Date: 01/18/11

	CALIBRATION FACTORS								R^2
COMPOUND	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	MEAN	%RSD
alpha-BHC	1.4822	1.3696	1.3272	1.3365	1.3008	1.3509	1.3581	1.3608	4.3
beta-BHC	0.7707	0.6717	0.6235	0.6032	0.5306	0.5360	0.5254	0.6087	14.8
delta-BHC	0.8887	0.7504	0.7163	0.7340	0.8219	0.8575	0.9263	0.8136	10.1
gamma-BHC (Lindane)	1.2568	1.1514	1.1094	1.1136	1.1004	1.1388	1.1510	1.1459	4.6
Heptachlor	1.6373	1.4775	1.4044	1.3808	1.2237	1.2746	1.2231	1.3745	11.0
Aldrin	1.2241	1.0624	1.0068	1.0049	0.9775	1.0004	0.9915	1.0382	8.3
Heptachlor epoxide b	1.3752	1.0377	0.9693	0.9693	0.9196	0.8988	0.8799	1.0071	17.0
Endosulfan I	1.1322	0.9087	0.8689	0.8579	0.8172	0.8095	0.7948	0.8842	13.1
Dieldrin	1.0147	0.9820	0.9275	0.9289	0.8876	0.8893	0.8699	0.9286	5.7
4,4'-DDE	0.9125	0.8416	0.8392	0.8504	0.8288	0.8317	0.8255	0.8471	3.5
Endrin	1.5568	1.4031	1.3307	1.3229	1.3256	1.2753	1.2448	1.3513	7.6
Endosulfan II	1.5043	1.3343	1.2068	1.2140	1.1760	1.1625	1.1388	1.2481	10.4
4,4'-DDD	1.2164	1.1435	1.0423	1.0573	1.0813	1.0624	1.0704	1.0962	5.7
Endosulfan sulfate	1.3302	1.1054	0.9597	0.9586	0.9171	0.9418	0.9403	1.0219	14.6
4,4'-DDT	1.2252	1.0652	0.9840	1.0123	1.0297	1.0290	1.0429	1.0555	7.5
Methoxychlor	0.7045	0.5898	0.5416	0.5257	0.5067	0.4822	0.4725	0.5461	14.7
Endrin ketone	1.6412	1.4512	1.2250	1.2274	1.1821	1.1066	1.0911	1.2749	15.7
Endrin aldehyde	1.4856	1.0674	0.9833	0.9622	0.9058	0.9040	0.8872	1.0279	0.9995
gamma-Chlordane	1.1234	0.9964	0.9592	0.9414	0.9043	0.8996	0.8972	0.9602	8.4
alpha-Chlordane	1.4291	0.9933	0.9354	0.9201	0.8628	0.8693	0.8671	0.9824	0.9997
Hexachlorobutadiene	1.9601	1.7276	1.6537	1.5942	1.4726	1.4845	1.5016	1.6278	10.7
Hexachlorobenzene	1.3481	1.1529	1.0653	1.0219	0.9780	0.9518	0.9342	1.0646	13.7
Tetrachloro-m-xylene	0.9920	0.9625	0.9039	0.8846	0.8625	0.8520	0.8383	0.8994	6.4
Decachlorobiphenyl	1.5167	1.3889	1.0351	0.9461	0.8519	0.8077	0.7828	1.0470	0.9970

FORM VI PEST-2

AR 2/9/2011

7E

8081 DDT/ENDRIN BREAKDOWN VERIFICATION SUMMARY

Lab ID: DS ARI Job No.: 20110118PEST

Analysis Date: 09-FEB-2011 15:37 Init. Calib. Date: 18-JAN-2011

GC Column: STX-CLP1 ID: 0.53(mm)

COMPOUND	RT	AREA
4,4'-DDE	5.391	110199
Endrin	5.838	8983398
4,4'-DDD	5.872	393847
4,4'-DDT	6.086	8701007
Endrin ketone	6.873	725247
Endrin aldehyde	6.330	244081

DDT Percent Breakdown = 5.5 %
((110199+393847) * 100)/(110199+393847+8701007)

Endrin Percent Breakdown = 9.7 %
((244081+725247) * 100)/(244081+725247+8983398)

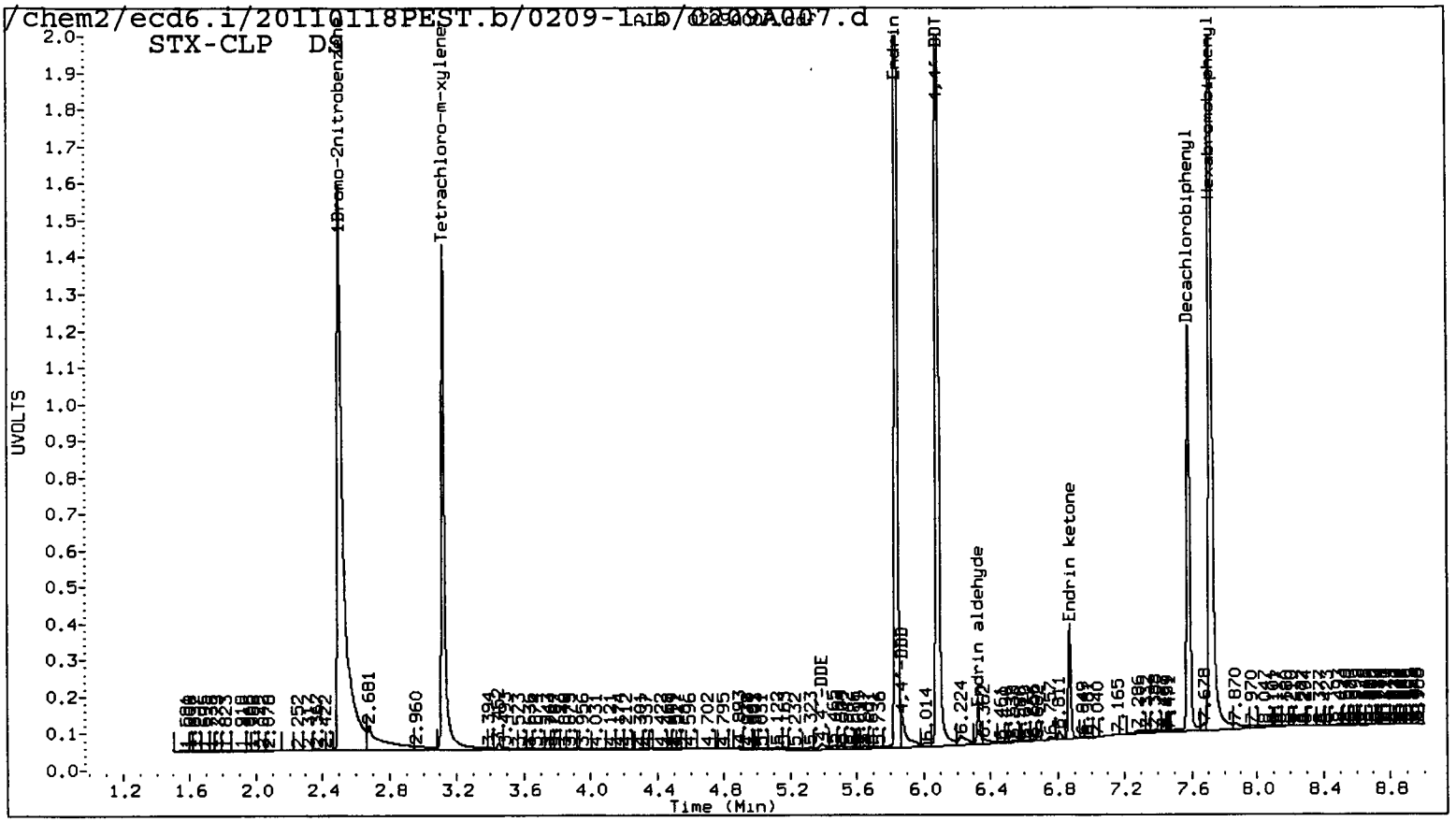
GC Column: STX-CLP2 ID: 0.53(mm)

COMPOUND	RT	AREA
4,4'-DDE	5.631	54832
Endrin	6.008	3246038
4,4'-DDD	6.083	145607
4,4'-DDT	6.314	2761710
Endrin ketone	7.042	268380
Endrin aldehyde	6.431	132705

DDT Percent Breakdown = 6.8 %
((54832+145607) * 100)/(54832+145607+2761710)

Endrin Percent Breakdown = 11.0 %
((132705+268380) * 100)/(132705+268380+3246038)

Form VII Pest-1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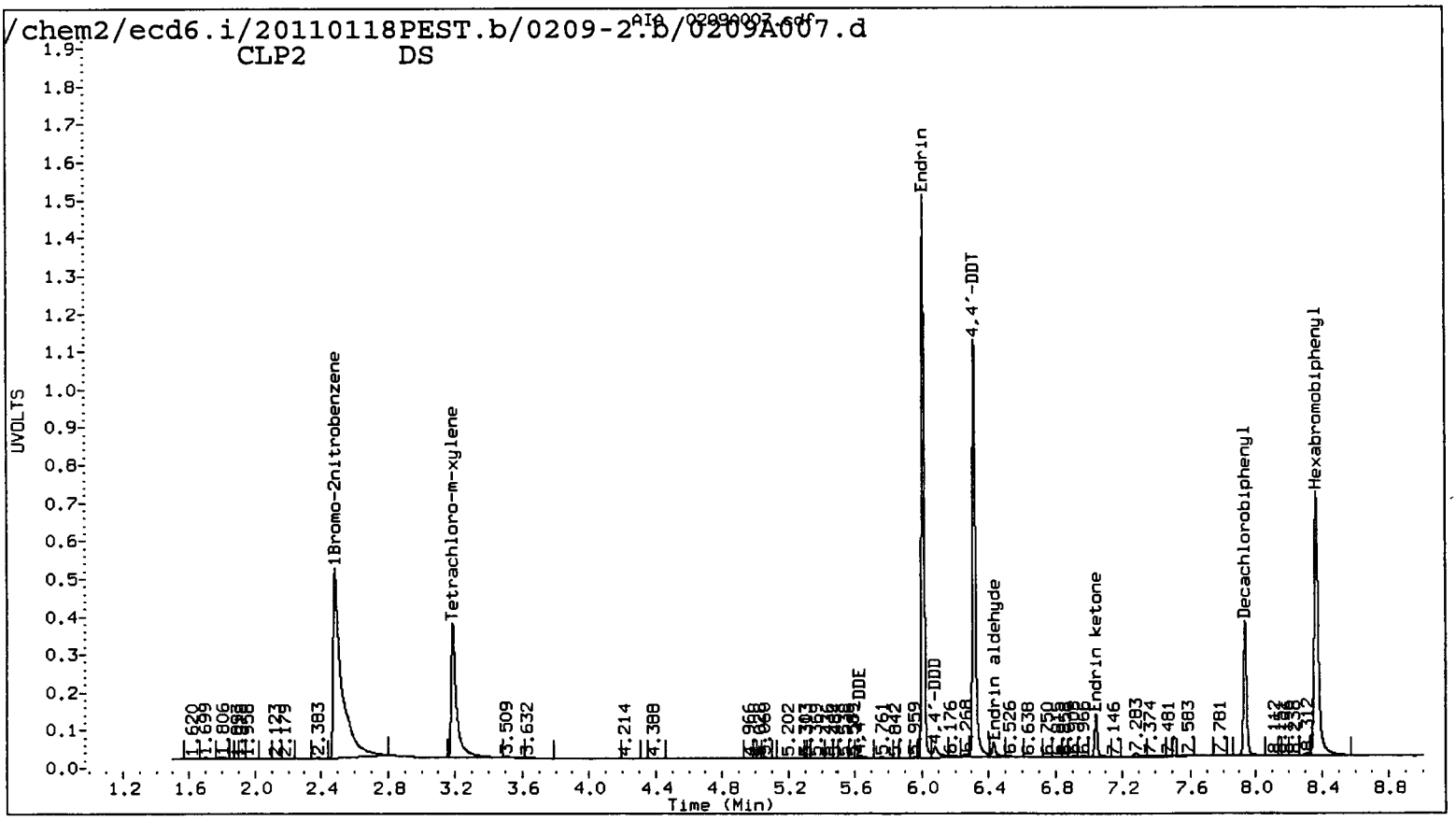
STX-CLP DS
1Bromo-2nitrobenzene
Tetrachloro-m-xylene
Endrin
4,4'-DDT
Decachlorobiphenyl
Hexabromobiphenyl
Endrin aldehyde
Endrin ketone
DDE
UVOLTS
Time (Min)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CLP2 DS
1Bromo-2nitrobenzene
Tetrachloro-m-xylene
Endrin
4,4'-DDT
Endrin aldehyde
Endrin ketone
Decachlorobiphenyl
Hexabromobiphenyl
DDE
UVOLTS
Time (Min)

7E

8081 PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP1 ID: 0.53 (mm)

Init. Calib. Date: 01/18/11

Lab Ccal ID: INDAE Date/Time Analyzed: 02/09/11,1610

PEST MIX COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC	3.59	3.54	3.64	23.7	20.0	18.3
beta-BHC	3.95	3.90	4.00	21.8	20.0	8.9
delta-BHC	4.12	4.07	4.17	22.0	20.0	10.2
gamma-BHC (Lindane)	3.87	3.83	3.93	22.1	20.0	10.5
Heptachlor	4.31	4.28	4.38	21.7	20.0	8.4
Aldrin	4.59	4.55	4.65	22.2	20.0	11.2
Heptachlor epoxide b	5.12	5.08	5.18	21.6	20.0	8.2
Endosulfan I	5.45	5.42	5.51	23.2	20.0	16.2
Dieldrin	5.65	5.61	5.71	44.5	40.0	11.2
4,4'-DDE	5.39	5.35	5.45	43.5	40.0	8.8
Endrin	5.84	5.80	5.90	33.6	40.0	-16.0
Endosulfan II	6.01	5.97	6.07	32.6	40.0	-18.5
4,4'-DDD	5.87	5.83	5.93	33.1	40.0	-17.2
Endosulfan sulfate	6.66	6.62	6.72	33.4	40.0	-16.5
4,4'-DDT	6.09	6.04	6.14	32.4	40.0	-18.9
Methoxychlor	6.44	6.39	6.50	163.3	200.0	-18.4
Endrin ketone	6.87	6.83	6.93	33.9	40.0	-15.2
Endrin aldehyde	6.33	6.29	6.39	33.0	40.0	-17.6
gamma-Chlordane	5.23	5.19	5.29	22.2	20.0	10.9
alpha-Chlordane	5.34	5.30	5.40	21.2	20.0	6.0
Hexachlorobutadiene	1.77	1.73	1.83	20.6	20.0	3.0
Hexachlorobenzene	3.46	3.41	3.51	20.9	20.0	4.4
Tetrachloro-m-xylene	3.12	3.08	3.18	41.1	40.0	2.8
Decachlorobiphenyl	7.59	7.54	7.64	40.3	40.0	0.8

FORM VII PEST-2

7E

8081 PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP2 ID: 0.53 (mm)

Init. Calib. Date: 01/18/11

Lab Ccal ID: INDAE Date/Time Analyzed: 02/09/11,1610

PEST MIX COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ug/L)	NOM AMOUNT (ug/L)	%D
alpha-BHC	3.69	3.65	3.75	21.2	20.0	6.0
beta-BHC	4.10	4.05	4.15	19.9	20.0	-0.6
delta-BHC	4.37	4.32	4.42	17.2	20.0	-13.8
gamma-BHC (Lindane)	4.01	3.96	4.06	20.5	20.0	2.6
Heptachlor	4.41	4.37	4.47	21.2	20.0	6.1
Aldrin	4.71	4.67	4.77	20.2	20.0	1.2
Heptachlor epoxide b	5.21	5.16	5.26	19.4	20.0	-2.8
Endosulfan I	5.54	5.50	5.60	19.7	20.0	-1.4
Dieldrin	5.76	5.72	5.82	40.5	40.0	1.3
4,4'-DDE	5.62	5.57	5.67	40.0	40.0	0.0
Endrin	6.01	5.97	6.07	34.5	40.0	-13.7
Endosulfan II	6.17	6.13	6.23	35.6	40.0	-11.0
4,4'-DDD	6.08	6.03	6.13	34.8	40.0	-12.9
Endosulfan sulfate	6.64	6.59	6.69	35.5	40.0	-11.3
4,4'-DDT	6.31	6.27	6.37	35.5	40.0	-11.4
Methoxychlor	6.81	6.77	6.87	165.2	200.0	-17.4
Endrin ketone	7.04	7.00	7.10	35.5	40.0	-11.3
Endrin aldehyde	6.43	6.39	6.49	38.3	40.0	-4.1
gamma-Chlordane	5.37	5.32	5.42	20.1	20.0	0.7
alpha-Chlordane	5.48	5.44	5.54	20.1	20.0	0.4
Hexachlorobutadiene	1.79	1.75	1.85	18.3	20.0	-8.3
Hexachlorobenzene	3.60	3.54	3.64	18.4	20.0	-7.9
Tetrachloro-m-xylene	3.19	3.13	3.23	42.4	40.0	5.9
Decachlorobiphenyl	7.94	7.90	8.00	41.1	40.0	2.6

FORM VII PEST-2

7E

8081 DDT/ENDRIN BREAKDOWN VERIFICATION SUMMARY

Lab ID: DS ARI Job No.: 20110118PEST

Analysis Date: 09-FEB-2011 19:44 Init. Calib. Date: 18-JAN-2011

GC Column: STX-CLP1 ID: 0.53(mm)

COMPOUND	RT	AREA
4,4'-DDE	5.389	112221
Endrin	5.837	8767669
4,4'-DDD	5.871	561241
4,4'-DDT	6.086	8138197
Endrin ketone	6.872	805821
Endrin aldehyde	6.329	257425

DDT Percent Breakdown = 7.6 %
((112221+561241) * 100)/(112221+561241+8138197)

Endrin Percent Breakdown = 10.8 %
((257425+805821) * 100)/(257425+805821+8767669)

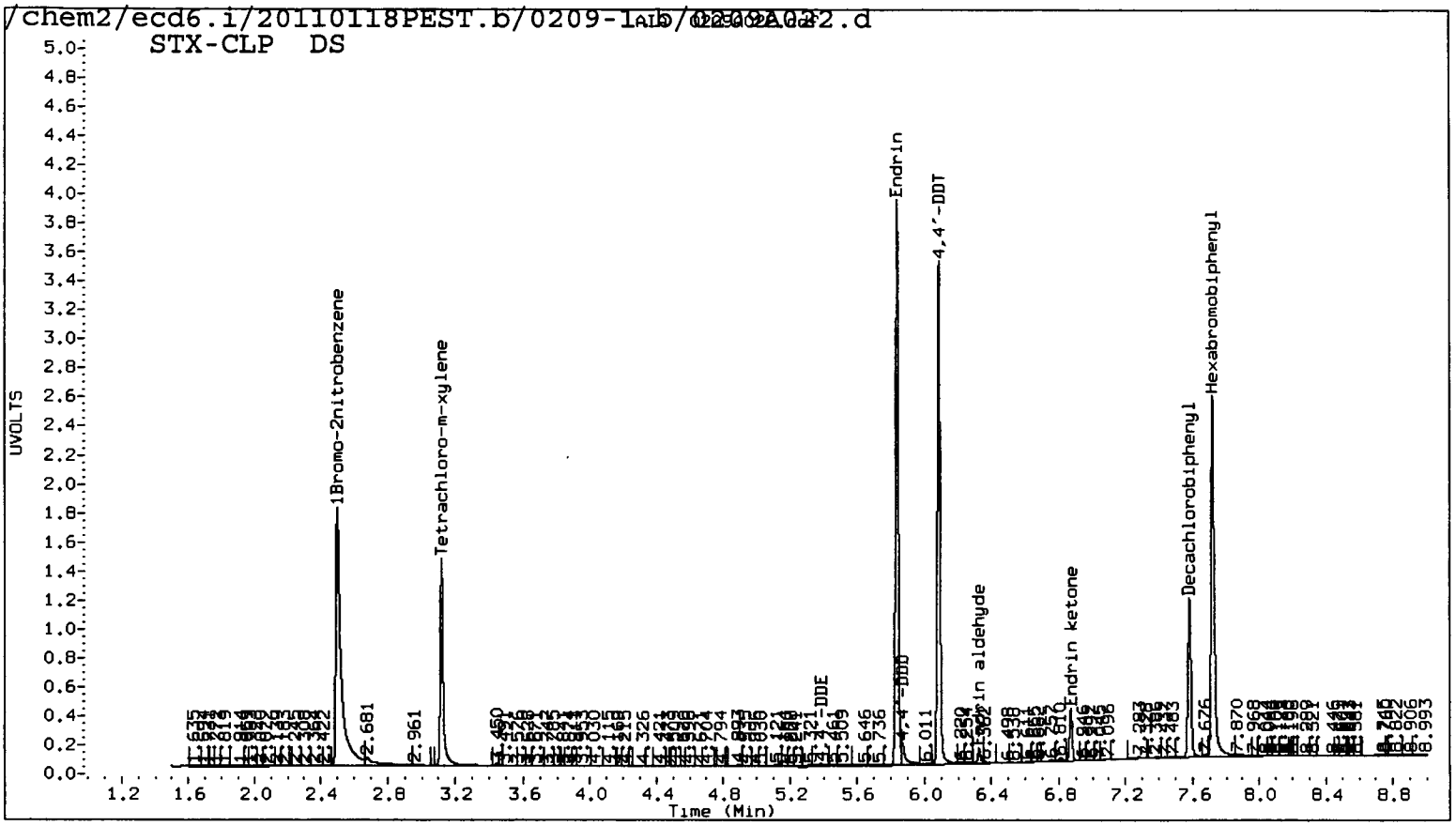
GC Column: STX-CLP2 ID: 0.53(mm)

COMPOUND	RT	AREA
4,4'-DDE	5.588	5501
Endrin	6.008	3220693
4,4'-DDD	6.082	204577
4,4'-DDT	6.314	2626286
Endrin ketone	7.043	302937
Endrin aldehyde	6.431	129904

DDT Percent Breakdown = 7.4 %
((5501+204577) * 100)/(5501+204577+2626286)

Endrin Percent Breakdown = 11.8 %
((129904+302937) * 100)/(129904+302937+3220693)

Form VII Pest-1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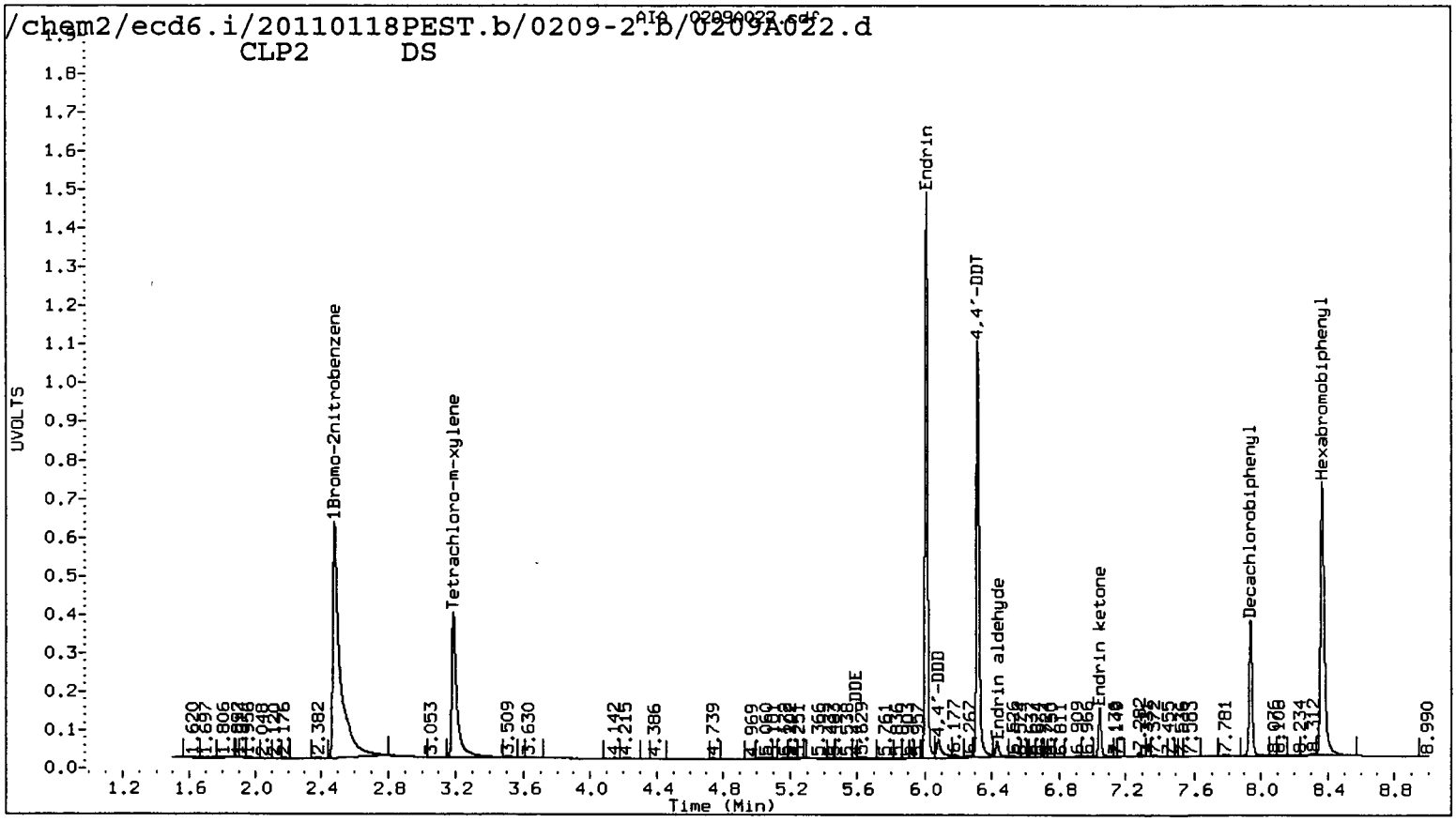
STX-CLP DS
UVOLTS
Time (Min)
1Bromo-2nitrobenzene
Tetrachloro-m-xylene
Endrin
4,4'-DDT
Endrin aldehyde
Endrin ketone
Decachlorobiphenyl
Hexabromobiphenyl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CLP2 DS
UVOLTS
Time (Min)
1Bromo-2nitrobenzene
Tetrachloro-m-xylene
Endrin
4,4'-DDT
Endrin aldehyde
Endrin ketone
Decachlorobiphenyl
Hexabromobiphenyl

7E

8081 PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP1 ID: 0.53 (mm)

Init. Calib. Date: 01/18/11

Lab Ccal ID: INDAE Date/Time Analyzed: 02/09/11,2000

PEST MIX COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC	3.59	3.54	3.64	23.0	20.0	15.1
beta-BHC	3.94	3.90	4.00	20.1	20.0	0.3
delta-BHC	4.12	4.07	4.17	21.5	20.0	7.7
gamma-BHC (Lindane)	3.87	3.83	3.93	21.6	20.0	7.9
Heptachlor	4.31	4.28	4.38	20.8	20.0	4.2
Aldrin	4.59	4.55	4.65	21.6	20.0	8.0
Heptachlor epoxide b	5.12	5.08	5.18	20.8	20.0	4.1
Endosulfan I	5.45	5.42	5.51	22.0	20.0	10.0
Dieldrin	5.65	5.61	5.71	42.2	40.0	5.4
4,4'-DDE	5.39	5.35	5.45	42.1	40.0	5.2
Endrin	5.84	5.80	5.90	34.4	40.0	-13.9
Endosulfan II	6.01	5.97	6.07	33.6	40.0	-16.0
4,4'-DDD	5.87	5.83	5.93	35.5	40.0	-11.2
Endosulfan sulfate	6.65	6.62	6.72	34.1	40.0	-14.8
4,4'-DDT	6.09	6.04	6.14	32.1	40.0	-19.8
Methoxychlor	6.44	6.39	6.50	164.8	200.0	-17.6
Endrin ketone	6.87	6.83	6.93	34.7	40.0	-13.3
Endrin aldehyde	6.33	6.29	6.39	33.8	40.0	-15.4
gamma-Chlordane	5.23	5.19	5.29	21.3	20.0	6.7
alpha-Chlordane	5.34	5.30	5.40	20.4	20.0	2.2
Hexachlorobutadiene	1.77	1.73	1.83	20.3	20.0	1.6
Hexachlorobenzene	3.45	3.41	3.51	20.4	20.0	1.8
Tetrachloro-m-xylene	3.12	3.08	3.18	37.7	40.0	-5.8
Decachlorobiphenyl	7.58	7.54	7.64	40.1	40.0	0.2

FORM VII PEST-2

7E

8081 PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP2 ID: 0.53 (mm)

Init. Calib. Date: 01/18/11

Lab Ccal ID: INDAE Date/Time Analyzed: 02/09/11,2000

PEST MIX COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ug/L)	NOM AMOUNT (ug/L)	%D
alpha-BHC	3.69	3.65	3.75	20.7	20.0	3.3
beta-BHC	4.10	4.05	4.15	19.3	20.0	-3.6
delta-BHC	4.37	4.32	4.42	17.9	20.0	-10.7
gamma-BHC (Lindane)	4.01	3.96	4.06	20.1	20.0	0.6
Heptachlor	4.41	4.37	4.47	20.0	20.0	0.0
Aldrin	4.71	4.67	4.77	19.6	20.0	-1.8
Heptachlor epoxide b	5.21	5.16	5.26	18.9	20.0	-5.6
Endosulfan I	5.54	5.50	5.60	19.0	20.0	-4.8
Dieldrin	5.76	5.72	5.82	39.2	40.0	-1.9
4,4'-DDE	5.62	5.57	5.67	38.9	40.0	-2.8
Endrin	6.01	5.97	6.07	34.8	40.0	-13.0
Endosulfan II	6.17	6.13	6.23	36.0	40.0	-10.0
4,4'-DDD	6.08	6.03	6.13	36.4	40.0	-8.9
Endosulfan sulfate	6.64	6.59	6.69	35.5	40.0	-11.3
4,4'-DDT	6.31	6.27	6.37	33.9	40.0	-15.2
Methoxychlor	6.81	6.77	6.87	162.7	200.0	-18.7
Endrin ketone	7.04	7.00	7.10	35.7	40.0	-10.7
Endrin aldehyde	6.43	6.39	6.49	38.4	40.0	-4.0
gamma-Chlordane	5.37	5.32	5.42	19.3	20.0	-3.6
alpha-Chlordane	5.48	5.44	5.54	19.4	20.0	-3.0
Hexachlorobutadiene	1.79	1.75	1.85	18.0	20.0	-9.9
Hexachlorobenzene	3.60	3.54	3.64	18.2	20.0	-8.8
Tetrachloro-m-xylene	3.19	3.13	3.23	39.4	40.0	-1.4
Decachlorobiphenyl	7.94	7.90	8.00	40.3	40.0	0.8

FORM VII PEST-2

7E

8081 DDT/ENDRIN BREAKDOWN VERIFICATION SUMMARY

Lab ID: DS ARI Job No.: 20110118PEST

Analysis Date: 09-FEB-2011 22:12 Init. Calib. Date: 18-JAN-2011

GC Column: STX-CLP1 ID: 0.53(mm)

COMPOUND	RT	AREA
4,4'-DDE	5.387	80469
Endrin	5.837	8408277
4,4'-DDD	5.869	536674
4,4'-DDT	6.085	7761268
Endrin ketone	6.872	776308
Endrin aldehyde	6.328	236257

DDT Percent Breakdown = 7.4 %
((80469+536674) * 100)/(80469+536674+7761268)

Endrin Percent Breakdown = 10.7 %
((236257+776308) * 100)/(236257+776308+8408277)

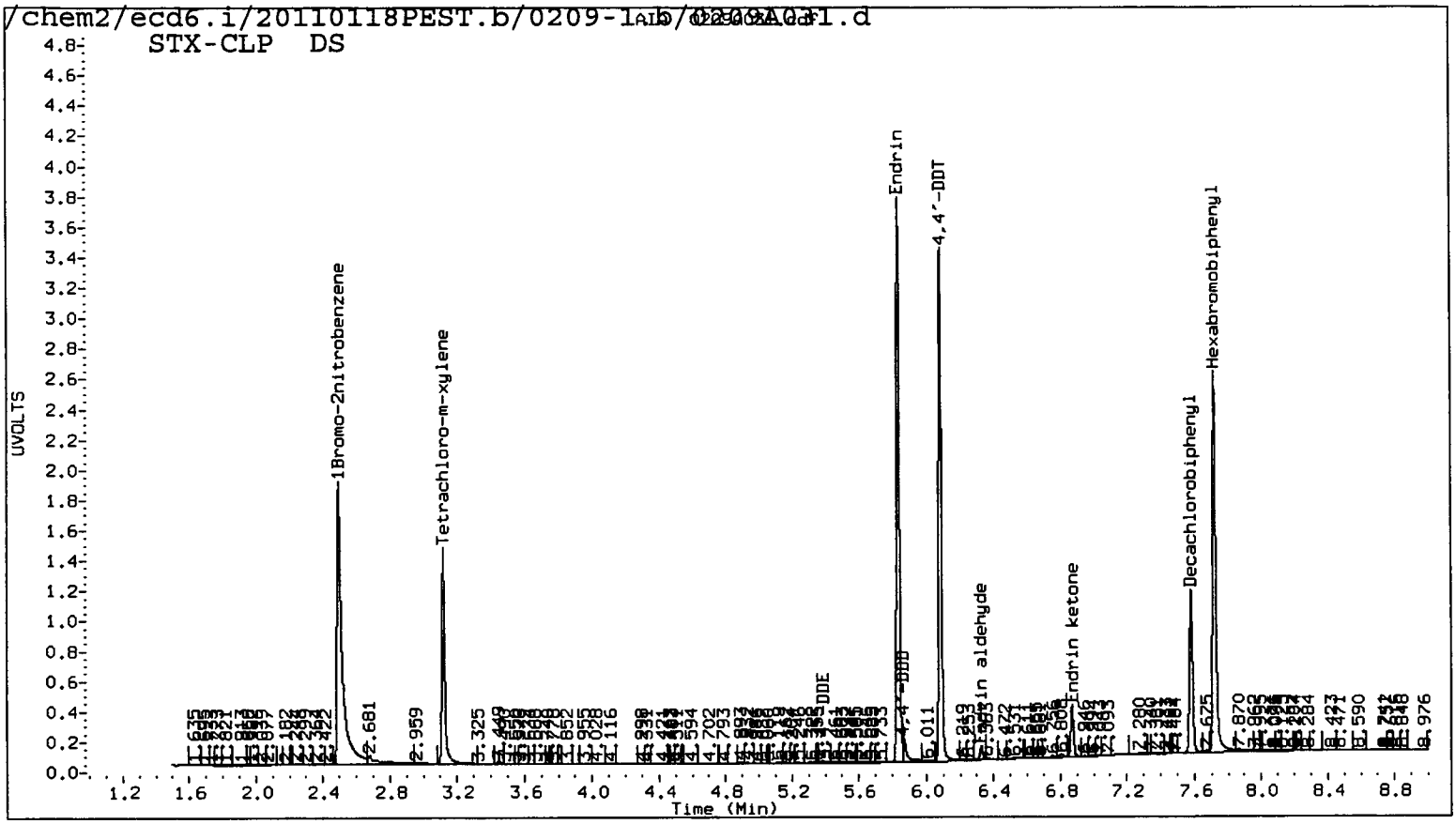
GC Column: STX-CLP2 ID: 0.53(mm)

COMPOUND	RT	AREA
4,4'-DDE	5.625	54118
Endrin	6.007	3268041
4,4'-DDD	6.079	213113
4,4'-DDT	6.313	2635547
Endrin ketone	7.041	301025
Endrin aldehyde	6.430	120501

DDT Percent Breakdown = 9.2 %
((54118+213113) * 100)/(54118+213113+2635547)

Endrin Percent Breakdown = 11.4 %
((120501+301025) * 100)/(120501+301025+3268041)

Form VII Pest-1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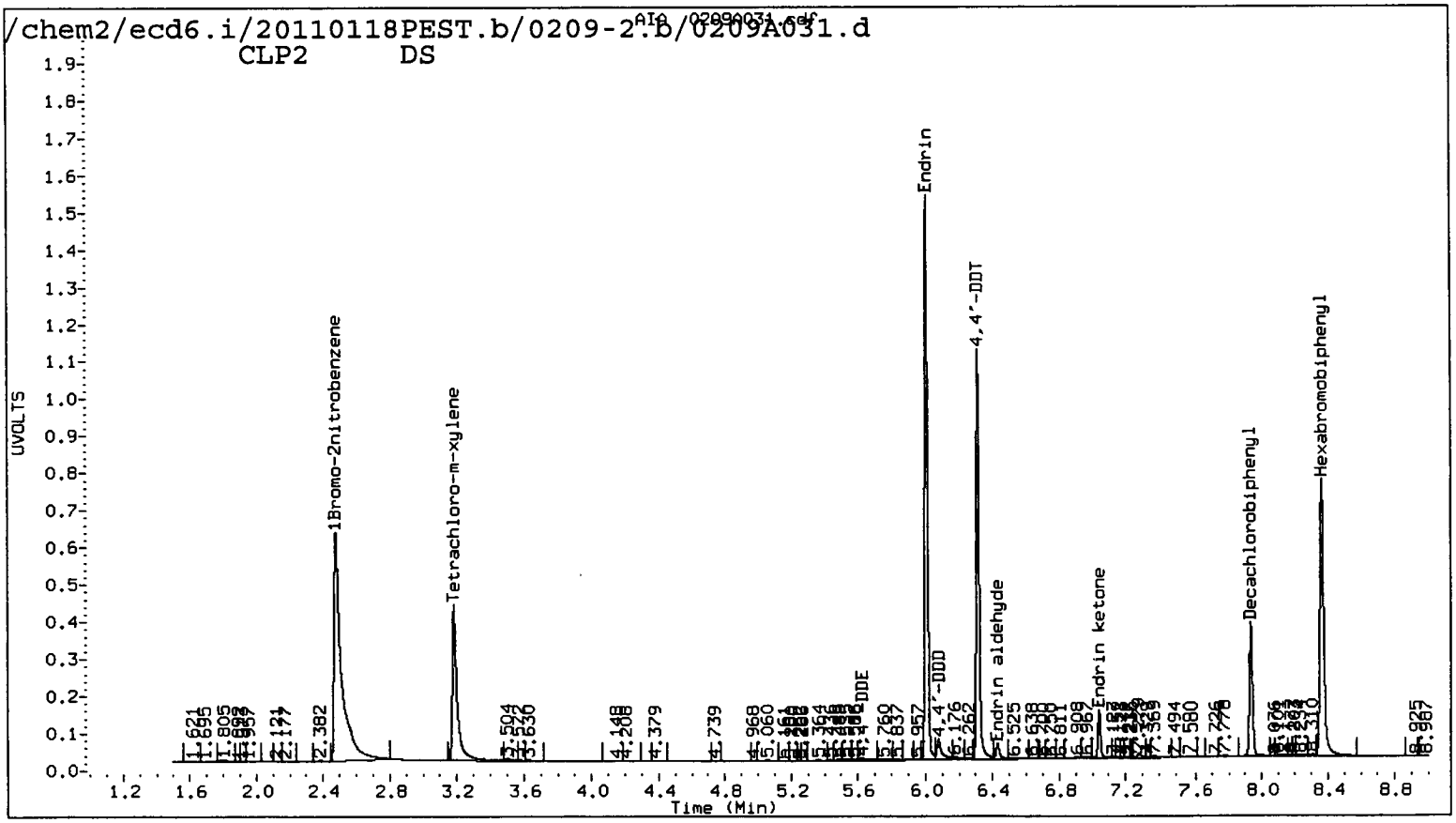
STX-CLP DS
UVOLTS
1Bromo-2nitrobenzene
Tetrachloro-m-xylene
DDE
Endrin
4,4'-DDT
Endrin aldehyde
Endrin ketone
Decachlorobiphenyl
Hexabromobiphenyl
Time (Min)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CLP2 DS
UVOLTS
1Bromo-2nitrobenzene
Tetrachloro-m-xylene
DDE
Endrin
4,4'-DDT
Endrin aldehyde
Endrin ketone
Decachlorobiphenyl
Hexabromobiphenyl
Time (Min)

7E

8081 PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP1 ID: 0.53 (mm)

Init. Calib. Date: 01/18/11

Lab Ccal ID: INDAE Date/Time Analyzed: 02/09/11,2229

PEST MIX COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC	3.59	3.54	3.64	22.7	20.0	13.3
beta-BHC	3.94	3.90	4.00	19.8	20.0	-1.1
delta-BHC	4.11	4.07	4.17	21.2	20.0	5.8
gamma-BHC (Lindane)	3.87	3.83	3.93	21.3	20.0	6.7
Heptachlor	4.31	4.28	4.38	20.4	20.0	2.1
Aldrin	4.59	4.55	4.65	21.2	20.0	6.1
Heptachlor epoxide b	5.12	5.08	5.18	20.3	20.0	1.4
Endosulfan I	5.45	5.42	5.51	21.4	20.0	6.8
Dieldrin	5.65	5.61	5.71	40.9	40.0	2.3
4,4'-DDE	5.39	5.35	5.45	41.5	40.0	3.7
Endrin	5.84	5.80	5.90	34.7	40.0	-13.2
Endosulfan II	6.01	5.97	6.07	33.6	40.0	-15.9
4,4'-DDD	5.87	5.83	5.93	36.4	40.0	-8.9
Endosulfan sulfate	6.65	6.62	6.72	33.7	40.0	-15.8
4,4'-DDT	6.09	6.04	6.14	31.3	40.0	-21.7
Methoxychlor	6.44	6.39	6.50	158.8	200.0	-20.6
Endrin ketone	6.87	6.83	6.93	34.5	40.0	-13.8
Endrin aldehyde	6.33	6.29	6.39	33.8	40.0	-15.5
gamma-Chlordane	5.23	5.19	5.29	21.0	20.0	4.9
alpha-Chlordane	5.34	5.30	5.40	20.1	20.0	0.6
Hexachlorobutadiene	1.77	1.73	1.83	20.2	20.0	1.1
Hexachlorobenzene	3.45	3.41	3.51	20.2	20.0	0.8
Tetrachloro-m-xylene	3.12	3.08	3.18	37.2	40.0	-7.0
Decachlorobiphenyl	7.58	7.54	7.64	40.1	40.0	0.2

FORM VII PEST-2

7E

8081 PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP2 ID: 0.53 (mm)

Init. Calib. Date: 01/18/11

Lab Ccal ID: INDAE Date/Time Analyzed: 02/09/11,2229

PEST MIX COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ug/L)	NOM AMOUNT (ug/L)	%D
alpha-BHC	3.69	3.65	3.75	20.3	20.0	1.6
beta-BHC	4.10	4.05	4.15	19.0	20.0	-5.2
delta-BHC	4.37	4.32	4.42	18.7	20.0	-6.4
gamma-BHC (Lindane)	4.01	3.96	4.06	19.9	20.0	-0.3
Heptachlor	4.41	4.37	4.47	19.0	20.0	-4.8
Aldrin	4.71	4.67	4.77	19.4	20.0	-3.2
Heptachlor epoxide b	5.20	5.16	5.26	18.5	20.0	-7.4
Endosulfan I	5.54	5.50	5.60	18.7	20.0	-6.5
Dieldrin	5.76	5.72	5.82	38.5	40.0	-3.7
4,4'-DDE	5.61	5.57	5.67	38.4	40.0	-3.9
Endrin	6.01	5.97	6.07	34.7	40.0	-13.3
Endosulfan II	6.17	6.13	6.23	35.6	40.0	-10.9
4,4'-DDD	6.08	6.03	6.13	37.5	40.0	-6.2
Endosulfan sulfate	6.64	6.59	6.69	34.8	40.0	-13.0
4,4'-DDT	6.31	6.27	6.37	32.2	40.0	-19.5
Methoxychlor	6.81	6.77	6.87	157.5	200.0	-21.2
Endrin ketone	7.04	7.00	7.10	35.1	40.0	-12.3
Endrin aldehyde	6.43	6.39	6.49	37.8	40.0	-5.6
gamma-Chlordane	5.36	5.32	5.42	19.0	20.0	-5.0
alpha-Chlordane	5.48	5.44	5.54	19.2	20.0	-4.2
Hexachlorobutadiene	1.79	1.75	1.85	17.9	20.0	-10.4
Hexachlorobenzene	3.59	3.54	3.64	18.3	20.0	-8.5
Tetrachloro-m-xylene	3.18	3.13	3.23	39.2	40.0	-2.0
Decachlorobiphenyl	7.94	7.90	8.00	40.3	40.0	0.7

7E

8081 DDT/ENDRIN BREAKDOWN VERIFICATION SUMMARY

Lab ID: DS ARI Job No.: 20110118PEST

Analysis Date: 10-FEB-2011 00:40 Init. Calib. Date: 18-JAN-2011

GC Column: STX-CLP1 ID: 0.53(mm)

COMPOUND	RT	AREA
4,4'-DDE	5.385	64075
Endrin	5.837	7314524
4,4'-DDD	5.866	1223610
4,4'-DDT	6.085	5001583
Endrin ketone	6.871	782236
Endrin aldehyde	6.328	138176

DDT Percent Breakdown = 20.5 %
((64075+1223610) * 100)/(64075+1223610+5001583)

Endrin Percent Breakdown = 11.2 %
((138176+782236) * 100)/(138176+782236+7314524)

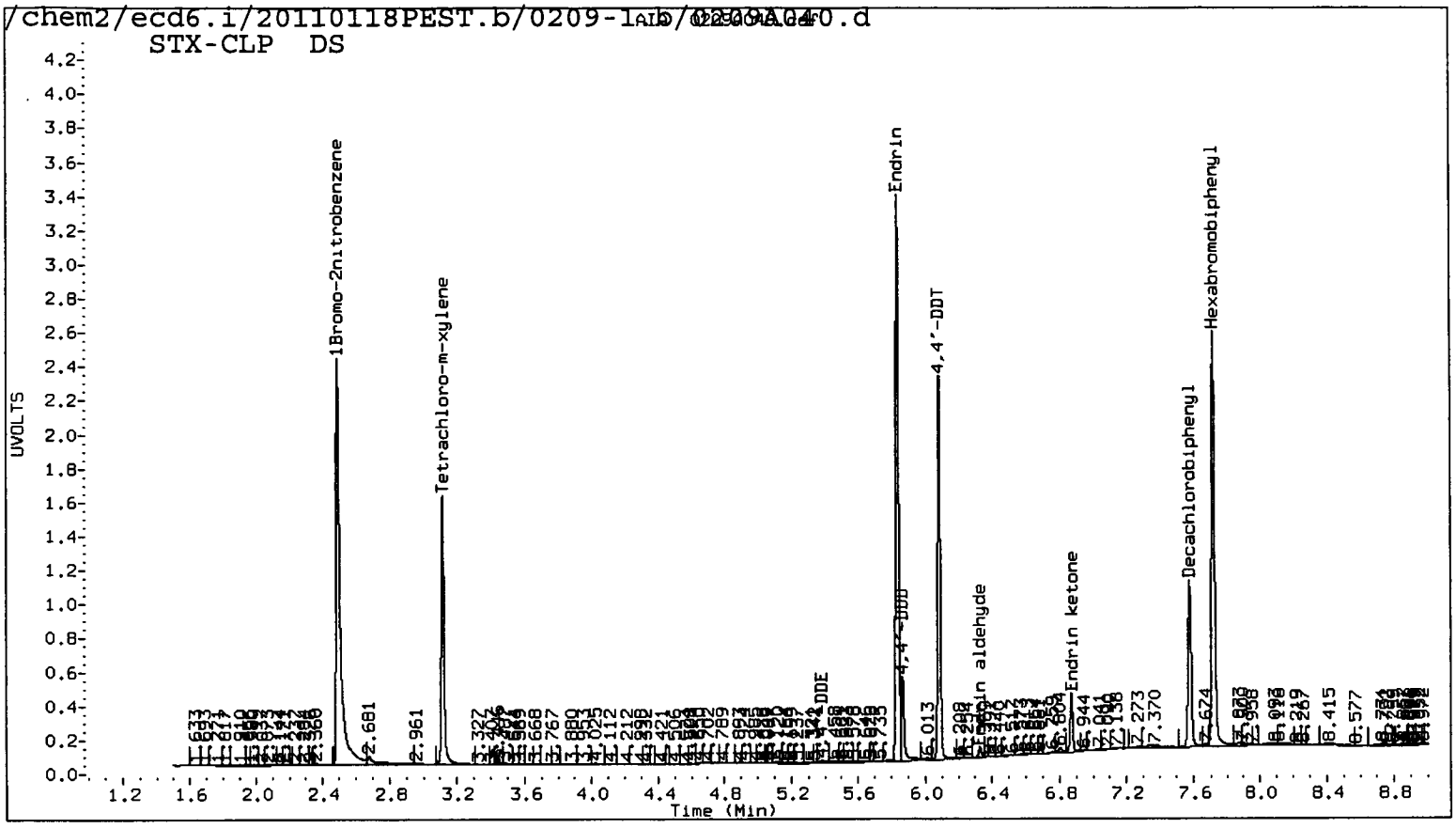
GC Column: STX-CLP2 ID: 0.53(mm)

COMPOUND	RT	AREA
4,4'-DDE	5.588	15271
Endrin	6.008	3024597
4,4'-DDD	6.075	519782
4,4'-DDT	6.311	1753696
Endrin ketone	7.041	293530
Endrin aldehyde	6.429	64820

DDT Percent Breakdown = 23.4 %
((15271+519782) * 100)/(15271+519782+1753696)

Endrin Percent Breakdown = 10.6 %
((64820+293530) * 100)/(64820+293530+3024597)

Form VII Pest-1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STX-CLP DS
UVOLTS
Time (Min)
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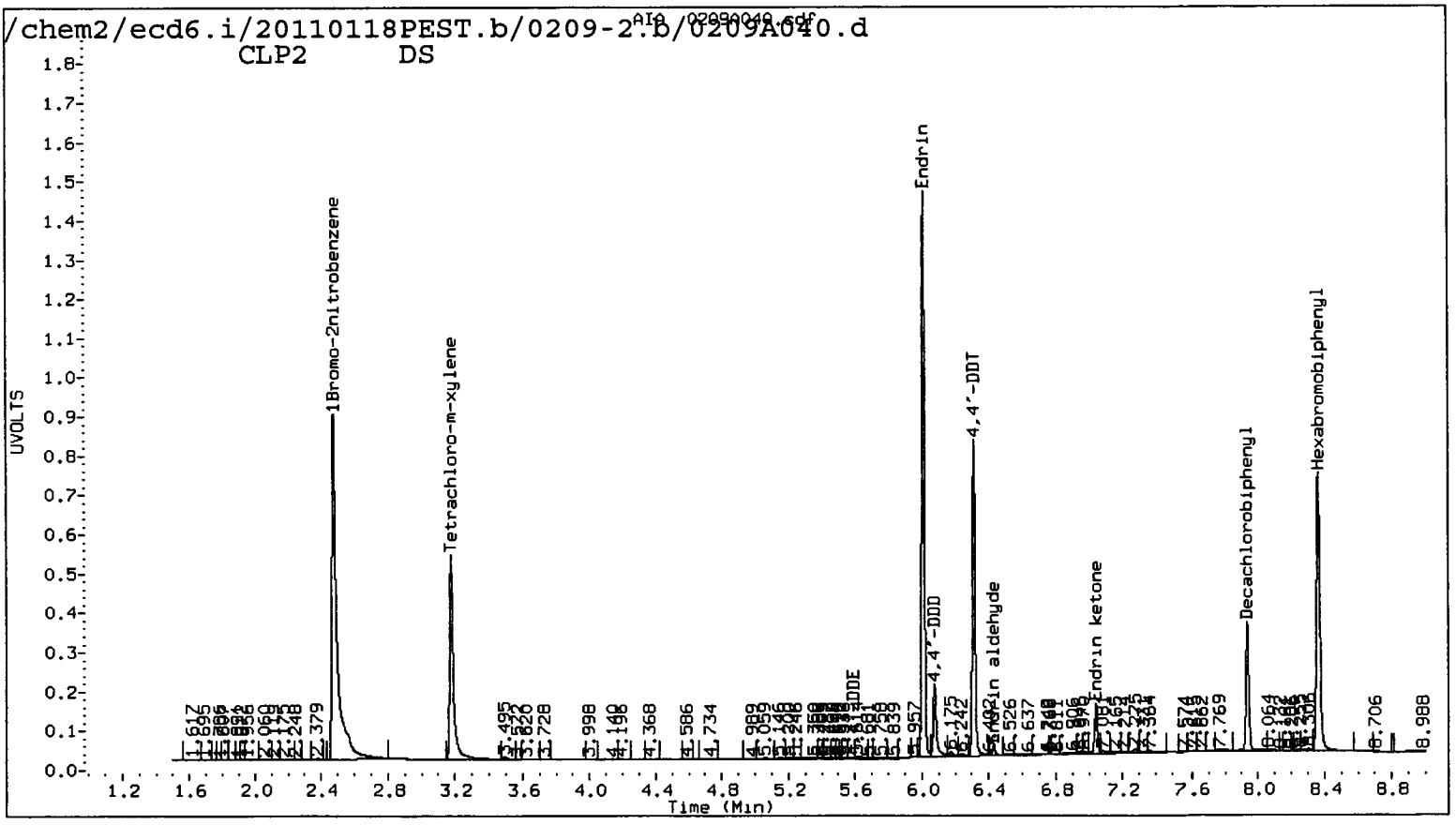
Tetrachloro-m-xylene
Endrin
4,4'-DDT
Hexabromobiphenyl
Decachlorobiphenyl
Endrin ketone
Endrin aldehyde
4,4'-DDD
4,4'-DDE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CLP2 DS
UVOLTS
Time (Min)
1Bromo-2nitrobenzene
Tetrachloro-m-xylene
Endrin
4,4'-DDT
Hexabromobiphenyl
Decachlorobiphenyl
Endrin ketone
Endrin aldehyde
4,4'-DDD
4,4'-DDE

7E

8081 PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP2 ID: 0.53 (mm)

Init. Calib. Date: 01/18/11

Lab Ccal ID: INDAE Date/Time Analyzed: 02/10/11,0057

PEST MIX COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ug/L)	NOM AMOUNT (ug/L)	%D	
alpha-BHC	3.69	3.65	3.75	20.0	20.0	-0.1	
beta-BHC	4.09	4.05	4.15	17.9	20.0	-10.6	
delta-BHC	4.36	4.32	4.42	21.5	20.0	7.6	
gamma-BHC (Lindane)	4.01	3.96	4.06	20.0	20.0	-0.2	
Heptachlor	4.41	4.37	4.47	16.7	20.0	-16.5	
Aldrin	4.71	4.67	4.77	18.9	20.0	-5.4	
Heptachlor epoxide b	5.20	5.16	5.26	17.8	20.0	-10.9	
Endosulfan I	5.54	5.50	5.60	17.8	20.0	-11.0	
Dieldrin	5.76	5.72	5.82	36.7	40.0	-8.2	
4,4'-DDE	5.61	5.57	5.67	37.2	40.0	-6.9	
Endrin	6.01	5.97	6.07	34.7	40.0	-13.3	
Endosulfan II	6.17	6.13	6.23	35.5	40.0	-11.3	
4,4'-DDD	6.07	6.03	6.13	41.1	40.0	2.6	
Endosulfan sulfate	6.64	6.59	6.69	33.2	40.0	-17.1	
4,4'-DDT	6.31	6.27	6.37	25.1	40.0	-37.3	<-
Methoxychlor	6.81	6.77	6.87	136.2	200.0	-31.9	<-
Endrin ketone	7.04	7.00	7.10	31.4	40.0	-21.4	
Endrin aldehyde	6.43	6.39	6.49	36.0	40.0	-9.9	
gamma-Chlordane	5.36	5.32	5.42	18.3	20.0	-8.3	
alpha-Chlordane	5.48	5.44	5.54	18.7	20.0	-6.3	
Hexachlorobutadiene	1.79	1.75	1.85	18.1	20.0	-9.5	
Hexachlorobenzene	3.58	3.54	3.64	19.0	20.0	-4.8	
Tetrachloro-m-xylene	3.18	3.13	3.23	40.2	40.0	0.5	
Decachlorobiphenyl	7.94	7.90	8.00	40.4	40.0	0.9	

FORM VII PEST-2

7E

8081 PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP1 ID: 0.53 (mm)

Init. Calib. Date: 01/18/11

Lab Ccal ID: INDAE Date/Time Analyzed: 02/10/11,0057

PEST MIX COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D	
alpha-BHC	3.58	3.54	3.64	22.2	20.0	11.2	
beta-BHC	3.94	3.90	4.00	19.3	20.0	-3.3	
delta-BHC	4.11	4.07	4.17	20.7	20.0	3.6	
gamma-BHC (Lindane)	3.86	3.83	3.93	21.0	20.0	5.2	
Heptachlor	4.31	4.28	4.38	19.2	20.0	-3.8	
Aldrin	4.59	4.55	4.65	20.6	20.0	3.1	
Heptachlor epoxide b	5.12	5.08	5.18	18.9	20.0	-5.5	
Endosulfan I	5.45	5.42	5.51	18.3	20.0	-8.7	
Dieldrin	5.65	5.61	5.71	35.3	40.0	-11.8	
4,4'-DDE	5.39	5.35	5.45	38.1	40.0	-4.7	
Endrin	5.84	5.80	5.90	31.6	40.0	-21.1	
Endosulfan II	6.01	5.97	6.07	30.6	40.0	-23.5	
4,4'-DDD	5.87	5.83	5.93	36.1	40.0	-9.7	
Endosulfan sulfate	6.65	6.62	6.72	30.0	40.0	-25.0	
4,4'-DDT	6.08	6.04	6.14	24.6	40.0	-38.5	<-
Methoxychlor	6.43	6.39	6.50	133.7	200.0	-33.1	<-
Endrin ketone	6.87	6.83	6.93	30.9	40.0	-22.6	
Endrin aldehyde	6.33	6.29	6.39	30.3	40.0	-24.2	
gamma-Chlordane	5.22	5.19	5.29	19.2	20.0	-3.8	
alpha-Chlordane	5.34	5.30	5.40	18.1	20.0	-9.5	
Hexachlorobutadiene	1.77	1.73	1.83	20.3	20.0	1.3	
Hexachlorobenzene	3.45	3.41	3.51	20.1	20.0	0.3	
Tetrachloro-m-xylene	3.12	3.08	3.18	37.3	40.0	-6.6	
Decachlorobiphenyl	7.58	7.54	7.64	40.0	40.0	-0.1	

FORM VII PEST-2

FORM 8
PESTICIDE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP1 ID: 0.53(mm) Instrument ID: ECD6

Init. Calib. Date: 01/18/11

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
				ICAL MIDPT	7134397	2.501	5514616	7.729
				UPPER LIMIT	14268794	2.551	11029232	7.779
				LOWER LIMIT	3567198	2.451	2757308	7.679
	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
01		DS	01/18/11	2030	8570385	2.499	6295340	7.730
02	ZZZZZ	ZZZZZ	01/18/11	2046	7880199	2.500	5502862	7.731
03		INDAE	01/18/11	2103	7134397	2.501	5514616	7.729
04		INDAA	01/18/11	2119	7181220	2.501	5402430	7.728
05		INDAB	01/18/11	2136	8296855	2.502	6315791	7.730
06		INDAC	01/18/11	2152	8325201	2.502	6521177	7.730
07		INDAD	01/18/11	2209	7447033	2.503	6092501	7.730
08		INDAF	01/18/11	2225	7707412	2.503	6343523	7.730
09		INDAG	01/18/11	2242	7555884	2.503	6204457	7.731
10	ZZZZZ	ZZZZZ	01/18/11	2258	7773465	2.504	6388396	7.730
11		TOXAPH	01/18/11	2315	7583608	2.504	6334091	7.731
12	ZZZZZ	ZZZZZ	01/18/11	2331	7780184	2.504	6401958	7.731
13		WNDE	01/18/11	2347	8045768	2.504	6717136	7.730
14		WNDA	01/19/11	0004	7608664	2.505	6398787	7.731
15		WNDB	01/19/11	0020	7632160	2.506	6454943	7.730
16		WNDC	01/19/11	0037	8064346	2.505	6810237	7.730
17		WNDD	01/19/11	0053	8168905	2.506	6988472	7.730
18		WNDF	01/19/11	0110	7491215	2.506	6565700	7.730
19		WNDG	01/19/11	0126	7472903	2.506	6452229	7.731
20	ZZZZZ	ZZZZZ	01/19/11	0143	7373530	2.506	6322929	7.731
21	ZZZZZ	ZZZZZ	01/19/11	0159	8126209	2.506	7211612	7.731
22	ZZZZZ	ZZZZZ	01/19/11	0216	6340858	2.506	3604268	7.732
23		DS	02/09/11	1537	7725894	2.503	7311902	7.720
24	ZZZZZ	ZZZZZ	02/09/11	1553	7025976	2.503	6325290	7.721
25		INDAE	02/09/11	1610	7558776	2.504	7491815	7.726
26	SH65MBS1	SH65MBS1	02/09/11	1626	10424032	2.499	9327917	7.724
27	SH65LCSS1	SH65LCSS1	02/09/11	1643	10287373	2.498	9450217	7.721
28	SH65LCSDS1	SH65LCSDS1	02/09/11	1659	10233657	2.499	9517555	7.720
29	ZZZZZ	ZZZZZ	02/09/11	1716	10132696	2.499	9180450	7.720
30	C1	SH66A	02/09/11	1732	10263818	2.497	9153536	7.723
31	C1Z	SH66B	02/09/11	1749	10150787	2.496	9095407	7.722
32	C1Z MS	SH66BMS	02/09/11	1805	10180884	2.495	9064200	7.718
33	C1Z MSD	SH66BMSD	02/09/11	1822	10229939	2.496	9127612	7.718
34	C5	SH66C	02/09/11	1838	9614257	2.497	8622628	7.719
35	C5Z	SH66D	02/09/11	1854	10631996	2.494	9207072	7.718

IS1 = 1-Bromo-2-Nitrobenzene RT Window = RT +/- .05 min
IS2 = Hexabromobiphenyl

* Indicates value outside QC Limits

FORM 8
PESTICIDE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP1 ID: 0.53(mm) Instrument ID: ECD6

Init. Calib. Date: 01/18/11

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

			IS1 AREA	RT	IS2 AREA	RT
		ICAL MIDPT	7134397	2.501	5514616	7.729
		UPPER LIMIT	14268794	2.551	11029232	7.779
		LOWER LIMIT	3567198	2.451	2757308	7.679

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
36	ZZZZZ	ZZZZZ	02/09/11	1911	8051524	2.498	7541033	7.717
37	ZZZZZ	ZZZZZ	02/09/11	1927	1194051*	2.500	1054403*	7.721
38		DS	02/09/11	1944	7907363	2.499	7239185	7.719
39		INDAE	02/09/11	2000	7545023	2.500	6918209	7.721
40	C2-4	SH66E	02/09/11	2017	9354346	2.497	8349966	7.718
41	C2-4Z	SH66F	02/09/11	2033	10015133	2.495	8918173	7.717
42	C-6D	SH65A	02/09/11	2050	9001326	2.496	7979310	7.720
43	C-11D	SH65B	02/09/11	2106	9168596	2.495	8040976	7.719
44	C-7D	SH65C	02/09/11	2123	8982033	2.494	7829740	7.717
45	ZZZZZ	ZZZZZ	02/09/11	2139	8002177	2.495	7286641	7.717
46	ZZZZZ	ZZZZZ	02/09/11	2156	1184677*	2.498	1016259*	7.719
47		DS	02/09/11	2212	7878168	2.498	7077000	7.718
48		INDAE	02/09/11	2229	7441175	2.498	6605531	7.719
49	C5	SH66C	02/09/11	2245	9526100	2.493	8768877	7.717
50	C2-4	SH66E	02/09/11	2302	9691191	2.492	8372982	7.718
51	C-6D	SH65A	02/09/11	2318	9088486	2.492	8379913	7.719
52	C-11D	SH65B	02/09/11	2335	8950455	2.490	7945639	7.719
53	C-7D	SH65C	02/09/11	2351	8894437	2.490	7915689	7.718
54	ZZZZZ	ZZZZZ	02/10/11	0007	7968435	2.491	6735987	7.716
55	ZZZZZ	ZZZZZ	02/10/11	0024	1247517*	2.493	943627*	7.717
56		DS	02/10/11	0040	8031824	2.493	6503309	7.716
57		INDAE	02/10/11	0057	7397687	2.494	6280556	7.716

IS1 = 1-Bromo-2-Nitrobenzene RT Window = RT +/- .05 min
IS2 = Hexabromobiphenyl

* Indicates value outside QC Limits

FORM 8
PESTICIDE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP2 ID: 0.53(mm) Instrument ID: ECD6

Init. Calib. Date: 01/18/11

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

			IS1 AREA	RT	IS2 AREA	RT
	ICAL MIDPT		3380355	2.479	2043827	8.376
	UPPER LIMIT		6760710	2.529	4087654	8.426
	LOWER LIMIT		1690178	2.429	1021914	8.326

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
01		DS	01/18/11	2030	3720407	2.479	2340694	8.377
02	ZZZZZ	ZZZZZ	01/18/11	2046	3684500	2.479	2134949	8.379
03		INDAE	01/18/11	2103	3380355	2.479	2043827	8.376
04		INDAA	01/18/11	2119	3358214	2.482	2009635	8.376
05		INDAB	01/18/11	2136	3924504	2.481	2404365	8.378
06		INDAC	01/18/11	2152	3916817	2.481	2439792	8.377
07		INDAD	01/18/11	2209	3564594	2.483	2255809	8.377
08		INDAF	01/18/11	2225	3698920	2.482	2351881	8.377
09		INDAG	01/18/11	2242	3620375	2.482	2302836	8.379
10	ZZZZZ	ZZZZZ	01/18/11	2258	3723109	2.483	2377292	8.378
11		TOXAPH	01/18/11	2315	3632752	2.484	2300995	8.379
12	ZZZZZ	ZZZZZ	01/18/11	2331	3719493	2.484	2380769	8.379
13		WNDE	01/18/11	2347	3852331	2.484	2508660	8.378
14		WNDA	01/19/11	0004	3653271	2.484	2380158	8.379
15		WNDB	01/19/11	0020	3669387	2.485	2409284	8.379
16		WNDC	01/19/11	0037	3920074	2.485	2563819	8.378
17		WNDD	01/19/11	0053	3980612	2.486	2647362	8.379
18		WNDF	01/19/11	0110	3670424	2.486	2489302	8.380
19		WNDG	01/19/11	0126	3642555	2.487	2450836	8.379
20	ZZZZZ	ZZZZZ	01/19/11	0143	3588754	2.486	2386875	8.380
21	ZZZZZ	ZZZZZ	01/19/11	0159	3945760	2.486	2722745	8.379
22	ZZZZZ	ZZZZZ	01/19/11	0216	3128982	2.486	1377354	8.382
23		DS	02/09/11	1537	3551269	2.484	2400562	8.367
24	ZZZZZ	ZZZZZ	02/09/11	1553	3193701	2.484	2058166	8.368
25		INDAE	02/09/11	1610	3433695	2.485	2411007	8.375
26	SH65MBS1	SH65MBS1	02/09/11	1626	3904654	2.477	2959710	8.372
27	SH65LCSS1	SH65LCSS1	02/09/11	1643	3893412	2.476	2971678	8.368
28	SH65LCSDS1	SH65LCSDS1	02/09/11	1659	3845450	2.476	2970051	8.367
29	ZZZZZ	ZZZZZ	02/09/11	1716	3850481	2.477	2916178	8.367
30	C1	SH66A	02/09/11	1732	3972011	2.475	2613773	8.368
31	C1Z	SH66B	02/09/11	1749	3949738	2.475	2799062	8.368
32	C1Z MS	SH66BMS	02/09/11	1805	4003995	2.475	2776337	8.363
33	C1Z MSD	SH66BMSD	02/09/11	1822	3985884	2.474	2791658	8.364
34	C5	SH66C	02/09/11	1838	4173292	2.478	2552946	8.364
35	C5Z	SH66D	02/09/11	1854	4174869	2.473	2718375	8.363

IS1 = 1-Bromo-2-Nitrobenzene RT Window = RT +/- .05 min
IS2 = Hexabromobiphenyl

* Indicates value outside QC Limits

FORM 8
PESTICIDE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 5 AND 6

GC Column: STX-CLP2 ID: 0.53(mm) Instrument ID: ECD6

Init. Calib. Date: 01/18/11

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

		IS1 AREA	RT	IS2 AREA	RT
	ICAL MIDPT	3380355	2.479	2043827	8.376
	UPPER LIMIT	6760710	2.529	4087654	8.426
	LOWER LIMIT	1690178	2.429	1021914	8.326

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
36	ZZZZZ	ZZZZZ	02/09/11	1911	3706327	2.479	2442499	8.362
37	ZZZZZ	ZZZZZ	02/09/11	1927	576346*	2.479	340339*	8.367
38		DS	02/09/11	1944	3676291	2.480	2377155	8.368
39		INDAE	02/09/11	2000	3538682	2.482	2365296	8.369
40	C2-4	SH66E	02/09/11	2017	4166589	2.477	2677865	8.363
41	C2-4Z	SH66F	02/09/11	2033	4069969	2.474	2780471	8.362
42	C-6D	SH65A	02/09/11	2050	4151364	2.477	2513071	8.365
43	C-11D	SH65B	02/09/11	2106	4196851	2.475	2482532	8.363
44	C-7D	SH65C	02/09/11	2123	4121050	2.475	2441375	8.363
45	ZZZZZ	ZZZZZ	02/09/11	2139	3370032	2.476	2391463	8.362
46	ZZZZZ	ZZZZZ	02/09/11	2156	588246*	2.477	321695*	8.364
47		DS	02/09/11	2212	3767906	2.481	2373772	8.366
48		INDAE	02/09/11	2229	3574369	2.479	2340784	8.368
49	C5	SH66C	02/09/11	2245	4183592	2.472	2529939	8.362
50	C2-4	SH66E	02/09/11	2302	4098788	2.472	2487797	8.362
51	C-6D	SH65A	02/09/11	2318	4048137	2.472	2400336	8.362
52	C-11D	SH65B	02/09/11	2335	4068398	2.470	2337254	8.362
53	C-7D	SH65C	02/09/11	2351	4028570	2.471	2277535	8.362
54	ZZZZZ	ZZZZZ	02/10/11	0007	3484484	2.473	2054558	8.362
55	ZZZZZ	ZZZZZ	02/10/11	0024	603062*	2.473	276528*	8.363
56		DS	02/10/11	0040	3744287	2.474	2085438	8.364
57		INDAE	02/10/11	0057	3466570	2.475	2157514	8.363

IS1 = 1-Bromo-2-Nitrobenzene RT Window = RT +/- .05 min
IS2 = Hexabromobiphenyl

* Indicates value outside QC Limits

PCB Analysis
Report and Summary QC Forms

ARI Job ID: SH66

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: C1
SAMPLE

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 07:50
Instrument/Analyst: ECD5/JLW
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.8 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 5.00
Silica Gel: Yes

Percent Moisture: 29.4%

CAS Number	Analyte	MDL	RL	Result
12674-11-2	Aroclor 1016	0.99	3.9	< 3.9 U
53469-21-9	Aroclor 1242	1.3	3.9	< 3.9 U
12672-29-6	Aroclor 1248	1.3	3.9	< 3.9 U
11097-69-1	Aroclor 1254	1.3	3.9	< 3.9 U
11096-82-5	Aroclor 1260	1.3	3.9	< 3.9 U
11104-28-2	Aroclor 1221	1.3	3.9	< 3.9 U
11141-16-5	Aroclor 1232	1.3	3.9	< 3.9 U
37324-23-5	Aroclor 1262	1.3	3.9	< 3.9 U
11100-14-4	Aroclor 1268	1.3	3.9	< 3.9 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	82.5%
Tetrachlorometaxylene	69.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: C5
SAMPLE

Lab Sample ID: SH66C
LIMS ID: 11-2467
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 08:08
Instrument/Analyst: ECD5/JLW
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.4 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 5.00
Silica Gel: Yes

Percent Moisture: 45.3%

CAS Number	Analyte	MDL	RL	Result
12674-11-2	Aroclor 1016	1.0	3.9	< 3.9 U
53469-21-9	Aroclor 1242	1.3	3.9	< 3.9 U
12672-29-6	Aroclor 1248	1.3	3.9	< 3.9 U
11097-69-1	Aroclor 1254	1.3	3.9	< 3.9 U
11096-82-5	Aroclor 1260	1.3	3.9	< 3.9 U
11104-28-2	Aroclor 1221	1.3	3.9	< 3.9 U
11141-16-5	Aroclor 1232	1.3	3.9	< 3.9 U
37324-23-5	Aroclor 1262	1.3	3.9	< 3.9 U
11100-14-4	Aroclor 1268	1.3	3.9	< 3.9 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	79.5%
Tetrachlorometaxylene	67.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: C2-4
SAMPLE

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 08:27
Instrument/Analyst: ECD5/JLW
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 5.00
Silica Gel: Yes

Percent Moisture: 28.4%

CAS Number	Analyte	MDL	RL	Result
12674-11-2	Aroclor 1016	1.0	4.0	< 4.0 U
53469-21-9	Aroclor 1242	1.4	4.0	< 4.0 U
12672-29-6	Aroclor 1248	1.4	4.0	< 4.0 U
11097-69-1	Aroclor 1254	1.4	4.0	< 4.0 U
11096-82-5	Aroclor 1260	1.4	4.0	< 4.0 U
11104-28-2	Aroclor 1221	1.4	4.0	< 4.0 U
11141-16-5	Aroclor 1232	1.4	4.0	< 4.0 U
37324-23-5	Aroclor 1262	1.4	4.0	< 4.0 U
11100-14-4	Aroclor 1268	1.4	4.0	< 4.0 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	90.5%
Tetrachlorometaxylene	78.4%

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-020811	95.9%	40-109	68.6%	35-100	0
LCS-020811	95.1%	40-109	71.1%	35-100	0
LCSD-020811	98.6%	40-109	69.5%	35-100	0
C1	82.5%	34-141	69.2%	38-102	0
C1 MS	93.6%	34-141	77.1%	38-102	0
C1 MSD	92.9%	34-141	76.6%	38-102	0
C5	79.5%	34-141	67.8%	38-102	0
C2-4	90.5%	34-141	78.4%	38-102	0

Low Level PSDDA Control Limits
Prep Method: SW3550C
Log Number Range: 11-2465 to 11-2469

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: C1
MS/MSD

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted MS/MSD: 02/08/11

Date Analyzed MS: 02/10/11 10:38
MSD: 02/10/11 10:57
Instrument/Analyst MS: ECD5/JLW
MSD: ECD5/JLW
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount MS: 25.6 g-dry-wt
MSD: 25.9 g-dry-wt
Final Extract Volume MS: 1.0 mL
MSD: 1.0 mL
Dilution Factor MS: 5.00
MSD: 5.00
Silica Gel: Yes

Percent Moisture: 29.4%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Aroclor 1016	< 3.9 U	15.7	19.5	80.5%	17.0	19.3	88.1%	8.0%
Aroclor 1260	< 3.9 U	15.1	19.5	77.4%	16.3	19.3	84.5%	7.6%

Results reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: C1
MATRIX SPIKE

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 10:38
Instrument/Analyst: ECD5/JLW
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 5.00
Silica Gel: Yes

Percent Moisture: 29.4%

CAS Number	Analyte	MDL	RL	Result
12674-11-2	Aroclor 1016	1.0	3.9	---
53469-21-9	Aroclor 1242	1.3	3.9	< 3.9 U
12672-29-6	Aroclor 1248	1.3	3.9	< 3.9 U
11097-69-1	Aroclor 1254	1.3	3.9	< 3.9 U
11096-82-5	Aroclor 1260	1.3	3.9	---
11104-28-2	Aroclor 1221	1.3	3.9	< 3.9 U
11141-16-5	Aroclor 1232	1.3	3.9	< 3.9 U
37324-23-5	Aroclor 1262	1.3	3.9	< 3.9 U
11100-14-4	Aroclor 1268	1.3	3.9	< 3.9 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	93.6%
Tetrachlorometaxylene	77.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: C1
MATRIX SPIKE DUP

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 10:57
Instrument/Analyst: ECD5/JLW
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.9 g-dry-wt
Final Extract Volume: 1.0 mL
Dilution Factor: 5.00
Silica Gel: Yes

Percent Moisture: 29.4%

CAS Number	Analyte	MDL	RL	Result
12674-11-2	Aroclor 1016	0.99	3.9	---
53469-21-9	Aroclor 1242	1.3	3.9	< 3.9 U
12672-29-6	Aroclor 1248	1.3	3.9	< 3.9 U
11097-69-1	Aroclor 1254	1.3	3.9	< 3.9 U
11096-82-5	Aroclor 1260	1.3	3.9	---
11104-28-2	Aroclor 1221	1.3	3.9	< 3.9 U
11141-16-5	Aroclor 1232	1.3	3.9	< 3.9 U
37324-23-5	Aroclor 1262	1.3	3.9	< 3.9 U
11100-14-4	Aroclor 1268	1.3	3.9	< 3.9 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	92.9%
Tetrachlorometaxylene	76.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: LCS-020811
LCS/LCSD

Lab Sample ID: LCS-020811
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 02/08/11

Date Analyzed LCS: 02/10/11 10:01
LCSD: 02/10/11 10:20
Instrument/Analyst LCS: ECD5/JLW
LCSD: ECD5/JLW
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount LCS: 25.0 g-dry-wt
LCSD: 25.0 g-dry-wt
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 5.00
LCSD: 5.00
Silica Gel: Yes

Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	15.6	20.0	78.0%	17.1	20.0	85.5%	9.2%
Aroclor 1260	16.1	20.0	80.5%	17.3	20.0	86.5%	7.2%

PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	95.1%	98.6%
Tetrachlorometaxylene	71.1%	69.5%

Results reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

PCB METHOD BLANK SUMMARY

BLANK NO.: SH65MBS1

Lab Name: ANALYTICAL RESOURCES, INC
Client: HART CROWSER

ARI Job No.: SH66
Project: TERMINAL 5

Lab Sample ID: SH65MBS1
Lab File ID: 0210B009

Date Extracted: 02/08/11
Matrix: SOLID

Date Analyzed: 02/10/11
Instrument ID: ECD5

Time Analyzed: 0942
GC Columns: ZB5/ZB35

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	C1	SH66A	02/10/11
02	C5	SH66C	02/10/11
03	C2-4	SH66E	02/10/11
04	SH65LCSS1	SH65LCSS1	02/10/11
05	SH65LCSDS1	SH65LCSDS1	02/10/11
06	C1 MS	SH66AMS	02/10/11
07	C1 MSD	SH66AMSD	02/10/11

ALL RUNS ARE DUAL COLUMN

FORM IV PCB

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: MB-020811
METHOD BLANK

Lab Sample ID: MB-020811
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/10/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Date Extracted: 02/08/11
Date Analyzed: 02/10/11 09:42
Instrument/Analyst: ECD5/JLW
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes

Sample Amount: 25.0 g
Final Extract Volume: 1.0 mL
Dilution Factor: 5.00
Silica Gel: Yes

Percent Moisture: NA

CAS Number	Analyte	MDL	RL	Result
12674-11-2	Aroclor 1016	1.0	4.0	< 4.0 U
53469-21-9	Aroclor 1242	1.4	4.0	< 4.0 U
12672-29-6	Aroclor 1248	1.4	4.0	< 4.0 U
11097-69-1	Aroclor 1254	1.4	4.0	< 4.0 U
11096-82-5	Aroclor 1260	1.4	4.0	< 4.0 U
11104-28-2	Aroclor 1221	1.4	4.0	< 4.0 U
11141-16-5	Aroclor 1232	1.4	4.0	< 4.0 U
37324-23-5	Aroclor 1262	1.4	4.0	< 4.0 U
11100-14-4	Aroclor 1268	1.4	4.0	< 4.0 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	95.9%
Tetrachlorometaxylene	68.6%

8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB5 Instrument ID: ECD5

Calibration Date: 01/05/11

SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
TCX	3.36- 3.56	1.2771	1.3006	1.2652	1.2422	1.1892	1.0782	1.2254	6.6
DCB	11.50-11.70	1.1808	1.1594	1.1042	1.0155	0.9322	0.8371	1.0382	13.0

Aroclor-1016 Peak	RT WIN	LVL1 .02	LVL2 0.05	LVL3 0.1	LVL4 .25	LVL5 0.5	LVL6 1.0	MEAN	%RSD R^2
1	4.84- 5.04	0.0337	0.0308	0.0317	0.0300	0.0280	0.0248	0.0298	10.4
2	5.26- 5.46	0.1068	0.0964	0.0988	0.0938	0.0869	0.0766	0.0932	11.1
3	5.41- 5.61	0.0472	0.0420	0.0426	0.0400	0.0368	0.0324	0.0402	12.7
4	6.99- 7.19	0.0296	0.0264	0.0275	0.0259	0.0248	0.0227	0.0262	9.1

AROCLOR AVERAGE %RSD = 10.8

Aroclor-1260 Peak	RT WIN	LVL1 .02	LVL2 0.05	LVL3 0.1	LVL4 .25	LVL5 0.5	LVL6 1.0	MEAN	%RSD R^2
1	8.72- 8.92	0.0475	0.0438	0.0445	0.0414	0.0380	0.0341	0.0415	11.7
2	9.03- 9.23	0.0481	0.0445	0.0456	0.0426	0.0391	0.0352	0.0425	11.0
3	9.39- 9.59	0.1396	0.1071	0.1117	0.1011	0.0920	0.0818	0.1055	18.8
4	9.78- 9.98	0.0630	0.0586	0.0612	0.0574	0.0532	0.0483	0.0570	9.5
5	9.97-10.17	0.0299	0.0280	0.0289	0.0275	0.0257	0.0236	0.0273	8.3

AROCLOR AVERAGE %RSD = 11.9

6F

8082 INITIAL CALIBRATION OF AROCLOR 1016/1260

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB35 Instrument ID: ECD5

Calibration Date: 01/05/11

SURROGATES

	RT WIN	LVL1	LVL2	LVL3	LVL4	LVL5	LVL6	MEAN	%RSD
TCX	3.65- 3.85	1.2193	1.2667	1.2172	1.1964	1.1471	1.0529	1.1832	6.3
DCB	12.26-12.46	1.1153	1.1355	1.0737	1.0030	0.9178	0.8382	1.0140	11.6

Aroclor-1016 Peak	RT WIN	LVL1 .02	LVL2 0.05	LVL3 0.1	LVL4 .25	LVL5 0.5	LVL6 1.0	MEAN	%RSD R^2
1	5.30- 5.50	0.0550	0.0495	0.0497	0.0439	0.0390	0.0334	0.0451	17.6
2	5.95- 6.15	0.1129	0.1019	0.1040	0.0949	0.0862	0.0748	0.0958	14.2
3	6.16- 6.36	0.0477	0.0425	0.0435	0.0396	0.0363	0.0319	0.0402	13.9
4	7.61- 7.81	0.0360	0.0289	0.0291	0.0252	0.0233	0.0211	0.0273	19.5

AROCLOR AVERAGE %RSD = 16.3

Aroclor-1260 Peak	RT WIN	LVL1 .02	LVL2 0.05	LVL3 0.1	LVL4 .25	LVL5 0.5	LVL6 1.0	MEAN	%RSD R^2
1	9.36- 9.56	0.0494	0.0442	0.0443	0.0409	0.0375	0.0341	0.0417	13.1
2	9.81-10.01	0.0595	0.0535	0.0541	0.0503	0.0463	0.0423	0.0510	12.0
3	10.64-10.84	0.0819	0.0752	0.0766	0.0720	0.0665	0.0613	0.0722	10.3
4	11.37-11.57	0.0316	0.0338	0.0326	0.0296	0.0271	0.0250	0.0299	11.2

AROCLOR AVERAGE %RSD = 11.7

6G

8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB5 Instrument ID: ECD5

Calibration Date: 01/05/11

Aroclor-1221			
Peak	RT	RT WIN	Cal Factor
1	3.755	3.65- 3.85	0.01313
2	3.902	3.80- 4.00	0.01226
3	3.996	3.90- 4.10	0.02828

Aroclor-1232			
Peak	RT	RT WIN	Cal Factor
1	4.939	4.84- 5.04	0.01203
2	5.355	5.25- 5.45	0.03752
3	6.723	6.62- 6.82	0.01382
4	7.015	6.91- 7.11	0.01432

Aroclor-1242			
Peak	RT	RT WIN	Cal Factor
1	4.937	4.84- 5.04	0.02249
2	5.355	5.26- 5.46	0.07036
3	5.514	5.41- 5.61	0.03003
4	7.014	6.91- 7.11	0.02665

Aroclor-1248			
Peak	RT	RT WIN	Cal Factor
1	5.870	5.77- 5.97	0.03205
2	6.355	6.26- 6.46	0.04418
3	6.779	6.68- 6.88	0.05646
4	7.013	6.91- 7.11	0.04127

6G

8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB5 Instrument ID: ECD5

Calibration Date: 01/05/11

Aroclor-1254			
Peak	RT	RT WIN	Cal Factor
1	6.786	6.69- 6.89	0.04815
2	7.089	6.99- 7.19	0.06284
3	7.459	7.36- 7.56	0.04239
4	7.592	7.49- 7.69	0.08067
5	8.287	8.19- 8.39	0.05777

Aroclor-1262			
Peak	RT	RT WIN	Cal Factor
1	8.824	8.72- 8.92	0.06379
2	9.135	9.03- 9.23	0.05307
3	9.996	9.90-10.10	0.05274
4	10.067	9.97-10.17	0.05428
5	10.715	10.61-10.81	0.04684

Aroclor-1268			
Peak	RT	RT WIN	Cal Factor
1	9.997	9.90-10.10	0.13021
2	10.066	9.97-10.17	0.12291
3	10.443	10.34-10.54	0.10814
4	11.208	11.11-11.31	0.31171

6G

8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB35 Instrument ID: ECD5

Calibration Date: 01/05/11

Aroclor-1221			
Peak	RT	RT WIN	Cal Factor
1	4.334	4.23- 4.43	0.01345
2	4.570	4.47- 4.67	0.00797
3	4.682	4.58- 4.78	0.02419
4	1.046	0.95- 1.15	0.00006

Aroclor-1232			
Peak	RT	RT WIN	Cal Factor
1	5.402	5.30- 5.50	0.01949
2	6.049	5.95- 6.15	0.03878
3	6.263	6.16- 6.36	0.01619
4	7.829	7.73- 7.93	0.01824

Aroclor-1242			
Peak	RT	RT WIN	Cal Factor
1	5.396	5.30- 5.50	0.03312
2	6.044	5.94- 6.14	0.07106
3	6.258	6.16- 6.36	0.02973
4	7.825	7.72- 7.92	0.03273

Aroclor-1248			
Peak	RT	RT WIN	Cal Factor
1	6.534	6.43- 6.63	0.03484
2	6.954	6.85- 7.05	0.04043
3	7.400	7.30- 7.50	0.05416
4	7.824	7.72- 7.92	0.05470

6G

8082 INITIAL CALIBRATION OF SINGLE POINT PCBs

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB35 Instrument ID: ECD5

Calibration Date: 01/05/11

Aroclor-1254			
Peak	RT	RT WIN	Cal Factor
1	7.541	7.44- 7.64	0.03951
2	7.706	7.61- 7.81	0.05199
3	8.227	8.13- 8.33	0.04128
4	8.376	8.28- 8.48	0.08899
5	9.146	9.05- 9.25	0.05553

Aroclor-1262			
Peak	RT	RT WIN	Cal Factor
1	9.467	9.37- 9.57	0.06345
2	9.915	9.82-10.02	0.06042
3	10.176	10.08-10.28	0.11761
4	10.691	10.59-10.79	0.05555
5	11.474	11.37-11.57	0.04919

Aroclor-1268			
Peak	RT	RT WIN	Cal Factor
1	10.691	10.59-10.79	0.12618
2	10.757	10.66-10.86	0.12059
3	11.149	11.05-11.25	0.10230
4	11.956	11.86-12.06	0.30830

7F

PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB5 Intrument: ECD5

Init. Calib. Date: 01/05/11

Date Analyzed :02/10/11

Lab Standard ID: AR1242 Time Analyzed :0712

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1242-1	4.96	4.84	5.04	259.4	250.0	3.8
Aroclor-1242-2	5.38	5.26	5.46	262.0	250.0	4.8
Aroclor-1242-3	5.53	5.41	5.61	255.9	250.0	2.3
Aroclor-1242-4	7.03	6.91	7.11	266.7	250.0	6.7

AVERAGE %D = 4.4

FORM VII PCB

7F

PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB35 Intrument: ECD5

Init. Calib. Date: 01/05/11

Date Analyzed :02/10/11

Lab Standard ID: AR1242 Time Analyzed :0712

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1242-1	5.40	5.30	5.50	248.7	250.0	-0.5
Aroclor-1242-2	6.05	5.94	6.14	251.9	250.0	0.8
Aroclor-1242-3	6.26	6.16	6.36	254.9	250.0	2.0
Aroclor-1242-4	7.83	7.72	7.92	254.2	250.0	1.7

AVERAGE %D = 1.2

FORM VII PCB

7F

PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB5 Intrument: ECD5

Init. Calib. Date: 01/05/11

Date Analyzed :02/10/11

Lab Standard ID: AR1660 Time Analyzed :0731

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1016-1	4.94	4.84	5.04	258.1	250.0	3.2
Aroclor-1016-2	5.36	5.26	5.46	257.9	250.0	3.2
Aroclor-1016-3	5.52	5.41	5.61	254.7	250.0	1.9
Aroclor-1016-4	7.10	6.99	7.19	262.0	250.0	4.8

AVERAGE %D = 3.3

Date Analyzed :02/10/11

Lab Standard ID: AR1660 Time Analyzed :0731

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1260-1	8.83	8.72	8.92	254.0	250.0	1.6
Aroclor-1260-2	9.14	9.03	9.23	254.0	250.0	1.6
Aroclor-1260-3	9.50	9.39	9.59	242.6	250.0	-3.0
Aroclor-1260-4	9.89	9.78	9.98	256.9	250.0	2.8
Aroclor-1260-5	10.07	9.97	10.17	259.0	250.0	3.6

AVERAGE %D = 2.5

7F

PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB35 Intrument: ECD5

Init. Calib. Date: 01/05/11

Date Analyzed :02/10/11

Lab Standard ID: AR1660 Time Analyzed :0731

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1016-1	5.40	5.30	5.50	238.6	250.0	-4.5
Aroclor-1016-2	6.05	5.95	6.15	242.5	250.0	-3.0
Aroclor-1016-3	6.26	6.16	6.36	243.4	250.0	-2.6
Aroclor-1016-4	7.71	7.61	7.81	231.5	250.0	-7.4

AVERAGE %D = 4.4

Date Analyzed :02/10/11

Lab Standard ID: AR1660 Time Analyzed :0731

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1260-1	9.47	9.36	9.56	253.0	250.0	1.2
Aroclor-1260-2	9.91	9.81	10.01	253.8	250.0	1.5
Aroclor-1260-3	10.75	10.64	10.84	247.8	250.0	-0.9
Aroclor-1260-4	11.47	11.37	11.57	243.8	250.0	-2.5

AVERAGE %D = 1.5

FORM VII PCB

7F

PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB5 Intrument: ECD5

Init. Calib. Date: 01/05/11

Date Analyzed :02/10/11

Lab Standard ID: AR1248 Time Analyzed :1116

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1248-1	5.87	5.77	5.97	240.4	250.0	-3.8
Aroclor-1248-2	6.35	6.26	6.46	231.6	250.0	-7.4
Aroclor-1248-3	6.78	6.68	6.88	243.0	250.0	-2.8
Aroclor-1248-4	7.01	6.91	7.11	225.2	250.0	-9.9

AVERAGE %D = 6.0

FORM VII PCB

7F

PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB35 Intrument: ECD5

Init. Calib. Date: 01/05/11

Date Analyzed :02/10/11

Lab Standard ID: AR1248 Time Analyzed :1116

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1248-1	6.53	6.43	6.63	236.2	250.0	-5.5
Aroclor-1248-2	6.95	6.85	7.05	230.2	250.0	-7.9
Aroclor-1248-3	7.40	7.30	7.50	234.1	250.0	-6.4
Aroclor-1248-4	7.82	7.72	7.92	232.6	250.0	-7.0

AVERAGE %D = 6.7

FORM VII PCB

7F

PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB5 Intrument: ECD5

Init. Calib. Date: 01/05/11

Date Analyzed :02/10/11

Lab Standard ID: AR1660 Time Analyzed :1135

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1016-1	4.93	4.84	5.04	258.6	250.0	3.4
Aroclor-1016-2	5.35	5.26	5.46	256.8	250.0	2.7
Aroclor-1016-3	5.51	5.41	5.61	253.7	250.0	1.5
Aroclor-1016-4	7.09	6.99	7.19	263.1	250.0	5.2

AVERAGE %D = 3.2

Date Analyzed :02/10/11

Lab Standard ID: AR1660 Time Analyzed :1135

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1260-1	8.82	8.72	8.92	246.0	250.0	-1.6
Aroclor-1260-2	9.13	9.03	9.23	247.3	250.0	-1.1
Aroclor-1260-3	9.49	9.39	9.59	238.9	250.0	-4.4
Aroclor-1260-4	9.88	9.78	9.98	252.2	250.0	0.9
Aroclor-1260-5	10.06	9.97	10.17	255.4	250.0	2.2

AVERAGE %D = 2.0

FORM VII PCB

7F

PCB CALIBRATION VERIFICATION SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB35 Intrument: ECD5

Init. Calib. Date: 01/05/11

Date Analyzed :02/10/11

Lab Standard ID: AR1660 Time Analyzed :1135

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1016-1	5.40	5.30	5.50	240.2	250.0	-3.9
Aroclor-1016-2	6.04	5.95	6.15	244.4	250.0	-2.2
Aroclor-1016-3	6.26	6.16	6.36	245.0	250.0	-2.0
Aroclor-1016-4	7.71	7.61	7.81	233.9	250.0	-6.4

AVERAGE %D = 3.6

Date Analyzed :02/10/11

Lab Standard ID: AR1660 Time Analyzed :1135

COMPOUND/PEAK NO.	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
Aroclor-1260-1	9.46	9.36	9.56	246.2	250.0	-1.5
Aroclor-1260-2	9.91	9.81	10.01	247.4	250.0	-1.0
Aroclor-1260-3	10.75	10.64	10.84	244.5	250.0	-2.2
Aroclor-1260-4	11.47	11.37	11.57	243.0	250.0	-2.8

AVERAGE %D = 1.9

FORM VII PCB

FORM 8
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB5 ID: 0.53(mm) Instrument ID: ECD5

Init. Calib. Date: 01/05/11

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

					IS1 AREA	RT	IS2 AREA	RT
				ICAL MIDPT	41338731	1.821	54238556	11.956
				UPPER LIMIT	82677462	1.921	108477112	12.056
				LOWER LIMIT	20669366	1.721	27119278	11.856
	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
01		IB	01/05/11	0959	41473176	1.822	55124862	11.957
02		0.25PPMAR166	01/05/11	1018	41338731	1.821	54238556	11.956
03		0.02PPMAR166	01/05/11	1037	43637172	1.821	55841709	11.958
04		0.05PPMAR166	01/05/11	1055	44565122	1.820	56453800	11.955
05		1PPMAR1660	01/05/11	1114	39217973	1.761	54081648	11.955
06		0.1PPMAR1660	01/05/11	1133	42929227	1.820	54890528	11.956
07		0.5PPMAR1660	01/05/11	1152	40230925	1.820	54641271	11.955
08		AR1242	01/05/11	1211	41523137	1.821	54753017	11.955
09		AR1248	01/05/11	1229	41925799	1.822	55410944	11.956
10		AR1254	01/05/11	1248	42164835	1.822	55608015	11.955
11		AR2162	01/05/11	1307	41853474	1.823	55980954	11.956
12		AR3268	01/05/11	1326	43381210	1.822	56749998	11.955
13	ZZZZZ	ZZZZZ	01/05/11	1345	40771061	1.822	54882222	11.955
14	ZZZZZ	ZZZZZ	01/05/11	1404	42270786	1.822	55220584	11.956
15	ZZZZZ	ZZZZZ	01/05/11	1422	42149874	1.822	55103621	11.957
16	ZZZZZ	ZZZZZ	01/05/11	1441	42688514	1.823	55839814	11.956
17	ZZZZZ	ZZZZZ	01/05/11	1500	43190460	1.822	56350021	11.955
18	ZZZZZ	ZZZZZ	01/05/11	1519	41281832	1.823	54881810	11.955
19		AR1242	02/10/11	0712	41540246	1.834	56096803	11.966
20		AR1660	02/10/11	0731	40977910	1.827	57030673	11.958
21	C1	SH66A	02/10/11	0750	43911846	1.827	49559674	11.955
22	C5	SH66C	02/10/11	0808	44434889	1.824	45264817	11.953
23	C2-4	SH66E	02/10/11	0827	43190282	1.827	47523429	11.953
24	ZZZZZ	ZZZZZ	02/10/11	0942	42742237	1.826	57745886	11.954
25	ZZZZZ	ZZZZZ	02/10/11	1001	45411755	1.825	60383960	11.953
26	ZZZZZ	ZZZZZ	02/10/11	1020	44677898	1.824	61390854	11.953
27	C1 MS	SH66AMS	02/10/11	1038	44725835	1.825	51222822	11.952
28	C1 MSD	SH66AMSD	02/10/11	1057	44105518	1.825	49824936	11.952
29		AR1248	02/10/11	1116	42502093	1.824	59223325	11.954
30		AR1660	02/10/11	1135	41372375	1.825	59450999	11.955

IS1 = 1-Bromo-2-Nitrobenzene RT Window = RT +/- 0.1 min
IS2 = Hexabromobiphenyl

* Indicates value outside QC Limits

FORM 8
PCB INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No.: SH66 Project: TERMINAL 6

GC Column: ZB35 ID: 0.53(mm) Instrument ID: ECD5

Init. Calib. Date: 01/05/11

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

			IS1 AREA	RT	IS2 AREA	RT
		ICAL MIDPT	74851684	2.336	89129349	13.232
		UPPER LIMIT	149703368	2.436	178258698	13.332
		LOWER LIMIT	37425842	2.236	44564674	13.132

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME	IS1 AREA	RT	IS2 AREA	RT
01		IB	01/05/11	0959	76094561	2.338	90793888	13.232
02		0.25PPMAR166	01/05/11	1018	74851684	2.336	89129349	13.232
03		0.02PPMAR166	01/05/11	1037	76606586	2.337	91386828	13.233
04		0.05PPMAR166	01/05/11	1055	78150366	2.336	92679272	13.231
05		1PPMAR1660	01/05/11	1114	74109275	2.338	89531531	13.232
06		0.1PPMAR1660	01/05/11	1133	75163113	2.336	90264147	13.231
07		0.5PPMAR1660	01/05/11	1152	74707806	2.336	90806234	13.232
08		AR1242	01/05/11	1211	75466272	2.337	90753249	13.233
09		AR1248	01/05/11	1229	75978488	2.337	91859566	13.232
10		AR1254	01/05/11	1248	76461985	2.337	92429857	13.232
11		AR2162	01/05/11	1307	74416913	2.338	93383609	13.232
12		AR3268	01/05/11	1326	77518216	2.338	95046451	13.232
13	ZZZZZ	ZZZZZ	01/05/11	1345	76212064	2.337	91805587	13.231
14	ZZZZZ	ZZZZZ	01/05/11	1404	76927243	2.337	92350083	13.231
15	ZZZZZ	ZZZZZ	01/05/11	1422	77095428	2.337	92395915	13.232
16	ZZZZZ	ZZZZZ	01/05/11	1441	78205007	2.338	93689159	13.233
17	ZZZZZ	ZZZZZ	01/05/11	1500	77217039	2.336	94739425	13.231
18	ZZZZZ	ZZZZZ	01/05/11	1519	74530177	2.338	92596135	13.232
19		AR1242	02/10/11	0712	82969690	2.338	93324738	13.233
20		AR1660	02/10/11	0731	81077015	2.339	95321997	13.229
21	C1	SH66A	02/10/11	0750	84899021	2.338	93546653	13.227
22	C5	SH66C	02/10/11	0808	84437732	2.336	86426952	13.226
23	C2-4	SH66E	02/10/11	0827	82830384	2.338	89186555	13.226
24	ZZZZZ	ZZZZZ	02/10/11	0942	81028074	2.336	96284755	13.226
25	ZZZZZ	ZZZZZ	02/10/11	1001	86389928	2.336	102509624	13.225
26	ZZZZZ	ZZZZZ	02/10/11	1020	84765510	2.335	102376896	13.226
27	C1 MS	SH66AMS	02/10/11	1038	85195122	2.336	96414319	13.225
28	C1 MSD	SH66AMSD	02/10/11	1057	83279154	2.336	94793683	13.225
29		AR1248	02/10/11	1116	82373765	2.335	99185097	13.226
30		AR1660	02/10/11	1135	80869255	2.336	99985286	13.226

IS1 = 1-Bromo-2-Nitrobenzene RT Window = RT +/- 0.1 min
IS2 = Hexabromobiphenyl

* Indicates value outside QC Limits

TPHD Analysis
Report and Summary QC Forms

ARI Job ID: SH66

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Page 1 of 1
Matrix: Sediment

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00

Data Release Authorized:
Reported: 02/09/11

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	MDL	RL	Result
SH66A	C1	02/07/11	02/08/11	1.00	Diesel	0.7	7.0	< 7.0 U
11-2465	HC ID: ---		FID9	1.0	Motor Oil	4.6	14	< 14 U
					o-Terphenyl			82.5%
SH66C	C5	02/07/11	02/08/11	1.00	Diesel	0.9	9.0	< 9.0 U
11-2467	HC ID: ---		FID9	1.0	Motor Oil	5.9	18	< 18 U
					o-Terphenyl			88.9%
MB-020711	Method Blank	02/07/11	02/08/11	1.00	Diesel	0.5	5.0	< 5.0 U
11-2469	HC ID: ---		FID9	1.0	Motor Oil	3.3	10	< 10 U
					o-Terphenyl			89.2%
SH66E	C2-4	02/07/11	02/08/11	1.00	Diesel	0.7	6.8	< 6.8 U
11-2469	HC ID: ---		FID9	1.0	Motor Oil	4.4	14	< 14 U
					o-Terphenyl			89.8%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00

Client ID	OTER	TOT OUT
C1	82.5%	0
C5	88.9%	0
MB-020711	89.2%	0
LCS-020711	90.8%	0
LCSD-020711	91.9%	0
C2-4	89.8%	0
C2-4 MS	91.4%	0
C2-4 MSD	91.6%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(59-134)	(43-137)

Prep Method: SW3546
Log Number Range: 11-2465 to 11-2469

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: C2-4**
Page 1 of 1 **MS/MSD**

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized: MW
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Date Extracted MS/MSD: 02/07/11

Date Analyzed MS: 02/08/11 18:50
MSD: 02/08/11 19:12
Instrument/Analyst MS: FID/AAR
MSD: FID/AAR

Sample Amount MS: 7.22 g-dry-wt
MSD: 7.35 g-dry-wt
Final Extract Volume MS: 1.0 mL
MSD: 1.0 mL
Dilution Factor MS: 1.0
MSD: 1.0
Percent Moisture: 28.4%

Range	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Diesel	< 6.8	162	208	77.9%	159	204	77.9%	1.9%

TPHD Surrogate Recovery

	MS	MSD
o-Terphenyl	91.4%	91.6%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-020711**
Page 1 of 1 LCS/LCSD

Lab Sample ID: LCS-020711 QC Report No: SH66-Hart Crowser
LIMS ID: 11-2469 Project: Terminal 6
Matrix: Sediment 15737-00
Data Release Authorized: Date Sampled: 02/04/11
Reported: 02/09/11 Date Received: 02/05/11

Date Extracted LCS/LCSD: 02/07/11 Sample Amount LCS: 10.0 g
LCSD: 10.0 g
Date Analyzed LCS: 02/08/11 17:03 Final Extract Volume LCS: 1.0 mL
LCSD: 02/08/11 17:25 LCSD: 1.0 mL
Instrument/Analyst LCS: FID/AAR Dilution Factor LCS: 1.0
LCSD: FID/AAR LCSD: 1.0

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	120	150	80.0%	122	150	81.3%	1.7%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	90.8%	91.9%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: SH66
Matrix: Sediment Project: Terminal 6
Date Received: 02/05/11 15737-00

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
11-2465-SH66A	C1	7.17 g	1.00 mL	D	02/07/11
11-2467-SH66C	C5	5.58 g	1.00 mL	D	02/07/11
11-2469-020711MB1	Method Blank	10.0 g	1.00 mL	-	02/07/11
11-2469-020711LCS1	Lab Control	10.0 g	1.00 mL	-	02/07/11
11-2469-020711LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	02/07/11
11-2469-SH66E	C2-4	7.40 g	1.00 mL	D	02/07/11
11-2469-SH66EMS	C2-4	7.22 g	1.00 mL	D	02/07/11
11-2469-SH66EMSD	C2-4	7.35 g	1.00 mL	D	02/07/11

Basis: D=Dry Weight W=As Received

TPH METHOD BLANK SUMMARY

BLANK NO.

SH66MBS1

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

SDG No.: SH66 Project No.: TERMINAL 6

Date Extracted: 02/07/11 Matrix: SOLID

Date Analyzed : 02/08/11 Instrument ID : FID9

Time Analyzed : 1641

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	SH66LCSS1	SH66LCSS1	02/08/11
02	SH66LCSDS1	SH66LCSDS1	02/08/11
03	C1	SH66A	02/08/11
04	C5	SH66C	02/08/11
05	C2-4	SH66E	02/08/11
06	C2-4 MS	SH66EMS	02/08/11
07	C2-4 MSD	SH66EMSD	02/08/11
08			
09			
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FORM IV TPH

6a
NW DIESEL INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: HART CROWSER

Instrument: FID9.I Project: TERMINAL 6

Calibration Date: 20-JAN-2011 SDG No.: SH66

Diesel Range	RF1 50	RF2 100	RF3 250	RF4 500	RF5 1000	RF6 2500	Ave RF	%RSD
WA Diesel	24039	22507	22451	22137	23038	21746	22653	3.5
AK Diesel	27229	25485	25276	24857	25838	24470	25526	3.8
OR Diesel	27318	25588	25386	24978	25964	24607	25641	3.7
o-Terph	21882	20885	21247	21247	21987	21255	21417	2.0

<- Indicates %RSD outside limits
Surrogate areas are not included in Diesel RF calculation.

Quant Ranges : WA Diesel C12-C24 (2.623-5.324)
AK Diesel C10-C25 (1.988-5.548)
OR Diesel C10-C28 (1.988-6.104)

Calibration Files	Analysis Time
0120A007.D	20-JAN-2011 16:13
0120A008.D	20-JAN-2011 16:34
0120A009.D	20-JAN-2011 16:56
0120A010.D	20-JAN-2011 17:17
0120A011.D	20-JAN-2011 17:39
0120A014.D	20-JAN-2011 18:43

6a

NW MOTOR OIL RANGE INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client:HART CROWSER

Instrument: FID9.I Project: TERMINAL 6

Calibration Date: 20-JAN-2011 SDG No.SH66

Product Range	RF1 100	RF2 250	RF3 500	RF4 1000	RF5 2500	RF6 5000	Ave RF	%RSD
WA M.Oil C24-C38	11365	12494	12640	13320	13928	15835	13264	11.5
Triac Surr	14163	16198	16626	17913	19039	21819	17626	14.9

<- Indicates %RSD outside limits
Surrogate areas are not included in Motor Oil RF calculation.

Calibration Files	Analysis Time
0120A015.D	20-JAN-2011 19:04
0120A016.D	20-JAN-2011 19:26
0120A017.D	20-JAN-2011 19:47
0120A018.D	20-JAN-2011 20:08
0120A019.D	20-JAN-2011 20:30
0120A020.D	20-JAN-2011 20:51

7a

DIESEL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: HART CROWSER

ICal Date: 20-JAN-2011 Project: TERMINAL 6

CCal Date: 08-FEB-2011 SDG No.: SH66

Analysis Time: 15:58 Lab ID: DIESEL#2

Instrument: FID9.I Lab File Name: 0208A009.D

Diesel Range	Area*	CalcAmnt	NomAmnt	% D
WADies(C12-C24)	5669702	250.3	250	0.1
AK102 (C10-C25)	6380925	250.0	250	0.0
Terphenyl	956015	44.6	45	-0.8

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA Diesel C12-C24
AK Diesel C10-C25

7a

MOTOR OIL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: HART CROWSER

ICal Date: 20-JAN-2011 Project: TERMINAL 6

CCal Date: 08-FEB-2011 SDG No.: SH66

Analysis Time: 16:20 Lab ID: MOIL#2

Instrument: FID9.I Lab File Name: 0208A010.D

M.oil Range	Area*	CalcAmnt	NomAmnt	% D	
WAMoil(C24-C38)	6181155	466.0	500	-6.8	
AK103 (C25-C36)	5570728	655.5	500	31.1	<-
n-Triacontane	940075	53.3	45	18.5	<-

* Surrogate areas are subtracted from range areas

<- Indicates a %D outside QC limits

Quant Ranges : WA M.Oil C24-C38
AK M.Oil C25-C36

7a

DIESEL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: HART CROWSER

ICal Date: 20-JAN-2011 Project: TERMINAL 6

CCal Date: 08-FEB-2011 SDG No.: SH66

Analysis Time: 19:33 Lab ID: DIESEL#3

Instrument: FID9.I Lab File Name: 0208A019.D

Diesel Range	Area*	CalcAmnt	NomAmnt	% D
WADies(C12-C24)	5615987	247.9	250	-0.8
AK102 (C10-C25)	6329324	248.0	250	-0.8
Terphenyl	955237	44.6	45	-0.9

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA Diesel C12-C24
AK Diesel C10-C25

7a

MOTOR OIL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: HART CROWSER

ICal Date: 20-JAN-2011 Project: TERMINAL 6

CCal Date: 08-FEB-2011 SDG No.: SH66

Analysis Time: 19:54 Lab ID: MOIL#3

Instrument: FID9.I Lab File Name: 0208A020.D

M.oil Range	Area*	CalcAmnt	NomAmnt	% D	
WAMoil(C24-C38)	6488133	489.2	500	-2.2	
AK103 (C25-C36)	5837142	686.9	500	37.4	<-
n-Triacontane	937222	53.2	45	18.2	<-

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA M.Oil C24-C38
AK M.Oil C25-C36

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

SDG No.: SH66 Project:TERMINAL 6

Instrument ID: FID9 GC Column: RTX-1

Run Date: 01/20/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 4.17 TRIAC: 6.42

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01	RT	RT	01/20/11	1530	4.17	6.42
02		IB	01/20/11	1552	4.17	6.42
03	DIESEL 50	DIESEL 50	01/20/11	1613	4.16	6.41
04	DIESEL 100	DIESEL 100	01/20/11	1634	4.16	6.41
05	DIESEL 250	DIESEL 250	01/20/11	1656	4.17	6.41
06	DIESEL 500	DIESEL 500	01/20/11	1717	4.18	6.42
07	DIESEL 1000	DIESEL 1000	01/20/11	1739	4.19	6.42
08		DIESEL ICV	01/20/11	1822	4.17	6.41
09	DIESEL 2500	DIESEL 2500	01/20/11	1843	4.21	6.41

QC LIMITS

TERPH = o-terph (+/- 0.05 MINUTES)
TRIAC = Triacon Surr (+/- 0.05 MINUTES)

* Values outside of QC limits.

FORM VIII TPH

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES, INC Client:HART CROWSER

SDG No.: SH66 Project:TERMINAL 6

Instrument ID: FID9 GC Column: RTX-1

Run Date: 01/20/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 4.17 TRIAC: 6.42

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01	RT	RT	01/20/11	1530	4.17	6.42
02		IB	01/20/11	1552	4.17	6.42
03	MOIL 100	MOIL 100	01/20/11	1904	4.17	6.41
04	MOIL 250	MOIL 250	01/20/11	1926	4.17	6.42
05	MOIL 500	MOIL 500	01/20/11	1947	4.17	6.42
06	MOIL 1000	MOIL 1000	01/20/11	2008	4.17	6.44
07	MOIL 2500	MOIL 2500	01/20/11	2030	4.17	6.46
08	MOIL 5000	MOIL 5000	01/20/11	2051	4.17	6.50*
09		MOIL ICV	01/20/11	2112	4.17	6.42

QC LIMITS

TERPH = o-terph (+/- 0.05 MINUTES)
TRIAC = Triacon Surr (+/- 0.05 MINUTES)

* Values outside of QC limits.

*Peak shifting occurs when column plates are close to overloaded. Sample surrogates are spiked at 45ppm. n-Triacontane quants %14.9 RSD and meets Ical criteria. No further corrective action needed.

FORM VIII TPH

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

SDG No.: SH66 Project: TERMINAL 6

Instrument ID: FID9 GC Column: RTX-1

Run Date: 02/08/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 4.16 TRIAC: 6.42

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01	RT	RT	02/08/11	1327	4.16	6.42
02	IB	IB	02/08/11	1349	4.16	6.42
03	TERMINAL 6	DIESEL#2	02/08/11	1558	4.16	6.41
04	TERMINAL 6	MOIL#2	02/08/11	1620	4.16	6.42
05	SH66MBS1	SH66MBS1	02/08/11	1641	4.16	6.41
06	SH66LCSS1	SH66LCSS1	02/08/11	1703	4.16	6.41
07	SH66LCSDS1	SH66LCSDS1	02/08/11	1725	4.16	6.42
08	C1	SH66A	02/08/11	1746	4.16	6.42
09	C5	SH66C	02/08/11	1807	4.16	6.41
10	C2-4	SH66E	02/08/11	1829	4.16	6.42
11	C2-4 MS	SH66EMS	02/08/11	1850	4.16	6.42
12	C2-4 MSD	SH66EMSD	02/08/11	1912	4.16	6.42
13	TERMINAL 6	DIESEL#3	02/08/11	1933	4.16	6.42
14	TERMINAL 6	MOIL#3	02/08/11	1954	4.17	6.42

QC LIMITS

TERPH = o-terph (+/- 0.05 MINUTES)
TRIAC = Triacon Surr (+/- 0.05 MINUTES)

* Values outside of QC limits.

Metals Analysis
Report and Summary QC Forms

ARI Job ID: SH66

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

SDG: SH66

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
C1	SH66A	11-2465	
C1D	SH66ADUP	11-2465	
C1S	SH66ASPK	11-2465	
C5	SH66C	11-2467	
PBS	SH66MB1	11-2467	
LCSS	SH66MB1SPK	11-2467	
C2-4	SH66E	11-2469	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 2/9/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: C1
SAMPLE

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Percent Total Solids: 70.6%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3050B	02/07/11	200.8	02/08/11	7440-36-0	Antimony	0.012	0.3	0.3	U
3050B	02/07/11	200.8	02/08/11	**7440-38-2**	**Arsenic**	0.11	0.3	**2.5**	
3050B	02/07/11	6010B	02/08/11	**7440-43-9**	**Cadmium**	0.028	0.3	**0.6**	
3050B	02/07/11	6010B	02/08/11	**7440-47-3**	**Chromium**	0.36	0.7	**17.0**	
3050B	02/07/11	6010B	02/08/11	**7440-50-8**	**Copper**	0.056	0.3	**22.8**	
3050B	02/07/11	6010B	02/08/11	**7439-92-1**	**Lead**	0.25	3	**7**	
CLP	02/07/11	7471A	02/08/11	**7439-97-6**	**Mercury**	0.0026	0.03	**0.07**	
3050B	02/07/11	6010B	02/08/11	**7440-02-0**	**Nickel**	1.2	1.4	**15.7**	
3050B	02/07/11	6010B	02/08/11	7440-22-4	Silver	0.056	0.4	0.4	U
3050B	02/07/11	6010B	02/08/11	**7440-66-6**	**Zinc**	0.52	1	**80**	

Reported in mg/kg-dry (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: C1
DUPLICATE

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Antimony	200.8	0.3 U	0.3 U	0.0%	+/- 0.3	L
Arsenic	200.8	2.5	2.6	3.9%	+/- 20%	
Cadmium	6010B	0.6	0.6	0.0%	+/- 0.3	L
Chromium	6010B	17.0	16.7	1.8%	+/- 20%	
Copper	6010B	22.8	22.5	1.3%	+/- 20%	
Lead	6010B	7	7	0.0%	+/- 3	L
Mercury	7471A	0.07	0.06	15.4%	+/- 0.03	L
Nickel	6010B	16	16	0.0%	+/- 20%	
Silver	6010B	0.4 U	0.4 U	0.0%	+/- 0.4	L
Zinc	6010B	80	81	1.2%	+/- 20%	

Reported in mg/kg-dry

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: C1
MATRIX SPIKE

Lab Sample ID: SH66A
LIMS ID: 11-2465
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Antimony	200.8	0.3 U	1.5	32.9	4.6%	N
Arsenic	200.8	2.5	35.7	32.9	101%	
Cadmium	6010B	0.6	73.7	69.8	105%	
Chromium	6010B	17.0	87.2	69.8	101%	
Copper	6010B	22.8	92.7	69.8	100%	
Lead	6010B	7	292	279	102%	
Mercury	7471A	0.07	0.35	0.323	86.7%	
Nickel	6010B	16	87	69.8	102%	
Silver	6010B	0.4 U	71.0	69.8	102%	
Zinc	6010B	80	153	69.8	105%	

Reported in mg/kg-dry

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: C5
SAMPLE

Lab Sample ID: SH66C
LIMS ID: 11-2467
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Percent Total Solids: 51.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3050B	02/07/11	200.8	02/08/11	7440-36-0	Antimony	0.017	0.4	0.4	U
3050B	02/07/11	200.8	02/08/11	**7440-38-2**	**Arsenic**	0.15	0.4	**3.8**	
3050B	02/07/11	6010B	02/08/11	**7440-43-9**	**Cadmium**	0.038	0.4	**0.8**	
3050B	02/07/11	6010B	02/08/11	**7440-47-3**	**Chromium**	0.50	1	**19**	
3050B	02/07/11	6010B	02/08/11	**7440-50-8**	**Copper**	0.077	0.4	**27.9**	
3050B	02/07/11	6010B	02/08/11	**7439-92-1**	**Lead**	0.35	4	**9**	
CLP	02/07/11	7471A	02/08/11	**7439-97-6**	**Mercury**	0.0028	0.04	**0.11**	
3050B	02/07/11	6010B	02/08/11	**7440-02-0**	**Nickel**	1.7	2	**17**	
3050B	02/07/11	6010B	02/08/11	7440-22-4	Silver	0.077	0.6	0.6	U
3050B	02/07/11	6010B	02/08/11	**7440-66-6**	**Zinc**	0.71	2	**99**	

Reported in mg/kg-dry (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: C2-4
SAMPLE

Lab Sample ID: SH66E
LIMS ID: 11-2469
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Percent Total Solids: 69.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3050B	02/07/11	200.8	02/08/11	7440-36-0	Antimony	0.012	0.3	0.3	U
3050B	02/07/11	200.8	02/08/11	**7440-38-2**	**Arsenic**	0.11	0.3	**2.2**	
3050B	02/07/11	6010B	02/08/11	**7440-43-9**	**Cadmium**	0.027	0.3	**0.4**	
3050B	02/07/11	6010B	02/08/11	**7440-47-3**	**Chromium**	0.35	0.7	**14.4**	
3050B	02/07/11	6010B	02/08/11	**7440-50-8**	**Copper**	0.053	0.3	**19.2**	
3050B	02/07/11	6010B	02/08/11	**7439-92-1**	**Lead**	0.24	3	**5**	
CLP	02/07/11	7471A	02/08/11	**7439-97-6**	**Mercury**	0.0023	0.03	**0.04**	
3050B	02/07/11	6010B	02/08/11	**7440-02-0**	**Nickel**	1.1	1.3	**14.4**	
3050B	02/07/11	6010B	02/08/11	7440-22-4	Silver	0.053	0.4	0.4	U
3050B	02/07/11	6010B	02/08/11	**7440-66-6**	**Zinc**	0.49	1	**61**	

Reported in mg/kg-dry (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: SH66LCS
LIMS ID: 11-2467
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Antimony	200.8	25.0	25.0	100%	
Arsenic	200.8	26.3	25.0	105%	
Cadmium	6010B	52.1	50.0	104%	
Chromium	6010B	52.2	50.0	104%	
Copper	6010B	51.1	50.0	102%	
Lead	6010B	206	200	103%	
Mercury	7471A	0.50	0.50	100%	
Nickel	6010B	53	50	106%	
Silver	6010B	53.6	50.0	107%	
Zinc	6010B	52	50	104%	

Reported in mg/kg-dry

N-Control limit not met
NA-Not Applicable, Analyte Not Spiked
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: SH66MB
LIMS ID: 11-2467
Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

QC Report No: SH66-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3050B	02/07/11	200.8	02/08/11	7440-36-0	Antimony	0.0090	0.2	0.2	U
3050B	02/07/11	200.8	02/08/11	7440-38-2	Arsenic	0.081	0.2	0.2	U
3050B	02/07/11	6010B	02/08/11	7440-43-9	Cadmium	0.020	0.2	0.2	U
3050B	02/07/11	6010B	02/08/11	7440-47-3	Chromium	0.26	0.5	0.5	U
3050B	02/07/11	6010B	02/08/11	7440-50-8	Copper	0.040	0.2	0.2	U
3050B	02/07/11	6010B	02/08/11	7439-92-1	Lead	0.18	2	2	U
CLP	02/07/11	7471A	02/08/11	7439-97-6	Mercury	0.0020	0.02	0.02	U
3050B	02/07/11	6010B	02/08/11	7440-02-0	Nickel	0.86	1	1	U
3050B	02/07/11	6010B	02/08/11	7440-22-4	Silver	0.040	0.3	0.3	U
3050B	02/07/11	6010B	02/08/11	7440-66-6	Zinc	0.37	1	1	U

Reported in mg/kg (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

SDG: SH66

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Antimony	SB	PMS	MS020881	50.0	49.19	**98.4**	50.0	50.44	**100.9**	49.81	**99.6**	49.87	**99.7**				
Arsenic	AS	PMS	MS020881	50.0	50.22	**100.4**	50.0	49.63	**99.3**	49.66	**99.3**	49.58	**99.2**				
Cadmium	CD	ICP	IP020871	1000.0	1029.36	**102.9**	1000.0	1028.91	**102.9**	1026.34	**102.6**	1035.72	**103.6**	1030.67	**103.1**		
Chromium	CR	ICP	IP020871	1000.0	1036.02	**103.6**	1000.0	1033.02	**103.3**	1043.66	**104.4**	1046.69	**104.7**	1050.47	**105.0**		
Copper	CU	ICP	IP020871	1000.0	1003.97	**100.4**	1000.0	1000.45	**100.0**	1002.60	**100.3**	1009.46	**100.9**	1009.16	**100.9**		
Lead	PB	ICP	IP020871	2000.0	2082.70	**104.1**	2000.0	2087.06	**104.4**	2068.54	**103.4**	2096.78	**104.8**	2062.11	**103.1**		
Mercury	HG	CVA	HG020801	8.0	7.95	**99.4**	4.0	4.03	**100.8**	3.93	**98.3**						
Nickel	NI	ICP	IP020871	1000.0	1048.64	**104.9**	1000.0	1048.50	**104.9**	1059.56	**106.0**	1060.48	**106.0**	1058.17	**105.8**		
Silver	AG	ICP	IP020871	1000.0	999.10	**99.9**	1000.0	995.73	**99.6**	996.39	**99.6**	990.87	**99.1**	987.48	**98.7**		
Zinc	ZN	ICP	IP020871	1000.0	1029.97	**103.0**	1000.0	1032.51	**103.3**	1038.26	**103.8**	1047.68	**104.8**	1048.59	**104.9**		

SH66 - 90195

Control Limits: Mercury 80-120; Other Metals 90-110

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

UNITS: ug/L

SDG: SH66

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Antimony	SB	PMS	MS020881	0.2	0.21	**105.0**										
Arsenic	AS	PMS	MS020881	0.2	0.20	**100.0**										
Cadmium	CD	ICP	IP020871	2.0	2.17	**108.5**	2.19	**109.5**								
Chromium	CR	ICP	IP020871	5.0	6.16	**123.2**	6.04	**120.8**								
Copper	CU	ICP	IP020871	2.0	2.36	**118.0**	2.51	**125.5**								
Lead	PB	ICP	IP020871	20.0	21.09	**105.5**	20.36	**101.8**								
Mercury	HG	CVA	HG020801	0.1	0.12	**120.0**										
Nickel	NI	ICP	IP020871	10.0	12.29	**122.9**	11.07	**110.7**								
Silver	AG	ICP	IP020871	3.0	3.09	**103.0**	3.06	**102.0**								
Zinc	ZN	ICP	IP020871	10.0	11.07	**110.7**	10.10	**101.0**								

SH66 : 00197

Control Limits: no control limits have been established by the EPA at this time.

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

SDG: SH66

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Antimony	SB	PMS	MS020881	60.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U				
Arsenic	AS	PMS	MS020881	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U				
Cadmium	CD	ICP	IP020871	5.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U		
Chromium	CR	ICP	IP020871	10.0	5.0	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
Copper	CU	ICP	IP020871	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U		
Lead	PB	ICP	IP020871	3.0	20.0	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U		
Mercury	HG	CVA	HG020801	0.2	0.1	0.1	U	0.1	U	0.1	U						
Nickel	NI	ICP	IP020871	40.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U		
Silver	AG	ICP	IP020871	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U		
Zinc	ZN	ICP	IP020871	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U		

SH66 : 00198

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

SDG: SH66

ICS SOURCE: I.V.

RUNID: IP020871

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	200290.4	202105.8	**101.1**	202911.6	203368.2	**101.7**			
Antimony		1000	7.8	1062.6	**106.3**	7.0	1056.5	**105.7**			
Arsenic		1000	9.0	1045.7	**104.6**	10.5	1033.3	**103.3**			
Barium		1000	2.8	1022.9	**102.3**	2.9	1011.4	**101.1**			
Beryllium		1000	0.0	1041.9	**104.2**	0.0	1038.0	**103.8**			
Boron			-2.3	-4.0		-4.1	-6.0				
Cadmium		1000	1.1	1017.5	**101.8**	1.2	1013.5	**101.4**			
Calcium	100000	100000	99264.9	101025.9	**101.0**	100655.5	101766.2	**101.8**			
Chromium		1000	-0.6	1034.8	**103.5**	-1.2	1037.6	**103.8**			
Cobalt		1000	1.9	944.9	**94.5**	2.1	939.1	**93.9**			
Copper		1000	1.0	1034.6	**103.5**	1.2	1037.0	**103.7**			
Iron	200000	200000	191742.1	194177.1	**97.1**	193220.3	193908.4	**97.0**			
Lead		1000	-6.3	985.4	**98.5**	-7.9	979.6	**98.0**			
Magnesium	100000	100000	97481.7	100102.0	**100.1**	98797.5	100562.1	**100.6**			
Manganese		1000	0.1	974.1	**97.4**	0.1	968.7	**96.9**			
Molybdenum			4.2	4.4		3.9	3.6				
Nickel		1000	2.2	1017.3	**101.7**	3.6	1009.3	**100.9**			
Potassium			-96.3	499.7		-67.3	470.9				
Selenium		1000	32.1	1074.7	**107.5**	41.4	1054.4	**105.4**			
Silicon			-10.0	-9.1		-5.0	1.5				
Silver		1000	-1.0	1043.6	**104.4**	-0.7	1032.9	**103.3**			
Sodium			-4.5	6.7		-8.1	-0.3				
Strontium			3.8	3.9		3.9	3.9				
Thallium		1000	13.8	997.4	**99.7**	11.4	984.2	**98.4**			
Tin			-9.2	-8.7		-9.7	-8.8				
Titanium			4.8	5.5		4.3	5.5				
Vanadium		1000	-3.0	982.6	**98.3**	-3.8	979.4	**97.9**			
Zinc		1000	-3.1	1004.7	**100.5**	-2.9	999.3	**99.9**			

SH66:00199

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

SDG: SH66

ICS SOURCE: I.V.

RUNID: MS020881

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.4	**97.0**						
Cadmium		20	0.0	19.6	**98.0**						
Chromium		20	0.5	20.2	**101.0**						
Cobalt		20	0.1	19.6	**98.0**						
Copper		20	0.5	19.7	**98.5**						
Iron	20000	20000	20014.6	19668.0	**98.3**						
Manganese		20	0.4	20.5	**102.5**						
Molybdenum	400	400	388.3	399.9	**100.0**						
Nickel		20	0.6	20.1	**100.5**						
Silver		20	0.0	18.4	**92.0**						
Vanadium			0.0	-0.4							
Zinc		20	4.2	22.8	**114.0**						

SH66:00200

Post Digest Spike Sample Recovery

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6 ANALYSIS METHOD: PMS

SDG: SH66 UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	RUNID	SPIKED SAMPLE RESULT	C	SAMPLE RESULT	C	SPIKE ADDED	MATRIX	%R
Antimony	C1A	SH66APOST	MS020881	480.84	B	4.00	U	500	Sediment	96.2

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6 ANALYSIS METHOD: ICP

SDG: SH66 UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Cadmium	C1L	SH66A-L	Sediment	IP020871	4.06	B	10.00	U	100.0	
Chromium	C1L	SH66A-L	Sediment	IP020871	121.41		130.55		7.5	
Copper	C1L	SH66A-L	Sediment	IP020871	163.46		165.80		1.4	
Lead	C1L	SH66A-L	Sediment	IP020871	51.14		100.00	U	100.0	
Nickel	C1L	SH66A-L	Sediment	IP020871	112.25		119.75	B	6.7	
Silver	C1L	SH66A-L	Sediment	IP020871	3.00	U	15.00	U		
Zinc	C1L	SH66A-L	Sediment	IP020871	574.06		576.45		0.4	

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6 ANALYSIS METHOD: PMS

SDG: SH66 UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Antimony	C1L	SH66A-L	Sediment	MS020881	0.02	U	0.10	B		
Arsenic	C1L	SH66A-L	Sediment	MS020881	1.88	B	1.95	B	3.7	

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

SDG: SH66 UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Antimony	SB	PMS	PE ELAN 6000 MS	0.00		60	0.2	4/1/2010		
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2010		
Cadmium	CD	ICP	OPTIMA ICP 2	228.80		5	2.0	4/1/2010	20000.0	8/19/2010
Chromium	CR	ICP	OPTIMA ICP 2	267.72		10	5.0	4/1/2010	100000.0	8/19/2010
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2010	40000.0	8/19/2010
Lead	PB	ICP	OPTIMA ICP 2	220.35		3	20.0	4/1/2010	300000.0	8/19/2010
Mercury	HG	CVA	CETAC MERCURY	253.70		0.2	0.1	4/1/2010		
Nickel	NI	ICP	OPTIMA ICP 2	231.60		40	10.0	4/1/2010	100000.0	8/19/2010
Silver	AG	ICP	OPTIMA ICP 2	328.07		10	3.0	4/1/2010	5000.0	8/19/2010
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2010	100000.0	8/19/2010

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

IEC DATE: 2/3/2011

SDG: SH66

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	9.9066900	0.0000000	0.0000000
Arsenic	188.98	0.0000000	0.0000000	0.0000000	0.0000000	0.0435257	0.0000000	-1.0280600	0.9896930	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.1423420	0.0000000	0.0000000	0.0580080
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	3.6086500	0.0000000	0.0000000	0.0000000	0.0000000	0.1351930	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0164649	0.0000000	0.0000000	0.0000000	0.0000000	-0.0378205
Cobalt	228.62	0.0000000	0.0000000	0.0227510	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.1969920	-0.0283867	0.0000000	-0.0679439
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.35	-0.1764280	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.9460200	1.1789000	0.0713273
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.3945700	-0.8349460	0.0000000	0.5958260
Manganese	257.61	0.0065261	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0045871
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0140519	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0000000	0.0000000	0.0000000	0.0000000	0.1382820	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.7058000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	-6.4399700	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	2.4468400	0.3572340	0.0000000	-0.1546700
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	-0.1094170	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0951215	0.0000000	0.0000000	0.1546720	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-4.7348500	0.0000000	0.1291960
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0805698	0.0000000	0.0302473

SH66 : 00295

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

IEC DATE: 2/3/2011

SDG: SH66

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	1.8788800	12.1307000	0.0000000	0.0000000	0.0000000	2.3503300	0.0000000	18.0364000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.3855180	0.0000000	0.0000000	-1.5147100	0.0000000	-3.2063100	0.0000000
Arsenic	188.98	0.0000000	0.0000000	1.3620000	0.0000000	0.0000000	0.0000000	-8.1444600	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0759003	0.0000000	0.0000000	0.0000000	0.0000000	0.4900780	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5371850	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.6212080	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0740399	0.0000000	0.2199000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2689540	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.2536290	0.1584550	0.0000000	0.0000000	1.6159400	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0033560	0.0000000	0.1558430	0.0000000	0.0000000	0.0000000	0.3031690	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	5.2755600	0.0000000
Lead	220.35	0.0000000	0.0000000	-0.3729230	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-2.6953000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0060822	0.0000000	0.0000000	0.0000000	-0.2659040	0.0000000	0.0000000	0.0000000	-0.0245885	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5897980	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0776465	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	-0.1538650	0.0000000	-1.8474100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.1773070	0.1067270	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2224750	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	337.7400000	0.0000000	0.0000000	262.9290000
Thallium	190.80	0.0000000	0.0000000	-3.9138800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.6225600	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.6365040	-0.3516110	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	1.2363700	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1619680	-0.9516330	0.0000000	0.0000000	0.0000000	0.6209970	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2547300	0.0000000	-0.0673589	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

SH66:00209

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

SDG: SH66

ANALYSIS METHOD: ICP

ARI PREP CODE: SWC

PREPDATE: 2/7/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
C1	SH66A	1.014	0.0	50.0
C1D	SH66ADUP	1.018	0.0	50.0
C1S	SH66ASPK	1.014	0.0	50.0
C5	SH66C	1.013	0.0	50.0
C2-4	SH66E	1.085	0.0	50.0
PBS	SH66MB1	1.000	0.0	50.0
LCSS	SH66MB1SPK	1.000	0.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

SDG: SH66

ANALYSIS METHOD: PMS

ARI PREP CODE: SWN

PREPDATE: 2/7/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
C1	SH66A	1.079	0.0	50.0
C1D	SH66ADUP	1.079	0.0	50.0
C1S	SH66ASPK	1.075	0.0	50.0
C5	SH66C	1.060	0.0	50.0
C2-4	SH66E	1.080	0.0	50.0
PBS	SH66MB1	1.000	0.0	50.0
LCSS	SH66MB1SPK	1.000	0.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6

SDG: SH66

ANALYSIS METHOD: CVA

ARI PREP CODE: SMM

PREPDATE: 2/7/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
C1	SH66A	0.217	0.0	50.0
C1D	SH66ADUP	0.213	0.0	50.0
C1S	SH66ASPK	0.219	0.0	50.0
C5	SH66C	0.277	0.0	50.0
C2-4	SH66E	0.255	0.0	50.0
PBS	SH66MB1	0.200	0.0	50.0
LCSW	SH66MB1SPK	0.200	0.0	50.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6 | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 2/8/2011

SDG: SH66 | RUNID: IP020871 | METHOD: ICP | END DATE: 2/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	11242		X							X		X	X								X	X									X
S2	S2	1.00	11281									X		X	X																		
S3	S3	1.00	11295		X																		X	X									X
S4	S4	1.00	11322																														
S5	S5	1.00	11343																														
ICV	ICV	1.00	11383		X							X		X	X								X	X									X
ICB	ICB	1.00	11412		X							X		X	X								X	X									X
CRI	CRII	1.00	11452		X							X		X	X								X	X									X
ICSA	ICSAI	1.00	11492		X							X		X	X								X	X									X
ICSAB	ICSABI	1.00	11533		X							X		X	X								X	X									X
CCV	CCV1	1.00	11571		X							X		X	X								X	X									X
CCB	CCB1	1.00	12001		X							X		X	X								X	X									X
CCV	CCV2	1.00	12041		X							X		X	X								X	X									X
CCB	CCB2	1.00	12071		X							X		X	X								X	X									X
ZZZZZZ	DICHECK	1.00	12112																														
PBS	SH66MB1	2.00	12152		X							X		X	X								X	X									X
C1L	SH66A-L	10.00	12191		X							X		X	X								X	X									X
C1	SH66A	2.00	12231		X							X		X	X								X	X									X
C1D	SH66ADUP	2.00	12270		X							X		X	X								X	X									X
C1S	SH66ASPK	2.00	12310		X							X		X	X								X	X									X
ZZZZZZ	ZZZZZZ	2.00	12335																														
C5	SH66C	2.00	12365		X							X		X	X								X	X									X
C2-4	SH66E	2.00	12405		X							X		X	X								X	X									X
LCSS	SH66MB1SPK	2.00	12444		X							X		X	X								X	X									X
CCV	CCV3	1.00	12484		X							X		X	X								X	X									X
CCB	CCB3	1.00	12514		X							X		X	X								X	X									X
CRI	CRIF	1.00	12553		X							X		X	X								X	X									X
ICSA	ICSAF	1.00	12593		X							X		X	X								X	X									X
ICSAB	ICSABF	1.00	13034		X							X		X	X								X	X									X
CCV	CCV4	1.00	13072		X							X		X	X								X	X									X
CCB	CCB4	1.00	13102		X							X		X	X								X	X									X

SH66.00210

FORM XIV

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6 | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 2/8/2011

SDG: SH66 | RUNID: MS020881 METHOD: PMS | END DATE: 2/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09300				X																		X								
S1	S1	1.00	09370				X																		X								
S2	S2	1.00	09450				X																		X								
S3	S3	1.00	09520				X																		X								
S4	S4	1.00	10000				X																		X								
ZZZZZZ	Rinse Samp1	1.00	10080																														
ICV	MICV	1.00	10190				X																		X								
ICB	ICB	1.00	10270				X																		X								
CCV	MCCV1	1.00	10340				X																		X								
CCB	CCB1	1.00	10410				X																		X								
CRI	MCRI	1.00	10480				X																		X								
ICSA	ICSAI	1.00	10560				X																		X								
ICSAB	ICSABI	1.00	11030				X																		X								
ZZZZZZ	LR200	1.00	11110																														
ZZZZZZ	LR300	1.00	11190																														
CCV	MCCV2	1.00	11260				X																		X								
CCB	CCB2	1.00	11340				X																		X								
PBS	SH66MB1	20.00	11420				X																		X								
LCSS	SH66MB1SPK	20.00	11480				X																		X								
C1L	SH66A-L	100.00	11550				X																		X								
C1	SH66A	20.00	12020				X																		X								
C1D	SH66ADUP	20.00	12080				X																		X								
C1S	SH66ASPK	20.00	12150				X																		X								
C1A	SH66APOST	20.00	12220																						X								
C5	SH66C	20.00	12280				X																		X								
C2-4	SH66E	20.00	12350				X																		X								
CCV	MCCV3	1.00	12420				X																		X								
CCB	CCB3	1.00	12490				X																		X								

SH66 : 09211

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: Hart Crowser

PROJECT: Terminal 6 | INSTRUMENT ID: CETAC MERCURY | START DATE: 2/8/2011

SDG: SH66 | RUNID: HG020801 | METHOD: CVA | END DATE: 2/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	13172														X																
S0.1	S0.1	1.00	13190														X																
S0.5	S0.5	1.00	13203														X																
S1	S1	1.00	13221														X																
S2	S2	1.00	13235														X																
S5	S5	1.00	13253														X																
S10	S10	1.00	13271														X																
ICV	AICV	1.00	13292														X																
ICB	ICB	1.00	13305														X																
CCV	ACCV1	1.00	13323														X																
CCB	CCB1	1.00	13341														X																
CRA	CRA	1.00	13355														X																
PBW	SH66MB1	1.00	13372														X																
LCSW	SH66MB1SPK	1.00	13390														X																
C1	SH66A	1.00	13403														X																
C1D	SH66ADUP	1.00	13421														X																
C1S	SH66ASPK	1.00	13435														X																
C5	SH66C	1.00	13452														X																
C2-4	SH66E	1.00	13470														X																
ZZZZZZ	SH27MB1	1.00	13484																														
ZZZZZZ	SH27MB1SPK	1.00	13502																														
CCV	ACCV2	1.00	13515														X																
CCB	CCB2	1.00	13534														X																

SH66 : 00212

General Chemistry Analysis
Report and Summary QC Forms

ARI Job ID: SH66

SAMPLE RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Client ID: C1
ARI ID: 11-2465 SH66A

Analyte	Date	Method	Units	RL	Sample
Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	69.50
Preserved Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	55.40
N-Ammonia	02/07/11 020711#1	EPA 350.1M	mg-N/kg	1.44	54.4
Sulfide	02/07/11 020711#1	EPA 376.2	mg/kg	8.68	80.5
Total Organic Carbon	02/08/11 020811#1	Plumb,1981	Percent	0.020	0.936

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Client ID: C1Z
ARI ID: 11-2466 SH66B

Analyte	Date	Method	Units	RL	Sample
Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	79.60
Preserved Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	75.80
N-Ammonia	02/07/11 020711#1	EPA 350.1M	mg-N/kg	1.21	36.7
Sulfide	02/07/11 020711#1	EPA 376.2	mg/kg	1.28	3.55

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Client ID: C5
ARI ID: 11-2467 SH66C

Analyte	Date	Method	Units	RL	Sample
Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	51.60
Preserved Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	50.30
N-Ammonia	02/07/11 020711#1	EPA 350.1M	mg-N/kg	1.88	74.0
Sulfide	02/07/11 020711#1	EPA 376.2	mg/kg	3.84	63.1
Total Organic Carbon	02/08/11 020811#1	Plumb,1981	Percent	0.020	1.06

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Client ID: C5Z
ARI ID: 11-2468 SH66D

Analyte	Date	Method	Units	RL	Sample
Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	75.10
Preserved Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	74.40
N-Ammonia	02/07/11 020711#1	EPA 350.1M	mg-N/kg	0.65	18.7
Sulfide	02/07/11 020711#1	EPA 376.2	mg/kg	1.30	17.9

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Client ID: C2-4
ARI ID: 11-2469 SH66E

Analyte	Date	Method	Units	RL	Sample
Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	69.20
Preserved Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	68.60
N-Ammonia	02/07/11	EPA 350.1M	mg-N/kg	1.33	44.5
Sulfide	02/07/11 020711#1	EPA 376.2	mg/kg	1.42	14.9
Total Organic Carbon	02/08/11 020811#1	Plumb,1981	Percent	0.020	1.15

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: 02/04/11
Date Received: 02/05/11

Client ID: C2-4Z
ARI ID: 11-2470 SH66F

Analyte	Date	Method	Units	RL	Sample
Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	78.80
Preserved Total Solids	02/07/11 020711#1	EPA 160.3	Percent	0.01	76.50
N-Ammonia	02/07/11	EPA 350.1M	mg-N/kg	1.24	37.9
Sulfide	02/07/11 020711#1	EPA 376.2	mg/kg	1.26	< 1.26 U

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

METHOD BLANK RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	02/07/11	Percent	< 0.01 U
Preserved Total Solids	02/07/11	Percent	< 0.01 U
N-Ammonia	02/07/11	mg-N/kg	< 0.10 U
Sulfide	02/07/11	mg/kg	< 1.00 U
Total Organic Carbon	02/08/11	Percent	< 0.020 U

LAB CONTROL RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Sulfide EPA 376.2	PREP	02/07/11	mg/kg	7.32	7.27	100.7%
Total Organic Carbon Plumb,1981	ICVL	02/08/11	Percent	0.099	0.100	99.0%

STANDARD REFERENCE RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
N-Ammonia SPEX 28-24AS	02/07/11	mg-N/kg	99.3	100	99.3%
Total Organic Carbon NIST #8704	02/08/11	Percent	3.21	3.35	95.8%

REPLICATE RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: SH66A Client ID: C1					
Total Solids	02/07/11	Percent	69.50	70.10 70.60	0.8%
Preserved Total Solids	02/07/11	Percent	55.40	55.60	0.4%
N-Ammonia	02/07/11	mg-N/kg	54.4	51.7 46.3	8.1%
Sulfide	02/07/11	mg/kg	80.5	70.9	12.7%
Total Organic Carbon	02/08/11	Percent	0.936	1.02 0.727	16.9%

MS/MSD RESULTS-CONVENTIONALS
SH66-Hart Crowser

ANALYTICAL RESOURCES INCORPORATED

Matrix: Sediment
Data Release Authorized:
Reported: 02/09/11

Project: Terminal 6
Event: 15737-00
Date Sampled: 02/01/11
Date Received: 02/05/11

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: SH66A Client ID: C1						
N-Ammonia	02/07/11	mg-N/kg	54.4	168	131	86.6%
N-Ammonia	02/07/11	mg-N/kg	54.4	176	137	88.5%
Sulfide	02/07/11	mg/kg	80.5	300	253	86.8%
Total Organic Carbon	02/08/11	Percent	0.936	2.37	1.25	114.7%

Geotechnical Analysis
Report and Summary QC Forms

ARI Job ID: SH66

Hart Crowser
15737-00
Terminal 6

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4 (4750)	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (63)	31.00	15.60	7.80	3.90	2.00	1.00
C5	100.0	100.0	100.0	99.6	98.9	97.0	91.9	73.3	48.3	24.8	15.1	10.5	7.3	4.9
	100.0	100.0	100.0	99.6	98.9	96.8	91.8	73.4	45.1	23.0	14.1	10.0	7.1	4.6
	100.0	100.0	100.0	99.6	98.9	96.9	91.4	73.4	46.8	23.7	14.4	10.3	7.2	4.7
C1	100.0	100.0	99.9	99.6	98.8	92.7	73.9	47.7	25.7	14.7	9.4	6.9	4.8	2.9
C2-4	100.0	100.0	99.9	98.8	95.5	78.4	44.2	30.1	18.3	10.5	6.8	4.7	3.2	1.9

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

Hart Crowser
15737-00
Terminal 6

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay			Total Fines
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10	<4
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31 0-15.6	15.6-7.8	7 8-3 9	3.9-2.0	2.0-1.0	<1.0	<230 (<62)
C5	0.0	0.4	0.7	1.9	5.2	18.6	25.0	23.5	9.7	4.6	3 3	2.3	4.9	73.3
	0.0	0.4	0.7	2.1	5.0	18.4	28.3	22.1	9.0	4.1	2.9	2.5	4.6	73.4
	0.0	0.4	0.7	2.0	5.5	18.0	26.6	23.1	9.3	4.0	3.1	2.5	4.7	73.4
C1	0.1	0.3	0.8	6.1	18.8	26.1	22.1	10.9	5.3	2.5	2.1	1.9	2.9	47.7
C2-4	0.1	1.1	3.3	17.1	34.1	14.1	11.8	7.8	3.7	2.1	1.5	1.4	1.9	30.1

Notes to the Testing:
1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

QA SUMMARY

Client:	Hart Crowser	Client Project No.:	15737-00
		Client Project:	Terminal 6
ARI Trip. Sample ID:	SH66C	Batch No.:	SH66-1
Client Trip. Sample ID:	C5	Page:	1 of 1

Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
C5	100.0	100.0	100 0	99.6	98.9	97.0	91.9	73 3	48.3	24.8	15.1	10.5	7.3	4 9
	100.0	100.0	100.0	99.6	98.9	96.8	91.8	73.4	45.1	23.0	14.1	10.0	7.1	4 6
	100.0	100.0	100.0	99.6	98.9	96.9	91.4	73.4	46.8	23.7	14.4	10.3	7.2	4.7
AVE	NA	100.00	100 00	99.61	98.90	96.92	91.67	73.33	46.72	23.84	14.52	10.27	7.19	4.73
STDEV	NA	0.00	0.00	0.03	0.03	0 10	0.26	0.06	1.60	0.89	0.55	0.28	0.09	0.18
%RSD	NA	0.00	0.00	0 03	0.03	0 11	0.29	0.08	3.42	3.73	3.81	2.69	1.32	3.80

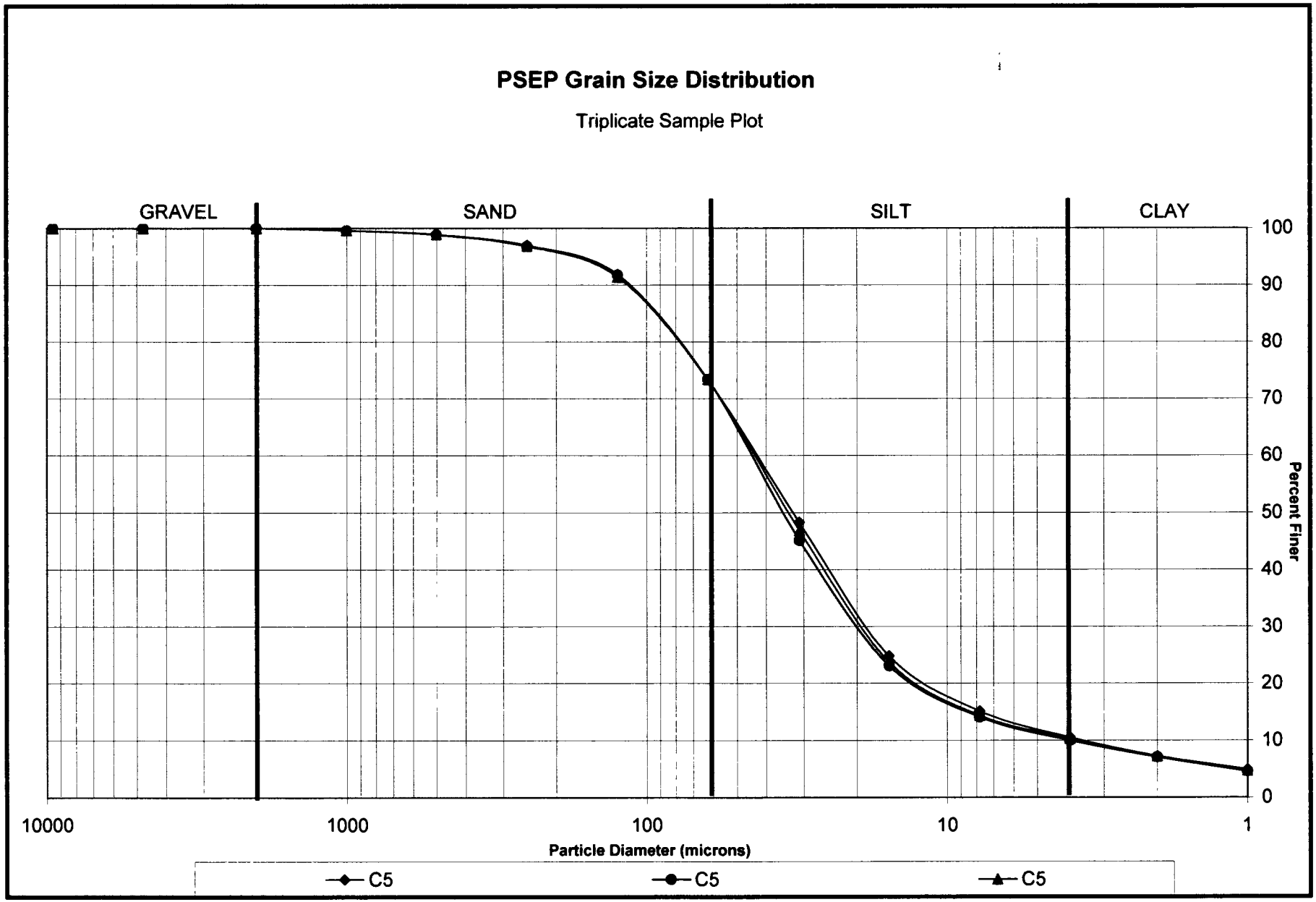
The Triplicate Applies To The Following Samples

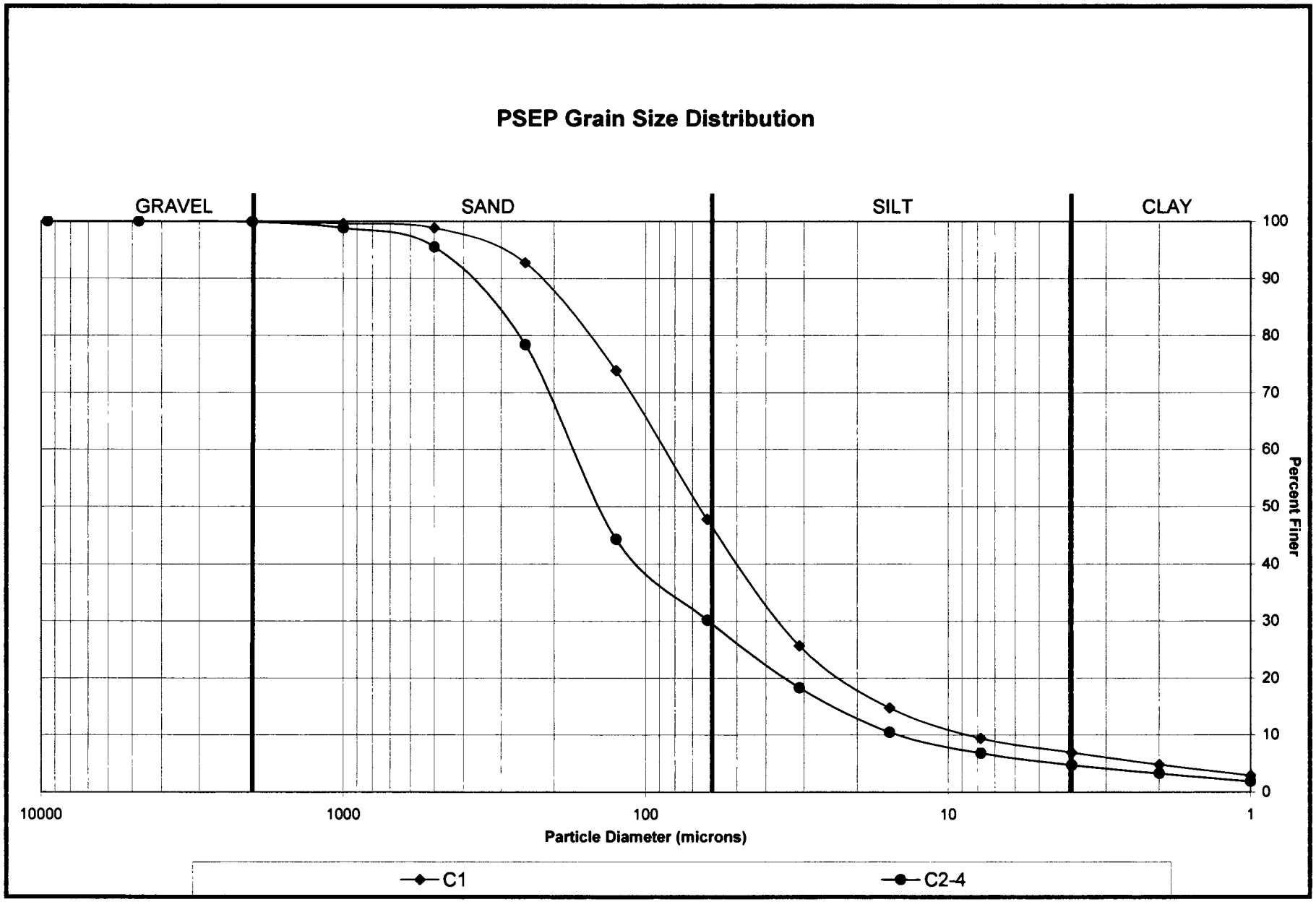
Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
C5	2/4/2011	2/10/2011	2/11/2011	104.9		16.4
	2/4/2011	2/10/2011	2/11/2011	99.0		16.3
	2/4/2011	2/10/2011	2/11/2011	101.1		16.7
C1	2/1/2011	2/10/2011	2/11/2011	102.5		11.9
C2-4	2/4/2011	2/10/2011	2/11/2011	99.6		22.4

* ARI Internal QA limits = 95-105%

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.


PSEP Grain Size Distribution
Triplicate Sample Plot
GRAVEL
SAND
SILT
CLAY
100
90
80
70
60
50
40
30
20
10
0
Percent Finer
10000
1000
100
10
1
Particle Diameter (microns)
C5
C5
C5


PSEP Grain Size Distribution
GRAVEL
SAND
SILT
CLAY
100
90
80
70
60
50
40
30
20
10
0
Percent Finer
10000
1000
100
10
1
Particle Diameter (microns)
C1
C2-4

Total Solids

ARI Job ID: SH66

Extractions Total Solids-extts
Data By: Allison J. Benny
Created: 2/ 7/11

Worklist: 3275
Analyst: RVR
Comments:

Oven ID:_____

Balance ID:_____

Samples In: Date:_____ Time:_____ Temp:_____ Analyst:_____

Samples Out: Date:_____ Time:_____ Temp:_____ Analyst:_____

	ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1.	SH66A 11-2465 C1	1.17	13.08	9.58	70.6	NR
2.	SH66B 11-2466 C1Z	1.16	12.52	9.97	77.6	NR
3.	SH66C 11-2467 C5	1.17	13.81	8.09	54.7	NR
4.	SH66D 11-2468 C5Z	1.17	13.23	10.28	75.5	NR
5.	SH66E 11-2469 C2-4	1.17	12.84	9.53	71.6	NR
6.	SH66F 11-2470 C2-4Z	1.17	13.13	10.65	79.3	NR

Extractions Total Solids-extts
Data By: Allison J. Benny
Created: 2/ 7/11

Worklist: 3275
Analyst: AJB
Comments:

Oven ID: 015

Balance ID: 21754520

Samples In: Date: 2/7/11 Time: 14:40 Temp: 103 Analyst: AB

Samples Out: Date 2/8/11 Time: 06:20 Temp: 103° Analyst: RC

	ARI ID / CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1.	SH66A 11-2465 C1	1.17	13.08	9.58		NR
2.	SH66B 11-2466 C1Z	1.16	12.52	9.97		NR
3.	SH66C 11-2467 C5	1.17	13.81	8.89		NR
4.	SH66D 11-2468 C5Z	1.17	13.23	10.28		NR
5.	SH66E 11-2469 C2-4	1.17	12.84	9.53		NR
6.	SH66F 11-2470 C2-4Z	1.17	13.13	10.65		NR

Solids Data Entry Report Checked by: MH Date: 2/8/11
Date: 02/08/11 Data Analyst: KM

Solids Determination performed on 02/07/11 by DM

JOB	SAMPLE	CLIENTID	TAREWEIGHT	SAMPDISH	DRYWEIGHT	SOLIDS
SH66	A	C1	0.990	10.526	7.722	70.60
SH66	C	C5	1.014	10.528	5.903	51.39
SH66	E	C2-4	0.989	10.148	7.346	69.41

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Total Solids Bench Sheet

Laboratory Section Mtab

Oven Identification: 57 **Balance ID:** 068755

Samples in Oven: Date: 2-07-11 Time: 1915 Temp: 105°c Analyst: DM

Removed from Oven: Date: 02/08/11 Time: 1040 Temp: 103°C Analyst: KM

Source of Total Solids Data If From A Different Lab: —

ARI Sample ID	Tare Weight (g)	Tare + Sample Wet (g)	Tare + Sample Dry (g)	Date & Time Last Weight	Final Weighting >12 hrs[1]
SH66 A	0.990	10.526	7.722	—	✓
" C	1.014	10.528	5.903	—	✓
" E	0.989	10.148	7.346	—	✓
		2-7-11 DM			

1) Place a check mark in this column if samples have dried > 12 but < 24 hours. When samples have been at 104℃ < 12 hours, constant weight must be verified as described in SOP 10023S. Use a 2nd bench sheet for additional weightings.

Table of Contents: ARI Job SJ76, SJ86

Client: Hart Crowser

Project: 15737-00 Terminal 6

Signature

February-28-2011
Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

March 2, 2011

Mr. Rick Ernst
Hart Crowser, Inc.
5 Centerpointe Dr #240
Lake Oswego, OR 97035

RE: Project: 15737-00 Terminal 6
ARI Job Nos: SJ76 & SJ86

Dear Mr. Ernst:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and the analytical results for samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted twelve sediment samples on February 5, 2011. The samples were received in good condition. There were no discrepancies between the sample containers' labels and the COC.

On February 28, 2011, one sample was re-logged for pore-water extraction under ARI job under ARI job SJ76. The pore water sample was analyzed for TBTs under ARI job SJ86, as requested.

Please reference the Case Narratives for analytical details associated with this project.

An electronic copy of this data package will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
kellyb@arilabs.com
206/695-6211

Enclosures

cc: files SJ76_SJ86

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Documentation

ARI Job ID: SJ76, SJ86

Sample Custody Record

1 OF 1

SH66

Samples Shipped to: ARI

HARTCROWSER

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
Phone: 206-324-9530 FAX: 206-328-5581

JOB 15737-00 LAB NUMBER

PROJECT NAME TERMINAL 6

HART CROWSER CONTACT RICK ERNST

SAMPLED BY: CFR

LAB NO.	SAMPLE ID	DESCRIPTION	DATE	TIME	MATRIX	TOTAL SOLIDS	TOC	Metals	Ammonia	TPH	TBT (dry weight)	PAHs	SVOCs	ORGANOCHLORINE PESTICIDES	PCBs	Total Sulfides	Grain Size	TBT (Porewater)	NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
	C1	DISCRETE	2/1/11	1045	SEDIMENT	X	X	X	X	X	X	X	X	X	X	X	X		7	
	C1Z	DISCRETE	2/1/11	1045		X			X		X		X	X		X			6	
	C2	DISCRETE	2/1/11	1315															1	HOLD
	C3	" "	2/1/11	1445															1	HOLD
	C2Z	" "	2/1/11	1315															2	HOLD
	C3Z	" "	2/1/11	1445															2	HOLD
	C4	" "	2/4/11	825															1	HOLD
	C4Z	" "	2/4/11	825															2	HOLD
	C5	" "	2/4/11	845		X	X	X	X	X	X	X	X	X	X	X	X		7	
	C5Z	" "	2/4/11	845		X			X		X		X	X		X			6	
	C2-4	COMPOSITE	2/4/11	1500		X	X	X	X	X	X	X	X	X	X	X	X		6	
	C2-4Z	COMPOSITE	2/4/11	1510		X			X		X		X	X		X			6	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE	2/5/11	V. Sn	
PRINT NAME Colleen Rust	TIME	VAN SPOHN	TIME
COMPANY HC	1500	PRINT NAME ART	15:00
		COMPANY	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE		SIGNATURE	
PRINT NAME	TIME	PRINT NAME	TIME
COMPANY		COMPANY	

SPECIAL SHIPMENT HANDLING OR STORAGE REQUIREMENTS:

SEE SAP FOR METHOD DETAILS

* ARCHIVE REMAINING VOLUME *

47 TOTAL NUMBER OF CONTAINERS

SAMPLE RECEIPT INFORMATION

CUSTODY SEALS: ☐YES ☐NO ☐N/A

GOOD CONDITION ☐YES ☐NO

TEMPERATURE _____

SHIPMENT METHOD: ☐HAND ☐COURIER ☐OVERNIGHT

COOLER NO.: STORAGE LOCATION:

See Lab Work Order No. _____ for Other Contract Requirements

TURNAROUND TIME:

☐ 24 HOURS ☐ 1 WEEK

☐ 48 HOURS ☐ STANDARD

☐ 72 HOURS OTHER _____

White and Yellow Copies to Lab Pink to Project Manager Lab to Return White Copy to Hart Crowser Gold to Sample Custodian

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Hart Crowser

Project Name: _____

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: SH66

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 2.8°C 2.2 1.9 0.9

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 90941619

Cooler Accepted by: VB Date: 2.5.11 Time: 15:00

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		(YES)	NO
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		YES	(NO)
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI.....	(NA)		

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: MM Date: 2/7/11 Time: 0830

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

~~C5~~ has COC reads 7 containers sent but 8 container received for C5

COC reads 1 containers sent but 3 containers received for C3Z

By: MM Date: 2/7/11

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• • •	• • •	● ● ●

Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Subject: RE: TBT follow ups
From: Rick Ernst <rick.ernst@hartcrowser.com>
Date: Thu, 17 Feb 2011 18:07:45 -0800
To: Kelly Bottem <kellyb@arilabs.com>

Please extract, but not analyze, porewater from sample C5 (lab id SH66C). The Port will decide if they want it analyzed within the 14 day hold time after extraction.

Thanks, Rick.

From: Kelly Bottem [kellyb@arilabs.com]
Sent: Thursday, February 10, 2011 2:33 PM
To: Rick Ernst
Subject: Re: TBT follow ups

I need more notice then the last day of holding.....
Thanks,
K

Rick Ernst wrote:

> At this point it doesn't look like any TBT porewater follow-ups are necessary. Only C5 exceeded the SEF criteria for TBT, but it's a dredge prism sample. Only if the Port decides to do in-water disposal will it matter (however, they think in-water is totally out of the question). This sample was collected on 2/4/11, so with a 14 day hold time, we have until 2/18/11 to decide. The Port doesn't think they'll run it, but will confer in-house to be sure.
>
> Rick
>
> -----Original Message-----
> From: Kelly Bottem [mailto:kellyb@arilabs.com]
> Sent: Thursday, February 10, 2011 1:03 PM
> To: Rick Ernst
> Subject: TBT follow ups
>
> Porewaters going out of holding please instruct me.
> K

--

Kelly Frances Bottem, Client Services Manager
Analytical Resources, Inc.
4611 S. 134th Place, Suite 100
Tukwila, WA 98168-3240
Website: http://www.arilabs.com
Direct Phone: 206-695-6211
E-Mail: kellyb@arilabs.com
Fax: 206-695-6201
Cell: 206-228-1385

"Never interrupt someone doing something you said couldn't be done" - Amelia Earhart

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: SJ96	Turn-around Requested: RUSH 2/22/11	Page: 1 of 1	
ARI Client Company: Hart Crowser	Phone:	Date: 2/18/11	Ice Present?
Client Contact: Rick Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Terminal 6			
Client Project #: 15737-00	Samplers: gs		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: TBTs	Notes/Comments
C5	2/18/11	1405	H_2O	1	X	Was 55 Hc A sediment

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Gwenna Smith	Printed Name: Mike Malmka	Printed Name:	Printed Name:
	Company: ARI	Company: ARI	Company:	Company:
	Date & Time: 2/18/11 14:12	Date & Time: 2/18/11 1428	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

SJ96 : SJ15

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: SJ76, SJ86

Case Narrative
Hart Crowser
Port Of Portland Terminal 6, 15737-00
ARI Job Nos.: SJ76 & SJ86
March 2, 2011

Pore Water Tributyl Tin Analysis (GC/MS Krone SIM):

The sample was extracted on 02/18/11 and the extract was analyzed on 02/21/11 within the method recommended holding time for frozen samples.

Initial calibration (s): All analytes were within method acceptance criteria.

Continuing calibration (s): All analytes of interest were within method acceptance criteria.

Method Blank (s): The method blank was free of contamination.

Surrogate(s): The surrogate percent recovery of Tripentyl Tin Chloride was outside the control limits high for **LCSD-021811**. No corrective action was taken.

Samples: There were no anomalies associated with this analysis.

LCS/LCSD (s): All percent recoveries and RPDs were in control.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Hart Crowser	**ARI Project No.:** SJ76
Client Project: Terminal 6	**Client Project No.:** 15737-00

Case Narrative

1. One sample was submitted for pore water extraction by the United States Army Corp of Engineers draft interim guidelines on February 18, 2011 and was in good condition.
2. The sediment for pore water extraction was placed in the nitrogen chamber along with centrifuge bottles, spoons and a balance. The chamber was sealed and filled with nitrogen. The centrifuge jars were opened to allow them to come to equilibrium with the chamber. The oxygen level in the chamber was less than 1%.
3. All centrifuge bottles were pre-rinsed with Hexane and allowed to dry completely. All spoons were pre-rinsed with Dichloromethane.
4. All samples were centrifuged in a pre-cooled centrifuge (4°C) at 3,000 x g for 30 minutes, decanted in the nitrogen chamber, and then placed in another pre-cooled centrifuge (4°C) and spun at 7,000-x g for 30 minutes.
5. There were no other anomalies in the samples or methods on this project.

Approved by: *[signature]* Date: 2/18/11
Title: *Geotechnical Laboratory Manager*

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200 • 206-695-6201 fax**

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: SH66
Client: Hart Crowser
Project Event: 15737-00
Project Name: Terminal 6

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	C1	SH66A	11-2465	Sediment	02/01/11 10:45	02/05/11 15:00
2.	C1Z	SH66B	11-2466	Sediment	02/01/11 10:45	02/05/11 15:00
3.	C5	SH66C	11-2467	Sediment	02/04/11 08:45	02/05/11 15:00
4.	C5Z	SH66D	11-2468	Sediment	02/04/11 08:45	02/05/11 15:00
5.	C2-4	SH66E	11-2469	Sediment	02/04/11 15:00	02/05/11 15:00
6.	C2-4Z	SH66F	11-2470	Sediment	02/04/11 15:10	02/05/11 15:00
7.	C2	SH66G	11-2471	Sediment	02/01/11 13:15	02/05/11 15:00
8.	C3	SH66H	11-2472	Sediment	02/01/11 14:45	02/05/11 15:00
9.	C2Z	SH66I	11-2473	Sediment	02/01/11 13:15	02/05/11 15:00
10.	C3Z	SH66J	11-2474	Sediment	02/01/11 14:45	02/05/11 15:00
11.	C4	SH66K	11-2475	Sediment	02/04/11 08:25	02/05/11 15:00
12.	C4Z	SH66L	11-2476	Sediment	02/04/11 08:25	02/05/11 15:00

Printed 02/07/11

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: SJ76
Client: Hart Crowser
Project Event: 15737-00
Project Name: Terminal 6

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	C5	SJ76A	11-3606	Sediment	02/04/11 08:45	02/05/11 15:00

Printed 02/18/11

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: SJ86
Client: Hart Crowser
Project Event: 15737-00
Project Name: Terminal 6

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	C5	SJ86A	11-3659	Water	02/18/11 14:05	02/18/11 14:28

Printed 02/18/11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

H — The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q — Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

SURR SOLUTIONS

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1817-1	ABN	100/150	MEOH	07/12/11
B	1771-1	SIM PNA	15/75	ACETONE	10/05/11
C	1705-4	SIM ABN	25/37.5	MEOH	03/08/11
D	1795-4	LOW PCB	0.2	ACETONE	12/16/11
E	1771-3	HERB	62.5	MEOH	10/06/11
F	1791-3	PCP	12.5	ACETONE	12/09/11
G	1758-4	1,4DIOXANE	100	MEOH	02/11/11
H	1723-2	OP-PEST	25	MEOH	04/02/11
I	1771-2	LOW S. PNA	1.5	ACETONE	10/05/11
J	1787-2	TBT-PORE	0.125	MECL2	11/27/11
K	1795-2	MED PCB	20	ACETONE	12/16/11
L	1785-4	TBT	2.5	MECL2	11/27/11
M	1767-1	EPH	1500	MECL2	06/02/11
N	1795-3	PCB	2	ACETONE	12/16/11
O	1821-3	TPH	450	MECL2	09/07/11
P	1813-2	HCID	2250	MECL2	08/05/11
Q	NA	EDB	1	MEOH	NA
R	1757-3	RESIN ACID	250	ACETONE	08/14/11
S*	1568-5	PBDE	.25	MEOH	01/13/11
T	1768-2	ALKYL PNA	10	MEOH	07/22/11
U	NA	CONGENER	2.5	ACETONE	NA
V	1791-4	LOW PCP	1.25	ACETONE	12/09/11
*reverified solution					

LCS SOLUTIONS

LABL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1820-2	PCB 1660	20	ACETONE	01/25/12
2#	NA	BCOC PEST	10	ACETONE	NA
3	1793-3	PEST	01/02/10	ACETONE	12/15/11
4	1806-2	LOW PEST	.1/.2/1	ACETONE	12/15/11
5	1779-1	EPH	1500	MECL2	11/11/11
6	1702-2	PCP	12.5/125	ACETONE	02/18/11
7	1789-2	ABN	100	MEOH	10/01/11
8	1785-3	TBT	2.5	MECL2	11/27/11
9	1786-3	PORE TBT	.125/.25	MECL2	11/27/11
10	1790-1	ABN ACID	100/200	MEOH	06/07/11
11	1777-2	TPHD	15000	ACETONE	11/01/11
12	1790-2	ABN BASE	200	MEOH	06/07/11
13	1716-2	LOW PCB	2	ACETONE	03/30/11
14	1753-3	LOW ABN ACID	10/20	MEOH	01/28/11
15	1814-2	SIM PNA	15/75	MEOH	01/04/12
16	1776-2	DIOXANE	100	MEOH	04/09/11
17	1772-3	1248 PCB	10	ACETONE	05/01/11
18	1814-3	LOW SIM PNA	1.5	ACETONE	01/04/12
19	1815-2	AK103	7500	ACETONE	06/02/11
20	1775-3	PNA	100	ACETONE	08/14/11
21	1725-1	SKY/BHT	100	MEOH	03/18/11
22	1781-1	HERB	05 to 4000	MEOH	04/15/11
23	1753-4	LW ABN BASE	20	MEOH	01/29/11
24	1758-2	LOW ABN	10	ACETONE	01/13/11
25#	NA	DIPHENYL	100	MEOH	NA
26	1789-1	OP-PEST	25	MEOH	04/02/11
27	NA	STEROLS	200	MEOH	NA
28#	1807-1	ADD. PEST	2	ACETONE	08/31/11
29#	NA	DECANES	100	MEOH	NA

LCS SOLUTIONS

30	NA	EDB/DBCP	0.2	MEOH	NA
31	1707-3	TERPINEOL	100	MEOH	03/19/11
32	1758-1	GUAIACOL	50-200	ACETONE	01/08/11
33	NA	RETENE	100	MEOH	NA
34	NA	CONGENERS	2.5	ACETONE	NA
35	NA	ALKYL PNA A	10	MEOH	NA
36	NA	ALKYL PNA B	10	MEOH	NA
37	1773-1	CAR/PERY	100	ACETONE	10/14/11
50	1757-4	FULL RESIN	250	ACETONE	08/14/11
51	1772-1	DDTS	0.01	ACETONE	04/24/11
52	NA	1232 PCB	20	ACETONE	NA
53	1780-1	DALAPON	50	MEOH	05/07/11
54	1753-1	T-CHLORDANE	10	ACETONE	07/21/11
55	1753-2	TOXAPHENE	50	ACETONE	07/21/11
#=PROJECT SPECIFIC SOLUTION					
*=REVERIFIED SOLUTION					

Summary of Laboratory Control Limits - SIM Analysis for Butyl Tin Species [1, 2] **EPA Method SW-846-8270D (Modified)** Effective 2/4/11			
Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip			
	ARI's Calculated Control Limits		
Sample Matrix	**Pore Water [4]**	**Water [5]**	**Soil/Sediment [6]**
Sample Amount / Final Volume:	**150 mL / 0.5 mL**	**100 mL / 0.5 mL**	**5 g / 0.5 mL**
LCS Spike Recovery [3]			
Tributyl Tin	30 - 160	60 - 125	40 - 144
Dibutyl Tin	30 - 160	30 - 160 [7]	34 - 115
Butyl Tin	30 - 160	30 - 160 [7]	**10** - 111
Method Blank/LCS Surrogate Recovery			
Tripentyl Tin	30 - 160	48 - 110	35 - 130
Tripropyl Tin	30 - 160	42 - 113	28 - 106
Sample Surrogate Recovery			
Tripentyl Tin	30 - 160	35 - 124	25 - 140
Tripropyl Tin	30 - 160	41 - 112	32 - 104

1. Instrument calibrated using hexyl (C_6) derivatives. Results reported as butylated Tin ion.
2. Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
3. Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
4. Default limits due to insufficient number of data points to calculate historic limits.
5. Control limits calculated using all data generated 10/1/06 through 5/30/08.
6. Control Limits calculated using all data generated 6/1/06 through 6/1/08 (sample surrogates 6/1/07-6/1/08)
7. Default limits due to insufficient number of data points to calculate historic limits.

Butyl Tin Analysis
Report and Summary QC Forms

ARI Job ID: SJ76, SJ86

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: C5**
Page 1 of 1 **SAMPLE**

Lab Sample ID: SJ86A
LIMS ID: 11-3659
Matrix: Water
Data Release Authorized:
Reported: 02/21/11

QC Report No: SJ86-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: 02/18/11
Date Received: 02/18/11

Date Extracted: 02/18/11
Date Analyzed: 02/21/11 10:14
Instrument/Analyst: NT11/YZ

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	**Tributyltin Ion**	0.005	0.048	
14488-53-0	Dibutyltin Ion	0.008	< 0.008	U
78763-54-9	**Butyltin Ion**	0.005	0.006	

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	69.1%
Tripentyl Tin Chloride	117%

ANALYTICAL RESOURCES INCORPORATED

TBT SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: SJ86-Hart Crowser
Project: Terminal 6
Event: 15737-00

Client ID	TPRT	TPNT	TOT OUT
MB-021811	71.1%	117%	0
LCS-021811	74.9%	123%	0
LCSD-021811	76.6%	127%*	1
C5	69.1%	117%	0

	LCS/MB LIMITS	QC LIMITS
(TPRT) = Tripropyl Tin Chloride	(29-100)	(28-100)
(TPNT) = Tripentyl Tin Chloride	(38-127)	(30-135)

Prep Method: SW3510C
Analytical Method: Low TBT (Hexyl) Krone 1988
Log Number Range: 11-3659 to 11-3659

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS

Sample ID: LCS-021811
LAB CONTROL SAMPLE

Lab Sample ID: LCS-021811
LIMS ID: 11-3659
Matrix: Water
Data Release Authorized: MW
Reported: 02/21/11

QC Report No: SJ86-Hart Crowser
Project: Terminal 6
15737-00
Date Sampled: NA
Date Received: NA

Date Extracted LCS: 02/18/11

Date Analyzed LCS: 02/21/11 09:49
LCSD: 02/21/11 10:01
Instrument/Analyst LCS: NT11/YZ
LCSD: NT11/YZ

Sample Amount LCS: 150 mL
LCSD: 150 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Alumina Cleanup: Yes

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Tributyltin Ion	0.064	0.074	86.5%	0.068	0.074	91.9%	6.1%
Dibutyltin Ion	0.138	0.128	108%	0.147	0.128	115%	6.3%
Butyltin Ion	0.047	0.104	45.2%	0.045	0.104	43.3%	4.3%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

TBT Surrogate Recovery

	LCS	LCSD
Tripropyl Tin Chloride	74.9%	76.6%
Tripentyl Tin Chloride	123%	127%

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

SJ86MBW1

Lab Name: ANALYTICAL RESOURCES, INC

Client: HART CROWSER

ARI Job No: SJ86

Project: TERMINAL 6

Lab File ID: SJ86MB

Date Extracted: 02/18/11

Instrument ID: NT11

Date Analyzed: 02/21/11

Matrix: LIQUID

Time Analyzed: 0936

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SJ86LCSW1	SJ86LCSW1	SJ86SB	02/21/11
02	SJ86LCSDW1	SJ86LCSDW1	SJ86SBS	02/21/11
03	C5	SJ86A	SJ86A	02/21/11
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
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22				
23				
24				
25				
26				
27				
28				
29				
30				

FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS

Sample ID: MB-021811
METHOD BLANK

Lab Sample ID: MB-021811
LIMS ID: 11-3659
Matrix: Water
Data Release Authorized: MW
Reported: 02/21/11

QC Report No: SJ86-Hart Crowser
Project: Terminal 6
Event: 15737-00
Date Sampled: NA
Date Received: NA

Date Extracted: 02/18/11
Date Analyzed: 02/21/11 09:36
Instrument/Analyst: NT11/YZ

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	0.005	< 0.005	U
14488-53-0	Dibutyltin Ion	0.008	< 0.008	U
78763-54-9	Butyltin Ion	0.005	< 0.005	U

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	71.1%
Tripentyl Tin Chloride	117%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT11 Project: TERMINAL 6

DFTPP Injection Date: 01/25/11 DFTPP Injection Time: 1502

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	32.4
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	40.8
70	Less than 2.0% of mass 69	0.1 (0.2)1
127	10.0 - 80.0% of mass 198	49.1
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.2
275	10.0 - 60.0% of mass 198	23.3
365	Greater than 1.0% of mass 198	2.87
441	0.0 - 24.0% of mass 442	10.1 (15.8)2
442	50.0 - 200.0% of mass 198	64.1
443	15.0 - 24.0% of mass 442	13.8 (21.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		IC0125A	IC0125A	01/25/11	1527
02		IC0125B	IC0125B	01/25/11	1539
03		IC0125C	IC0125C	01/25/11	1552
04		IC0125D	IC0125D	01/25/11	1604
05		IC0125E	IC0125E	01/25/11	1617
06		IC0125F	IC0125F	01/25/11	1630
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

Instrument ID: NT11 Project: TERMINAL 6

DFTPP Injection Date: 02/21/11 DFTPP Injection Time: 0902

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	32.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	39.7
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	10.0 - 80.0% of mass 198	47.8
197	Less than 2.0% of mass 198	0.1
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 60.0% of mass 198	25.6
365	Greater than 1.0% of mass 198	3.06
441	0.0 - 24.0% of mass 442	11.2 (15.6)2
442	50.0 - 200.0% of mass 198	72.2
443	15.0 - 24.0% of mass 442	12.9 (17.8)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		CC0221	CC0221	02/21/11	0914
02	SJ86MBW1	SJ86MBW1	SJ86MB	02/21/11	0936
03	SJ86LCSW1	SJ86LCSW1	SJ86SB	02/21/11	0949
04	SJ86LCSDW1	SJ86LCSDW1	SJ86SBS	02/21/11	1001
05	C5	SJ86A	SJ86A	02/21/11	1014
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SJ86 Project: TERMINAL 6

Instrument ID: NT11 Calibration Date: 01/25/11

LAB FILE ID: RRF2 =IC0125C RRF5 =IC0125E RRF10 =IC0125F
RRF25 =IC0125A RRF50 =IC0125D RRF100=IC0125B

COMPOUND	RRF 2	RRF 5	RRF 10	RRF 25	RRF 50	RRF 100	$\overline{RRF}$	%RSD /R^2
Tributyl Tin (Hexyl)	0.669	0.558	0.530	0.567	0.593	0.595	0.585	8.1
Dibutyl Tin (Hexyl)	0.035	0.034	0.036	0.032	0.034	0.033	0.034	4.4
Butyl Tin (Hexyl)	0.048	0.042	0.047	0.044	0.044	0.045	0.045	5.0
Tetrabutyl Tin	0.810	0.798	0.731	0.774	0.787	0.802	0.784	3.6
Tripropyl Tin (Hexyl)	0.911	0.883	0.744	0.836	0.842	0.834	0.842	6.7
Tripentyl Tin (Hexyl)	0.047	0.042	0.046	0.046	0.046	0.046	0.046	3.6

<- Outside QC limits: %RSD <20% or R^2 > 0.990

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SJ86 Project: TERMINAL 6

Instrument ID: NT11 Cont. Calib. Date: 02/21/11

Init. Calib. Date: 01/25/11 Cont. Calib. Time: 0914

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Tributyl Tin (Hexyl)	0.585	0.491	0.010	AVRG	-16.1	
Dibutyl Tin (Hexyl)	0.034	0.034	0.010	AVRG	0.0	
Butyl Tin (Hexyl)	0.045	0.047	0.010	AVRG	4.4	
Tetrabutyl Tin	0.784	0.649	0.010	AVRG	-17.2	
Tripropyl Tin (Hexyl)	0.842	0.663	0.010	AVRG	-21.2	<-
Tripentyl Tin (Hexyl)	0.046	0.047	0.010	AVRG	2.2	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES, INC Client: HART CROWSER

ARI Job No: SJ86 Project: TERMINAL 6

Ical Midpoint ID: IC0125A Ical Date: 01/25/11

Instrument ID: NT11 Cont. Cal Date: 02/21/11

		IS1 AREA #	RT #	IS2 AREA #	RT #	AREA #	RT #
	ICAL MIDPT	96455	6.37	120265	7.30		
	UPPER LIMIT	192910		240530			
	LOWER LIMIT	48228		60132			
	CCAL	109099	6.36	139129	7.30		
	UPPER LIMIT		6.86		7.80		
	LOWER LIMIT		5.86		6.80		
01	SJ86MBW1	130617	6.36	100043	7.30		
02	SJ86LCSW1	133036	6.36	98825	7.28		
03	SJ86LCSDW1	133316	6.36	100582	7.28		
04	C5	134977	6.36	100746	7.28		
05							
06							
07							
08							
09							
10							
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21							
22							
23							
24							
25							

IS1 = Tetrapentyl Tin
IS2 = p-Terphenyl-d14

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

Butyl Tin Raw Data
Extraction Bench Sheets and Notes

ARI Job ID: SJ76, SJ86

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Organic Extractions Benchsheet

Tributyl Tin – Pore Water
Separatory Funnel (3510C) (SOP # 3311S)

Preparation Test TBT # 2

Pore Water (0.0049-0.006ppb)

ARI Job No(s) 5J86

Batch set up by: JH

Bottle #	Extraction Requirements	Date	Volume Extracted	KD Exchange To Hexane (X 2)	Turbo Vap (1) 2 3	~~HexMgBr Addition~~ Vortex 45min + ~~Overnite~~	(REQ) Derivitized	(REQ) Alumina Clean (X 2)	Turbo Vap (1) 2 3	Final Effective Volume	Volume to Lab	Comments
	5J86 MBW	2/18/11	150mL	↓	↓	↓	4mL	2mL	↓	0.5mL	0.5mL	Blanks= Sea H2O
	SBW	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	SBWDup.	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	~~QLS~~		↓				↓	↓		↓	↓	↓
1	5J86 A	cracked	↓	↓	↓	↓	↓	↓	↓	↓	↓	
Analyst/Date:	WC 2/18/11			2/18/11	ww 2/18/11 →		ww 2/19/11 →					

Standard	Standard ID	Volume	Expiration Date	Analyst	Witness
Surrogate	J	100μL	11/27/11	WC	WW
Spike	9	100μL	11/27/11	WC	WW
~~QLS Spike~~	~~1~~	~~50μL~~			
Extraction Time:	18:25				

SPECIAL INSTRUCTIONS: NOTE: TBT Extractions must be completed within 48 hours!
1. Rinse all glassware with 0.02% Tropolone. 2. Pre-wash "Sea Water" blanks with 30mL DCM (2min shake) (Discard DCM). 3. Add Surr/Spk. 4. Acidify with 1:1 HCL. 5. Check pH. 6. Let sit 10 minutes-Check pH again. 7. Extract 1 X with 30mL 0.02% Tropolone (4 min shake-SHAKE VIGOROUSLY)!. Plus 2 X 30mL DCM. 8. KD rinsed with 0.02% Tropolone (NO Drying Column) at 80°. 9. Exchange (2 X with 20mL) to Hexane at 100°. 10. TurboVap to 3mL-Transfer with Hexane to 40mL VOA vial.. 11. Derivitize=1 1/2 pipet HexMgBr (Mix by hand). Let sit 45min (mix every 10 min). Then overnite in fridge. 12. Derivitize: Add (1) pipet conc. HCL. Vortex. Draw off/discard HCL. Add 5mL DI H2O. Vortex. Draw off/discard H20. Add 5mL DI H2O a second time. Vortex. Draw off/discard H2O. 13. Add sodium sulfate-Let sit 15min. 14. TurboVap to 2mL 15. 5g 0% Alumina Clean-up Required X 2. 16. TurboVap. 17. Vial in Hexane.

A. Archive (Y) N

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Organic Extractions Laboratory Analyst Notes

ARI Job No.: SJ86 Client ID: Hart Crowser

Parameter: TBT Pore Water Client Project: Terminal 6

Note problems, concerns, corrective actions	Analyst/Date
Screens: Soil/Sediment/Solid/Other:	
☐ No Anomalies (standard soil/sediment)	
☐ Wet sediment/sludge=	
☐ Standing Water Decanted=	
☐ Standing Water Homogenized (Shared samples)=	
☐ Clay (Difficult to homogenize/Mixed with Kitchen Aid)=	
☐ Rocks/Organics=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Other (Details)=	
Aqueous:	
☐ No Anomalies	
☒ Turbid/Color= yellow (A)	WC 2/18/11
☐ Particulates=	
☐ Emulsions=	
☐ Other (Details)=	
☒ Other Notes/Comments= All extracts - higher than typical precipitate present after Acid clean, centrifuged, pipeted off acid, added first water wash, precipitate dissolved on Vortex	WC 2/18 2nd WC 2/19/11

3056F

Revision 007
02/25/10

SJ76:00033

Butyl Tin Raw Data
Initial Calibration

ARI Job ID: SJ76, SJ86

Analytical Resources, Incorporated
Analytical Chemists and Consultants

GC/MS SVOA Analyst Notes / Corrective Action Log

ARI Project ID: Pore H2O curve Client ID: ARI

ARI SOP: **801S**(SIM-PNA) **802S**(Butyl Tins) **804S**(SVOA-8270D) **805S**(op-Pest)

Parameter(s): Pore H2O TBT

Instrument: NT-2 NT-4 NT-6 NT-8 NT11

Curve Date: 01/25/11 Analysis Start Date: 01/25/11

DFTPP Tune Meets Criteria?	YES / NO	Internal Standard Meets Criteria?	YES / NO
DDT Breakdown <20%?	YES / NO / NA	Method Blank In Control?	YES / NO
Peak Tailing Factor ≤2?	YES / NO / NA	LCS / LCSD Recovery In Control?	YES / NO
ICal acceptable?	YES / NO	CCal acceptable?	YES / NO
Q flag applied?	YES / NO	Q flag applied?	YES / NO
Surrogate Recovery in Control?	YES / NO	Special Analysis Criteria Met?	YES / NO / NA
Manual Integrations for ICal?	YES / NO	Manual Integrations for Samples?	Yes /NO

Detail problems, corrective actions and/or other pertinent information below (use reverse side when necessary):

6 point curve, all RSD <20%D

Additional Details on Reverse: Yes / No

Analyst: YE **Date:** 01/26/11

Reviewer: VD **Date:** 1/26/11

Analytical Resources Inc.: Organics Instrument Log

NT-11 Serial No.:GC=US10140004, MS=US10481502

Date: 01/25/11 Analysis: Pore H2O TBT Analyst: YZ

GC Program: Pore TBT Column No: 180397 Column Type: ZB5-MS

Instrument Tune (.U or .CT.): ~~DF01~~ 110125U EM Voltage: 2800

Calibration File: DF0125 Curve Date: 01/25/11

IS/SS	Ical/Ccal	LCS/ICV
1711-3	1711-2	

INTERNAL STANDARD SUMMARY FOR DATABATCH - /chem3/nt11.i/20110125.b

	Time	Filename	LabID	ClientId	DF				
1	1502	df0125.d	DF0125		1	NO ISTDS FOUND			
2	1527	ic0125a.d	IC0125A		1	6.37	96455	7.30	120265
3	1539	ic0125b.d	IC0125B		1	6.36	133209	7.30	176843
4	1552	ic0125c.d	IC0125C		1	6.36	115963	7.30	141594
5	1604	ic0125d.d	IC0125D		1	6.36	92877	7.28	117070
6	1617	ic0125e.d	IC0125E		1	6.36	93702	7.28	113041
7	1630	ic0125f.d	IC0125F		1	6.36	97209	7.28	100231
8	1642	sd45mb.d	SD45MBW1		1	6.36	104353	7.28	82237
9	1655	sd45a.d	SD45A		1	6.36	120503	7.28	94735
10	1707	sd45b.d	SD45B		1	6.36	122817	7.28	94559
11	1720	sd45c.d	SD45C		1	6.36	118056	7.28	93089
12	1733	sd04mb.d	SD04MBW1		1	6.36	122431	7.28	92114
13	1745	sd04a.d	SD04A		1	6.36	123427	7.28	95664
14	1758	sd04b.d	SD04B		1	6.36	122998	7.28	95125
15	1810	sd04c.d	SD04C		1	6.36	124443	7.28	96276

Maintenance / Comments new liner, new septum, new ferrule

YZ 01/25/11

Maintenance Verification (Identify ICal or CCal that demonstrates the instrument is in control): ICal6

Every line must contain information or be lined out. Make all entries legible. Start a new page for each QC period.

SJTS : 09

MANUAL INTEGRATION SUMMARY FOR DATABATCH - /chem3/nt11.i/20110125.b

ARI Job No.: IC01 Method: pw3ul.m Instrument: nt11.i Date: 25-JAN-2011

Time	Filename	LabID	ClientId	DF	Manually Integrated Compounds
1527	ic0125a.d	IC0125A		1	NO MANUAL INTEGRATION
1539	ic0125b.d	IC0125B		1	NO MANUAL INTEGRATION
1552	ic0125c.d	IC0125C		1	NO MANUAL INTEGRATION
1604	ic0125d.d	IC0125D		1	NO MANUAL INTEGRATION
1617	ic0125e.d	IC0125E		1	NO MANUAL INTEGRATION
1630	ic0125f.d	IC0125F		1	NO MANUAL INTEGRATION

Analytical Resources, Inc.
RETENTION TIME SUMMARY REPORT

Method File: /chem3/nt11.i/20110125.b/pw3ul.m
Batch File: /chem3/nt11.i/20110125.b
Inst ID: nt11.i

ID:	RT01	RT02	RT03	RT04	RT05	RT06
FILENAME:	ic0125a	ic0125b	ic0125c	ic0125d	ic0125e	ic0125f
INJ.DATE:	25-JAN-2011	25-JAN-2011	25-JAN-2011	25-JAN-2011	25-JAN-2011	25-JAN-2011
INJ.TIME:	15:27	15:39	15:52	16:04	16:17	16:30

	Compound	RT01	RT02	RT03	RT04	RT05	RT06	EXPEC RT	RT WINDOW	AVG RT	STD DEV
$	1 Tripropyl Tin (Hexyl)	4.720	4.720	4.709	4.709	4.709	4.709	4.720	4.626-4.815	4.713	0.006
	2 Tetrabutyl Tin	4.939	4.939	4.928	4.928	4.927	4.927	4.939	4.840-5.038	4.931	0.006
	3 Tributyl Tin (Hexyl)	5.722	5.710	5.710	5.710	5.710	5.710	5.722	5.607-5.836	5.712	0.005
*	4 Tetrapentyl Tin	6.371	6.358	6.358	6.358	6.358	6.358	6.371	6.244-6.499	6.360	0.006
	5 Dibutyl Tin (Hexyl)	6.412	6.412	6.411	6.411	6.411	6.411	6.412	6.283-6.540	6.411	0.000
$	6 Tripentyl Tin (Hexyl)	6.706	6.706	6.706	6.706	6.706	6.706	6.706	6.572-6.841	6.706	0.000
	7 Butyl Tin (Hexyl)	7.042	7.042	7.042	7.042	7.042	7.041	7.042	6.901-7.182	7.042	0.000
*	8 p-Terphenyl-d14	7.296	7.296	7.296	7.283	7.283	7.283	7.296	7.151-7.442	7.290	0.007

Reviewer 1 YZ Date: 01/26/11
Reviewer 2 _____ Date: _____

Analytical Resources, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 25-JAN-2011 15:27
End Cal Date : 25-JAN-2011 16:30
Quant Method : ISTD
Origin : Disabled
Target Version : 3.50
Integrator : HP RTE
Method file : /chem3/nt11.i/20110125.b/pw3ul.m
Cal Date : 26-Jan-2011 09:44 yev
Curve Type : Average

Calibration File Names:
Level 1: /chem3/nt11.i/20110125.b/ic0125c.d
Level 2: /chem3/nt11.i/20110125.b/ic0125e.d
Level 3: /chem3/nt11.i/20110125.b/ic0125f.d
Level 4: /chem3/nt11.i/20110125.b/ic0125a.d
Level 5: /chem3/nt11.i/20110125.b/ic0125d.d
Level 6: /chem3/nt11.i/20110125.b/ic0125b.d

Compound	2.000 Level 1	5.000 Level 2	10.000 Level 3	25.000 Level 4	50.000 Level 5	100.000 Level 6	___ RRF	% RSD
2 Tetrabutyl Tin	0.80974	0.79785	0.73100	0.77433	0.78676	0.80176	0.78357	3.645
3 Tributyl Tin (Hexyl)	0.66918	0.55794	0.53020	0.56681	0.59300	0.59506	0.58537	8.127
5 Dibutyl Tin (Hexyl)	0.03485	0.03370	0.03639	0.03197	0.03393	0.03327	0.03402	4.398
7 Butyl Tin (Hexyl)	0.04795	0.04193	0.04740	0.04386	0.04459	0.04538	0.04519	4.980
$ 1 Tripropyl Tin (Hexyl)	0.91150	0.88280	0.74438	0.83637	0.84167	0.83350	0.84170	6.748
$ 6 Tripentyl Tin (Hexyl)	0.04686	0.04221	0.04557	0.04560	0.04634	0.04573	0.04539	3.599

Analytical Resources, Inc.

YZ 01/26/11

Krone 1988

Data file : /chem3/nt11.i/20110125.b/ic0125a.d
Lab Smp Id: IC0125A
Inj Date : 25-JAN-2011 15:27
Operator : yz Inst ID: nt11.i
Smp Info : IC0125A
Misc Info :
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110125.b/pw3ul.m
Meth Date : 26-Jan-2011 09:44 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 15:27 Cal File: ic0125a.d
Als bottle: 1 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ng/mL)	AMOUNTS ON-COL (ng/mL)
$	1 Tripropyl Tin (Hexyl)	291	4.720	4.720	(0.741)	10084	25.0000	24.84
	2 Tetrabutyl Tin	289	4.939	4.939	(0.775)	9336	25.0000	24.71
	3 Tributyl Tin (Hexyl)	319	5.722	5.722	(0.898)	6834	25.0000	24.21
*	4 Tetrapentyl Tin	333	6.371	6.371	(1.000)	96455	200.000	
	5 Dibutyl Tin (Hexyl)	347	6.412	6.412	(0.879)	9611	50.0000	46.99
$	6 Tripentyl Tin (Hexyl)	347	6.706	6.706	(0.919)	13710	50.0000	50.23
	7 Butyl Tin (Hexyl)	347	7.042	7.042	(0.965)	13186	50.0000	48.53
*	8 p-Terphenyl-d14	244	7.296	7.296	(1.000)	120265	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: ic0125a.d
Lab Smp Id: IC0125A
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110125.b/pw3ul.m
Misc Info:

Calibration Date: 25-JAN-2011
Calibration Time: 15:27

Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	96455	0.00
8 p-Terphenyl-d14	120265	60132	240530	120265	0.00

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.37	5.87	6.87	6.37	0.00
8 p-Terphenyl-d14	7.30	6.80	7.80	7.30	0.00

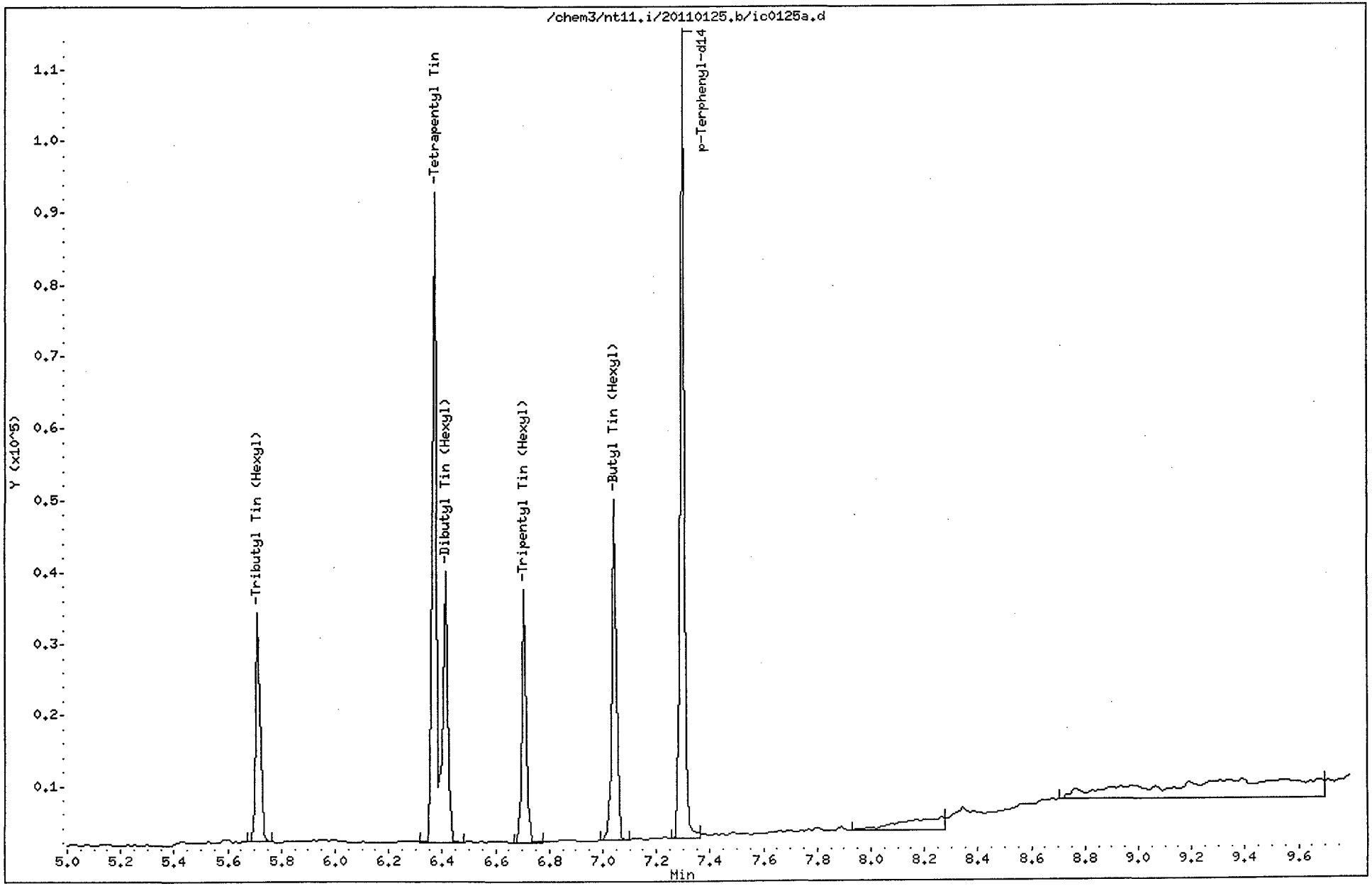
AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /chem3/nt11.i/20110125.b/ic0125a.d
Date : 25-JAN-2011 15:27
Client ID:
Sample Info: IC0125A

Instrument: nt11.i

Operator: yz
Column diameter: 0.25

Column phase: ZB-5msi



S175-00012

Analytical Resources, Inc.

Krone 1988

Data file : /chem3/nt11.i/20110125.b/ic0125b.d
Lab Smp Id: IC0125B
Inj Date : 25-JAN-2011 15:39
Operator : yz Inst ID: nt11.i
Smp Info : IC0125B
Misc Info :
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110125.b/pw3ul.m
Meth Date : 26-Jan-2011 09:44 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 15:39 Cal File: ic0125b.d
Als bottle: 2 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

YZ 02/26/11

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ng/mL)	AMOUNTS ON-COL (ng/mL)
$	1 Tripropyl Tin (Hexyl)	291	4.720	4.720	(0.742)	55515	100.000	99.03
	2 Tetrabutyl Tin	289	4.939	4.939	(0.777)	53401	100.000	102.3
	3 Tributyl Tin (Hexyl)	319	5.710	5.722	(0.898)	39634	100.000	101.7
*	4 Tetrapentyl Tin	333	6.358	6.371	(1.000)	133209	200.000	
	5 Dibutyl Tin (Hexyl)	347	6.412	6.412	(0.879)	58827	200.000	195.6
$	6 Tripentyl Tin (Hexyl)	347	6.706	6.706	(0.919)	80866	200.000	201.5
	7 Butyl Tin (Hexyl)	347	7.042	7.042	(0.965)	80247	200.000	200.9
*	8 p-Terphenyl-d14	244	7.296	7.296	(1.000)	176843	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: ic0125b.d
Lab Smp Id: IC0125B
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110125.b/pw3ul.m
Misc Info:

Calibration Date: 25-JAN-2011
Calibration Time: 15:27

Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	133209	38.10
8 p-Terphenyl-d14	120265	60132	240530	176843	47.04

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.37	5.87	6.87	6.36	-0.21
8 p-Terphenyl-d14	7.30	6.80	7.80	7.30	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

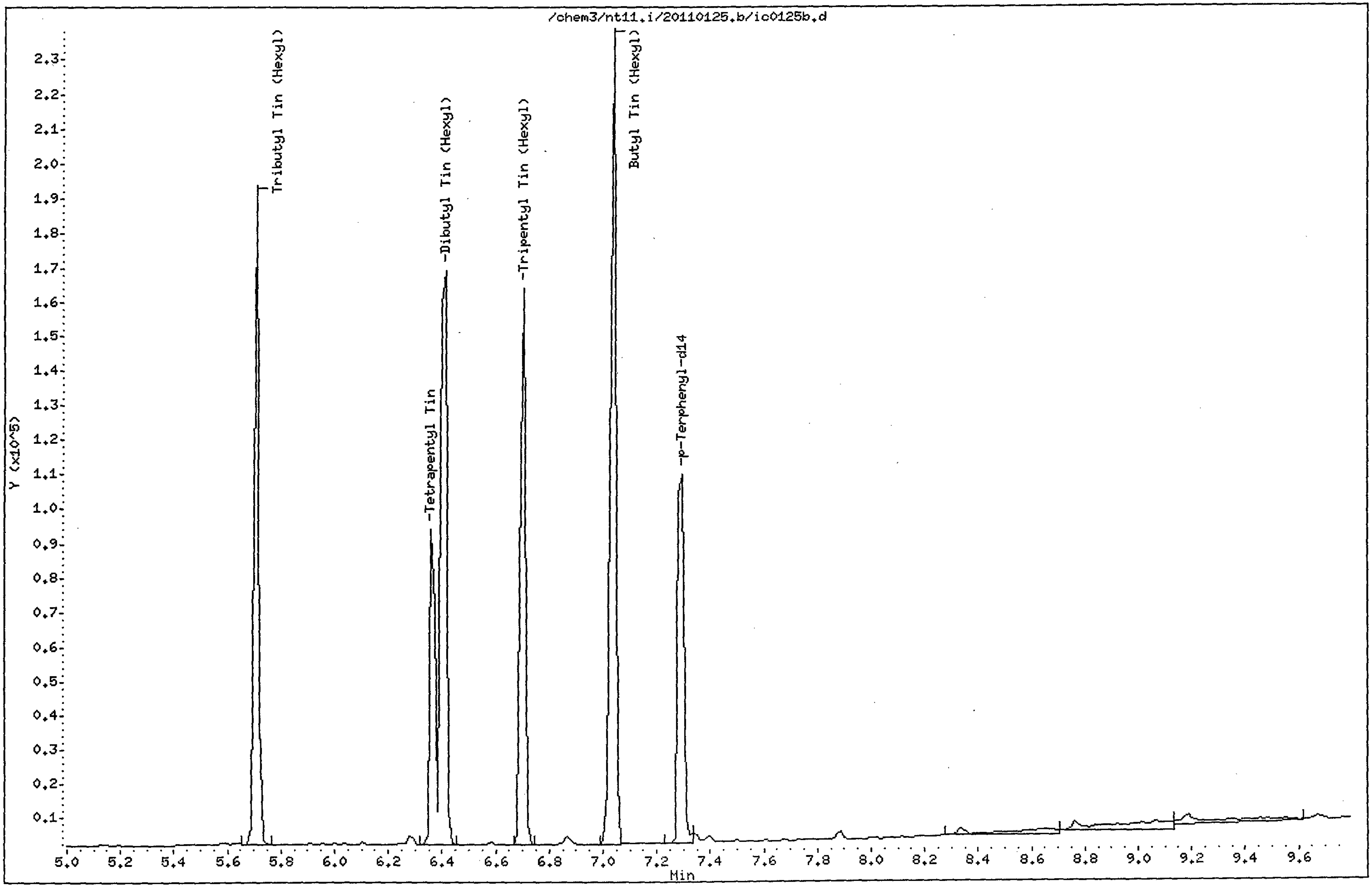
Data File: /chem3/nt11.i/20110125.b/ic0125b.d
Date : 25-JAN-2011 15:39
Client ID:
Sample Info: IC0125B

Instrument: nt11.i

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25



Analytical Resources, Inc.

Krone 1988

Data file : /chem3/nt11.i/20110125.b/ic0125c.d
Lab Smp Id: IC0125C
Inj Date : 25-JAN-2011 15:52
Operator : yz Inst ID: nt11.i YZ 09/26/11
Smp Info : IC0125C
Misc Info :
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110125.b/pw3ul.m
Meth Date : 26-Jan-2011 09:44 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 15:52 Cal File: ic0125c.d
Als bottle: 3 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ng/mL)	AMOUNTS ON-COL (ng/mL)
$	1 Tripropyl Tin (Hexyl)	291	4.709	4.720	(0.741)	1057	2.00000	2.166
	2 Tetrabutyl Tin	289	4.928	4.939	(0.775)	939	2.00000	2.067
	3 Tributyl Tin (Hexyl)	319	5.710	5.722	(0.898)	776	2.00000	2.286
*	4 Tetrapentyl Tin	333	6.358	6.371	(1.000)	115963	200.000	
	5 Dibutyl Tin (Hexyl)	347	6.411	6.412	(0.879)	987	4.00000	4.098
$	6 Tripentyl Tin (Hexyl)	347	6.706	6.706	(0.919)	1327	4.00000	4.130
	7 Butyl Tin (Hexyl)	347	7.042	7.042	(0.965)	1358	4.00000	4.245
*	8 p-Terphenyl-d14	244	7.296	7.296	(1.000)	141594	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: ic0125c.d
Lab Smp Id: IC0125C
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110125.b/pw3ul.m
Misc Info:

Calibration Date: 25-JAN-2011
Calibration Time: 15:27

Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	115963	20.22
8 p-Terphenyl-d14	120265	60132	240530	141594	17.74

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.37	5.87	6.87	6.36	-0.21
8 p-Terphenyl-d14	7.30	6.80	7.80	7.30	0.00

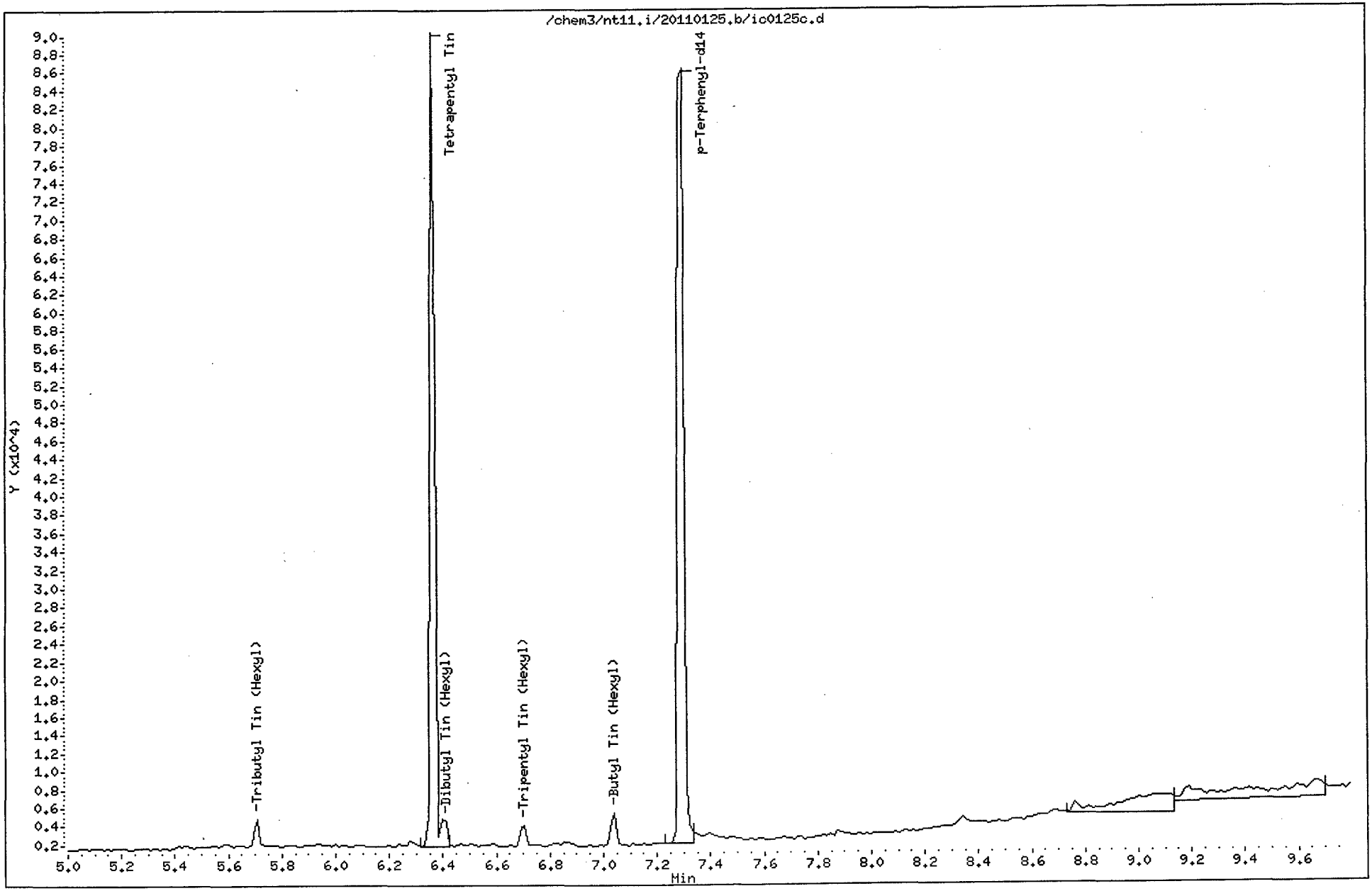
AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /chem3/nt11.i/20110125.b/ic0125c.d
Date : 25-JAN-2011 15:52
Client ID:
Sample Info: IC0125C

Instrument: nt11.i

Operator: yz
Column diameter: 0.25

Column phase: ZB-5msi



Analytical Resources, Inc.

Krone 1988

Data file : /chem3/nt11.i/20110125.b/ic0125d.d
Lab Smp Id: IC0125D
Inj Date : 25-JAN-2011 16:04
Operator : yz Inst ID: nt11.i
Smp Info : IC0125D
Misc Info :
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110125.b/pw3ul.m
Meth Date : 26-Jan-2011 09:44 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 16:04 Cal File: ic0125d.d
Als bottle: 4 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

yz 01/26/11

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ng/mL)	AMOUNTS ON-COL (ng/mL)
$	1 Tripropyl Tin (Hexyl)	291	4.709	4.720	(0.741)	19543	50.0000	50.00
	2 Tetrabutyl Tin	289	4.928	4.939	(0.775)	18268	50.0000	50.20
	3 Tributyl Tin (Hexyl)	319	5.710	5.722	(0.898)	13769	50.0000	50.65
*	4 Tetrapentyl Tin	333	6.358	6.371	(1.000)	92877	200.000	
	5 Dibutyl Tin (Hexyl)	347	6.411	6.412	(0.880)	19859	100.000	99.73
$	6 Tripentyl Tin (Hexyl)	347	6.706	6.706	(0.921)	27126	100.000	102.1
	7 Butyl Tin (Hexyl)	347	7.042	7.042	(0.967)	26101	100.000	98.68
*	8 p-Terphenyl-d14	244	7.283	7.296	(1.000)	117070	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: ic0125d.d
Lab Smp Id: IC0125D
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110125.b/pw3ul.m
Misc Info:

Calibration Date: 25-JAN-2011
Calibration Time: 15:27

Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	92877	-3.71
8 p-Terphenyl-d14	120265	60132	240530	117070	-2.66

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.37	5.87	6.87	6.36	-0.21
8 p-Terphenyl-d14	7.30	6.80	7.80	7.28	-0.18

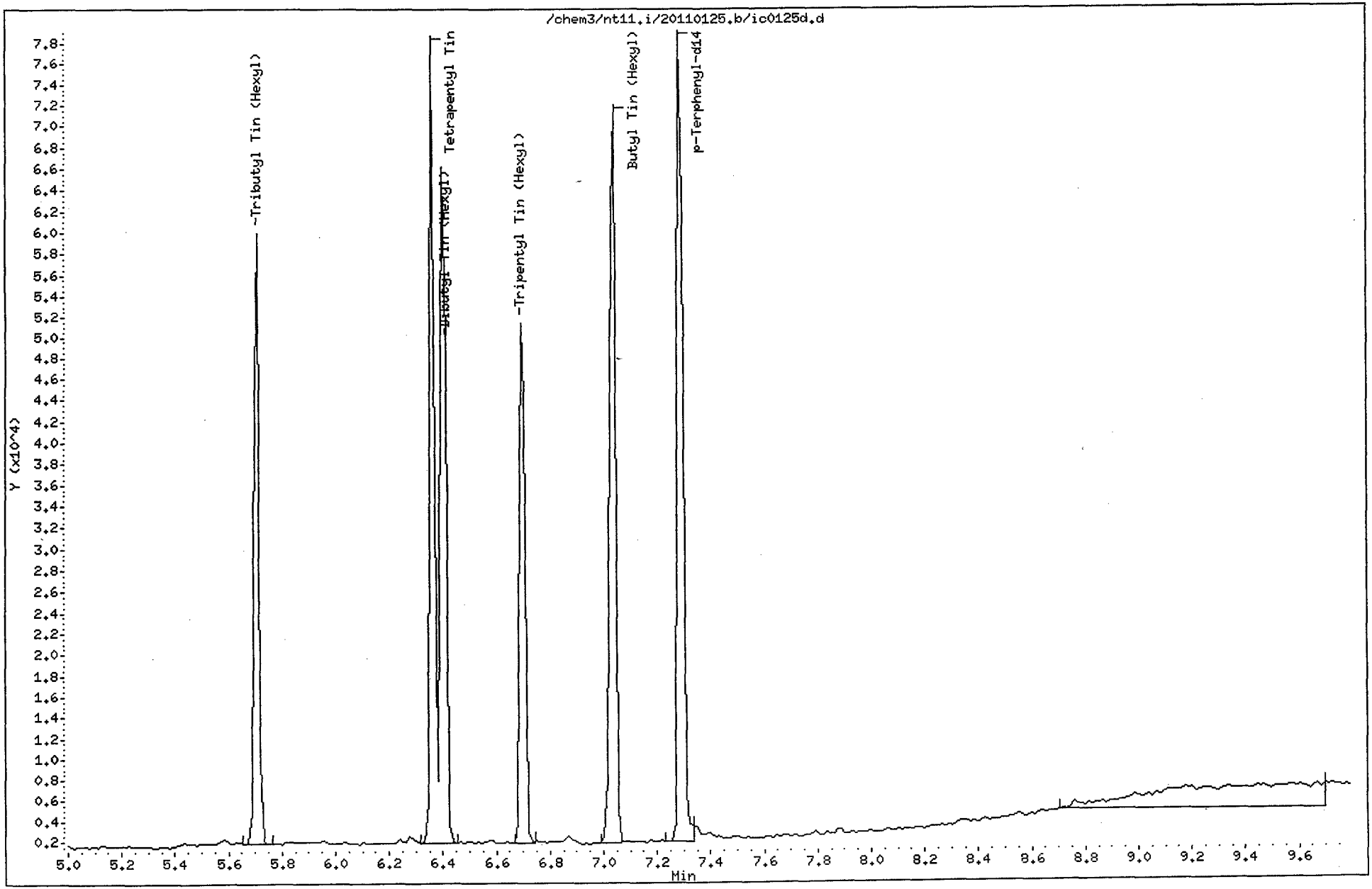
AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /chem3/nt11.i/20110125.b/ic0125d.d
Date : 25-JAN-2011 16:04
Client ID:
Sample Info: IC0125D

Instrument: nt11.i

Operator: yz
Column diameter: 0.25

Column phase: ZB-5msi



Analytical Resources, Inc.

Krone 1988

YZ 01/26/11

Data file : /chem3/nt11.i/20110125.b/ic0125e.d
Lab Smp Id: IC0125E
Inj Date : 25-JAN-2011 16:17
Operator : yz Inst ID: nt11.i
Smp Info : IC0125E
Misc Info :
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110125.b/pw3ul.m
Meth Date : 26-Jan-2011 09:44 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 16:17 Cal File: ic0125e.d
Als bottle: 5 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ng/mL)	AMOUNTS ON-COL (ng/mL)
$	1 Tripropyl Tin (Hexyl)	291	4.709	4.720	(0.741)	2068	5.00000	5.244
	2 Tetrabutyl Tin	289	4.927	4.939	(0.775)	1869	5.00000	5.091
	3 Tributyl Tin (Hexyl)	319	5.710	5.722	(0.898)	1307	5.00000	4.766
*	4 Tetrapentyl Tin	333	6.358	6.371	(1.000)	93702	200.000	
	5 Dibutyl Tin (Hexyl)	347	6.411	6.412	(0.880)	1905	10.0000	9.908
$	6 Tripentyl Tin (Hexyl)	347	6.706	6.706	(0.921)	2386	10.0000	9.301
	7 Butyl Tin (Hexyl)	347	7.042	7.042	(0.967)	2370	10.0000	9.280
*	8 p-Terphenyl-d14	244	7.283	7.296	(1.000)	113041	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: ic0125e.d
Lab Smp Id: IC0125E
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110125.b/pw3ul.m
Misc Info:

Calibration Date: 25-JAN-2011
Calibration Time: 15:27

Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	93702	-2.85
8 p-Terphenyl-d14	120265	60132	240530	113041	-6.01

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.37	5.87	6.87	6.36	-0.21
8 p-Terphenyl-d14	7.30	6.80	7.80	7.28	-0.19

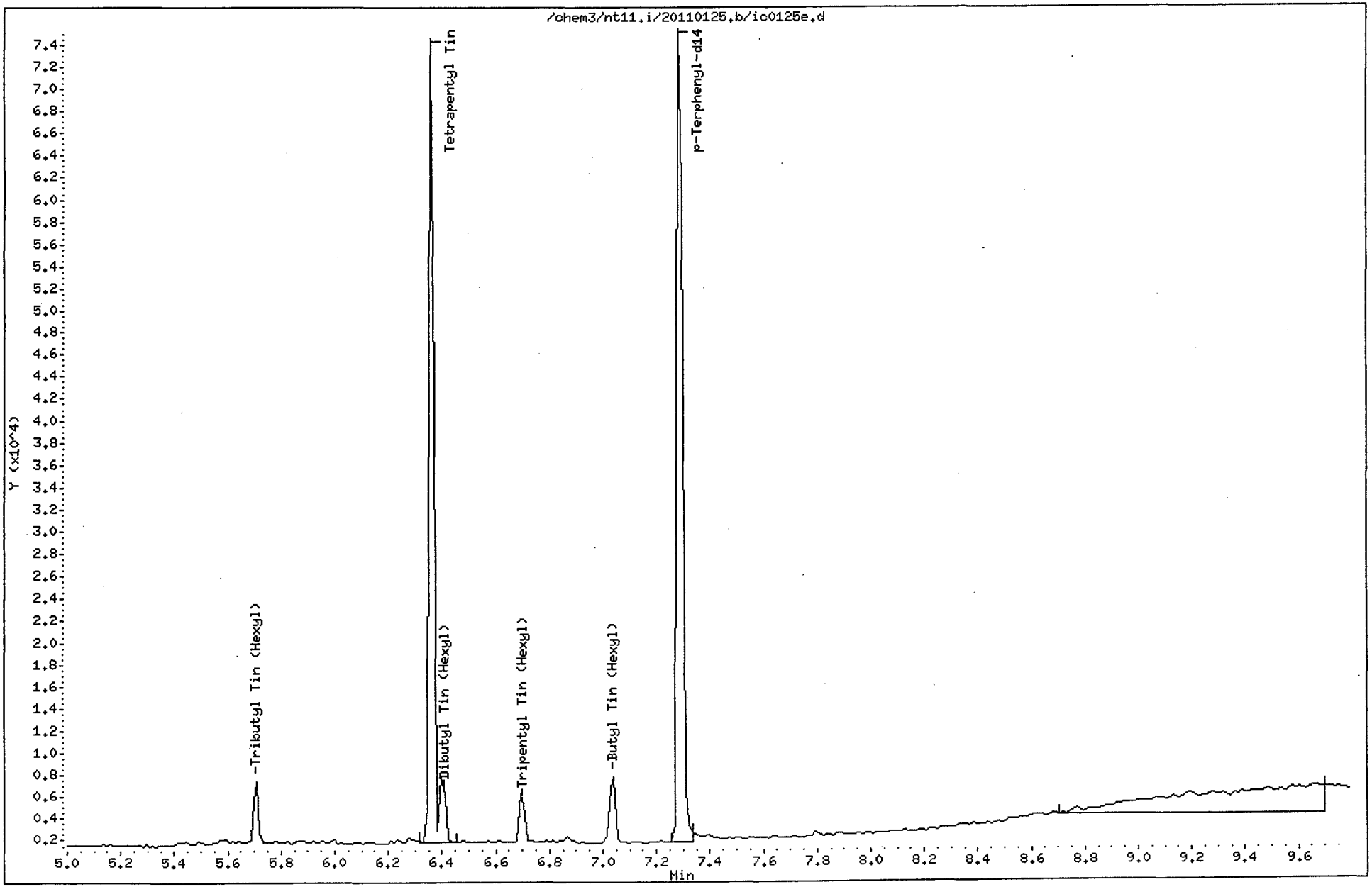
AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /chem3/nt11.i/20110125.b/ic0125e.d
Date : 25-JAN-2011 16:17
Client ID:
Sample Info: IC0125E

Instrument: nt11.i

Operator: yz
Column diameter: 0.25

Column phase: ZB-5msi



IC0125E

Analytical Resources, Inc.

Krone 1988

YZ 01/26/11

Data file : /chem3/nt11.i/20110125.b/ic0125f.d
Lab Smp Id: IC0125F
Inj Date : 25-JAN-2011 16:30
Operator : yz Inst ID: nt11.i
Smp Info : IC0125F
Misc Info :
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110125.b/pw3ul.m
Meth Date : 26-Jan-2011 09:44 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 16:30 Cal File: ic0125f.d
Als bottle: 6 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ng/mL)	AMOUNTS ON-COL (ng/mL)
$	1 Tripropyl Tin (Hexyl)	291	4.709	4.720	(0.741)	3618	10.0000	8.844
	2 Tetrabutyl Tin	289	4.927	4.939	(0.775)	3553	10.0000	9.329
	3 Tributyl Tin (Hexyl)	319	5.710	5.722	(0.898)	2577	10.0000	9.058
*	4 Tetrapentyl Tin	333	6.358	6.371	(1.000)	97209	200.000	
	5 Dibutyl Tin (Hexyl)	347	6.411	6.412	(0.880)	3647	20.0000	21.39
$	6 Tripentyl Tin (Hexyl)	347	6.706	6.706	(0.921)	4568	20.0000	20.08
	7 Butyl Tin (Hexyl)	347	7.041	7.042	(0.967)	4751	20.0000	20.98
*	8 p-Terphenyl-d14	244	7.283	7.296	(1.000)	100231	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: ic0125f.d
Lab Smp Id: IC0125F
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110125.b/pw3ul.m
Misc Info:

Calibration Date: 25-JAN-2011
Calibration Time: 15:27

Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	97209	0.78
8 p-Terphenyl-d14	120265	60132	240530	100231	-16.66

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.37	5.87	6.87	6.36	-0.21
8 p-Terphenyl-d14	7.30	6.80	7.80	7.28	-0.19

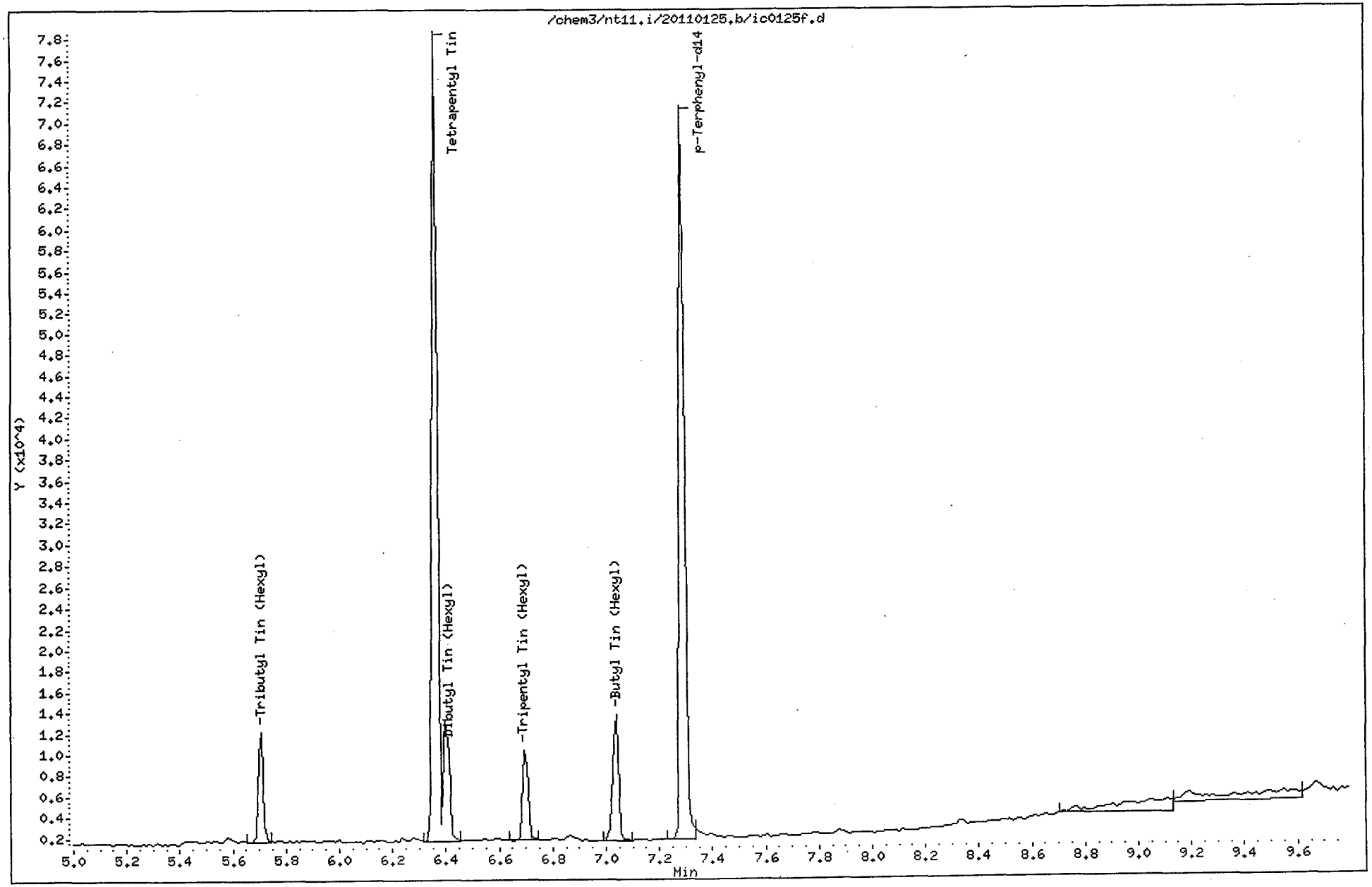
AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /chem3/nt11.i/20110125.b/ic0125f.d
Date : 25-JAN-2011 16:30
Client ID:
Sample Info: IC0125F

Instrument: nt11.i

Operator: yz
Column diameter: 0.25

Column phase: ZB-5msi



Data File: /chem3/nt11.i/20110125.b/df0125.d

Date : 25-JAN-2011 15:02

Client ID:

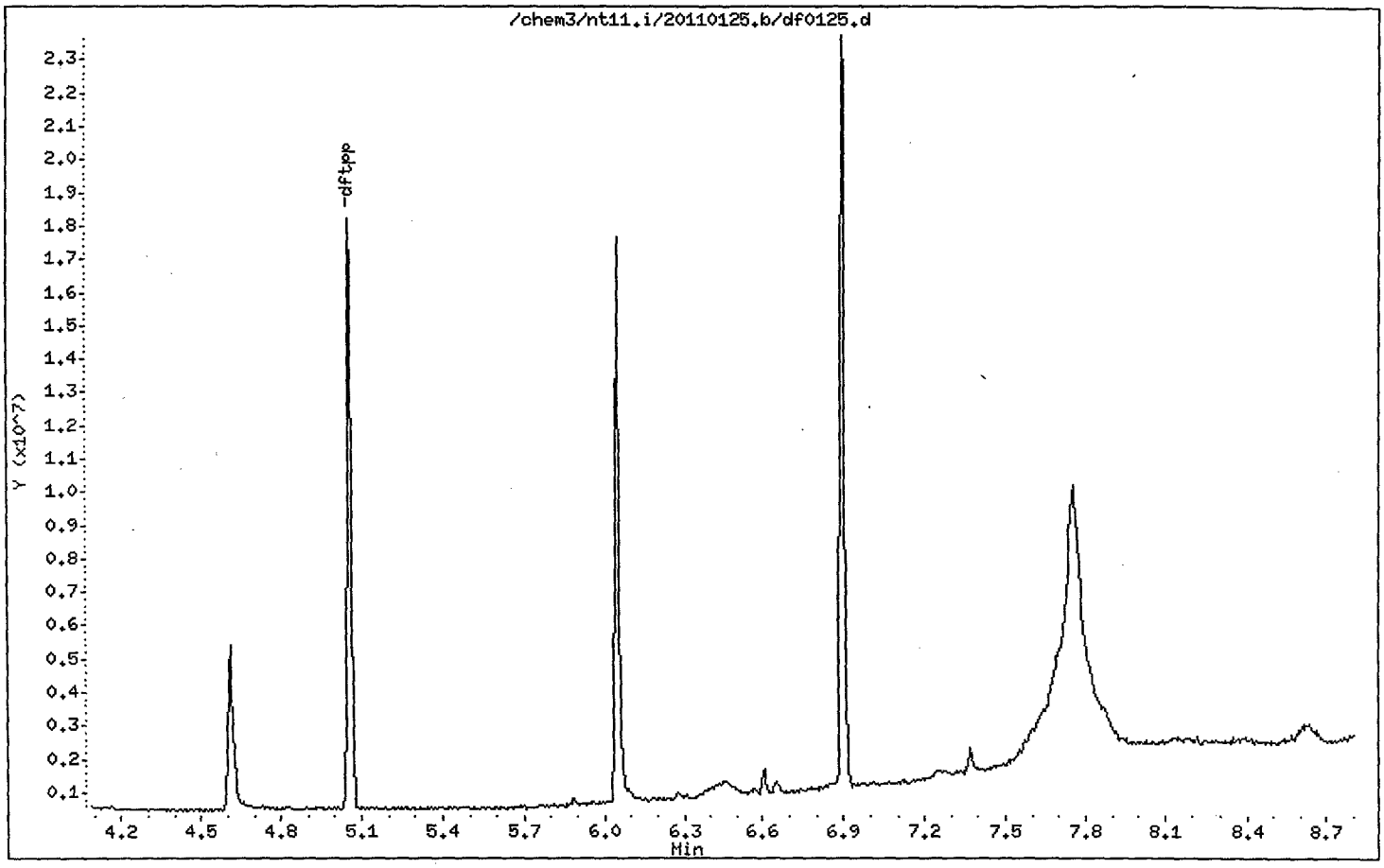
Instrument: nt11.i

Sample Info: DF0125

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25



Data File: /chem3/nt11.i/20110125.b/df0125.d

Date : 25-JAN-2011 15:02

Client ID:

Instrument: nt11.i

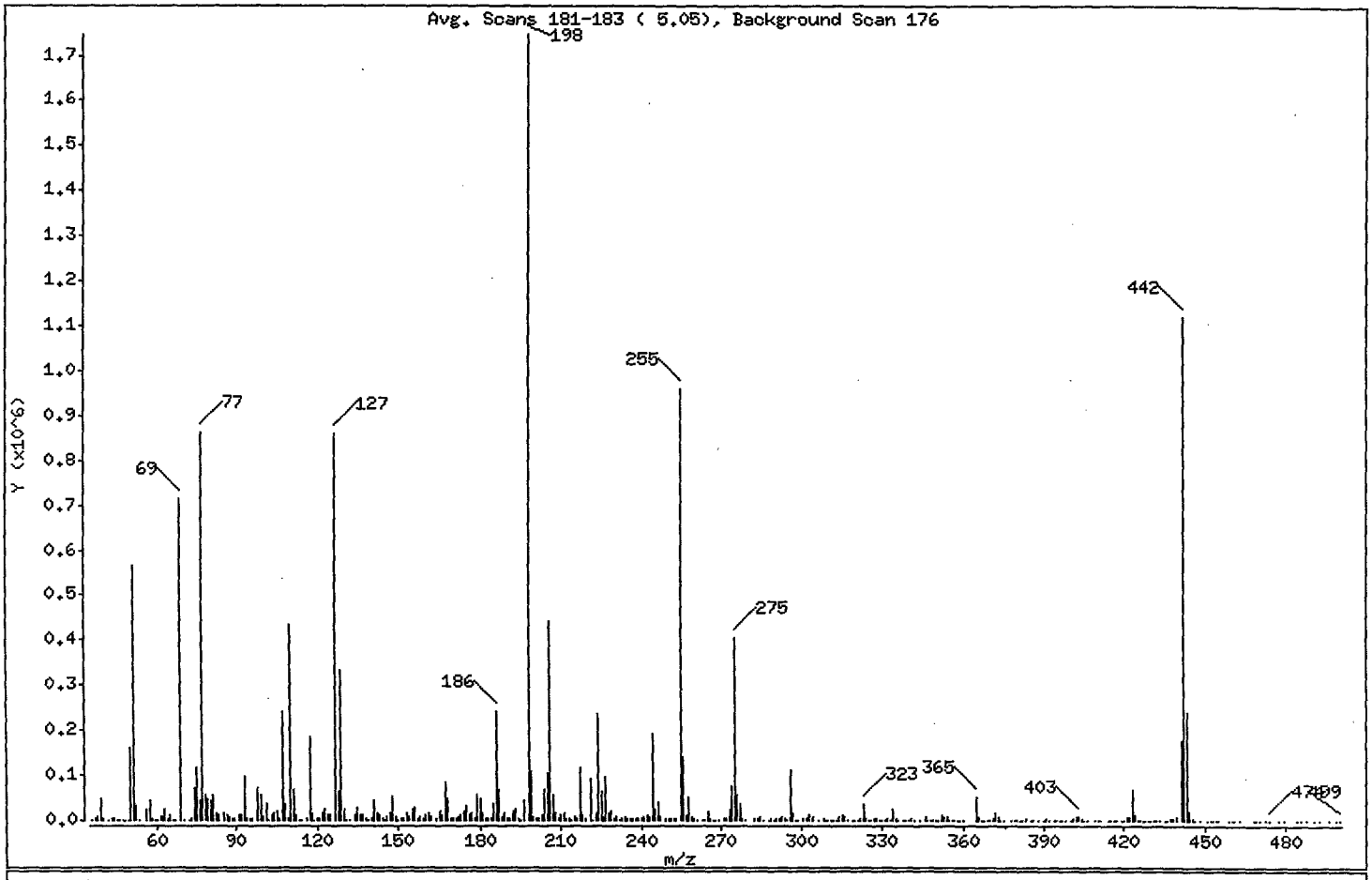
Sample Info: DF0125

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25

1 dftpp



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	32.39
68	Less than 2.00% of mass 69	0.00 (0.00)
69	Mass 69 relative abundance	40.84
70	Less than 2.00% of mass 69	0.08 (0.18)
127	10.00 - 80.00% of mass 198	49.15
197	Less than 2.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	6.24
275	10.00 - 60.00% of mass 198	23.29
365	Greater than 1.00% of mass 198	2.87
441	0.01 - 24.00% of mass 442	10.13 (15.80)
442	50.00 - 200.00% of mass 198	64.09
443	15.00 - 24.00% of mass 442	13.82 (21.56)

Data File: /chem3/nt11.i/20110125.b/df0125.d

Date : 25-JAN-2011 15:02

Client ID:

Instrument: nt11.i

Sample Info: DF0125

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25

Data File: df0125.d

Spectrum: Avg. Scans 181-183 (5.05), Background Scan 176

Location of Maximum: 198.00

Number of points: 389

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	985	145.00	1990	246.00	39376	359.00	1017
37.00	3784	146.00	6255	247.00	8391	360.00	427
38.00	8213	147.00	18048	249.00	4486	365.00	50192
39.00	47792	148.00	52048	250.00	2158	366.00	6448
40.00	4565	149.00	8262	251.00	2022	367.00	721
42.00	1596	150.00	599	252.00	2164	368.00	104
43.00	4865	151.00	4577	253.00	3308	369.00	1528
44.00	2987	152.00	4172	255.00	958016	370.00	1970
45.00	1391	153.00	14196	256.00	140416	371.00	5362
46.00	581	154.00	9554	257.00	11911	372.00	17952
47.00	567	155.00	22904	258.00	53768	373.00	7881
48.00	497	156.00	29680	259.00	7497	374.00	1425
49.00	1352	157.00	4104	260.00	2503	375.00	368
50.00	160000	158.00	9103	261.00	906	378.00	171
51.00	565632	159.00	5082	263.00	30	379.00	106
52.00	31248	160.00	12275	264.00	923	380.00	190
53.00	522	161.00	17320	265.00	21984	381.00	623
56.00	22344	162.00	6090	266.00	3619	382.00	635
57.00	44520	164.00	3451	267.00	834	383.00	3534
58.00	2828	165.00	18312	268.00	658	385.00	308
59.00	247	166.00	11975	269.00	532	386.00	92
60.00	988	167.00	82736	271.00	3418	388.00	78
61.00	7216	168.00	48992	272.00	2625	390.00	1616
62.00	9444	169.00	5835	273.00	25680	391.00	2266
63.00	24136	170.00	2582	274.00	76552	392.00	874
64.00	5564	171.00	3205	275.00	406784	394.00	559
65.00	13382	172.00	9130	276.00	57480	395.00	39
66.00	962	173.00	11756	277.00	35832	396.00	416
67.00	340	174.00	18320	278.00	4470	397.00	290
69.00	713280	175.00	32152	279.00	123	398.00	246
70.00	1314	176.00	13669	283.00	4034	400.00	438
72.00	772	177.00	14974	284.00	3520	401.00	2779
73.00	5830	178.00	4871	285.00	6171	402.00	8547
74.00	73520	179.00	55256	286.00	1199	403.00	9717
75.00	117728	180.00	48128	288.00	869	404.00	2996

Data File: /chem3/nt11.i/20110125.b/df0125.d

Date : 25-JAN-2011 15:02

Client ID:

Instrument: nt11.i

Sample Info: DF0125

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25

Data File: df0125.d
Spectrum: Avg. Scans 181-183 (5.05), Background Scan 176
Location of Maximum: 198.00
Number of points: 389

m/z	Y	m/z	Y	m/z	Y	m/z	Y
76.00	44824	181.00	15311	289.00	4283	405.00	860
77.00	862208	182.00	3910	290.00	1663	406.00	108
78.00	54992	183.00	3175	291.00	2168	409.00	384
79.00	46728	184.00	4885	292.00	2648	410.00	875
80.00	44776	185.00	34184	293.00	8731	411.00	507
81.00	56552	186.00	242816	294.00	3010	414.00	277
82.00	15842	187.00	68792	295.00	690	415.00	769
83.00	12166	188.00	7789	296.00	112528	416.00	355
85.00	14760	189.00	14650	297.00	16640	417.00	535
86.00	13181	190.00	3052	298.00	1520	419.00	603
87.00	8538	191.00	5689	299.00	434	420.00	510
88.00	4312	192.00	20896	301.00	2441	421.00	8715
89.00	2328	193.00	22464	302.00	2334	422.00	8755
91.00	12372	194.00	3006	303.00	12349	423.00	67776
92.00	13096	195.00	1644	304.00	7418	424.00	13828
93.00	95976	196.00	45816	306.00	165	425.00	1695
94.00	5441	198.00	1746432	308.00	3197	426.00	508
95.00	2279	199.00	109032	309.00	1089	427.00	452
96.00	5920	200.00	9540	310.00	1526	428.00	534
98.00	73048	201.00	5853	311.00	795	429.00	382
99.00	56824	202.00	5168	312.00	547	430.00	72
100.00	7095	203.00	13471	313.00	1564	431.00	130
101.00	34624	204.00	67208	314.00	6829	432.00	181
102.00	28	205.00	103008	315.00	13681	433.00	911
103.00	10655	206.00	441600	316.00	6965	435.00	756
104.00	17960	207.00	57312	317.00	1578	436.00	1414
105.00	21200	208.00	14378	319.00	1328	437.00	2462
106.00	4661	209.00	3743	320.00	1101	438.00	3410
107.00	239296	210.00	11531	321.00	1698	439.00	6732
108.00	34552	211.00	17600	322.00	2214	441.00	176832
109.00	3785	212.00	3700	323.00	36512	442.00	1119232
110.00	432256	213.00	2083	324.00	4857	443.00	241280
111.00	68088	214.00	1507	325.00	355	444.00	20408
112.00	10384	215.00	7332	326.00	506	445.00	2659
113.00	1078	216.00	4893	327.00	5580	446.00	186

Data File: /chem3/nt11.i/20110125.b/df0125.d

Date : 25-JAN-2011 15:02

Client ID:

Instrument: nt11.i

Sample Info: DF0125

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25

Data File: df0125.d

Spectrum: Avg. Scans 181-183 (5.05), Background Scan 176

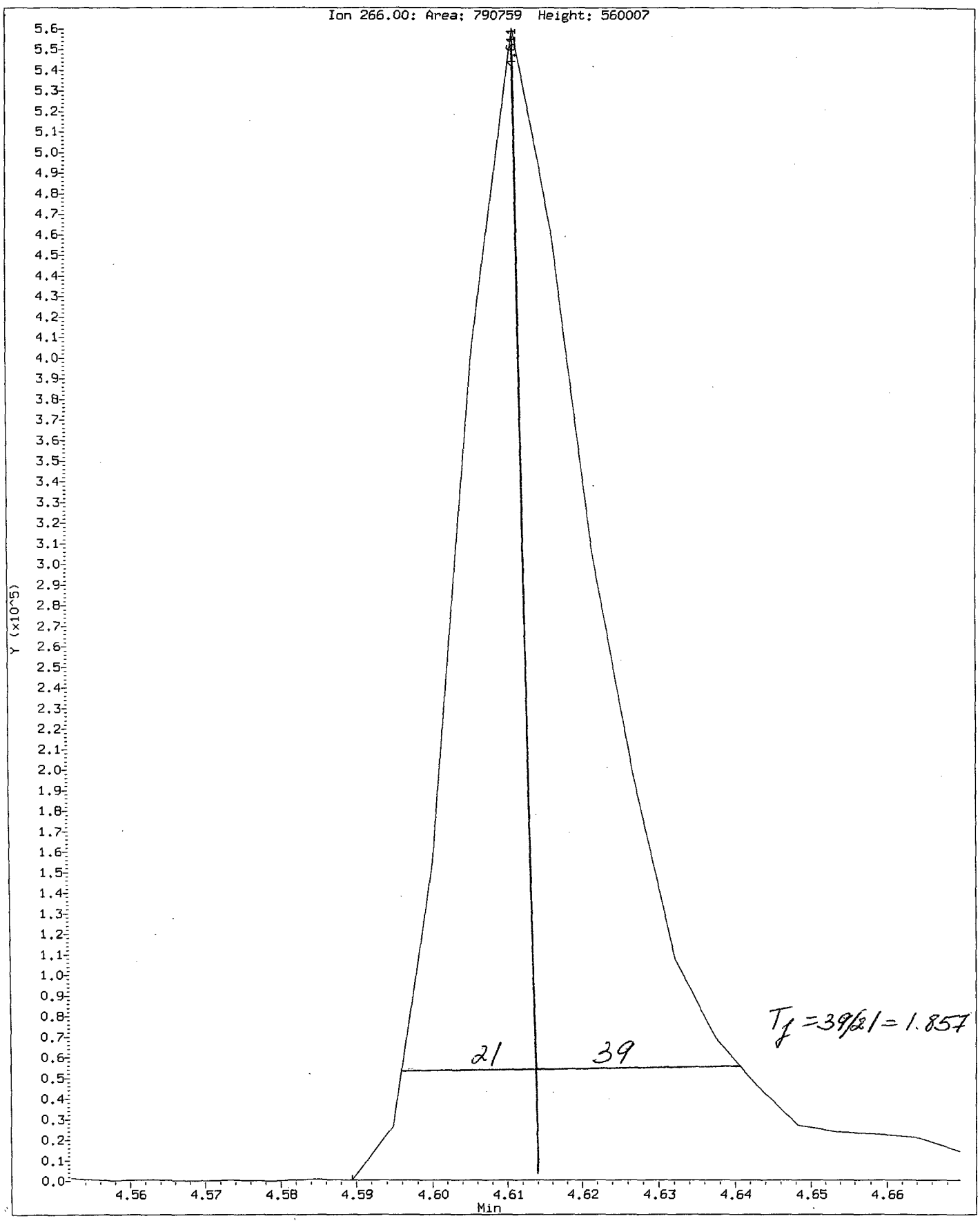
Location of Maximum: 198.00

Number of points: 389

m/z	Y	m/z	Y	m/z	Y	m/z	Y
114.00	1619	217.00	117832	328.00	3619	448.00	120
116.00	4799	218.00	11850	329.00	599	451.00	278
117.00	183616	219.00	2927	330.00	542	452.00	32
118.00	17304	221.00	93048	331.00	1067	453.00	69
119.00	1405	222.00	1047	332.00	3220	454.00	114
120.00	2529	223.00	14300	333.00	1216	455.00	96
121.00	3340	224.00	238720	334.00	22408	459.00	109
122.00	17248	225.00	63328	335.00	5766	460.00	880
123.00	23360	226.00	8026	336.00	349	461.00	24
124.00	10726	227.00	96232	338.00	980	463.00	160
125.00	12413	228.00	14697	339.00	1561	468.00	97
127.00	858304	229.00	21304	340.00	1120	469.00	283
128.00	65176	230.00	4811	341.00	2431	470.00	73
129.00	333184	231.00	9724	342.00	770	472.00	271
130.00	23888	232.00	1530	344.00	478	474.00	899
131.00	1220	233.00	2311	346.00	9106	477.00	304
132.00	1617	234.00	7909	347.00	1608	479.00	198
134.00	10783	235.00	5852	348.00	234	484.00	395
135.00	27600	236.00	2509	349.00	384	485.00	308
136.00	12373	237.00	5911	350.00	282	487.00	451
137.00	10743	238.00	2525	351.00	1643	490.00	54
138.00	2356	239.00	4966	352.00	13312	492.00	103
139.00	1551	240.00	4191	353.00	9183	495.00	79
140.00	4773	241.00	6024	354.00	6245	498.00	377
141.00	43440	242.00	13590	355.00	1325	499.00	81
142.00	14402	243.00	6903	356.00	503		
143.00	12257	244.00	194432	357.00	366		
144.00	4187	245.00	25872	358.00	134		

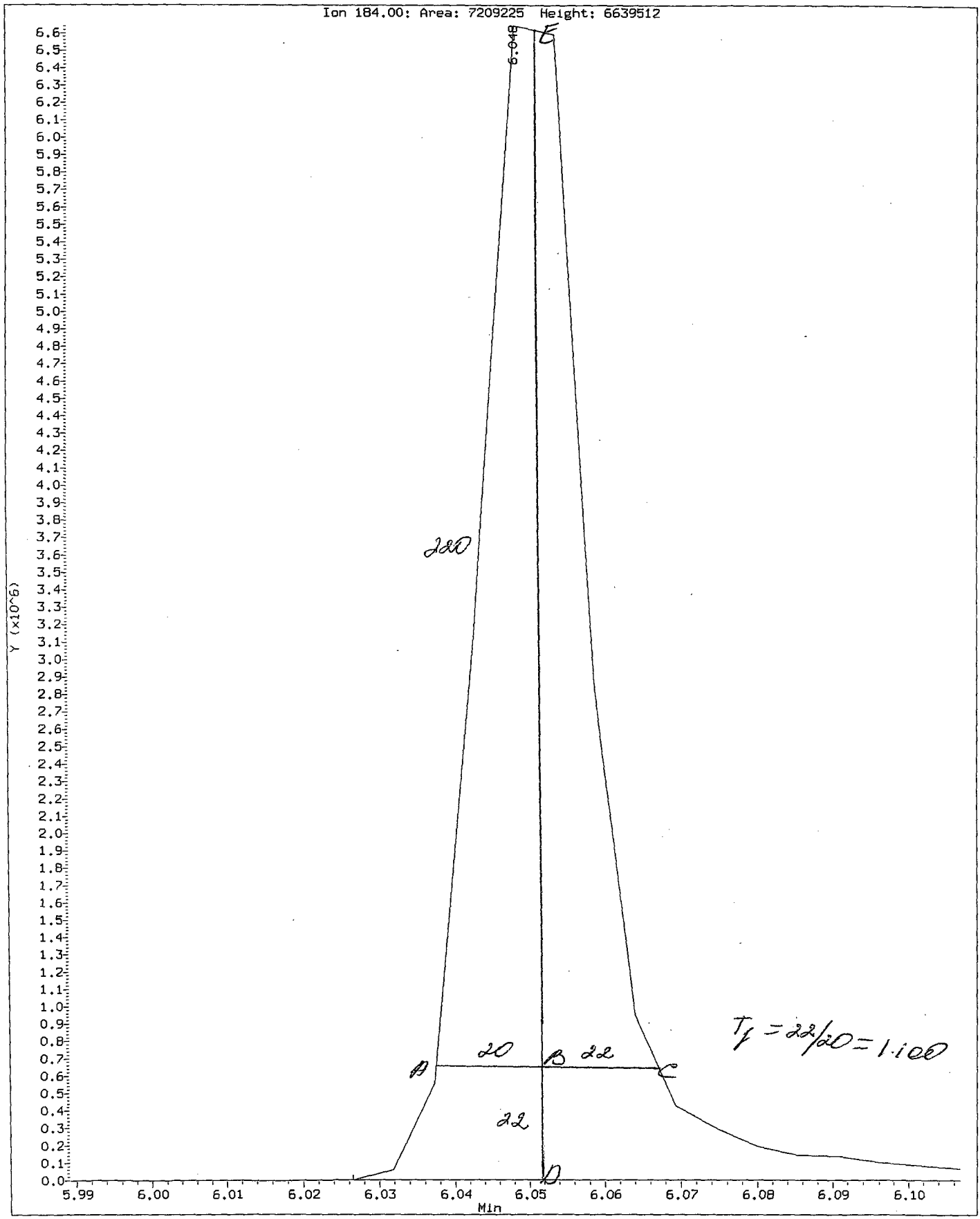
Data File: /chem3/nt11.i/20110125.b/ddt.b/df0125.d
Injection Date: 25-JAN-2011 15:02
Instrument: nt11.i
Client Sample ID:

Compound: Pentachlorophenol
CAS Number: 87-86-5



Data File: /chem3/nt11.i/20110125.b/ddt.b/df0125.d
Injection Date: 25-JAN-2011 15:02
Instrument: nt11.i
Client Sample ID:

Compound: Benzidine
CAS Number:



Analytical Resources Inc.
ABN by sw846 8270C
DDT Breakdown Report

Data file: /chem3/nt11.i/20110125.b/ddt.b/df0125.d ARI ID: DF0125
Method: /chem3/nt11.i/20110125.b/ddt.b/sw846ddt.m Misc:
Analysis Date: 25-JAN-2011 15:02 Instrument: nt11.i

COMPOUND	RT	AREA
Pentachlorophenol	4.611	790759
Benzidine	6.048	7209225
4,4'-DDE	6.278	27942
4,4'-DDD	6.609	219808
4,4'-DDT	6.903	4432526

$$\text{DDT Percent Breakdown} = \frac{(\text{DDE Area} + \text{DDD Area}) * 100}{(\text{DDE Area} + \text{DDD Area} + \text{DDT Area})}$$

$$\text{DDT Percent Breakdown} = \frac{(\ 27942 + 219808) * 100}{(\ 27942 + 219808 + 4432526)}$$

DDT Percent Breakdown = 5.3 %

Butyl Tin Raw Data
Run Logs, Continuing Calibrations, and Raw Data

ARI Job ID: SJ76, SJ86

Analytical Resources, Incorporated
Analytical Chemists and Consultants

GC/MS SVOA Analyst Notes / Corrective Action Log

ARI Project ID: SJ 86 Client ID: Hart Crowser

ARI SOP: **801S**(SIM-PNA) **802S**(Butyl Tins) **804S**(SVOA-8270D) **805S**(op-Pest)

Parameter(s): Pore H2O TBT

Instrument: NT-2 NT-4 NT-6 NT-8 (NT11)

Curve Date: 01/25/11 Analysis Start Date: 02/28/11

DFTPP Tune Meets Criteria?	(YES) / NO	Internal Standard Meets Criteria?	(YES) / NO
DDT Breakdown <20%?	(YES) / NO / NA	Method Blank In Control?	(YES) / NO
Peak Tailing Factor ≤2?	(YES) / NO / NA	LCS / LCSD Recovery In Control?	(YES) / NO
ICal acceptable?	(YES) / NO	CCal acceptable?	(YES) / NO
Q flag applied?	YES / (NO)	Q flag applied?	(YES) / NO
Surrogate Recovery in Control?	(YES) / NO	Special Analysis Criteria Met?	YES / NO / (NA)
Manual Integrations for ICal?	YES / NO	Manual Integrations for Samples?	Yes / (NO)

Detail problems, corrective actions and/or other pertinent information below (use reverse side when necessary):

Additional Details on Reverse: Yes (No)

Analyst: XZ **Date:** 02/28/11

Reviewer: MW **Date:** 2/21/11

Analytical Resources Inc.: Organics Instrument Log

NT-11 Serial No.:GC=US10140004, MS=US10481502

Date: 02/21/11 Analysis: PW TBT Analyst: YZ

GC Program: Pore TBT Column No: 180397 Column Type: 2B5M

Instrument Tune (.U or .CT.): 110225U EM Voltage: 2800

Calibration File: DF0221 Curve Date: 09/25/11

IS/SS	Ical/Ccal	LCS/ICV
1711-3	1711-2	

INTERNAL STANDARD SUMMARY FOR DATABATCH - /chem3/nt11.i/20110221.b

	Time	Filename	LabID	ClientId	DF				
1	0902	df0221.d	DF0221		1	NO ISTDS FOUND			
2	0914	cc0221.d	CC0221		1	6.36	109099	7.30	139129
3	0936	sj86mb.d	SJ86MBW1	SJ86MBW1	1	6.36	130617	7.30	100043
4	0949	sj86sb.d	SJ86LCSW1	SJ86LCSW1	1	6.36	133036	7.28	98825
5	1001	sj86sbs.d	SJ86LCSDW1	SJ86LCSDW1	1	6.36	133316	7.28	100582
6	1014	sj86a.d	SJ86A	C5	1	6.36	134977	7.28	100746

YZ 02/25/11

Maintenance / Comments none

Maintenance Verification (Identify ICal or CCal that demonstrates the instrument is in control): CC0221

Every line must contain information or be lined out. Make all entries legible. Start a new page for each QC period.

Q-FLAG SUMMARY FOR DATABATCH - /chem3/nt11.i/20110221.b

Instrument: nt11.i Date: 21-FEB-2011 Method: pw3ul.m

INITIAL CAL: 25-JAN-2011

Compound	%RSD or R^2
NO Q-FLAGS	

CONTINUING CAL: 21-FEB-2011

Compound	%D
Tripropyl Tin (Hexyl)	-21.3

Data File: /chem3/nt11.i/20110221.b/df0221.d

Date : 21-FEB-2011 09:02

Client ID:

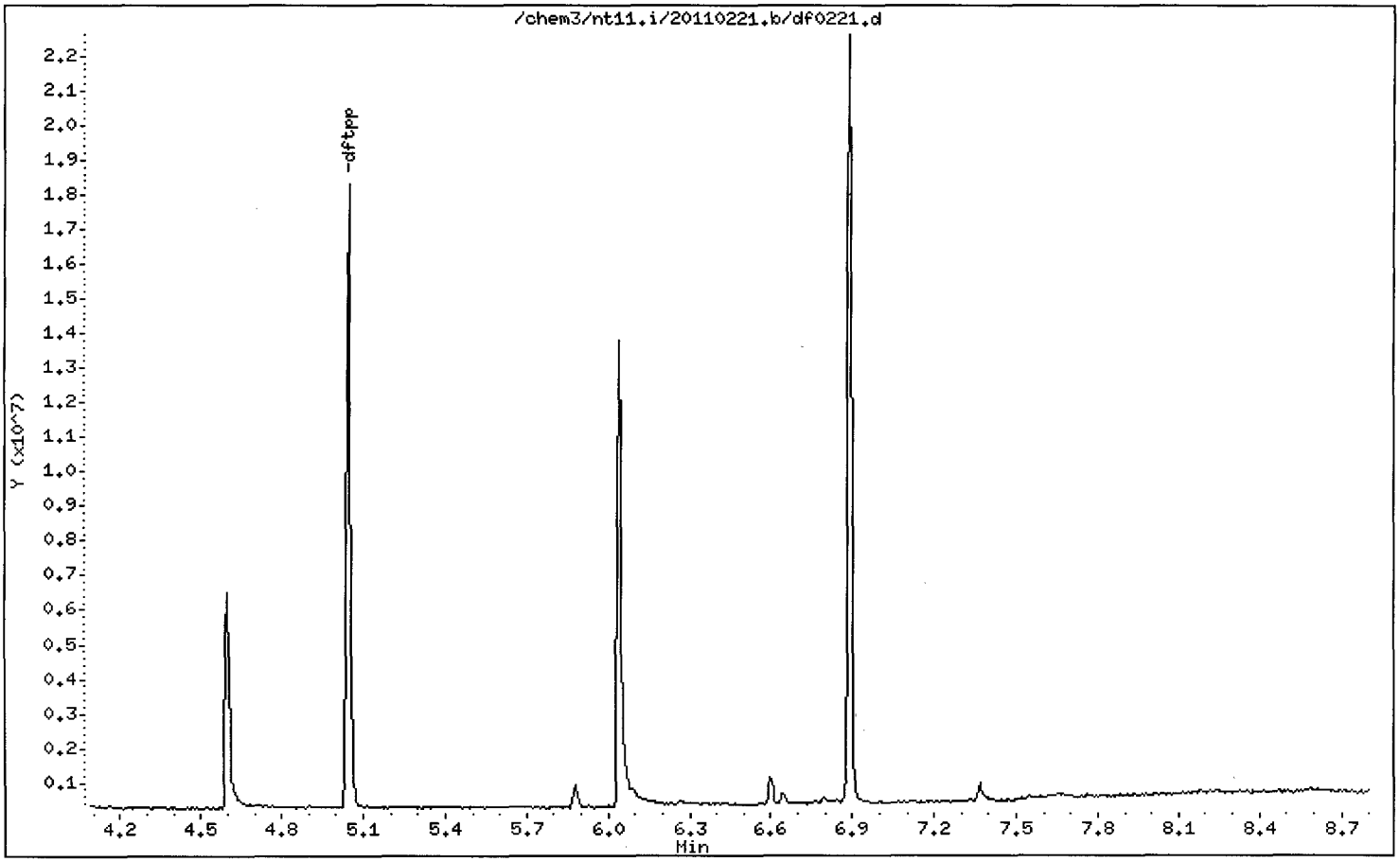
Instrument: nt11.i

Sample Info: DF0221

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25



Data File: /chem3/nt11.i/20110221.b/df0221.d

Date : 21-FEB-2011 09:02

Client ID:

Instrument: nt11.i

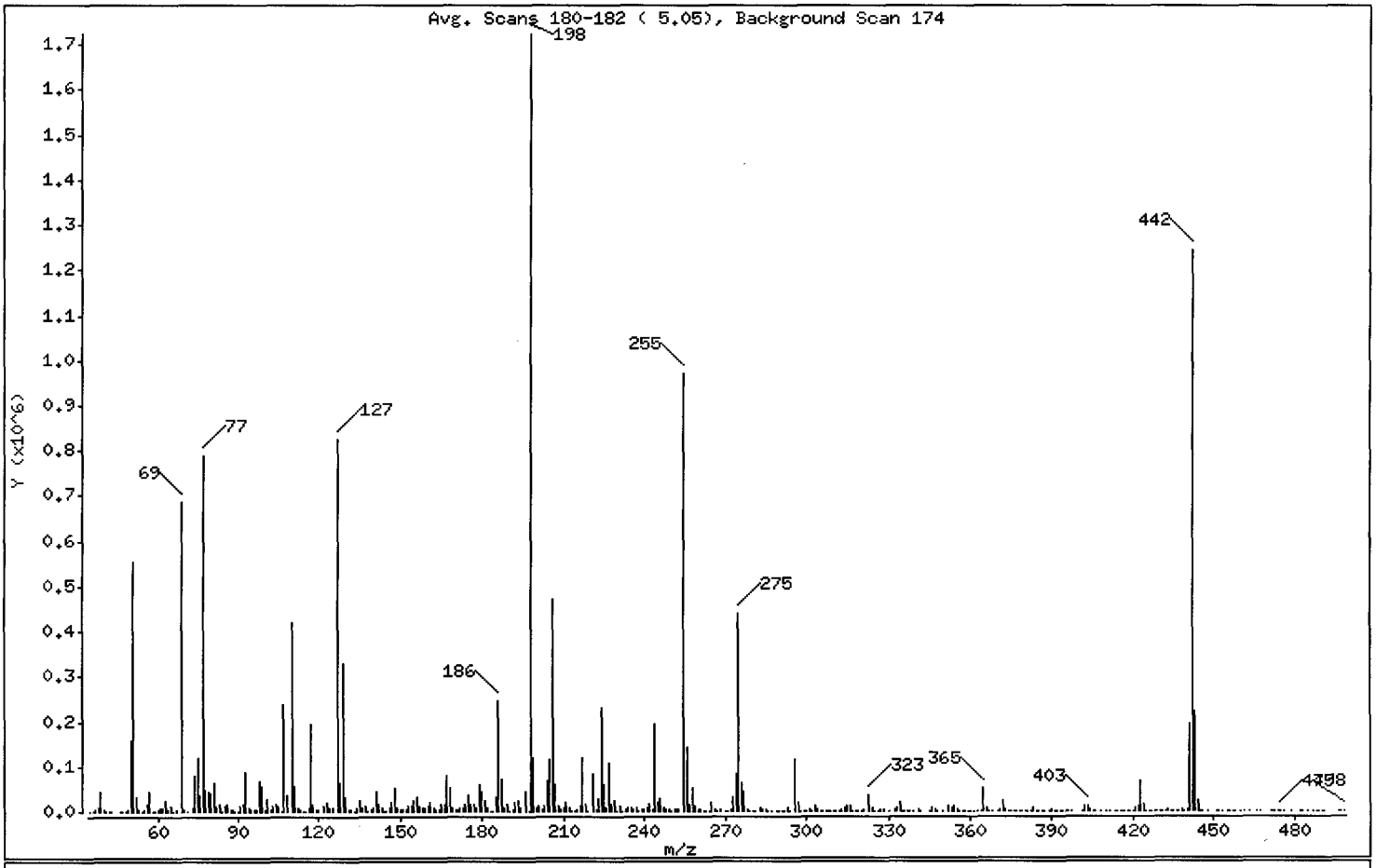
Sample Info: DF0221

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25

1 dftpp



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	32.20
68	Less than 2.00% of mass 69	0.00 (0.00)
69	Mass 69 relative abundance	39.68
70	Less than 2.00% of mass 69	0.18 (0.46)
127	10.00 - 80.00% of mass 198	47.84
197	Less than 2.00% of mass 198	0.11
199	5.00 - 9.00% of mass 198	6.81
275	10.00 - 60.00% of mass 198	25.59
365	Greater than 1.00% of mass 198	3.06
441	0.01 - 24.00% of mass 442	11.25 (15.57)
442	50.00 - 200.00% of mass 198	72.21
443	15.00 - 24.00% of mass 442	12.86 (17.81)

Data File: /chem3/nt11.i/20110221.b/df0221.d

Date : 21-FEB-2011 09:02

Client ID:

Instrument: nt11.i

Sample Info: DF0221

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25

Data File: df0221.d

Spectrum: Avg. Scans 180-182 (5.05), Background Scan 174

Location of Maximum: 198.00

Number of points: 412

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.00	389	146.00	7636	252.00	2655	371.00	2777
36.00	1085	147.00	17896	253.00	4733	372.00	23744
37.00	4346	148.00	49776	255.00	972288	373.00	2298
38.00	7216	149.00	8734	256.00	143168	374.00	1302
39.00	44920	150.00	1998	257.00	17472	375.00	210
40.00	5231	151.00	5664	258.00	53032	376.00	186
41.00	265	152.00	3488	259.00	10850	377.00	219
42.00	1021	153.00	10495	260.00	2061	378.00	145
43.00	1040	154.00	9913	261.00	2545	379.00	498
46.00	129	155.00	25040	262.00	349	380.00	164
47.00	1258	156.00	33072	263.00	219	381.00	33
48.00	894	157.00	11964	264.00	1297	382.00	261
49.00	2406	158.00	6614	265.00	18552	383.00	7668
50.00	158720	159.00	6206	266.00	3352	384.00	1684
51.00	555328	160.00	12838	267.00	17	385.00	288
52.00	31104	161.00	20816	268.00	3082	386.00	279
53.00	3428	162.00	6776	270.00	10	387.00	418
54.00	1905	163.00	3712	271.00	1181	389.00	1157
55.00	5527	164.00	4044	272.00	3407	390.00	3027
56.00	17672	165.00	14889	273.00	30200	391.00	1913
57.00	44688	166.00	14690	274.00	83912	392.00	1330
58.00	770	167.00	78800	275.00	441280	393.00	514
59.00	236	168.00	52480	276.00	65056	394.00	434
60.00	2696	169.00	7611	277.00	42048	395.00	57
61.00	8342	170.00	3706	278.00	4265	396.00	484
62.00	9812	171.00	3496	279.00	1488	397.00	612
63.00	23848	172.00	8317	280.00	540	401.00	1257
64.00	4036	173.00	9350	281.00	35	402.00	10096
65.00	13588	174.00	16896	283.00	6319	403.00	12397
66.00	538	175.00	34680	284.00	2573	404.00	4517
67.00	3836	176.00	15971	285.00	5928	405.00	1094
69.00	684288	177.00	16520	286.00	604	406.00	341
70.00	3152	178.00	8756	287.00	341	408.00	919
71.00	432	179.00	59000	289.00	690	410.00	1065
73.00	7034	180.00	42056	290.00	1861	411.00	599

Date : 21-FEB-2011 09:02

Client ID: Instrument: nt11.i

Sample Info: DF0221

Operator: yz

Column phase: ZB-5msi Column diameter: 0.25

Data File: df0221.d
Spectrum: Avg. Scans 180-182 (5.05), Background Scan 174
Location of Maximum: 198.00
Number of points: 412

m/z	Y	m/z	Y	m/z	Y	m/z	Y
74.00	80472	181.00	24832	291.00	900	413.00	1266
75.00	118216	182.00	7512	292.00	1339	414.00	375
76.00	34752	183.00	1722	293.00	6761	415.00	245
77.00	788864	184.00	1903	294.00	1723	416.00	264
78.00	46688	185.00	33080	296.00	116216	417.00	357
79.00	44680	186.00	244928	297.00	20264	418.00	771
80.00	38472	187.00	73040	298.00	605	419.00	624
81.00	64664	188.00	6640	299.00	968	420.00	288
82.00	13106	189.00	17488	300.00	469	421.00	8807
83.00	14083	190.00	1501	301.00	2044	422.00	13456
84.00	1425	191.00	4645	302.00	1473	423.00	67360
85.00	13194	192.00	20216	303.00	11333	424.00	14798
86.00	17464	193.00	24864	304.00	4613	425.00	1461
87.00	5441	194.00	6061	305.00	573	426.00	329
88.00	3306	196.00	43336	306.00	729	427.00	527
89.00	472	197.00	1901	307.00	790	428.00	1473
90.00	421	198.00	1724416	308.00	993	429.00	667
91.00	12186	199.00	117384	309.00	786	430.00	1014
92.00	14137	200.00	9876	310.00	1121	431.00	674
93.00	85976	201.00	11636	311.00	269	432.00	404
94.00	7004	202.00	2237	312.00	1018	433.00	2216
95.00	4223	203.00	9992	313.00	2079	434.00	503
96.00	3634	204.00	69360	314.00	6943	435.00	1459
97.00	3633	205.00	115912	315.00	13404	436.00	1130
98.00	69320	206.00	471744	316.00	10144	437.00	1653
99.00	56776	207.00	61360	317.00	1581	438.00	2819
100.00	4814	208.00	12692	318.00	355	439.00	682
101.00	25864	209.00	3320	319.00	243	440.00	4409
102.00	2482	210.00	8278	320.00	645	441.00	193920
103.00	11314	211.00	19936	321.00	5567	442.00	1245184
104.00	15546	212.00	6330	323.00	37000	443.00	221824
105.00	13405	213.00	1666	324.00	6309	444.00	22272
106.00	1164	214.00	314	325.00	677	445.00	459
107.00	238272	215.00	5182	326.00	469	446.00	153
108.00	37040	216.00	10655	327.00	4560	448.00	339

Data File: /chem3/nt11.i/20110221.b/df0221.d

Date : 21-FEB-2011 09:02

Client ID:

Instrument: nt11.i

Sample Info: DF0221

Operator: yz

Column phase: ZB-5msi

Column diameter: 0.25

Data File: df0221.d

Spectrum: Avg. Scans 180-182 (5.05), Background Scan 174

Location of Maximum: 198.00

Number of points: 412

m/z	Y	m/z	Y	m/z	Y	m/z	Y
110.00	421312	217.00	117360	328.00	5137	451.00	383
111.00	56896	218.00	14743	330.00	1040	452.00	599
112.00	7101	219.00	1485	332.00	2328	453.00	328
113.00	2689	221.00	82744	333.00	8050	455.00	177
114.00	1023	222.00	5802	334.00	21144	456.00	168
115.00	1069	223.00	28472	335.00	1689	457.00	350
116.00	6910	224.00	229504	336.00	1175	458.00	8
117.00	194368	225.00	60128	337.00	342	460.00	235
118.00	15099	226.00	6848	338.00	456	461.00	264
119.00	2741	227.00	106184	339.00	991	463.00	268
120.00	3640	228.00	15373	341.00	3730	466.00	291
122.00	13687	229.00	22816	342.00	705	467.00	230
123.00	19088	230.00	482	345.00	535	471.00	276
124.00	8396	231.00	10758	346.00	6886	472.00	347
125.00	9677	232.00	577	347.00	3730	473.00	399
127.00	824896	233.00	3964	348.00	617	474.00	929
128.00	64200	234.00	6113	350.00	1614	475.00	930
129.00	328704	235.00	7933	352.00	10876	476.00	76
130.00	29968	236.00	4448	353.00	7529	479.00	214
131.00	2731	237.00	7130	354.00	12035	482.00	109
132.00	2948	238.00	1175	355.00	2135	483.00	26
133.00	510	239.00	3785	356.00	78	485.00	517
134.00	9460	240.00	1985	357.00	665	487.00	26
135.00	22560	241.00	6298	358.00	8	488.00	543
136.00	7854	242.00	15859	359.00	268	489.00	184
137.00	12392	243.00	5220	360.00	755	490.00	79
138.00	1948	244.00	192896	361.00	1013	491.00	617
139.00	3796	245.00	20376	363.00	341	496.00	508
140.00	6393	246.00	29528	364.00	1521	497.00	196
141.00	44344	247.00	7131	365.00	52816	498.00	17
142.00	14080	248.00	2174	366.00	5982		
143.00	8096	249.00	4421	367.00	1259		
144.00	1948	250.00	1809	368.00	304		
145.00	1327	251.00	3569	370.00	1146		

Analytical Resources Inc.
ABN by sw846 8270C
DDT Breakdown Report

Data file: /chem3/nt11.i/20110221.b/ddt.b/df0221.d ARI ID: DF0221
Method: /chem3/nt11.i/20110221.b/ddt.b/sw846ddt.m Misc:
Analysis Date: 21-FEB-2011 09:02 Instrument: nt11.i

COMPOUND	RT	AREA
Pentachlorophenol	4.600	727426
Benzidine	6.042	5837846
4,4'-DDE	6.267	17456
4,4'-DDD	6.603	137439
4,4'-DDT	6.892	4047816

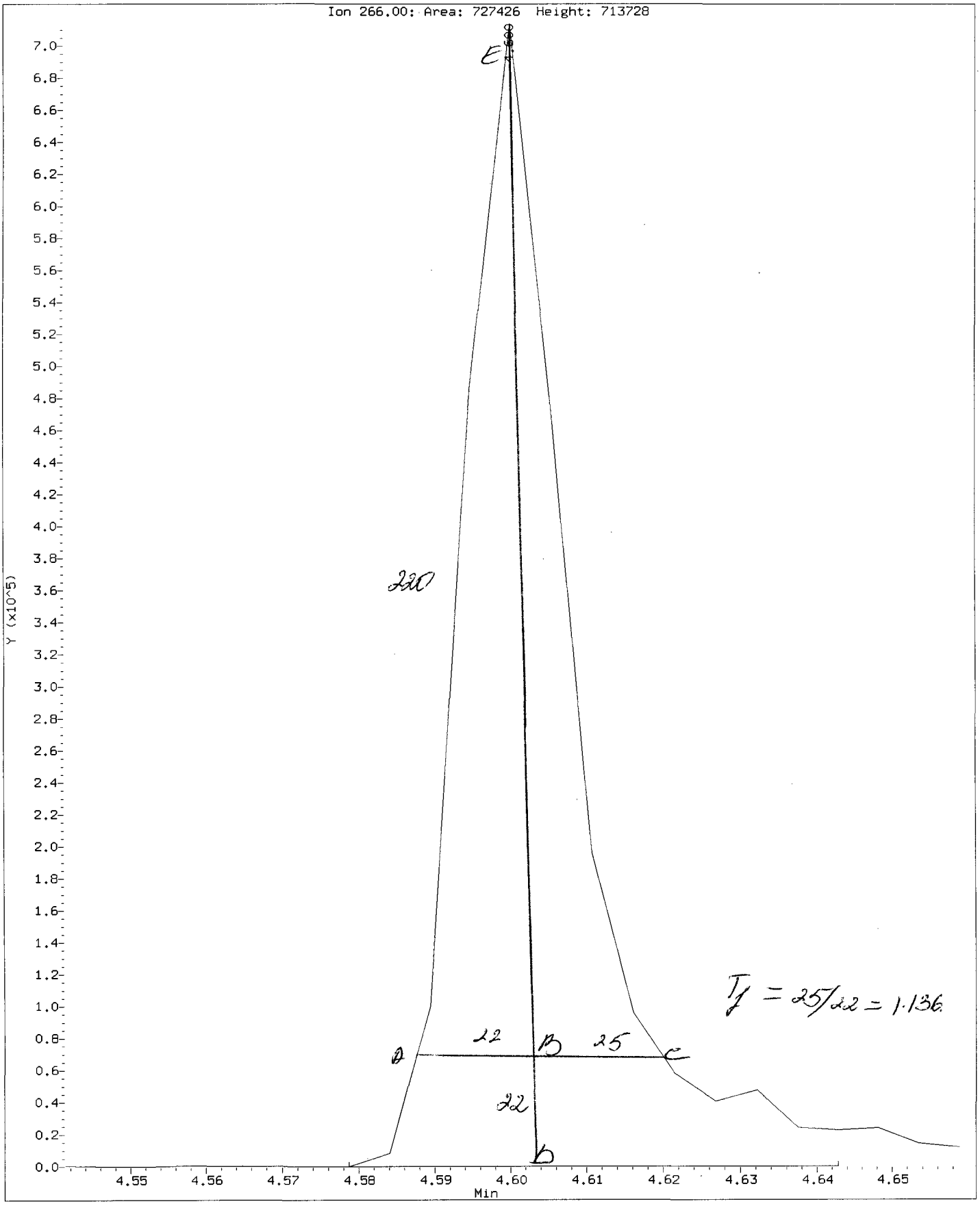
$$\text{DDT Percent Breakdown} = \frac{(\text{DDE Area} + \text{DDD Area}) * 100}{(\text{DDE Area} + \text{DDD Area} + \text{DDT Area})}$$

$$\text{DDT Percent Breakdown} = \frac{(\ 17456 + 137439) * 100}{(\ 17456 + 137439 + 4047816)}$$

DDT Percent Breakdown = 3.7 %

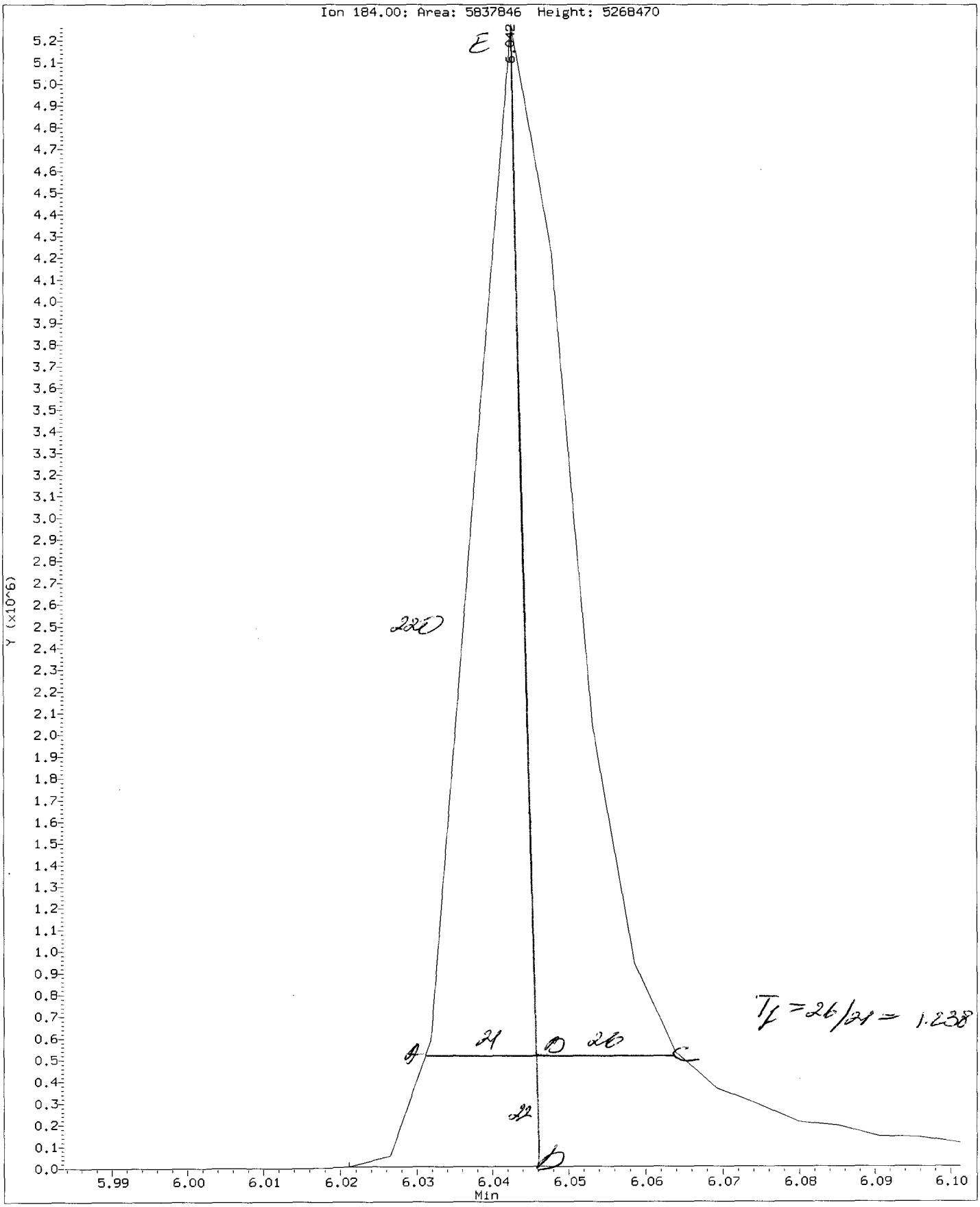
Data File: /chem3/nt11.i/20110221.b/ddt.b/df0221.d
Injection Date: 21-FEB-2011 09:02
Instrument: nt11.i
Client Sample ID:

Compound: Pentachlorophenol
CAS Number: 87-86-5



Data File: /chem3/nt11.i/20110221.b/ddt.b/df0221.d
Injection Date: 21-FEB-2011 09:02
Instrument: nt11.i
Client Sample ID:

Compound: Benzidine
CAS Number:



Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt11.i
Lab File ID: cc0221.d
Analysis Type:
Lab Sample ID: CC0221
Method: /chem3/nt11.i/20110221.b/pw3ul.m

Injection Date: 21-FEB-2011 09:14
Init. Cal. Date(s): 25-JAN-2011 25-JAN-2011
Init. Cal. Times: 15:27 16:30
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF25	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
$ 1 Tripropyl Tin (Hexyl)	0.84170	0.66283	0.005	-21.25071	20.00000	Averaged	<-
2 Tetrabutyl Tin	0.78357	0.64896	0.010	-17.17906	20.00000	Averaged	
3 Tributyl Tin (Hexyl)	0.58537	0.49116	0.005	-16.09425	20.00000	Averaged	
5 Dibutyl Tin (Hexyl)	0.03402	0.03371	0.005	-0.90425	20.00000	Averaged	
$ 6 Tripentyl Tin (Hexyl)	0.04539	0.04682	0.010	3.15112	20.00000	Averaged	
7 Butyl Tin (Hexyl)	0.04519	0.04668	0.005	3.31223	20.00000	Averaged	

Analytical Resources, Inc.

Krone 1988

Data file : /chem3/nt11.i/20110221.b/cc0221.d
Lab Smp Id: CC0221
Inj Date : 21-FEB-2011 09:14
Operator : yz Inst ID: nt11.i
Smp Info : CC0221
Misc Info :
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110221.b/pw3ul.m
Meth Date : 21-Feb-2011 09:43 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 16:30 Cal File: ic0125f.d
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50

yz 02/24/11.

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ng/mL)	ON-COL (ng/mL)
$	1 Tripropyl Tin (Hexyl)	291	4.720	4.720	(0.742)	9039	25.0000	19.69
	2 Tetrabutyl Tin	289	4.927	4.927	(0.775)	8850	25.0000	20.71
	3 Tributyl Tin (Hexyl)	319	5.710	5.710	(0.898)	6698	25.0000	20.98
*	4 Tetrapentyl Tin	333	6.358	6.358	(1.000)	109099	200.000	
	5 Dibutyl Tin (Hexyl)	347	6.411	6.411	(0.879)	11724	50.0000	49.55
$	6 Tripentyl Tin (Hexyl)	347	6.706	6.706	(0.919)	16283	50.0000	51.58
	7 Butyl Tin (Hexyl)	347	7.041	7.041	(0.965)	16237	50.0000	51.66
*	8 p-Terphenyl-d14	244	7.296	7.296	(1.000)	139129	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: cc0221.d
Lab Smp Id: CC0221
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110221.b/pw3ul.m
Misc Info:

Calibration Date: 21-FEB-2011
Calibration Time: 09:14

Level:
Sample Type:

Test Mode:
Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	109099	13.11
8 p-Terphenyl-d14	120265	60132	240530	139129	15.69

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.36	5.86	6.86	6.36	0.00
8 p-Terphenyl-d14	7.30	6.80	7.80	7.30	0.00

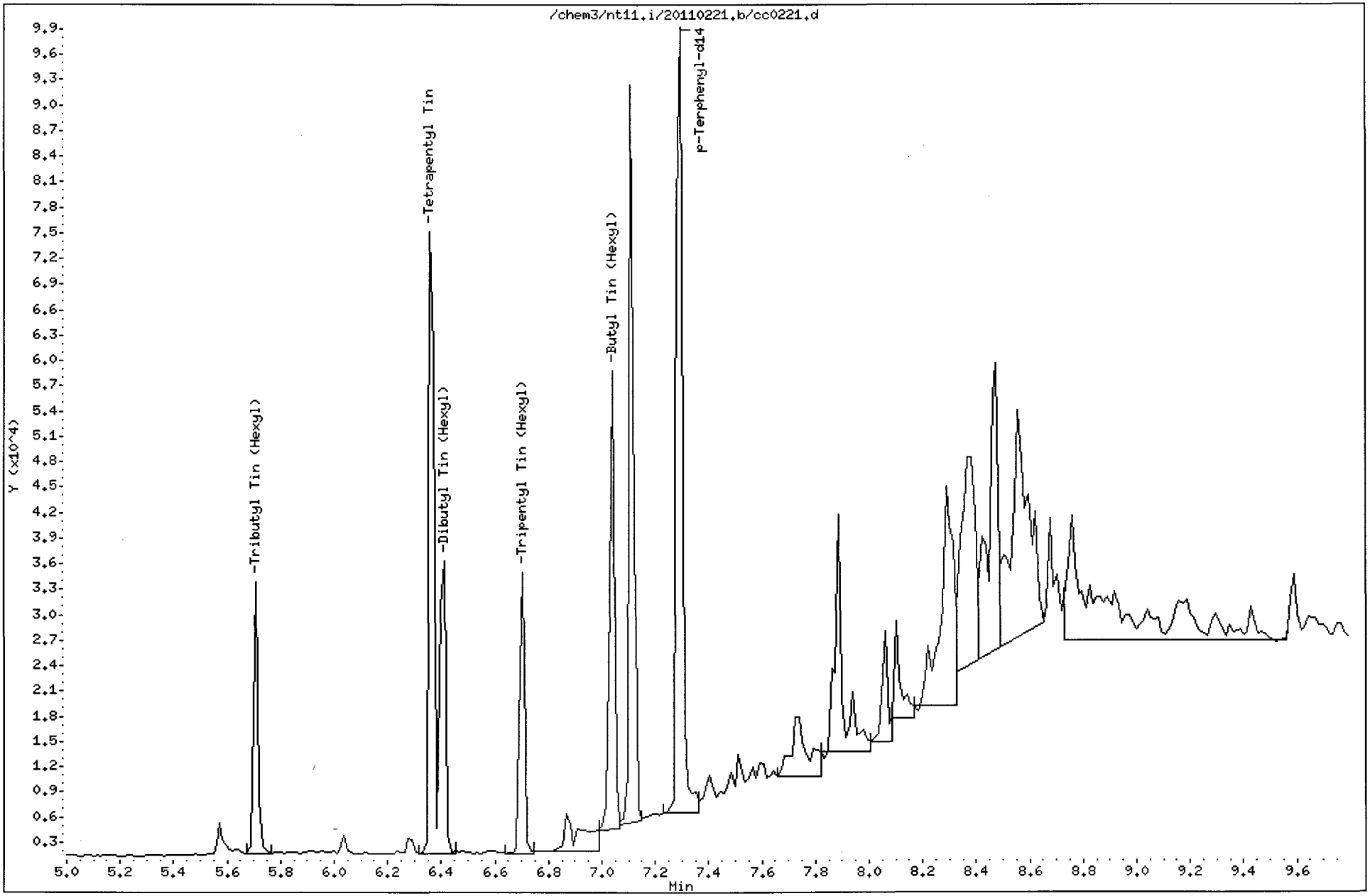
AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /chem3/nt11.i/20110221.b/cc0221.d
Date : 21-FEB-2011 09:14
Client ID:
Sample Info: CC0221

Instrument: nt11.i

Operator: yz
Column diameter: 0.25

Column phase: ZB-5msi



Analytical Resources, Inc. YZ 03/21/11

Krone 1988

Data file : /chem3/nt11.i/20110221.b/sj86mb.d
Lab Smp Id: SJ86MBW1 Client Smp ID: SJ86MBW1
Inj Date : 21-FEB-2011 09:36
Operator : yz Inst ID: nt11.i
Smp Info : SJ86MBW1
Misc Info : 11-3659
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110221.b/pw3ul.m
Meth Date : 21-Feb-2011 09:43 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 16:30 Cal File: ic0125f.d
Als bottle: 1 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

Concentration Formula: Amt * DF * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.00000	Dilution Factor
Vt	0.50000	Final Extract Volume (mL)
Vo	150.00000	Volume Extracted (L)

Cpnd Variable Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng/mL)	CONCENTRATIONS FINAL (ug/L)
$	1 Tripropyl Tin (Hexyl)	291	4.732	4.720	(0.744)	11472	20.8694	0.06956
	2 Tetrabutyl Tin	289	Compound Not Detected.					
	3 Tributyl Tin (Hexyl)	319	Compound Not Detected.					
*	4 Tetrapentyl Tin	333	6.358	6.358	(1.000)	130617	200.000	
	5 Dibutyl Tin (Hexyl)	347	Compound Not Detected.					
$	6 Tripentyl Tin (Hexyl)	347	6.706	6.706	(0.919)	7509	33.0751	0.1103
	7 Butyl Tin (Hexyl)	347	Compound Not Detected.					
*	8 p-Terphenyl-d14	244	7.296	7.296	(1.000)	100043	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: sj86mb.d
Lab Smp Id: SJ86MBW1
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110221.b/pw3ul.m
Misc Info: 11-3659

Calibration Date: 21-FEB-2011
Calibration Time: 09:14
Client Smp ID: SJ86MBW1
Level: LOW
Sample Type: Liquid

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	130617	35.42
8 p-Terphenyl-d14	120265	60132	240530	100043	-16.81

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.36	5.86	6.86	6.36	0.00
8 p-Terphenyl-d14	7.30	6.80	7.80	7.30	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Analytical Resources, Inc.

RECOVERY REPORT

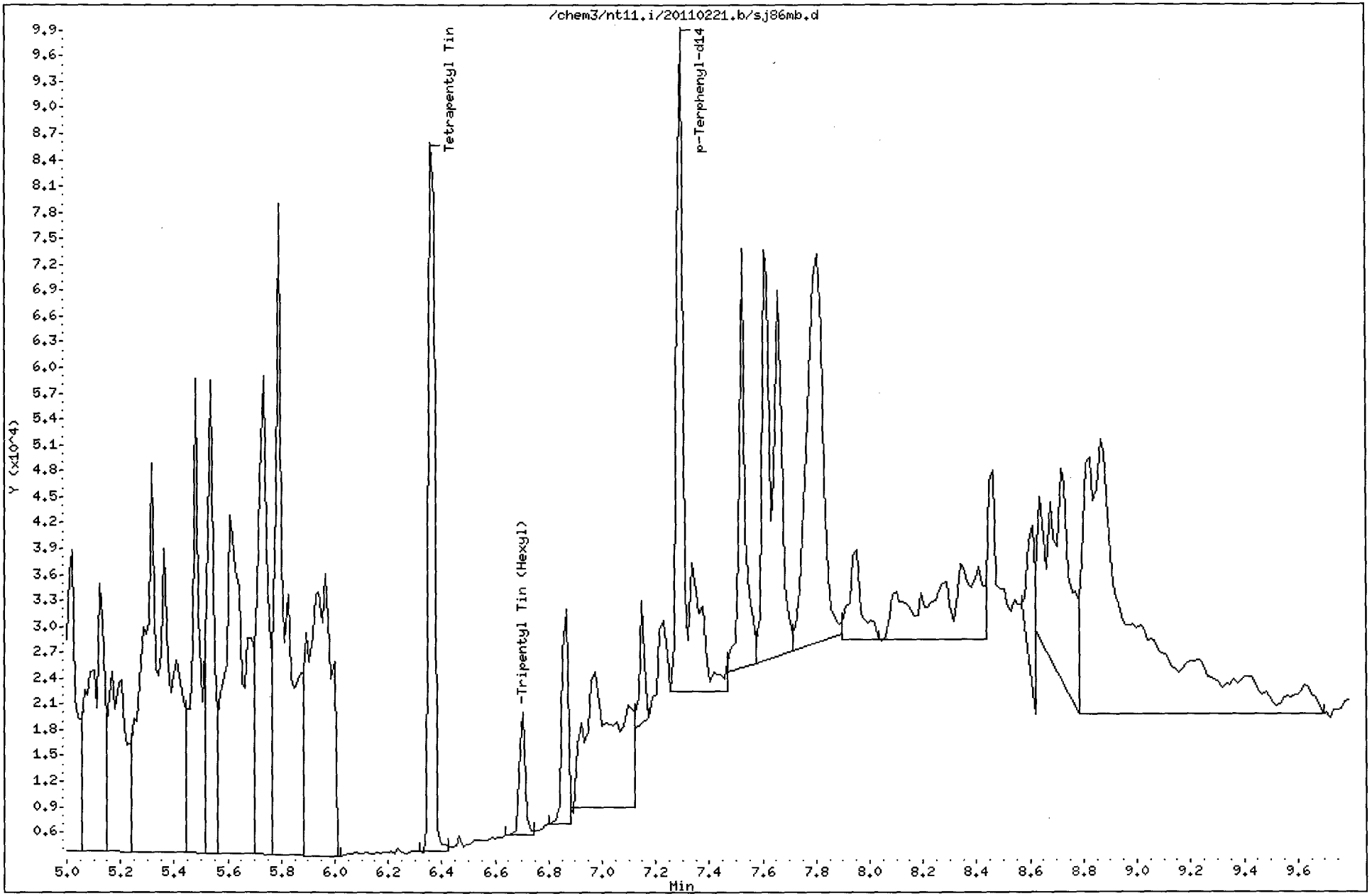
Client Name: Hart Crowser
Client SDG: SJ86
Sample Matrix: LIQUID
Fraction: SV
Lab Smp Id: SJ86MBW1
Client Smp ID: SJ86MBW1
Level: LOW
Operator: yz
Data Type: MS DATA
SampleType: BLANK
SpikeList File: PW.spk
Quant Type: ISTD
Sublist File: PW.sub
Method File: /chem3/nt11.i/20110221.b/pw3ul.m
Misc Info: 11-3659

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
3 Tributyl Tin (Hex	0.09606	0.000	*	23-133
5 Dibutyl Tin (Hexy	0.2212	0.000	*	30-118
7 Butyl Tin (Hexyl)	0.2548	0.000	*	10-113

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 1 Tripropyl Tin (Hex	0.09795	0.06956	71.02	28-100
$ 6 Tripentyl Tin (Hex	0.09460	0.1103	116.54	30-135

Data File: /chem3/nt11.i/20110221.b/sj86mb.d
Date : 21-FEB-2011 09:36
Client ID: SJ86MBW1
Sample Info: SJ86MBW1
Purge Volume: 150.0
Column phase: ZB-5msi

Instrument: nt11.i
Operator: yz
Column diameter: 0.25



YZ 03/21/11

Analytical Resources, Inc.

Krone 1988

Data file : /chem3/nt11.i/20110221.b/sj86sb.d
Lab Smp Id: SJ86LCSW1 Client Smp ID: SJ86LCSW1
Inj Date : 21-FEB-2011 09:49
Operator : yz Inst ID: nt11.i
Smp Info : SJ86LCSW1
Misc Info : 11-3659
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110221.b/pw3ul.m
Meth Date : 21-Feb-2011 09:43 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 16:30 Cal File: ic0125f.d
Als bottle: 2 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

Concentration Formula: Amt * DF * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.00000	Dilution Factor
Vt	0.50000	Final Extract Volume (mL)
Vo	150.00000	Volume Extracted (L)

Cpnd Variable Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng/mL)	CONCENTRATIONS FINAL (ug/L)
$	1 Tripropyl Tin (Hexyl)	291	4.720	4.720	(0.742)	12313	21.9921	0.07331 Q
	2 Tetrabutyl Tin	289	Compound Not Detected.					
	3 Tributyl Tin (Hexyl)	319	5.710	5.710	(0.898)	9651	24.7860	0.08262
*	4 Tetrapentyl Tin	333	6.358	6.358	(1.000)	133036	200.000	
	5 Dibutyl Tin (Hexyl)	347	6.398	6.411	(0.878)	12039	71.6240	0.2387
$	6 Tripentyl Tin (Hexyl)	347	6.693	6.706	(0.919)	7816	34.8517	0.1162
	7 Butyl Tin (Hexyl)	347	7.042	7.041	(0.967)	7705	34.5096	0.1150
*	8 p-Terphenyl-d14	244	7.283	7.296	(1.000)	98825	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: sj86sb.d
Lab Smp Id: SJ86LCSW1
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110221.b/pw3ul.m
Misc Info: 11-3659

Calibration Date: 21-FEB-2011
Calibration Time: 09:14
Client Smp ID: SJ86LCSW1
Level: LOW
Sample Type: Liquid

Test Mode:
Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	133036	37.93
8 p-Terphenyl-d14	120265	60132	240530	98825	-17.83

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.36	5.86	6.86	6.36	0.00
8 p-Terphenyl-d14	7.30	6.80	7.80	7.28	-0.18

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Analytical Resources, Inc.

RECOVERY REPORT

Client Name: Hart Crowser
Sample Matrix: LIQUID
Lab Smp Id: SJ86LCSW1
Level: LOW
Data Type: MS DATA
SpikeList File: PW.spk
Sublist File: PW.sub
Method File: /chem3/nt11.i/20110221.b/pw3ul.m
Misc Info: 11-3659

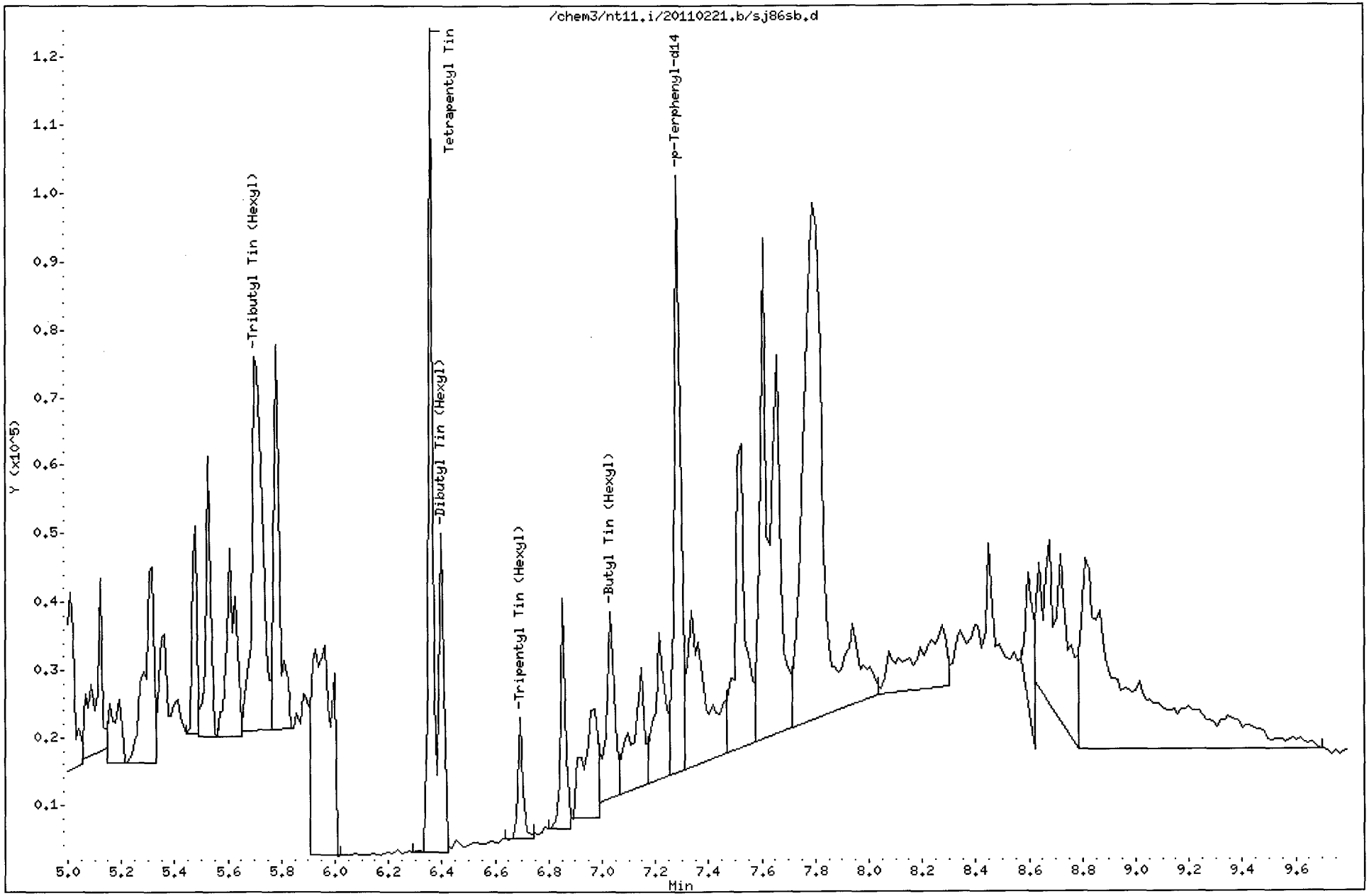
Client SDG: SJ86
Fraction: SV
Client Smp ID: SJ86LCSW1
Operator: yz
SampleType: LCS
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
3 Tributyl Tin (Hexy	0.09606	0.08262	86.01	23-133
5 Dibutyl Tin (Hexyl	0.2212	0.2387	107.92	30-118
7 Butyl Tin (Hexyl)	0.2548	0.1150	45.15	10-113

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 1 Tripropyl Tin (Hex	0.09795	0.07331	74.84	28-100
$ 6 Tripentyl Tin (Hex	0.09460	0.1162	122.80	30-135

Data File: /chem3/nt11.i/20110221.b/sj86sb.d
Date : 21-FEB-2011 09:49
Client ID: SJ86LCSW1
Sample Info: SJ86LCSW1
Purge Volume: 150.0
Column phase: ZB-5msi

Instrument: nt11.i
Operator: yz
Column diameter: 0.25



Analytical Resources, Inc. 2/24/11

Krone 1988

Data file : /chem3/nt11.i/20110221.b/sj86sbs.d
Lab Smp Id: SJ86LCSDW1 Client Smp ID: SJ86LCSDW1
Inj Date : 21-FEB-2011 10:01
Operator : yz Inst ID: nt11.i
Smp Info : SJ86LCSDW1
Misc Info : 11-3659
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110221.b/pw3ul.m
Meth Date : 21-Feb-2011 09:43 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 16:30 Cal File: ic0125f.d
Als bottle: 3 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

Concentration Formula: Amt * DF * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.00000	Dilution Factor
Vt	0.50000	Final Extract Volume (mL)
Vo	150.00000	Volume Extracted (L)

Cpnd Variable Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng/mL)	CONCENTRATIONS FINAL (ug/L)
$ 1 Tripropyl Tin (Hexyl)	291	4.720	4.720	(0.742)	12629	22.5091	0.07503
2 Tetrabutyl Tin	289	Compound Not Detected.					
3 Tributyl Tin (Hexyl)	319	5.710	5.710	(0.898)	10372	26.5817	0.08861
* 4 Tetrapentyl Tin	333	6.358	6.358	(1.000)	133316	200.000	
5 Dibutyl Tin (Hexyl)	347	6.398	6.411	(0.878)	13052	76.2942	0.2543
$ 6 Tripentyl Tin (Hexyl)	347	6.693	6.706	(0.919)	8249	36.1399	0.1205
7 Butyl Tin (Hexyl)	347	7.042	7.041	(0.967)	7562	33.2775	0.1109
* 8 p-Terphenyl-d14	244	7.283	7.296	(1.000)	100582	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: sj86sbs.d
Lab Smp Id: SJ86LCSDW1
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110221.b/pw3ul.m
Misc Info: 11-3659

Calibration Date: 21-FEB-2011
Calibration Time: 09:14
Client Smp ID: SJ86LCSDW1
Level: LOW
Sample Type: Liquid

Test Mode:
Use Initial Calibration Level 4.

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	133316	38.22
8 p-Terphenyl-d14	120265	60132	240530	100582	-16.37

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.36	5.86	6.86	6.36	0.00
8 p-Terphenyl-d14	7.30	6.80	7.80	7.28	-0.18

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Analytical Resources, Inc.

RECOVERY REPORT

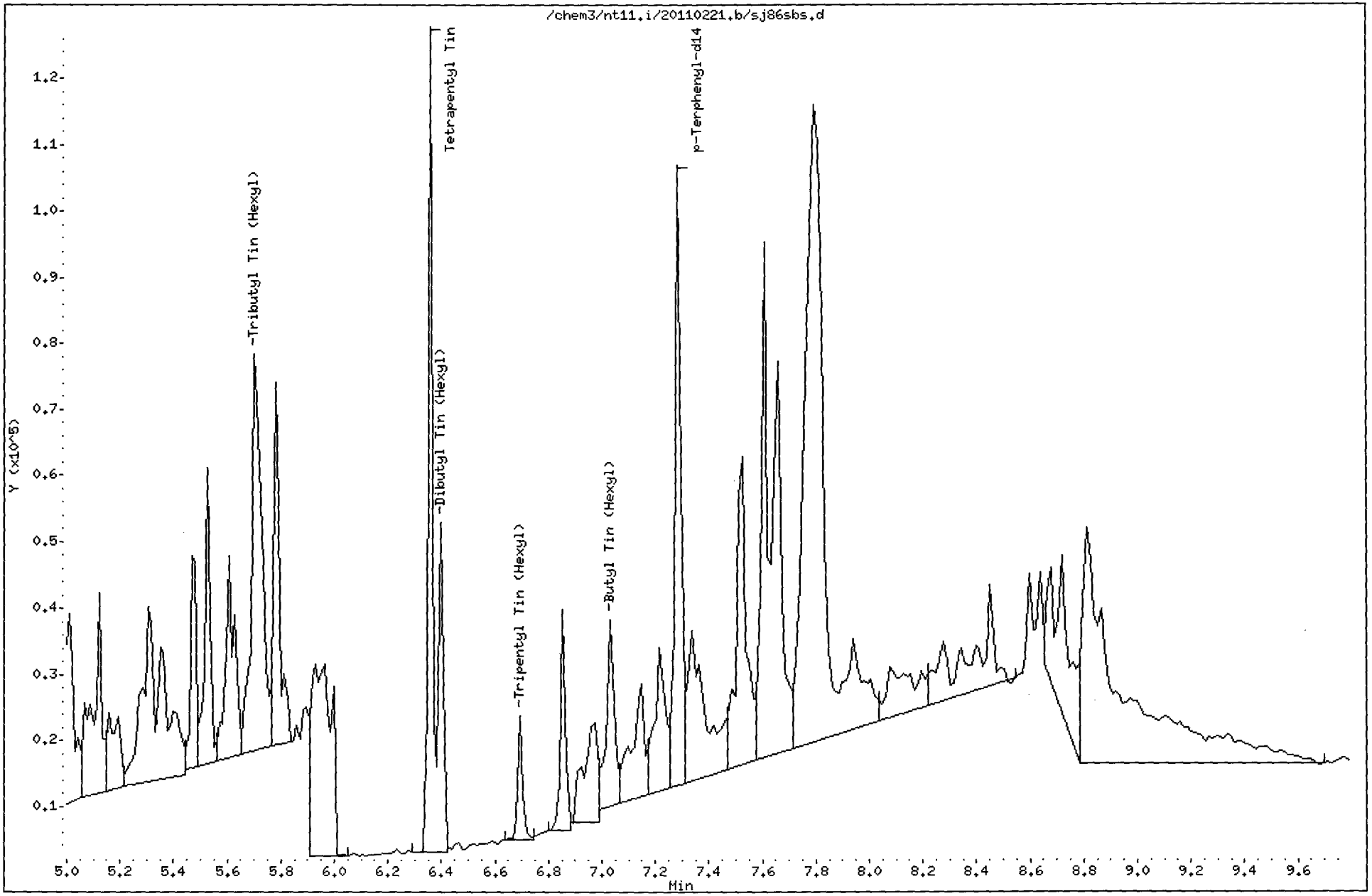
Client Name: Hart Crowser
Client SDG: SJ86
Sample Matrix: LIQUID
Fraction: SV
Lab Smp Id: SJ86LCSDW1
Client Smp ID: SJ86LCSDW1
Level: LOW
Operator: yz
Data Type: MS DATA
SampleType: LCSD
SpikeList File: PW.spk
Quant Type: ISTD
Sublist File: PW.sub
Method File: /chem3/nt11.i/20110221.b/pw3ul.m
Misc Info: 11-3659

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
3 Tributyl Tin (Hexy	0.09606	0.08861	92.24	23-133
5 Dibutyl Tin (Hexyl	0.2212	0.2543	114.96	30-118
7 Butyl Tin (Hexyl)	0.2548	0.1109	43.54	10-113

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 1 Tripropyl Tin (Hex	0.09795	0.07503	76.60	28-100
$ 6 Tripentyl Tin (Hex	0.09460	0.1205	127.34	30-135

Data File: /chem3/nt11.i/20110221.b/sj86sbs.d
Date : 21-FEB-2011 10:01
Client ID: SJ86LCSDW1
Sample Info: SJ86LCSDW1
Purge Volume: 150.0
Column phase: ZB-5msi

Instrument: nt11.i
Operator: yz
Column diameter: 0.25



Analytical Resources, Inc.

Krone 1988

TZ 02/21/11

Data file : /chem3/nt11.i/20110221.b/sj86a.d
Lab Smp Id: SJ86A Client Smp ID: C5
Inj Date : 21-FEB-2011 10:14
Operator : yz Inst ID: nt11.i
Smp Info : SJ86A
Misc Info : 11-3659
Comment : 3 ul Injection
Method : /chem3/nt11.i/20110221.b/pw3ul.m
Meth Date : 21-Feb-2011 10:55 yev Quant Type: ISTD
Cal Date : 25-JAN-2011 16:30 Cal File: ic0125f.d
Als bottle: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: PW.sub
Target Version: 3.50
Processing Host: cserv3

Concentration Formula: Amt * DF * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.00000	Dilution Factor
Vt	0.50000	Final Extract Volume (mL)
Vo	150.00000	Volume Extracted (L)

Cpnd Variable Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng/mL)	CONCENTRATIONS FINAL (ug/L)
$	1 Tripropyl Tin (Hexyl)	291	4.720	4.720	(0.742)	11507	20.2569	0.06752
	2 Tetrabutyl Tin	289	Compound Not Detected.					
	3 Tributyl Tin (Hexyl)	319	5.710	5.710	(0.898)	7302	18.4835	0.06161
*	4 Tetrapentyl Tin	333	6.358	6.358	(1.000)	134977	200.000	
	5 Dibutyl Tin (Hexyl)	347	6.398	6.411	(0.878)	523	3.05217 J	0.01017
$	6 Tripentyl Tin (Hexyl)	347	6.693	6.706	(0.919)	7557	33.0543	0.1102
	7 Butyl Tin (Hexyl)	347	7.028	7.041	(0.965)	1024	4.49891	0.01500
*	8 p-Terphenyl-d14	244	7.283	7.296	(1.000)	100746	20.0000	

Analytical Resources, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt11.i
Lab File ID: sj86a.d
Lab Smp Id: SJ86A
Analysis Type: SV
Quant Type: ISTD
Operator: yz
Method File: /chem3/nt11.i/20110221.b/pw3ul.m
Misc Info: 11-3659

Calibration Date: 21-FEB-2011
Calibration Time: 09:14
Client Smp ID: C5
Level: LOW
Sample Type: Water

Test Mode:
Use Initial Calibration Level 4.

		AREA LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	96455	48228	192910	134977	39.94
8 p-Terphenyl-d14	120265	60132	240530	100746	-16.23

		RT LIMIT			
COMPOUND	STANDARD	LOWER	UPPER	SAMPLE	%DIFF
4 Tetrapentyl Tin	6.36	5.86	6.86	6.36	0.00
8 p-Terphenyl-d14	7.30	6.80	7.80	7.28	-0.18

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Analytical Resources, Inc.

RECOVERY REPORT

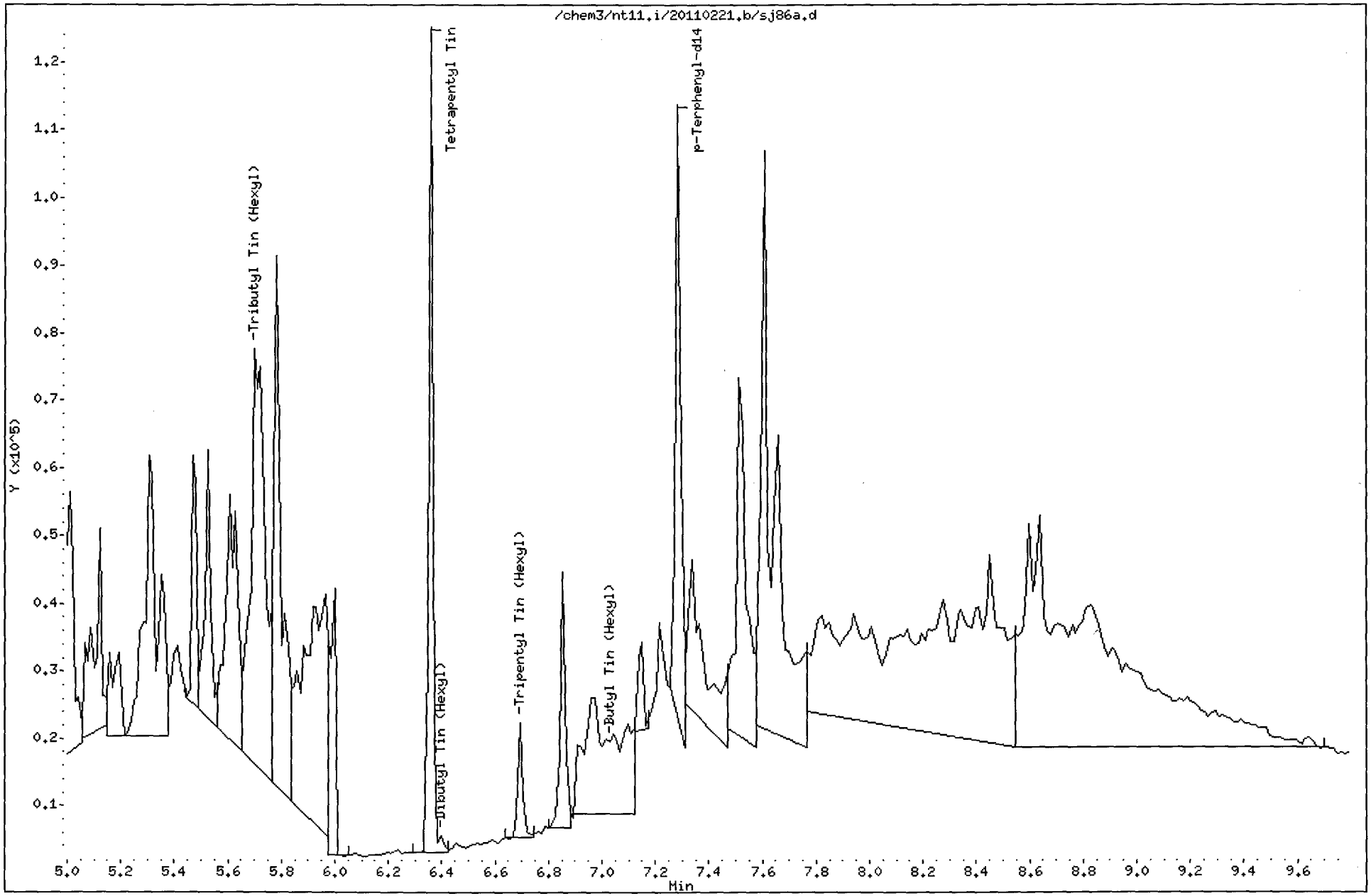
Client Name: Hart Crowser
Sample Matrix: LIQUID
Lab Smp Id: SJ86A
Level: LOW
Data Type: MS DATA
SpikeList File: PW.spk
Sublist File: PW.sub
Method File: /chem3/nt11.i/20110221.b/pw3ul.m
Misc Info: 11-3659

Client SDG: SJ86
Fraction: SV
Client Smp ID: C5
Operator: yz
SampleType: SAMPLE
Quant Type: ISTD

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 1 Tripropyl Tin (Hex	0.09795	0.06752	68.94	28-100
$ 6 Tripentyl Tin (Hex	0.09460	0.1102	116.47	30-135

Data File: /chem3/nt11.i/20110221.b/sj86a.d
Date : 21-FEB-2011 10:14
Client ID: C5
Sample Info: SJ86A
Purge Volume: 150.0
Column phase: ZB-5msi

Instrument: nt11.i
Operator: yz
Column diameter: 0.25



SJ76 : 66657

Data File: /chem3/nt11.i/20110221.b/sj86a.d

Date : 21-FEB-2011 10:14

Client ID: C5

Instrument: nt11.i

Sample Info: SJ86A

Purge Volume: 150.0

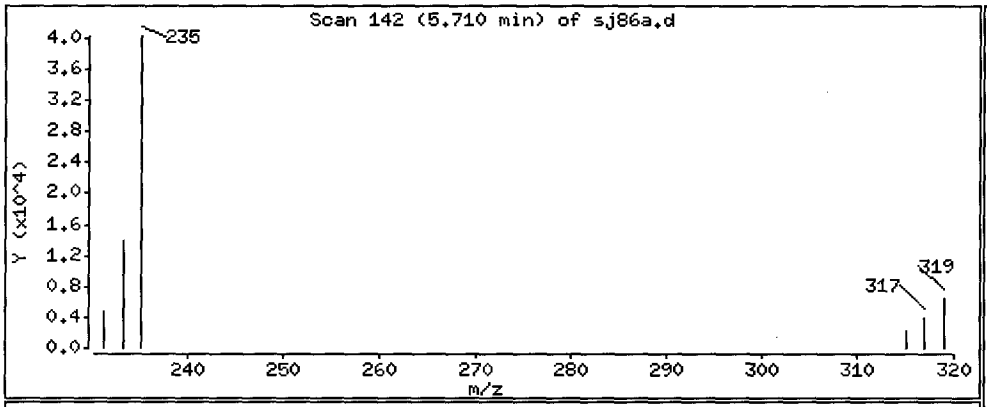
Operator: yz

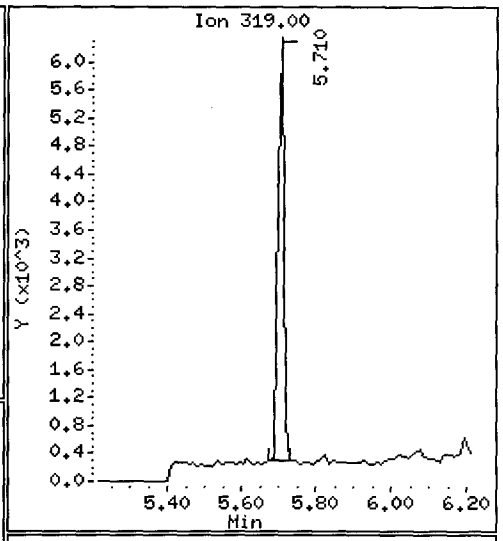
Column phase: ZB-5msi

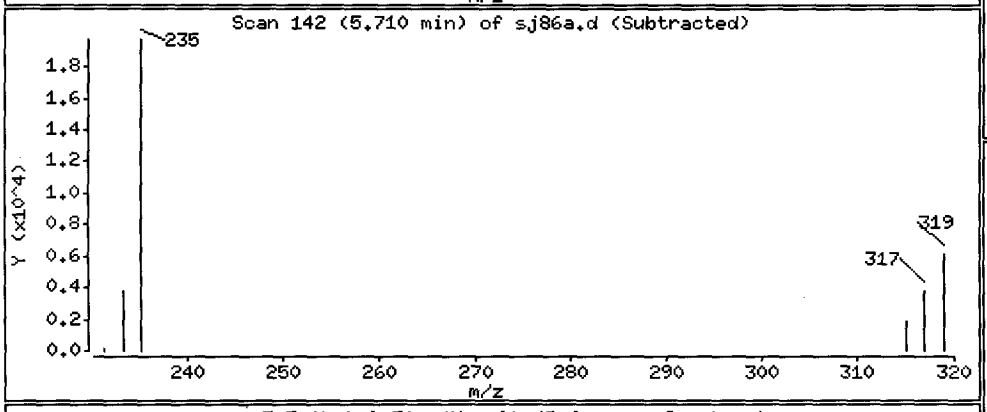
Column diameter: 0.25

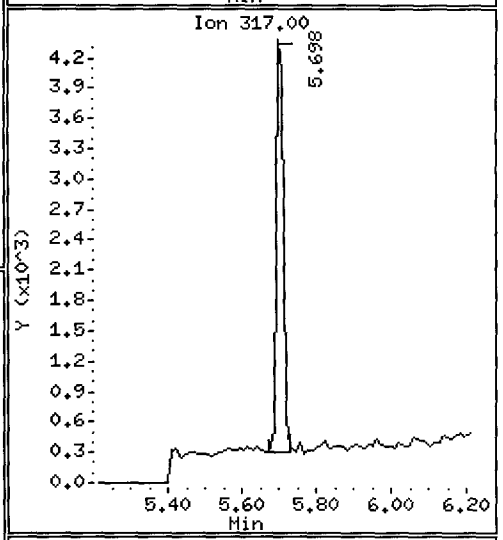
3 Tributyl Tin (Hexyl)

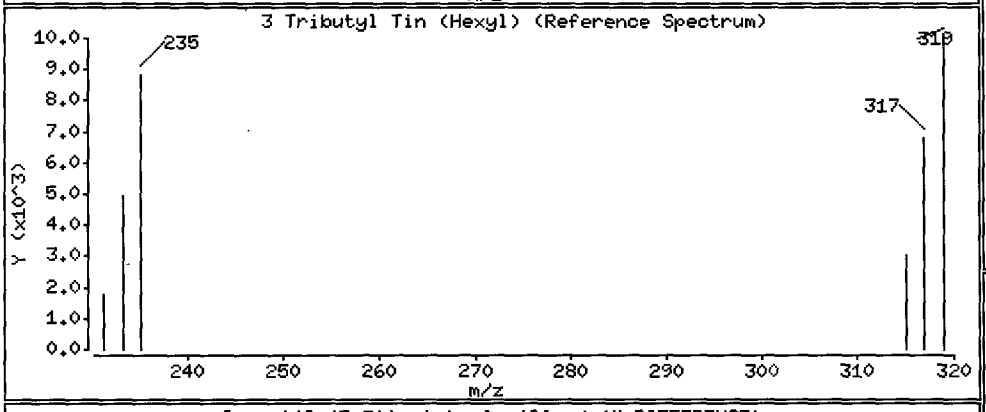
Concentration: 0.06161 ug/L

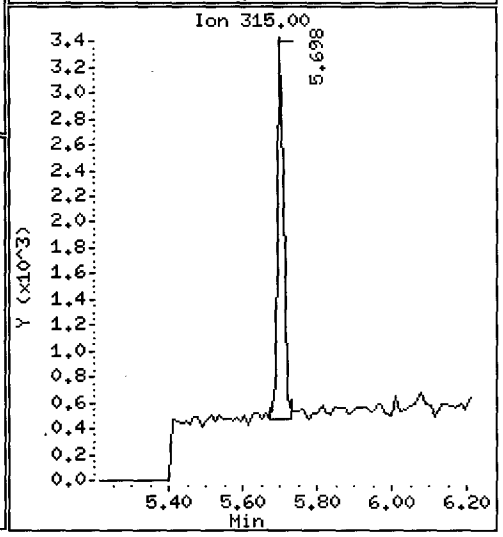


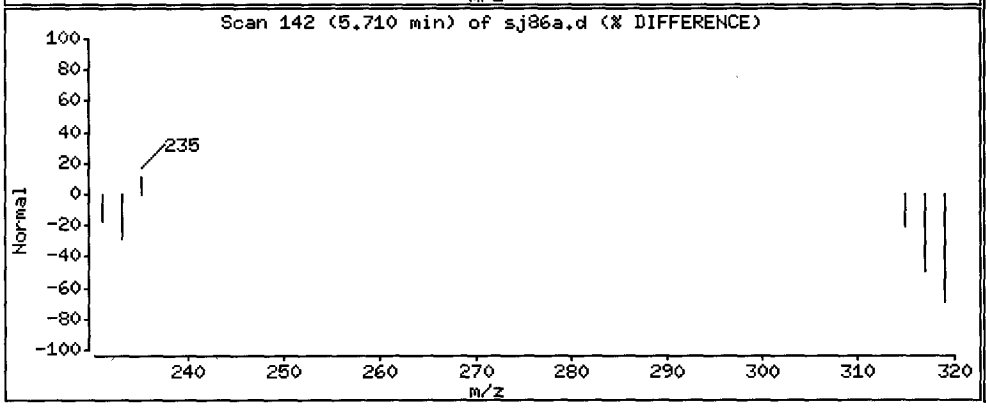












Data File: /chem3/nt11.i/20110221.b/sj86a.d

Date : 21-FEB-2011 10:14

Client ID: C5

Instrument: nt11.i

Sample Info: SJ86A

Purge Volume: 150.0

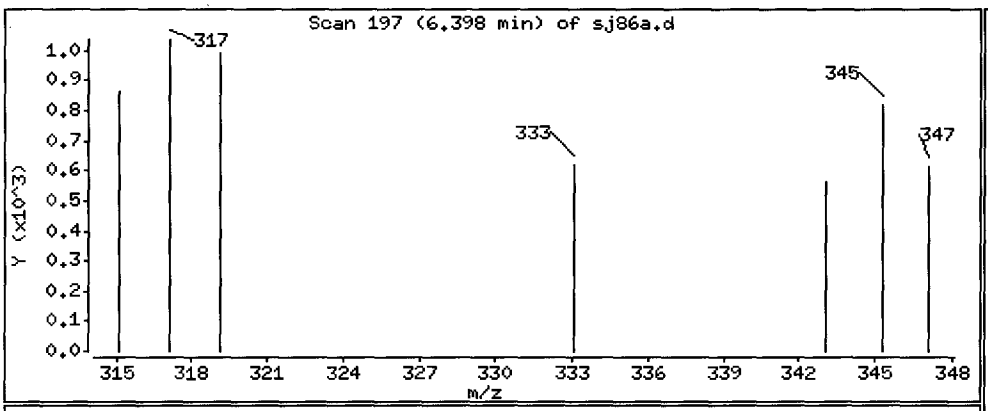
Operator: yz

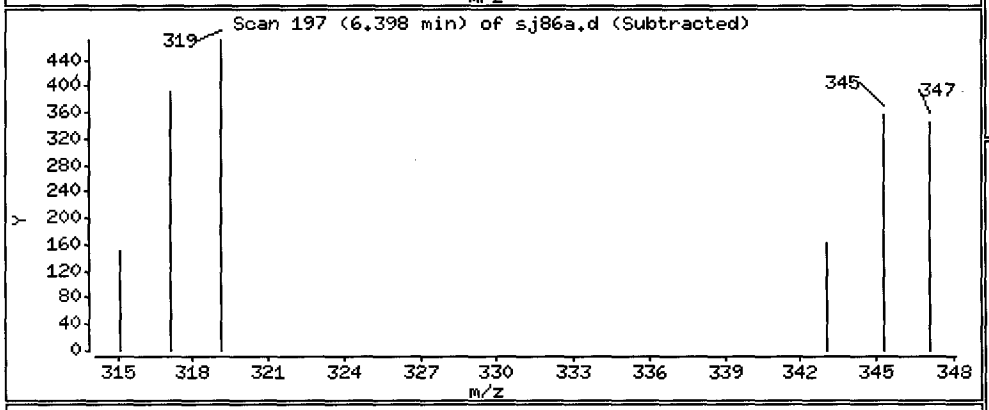
Column phase: ZB-5msi

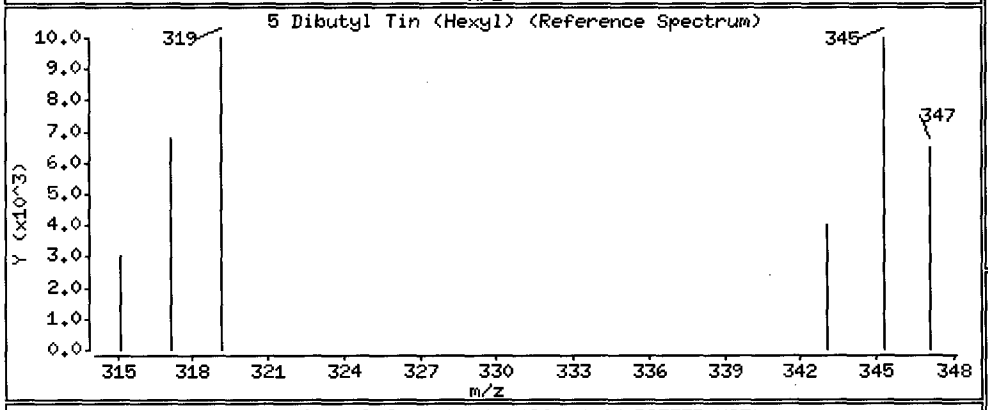
Column diameter: 0.25

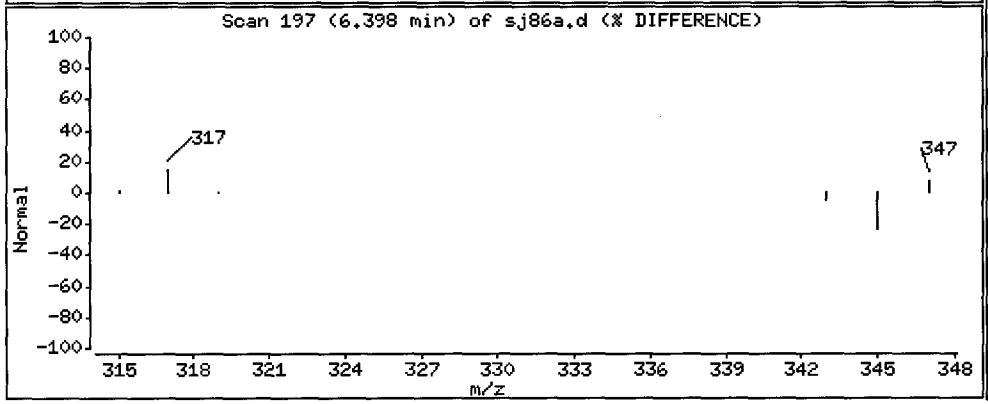
5 Dibutyl Tin (Hexyl)

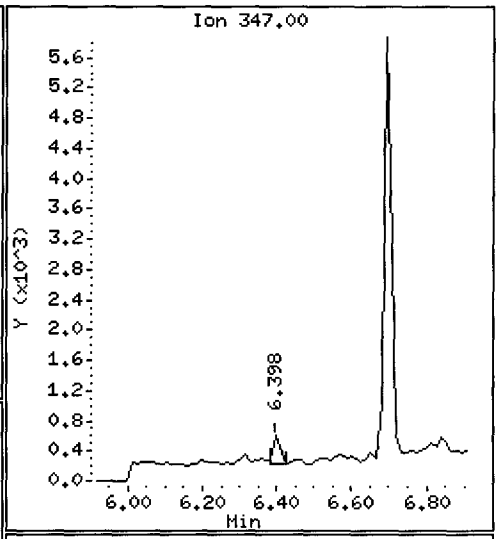
Concentration: 0.01017 ug/L

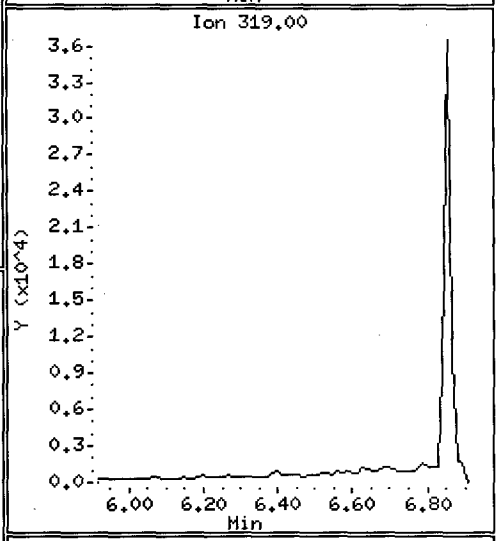


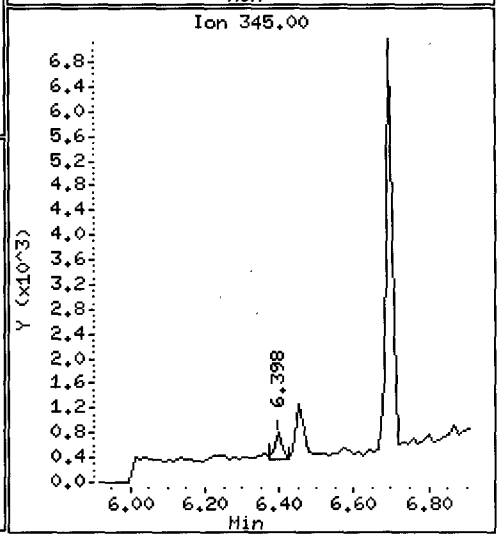












Data File: /chem3/nt11.i/20110221.b/sj86a.d

Date : 21-FEB-2011 10:14

Client ID: C5

Instrument: nt11.i

Sample Info: SJ86A

Purge Volume: 150.0

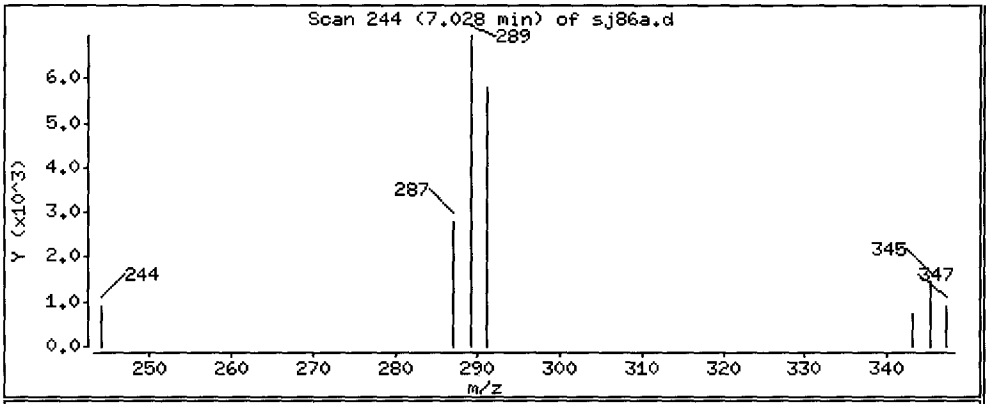
Operator: yz

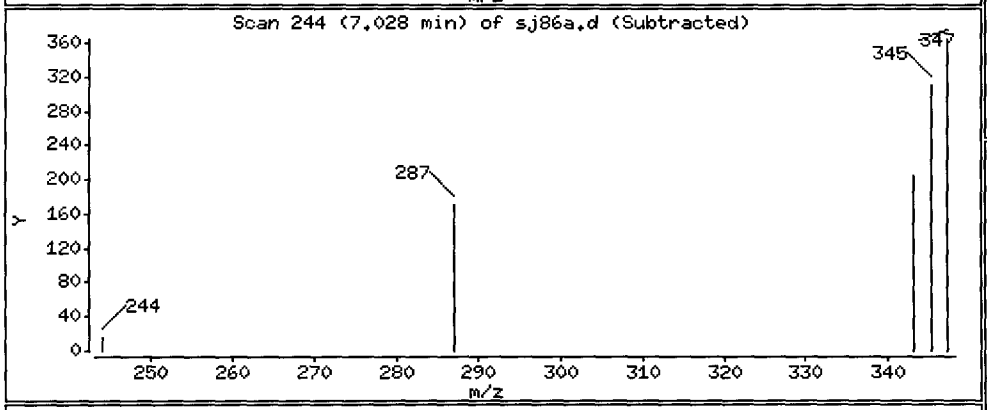
Column phase: ZB-5msi

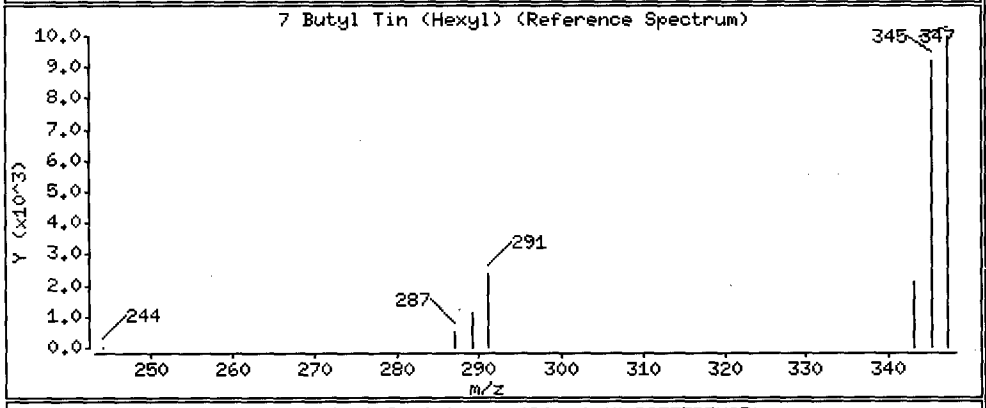
Column diameter: 0.25

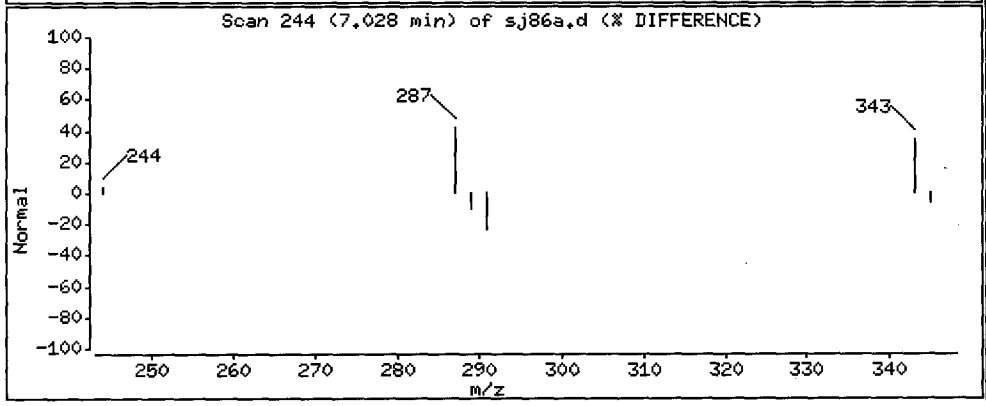
7 Butyl Tin (Hexyl)

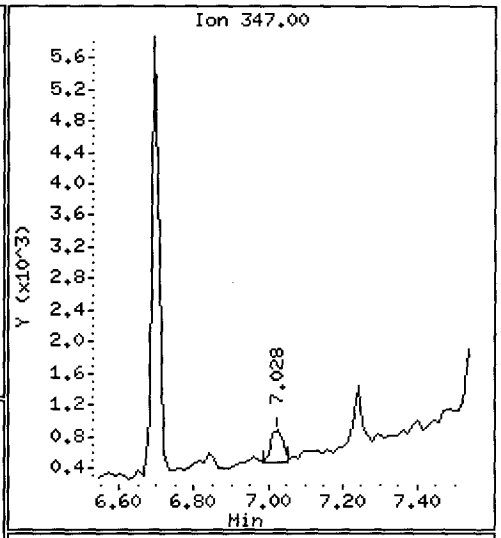
Concentration: 0.01500 ug/L

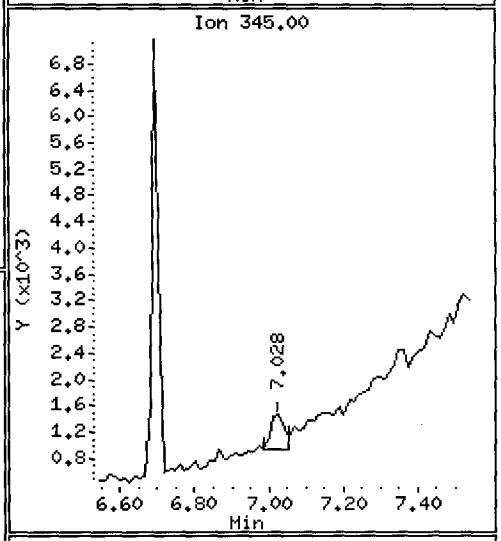


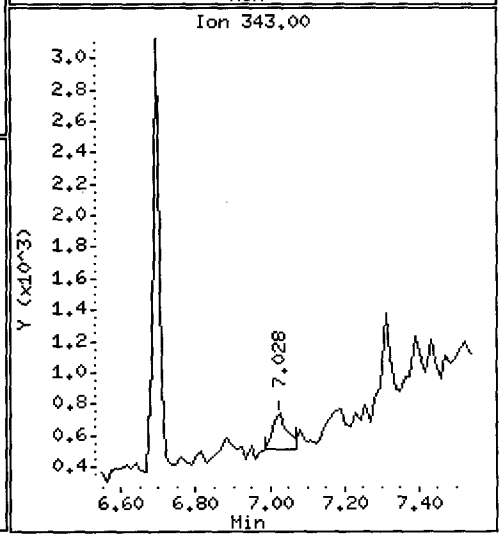












Geotechnical Raw Data
Analyst Notes and Raw Data

ARI Job ID: SJ76, SJ86

Analytical Resources, Inc.

Pore Water Extraction

ARI Job No.: SJ7L0 Date: 2/18/11 Tested By: gs Analytes: TBTs

Aerobic ( )
Anaeorobic (X)

Volume Required: 140 ml

Filtered ( )
Filter Material: _____
Filter Size: _____

Centrifugation 1:	Speed:	3000xg	Temp:	4°C	Duration:	30 min	O2 Level:	<1%
Centrifugation 2:	Speed:	7000xg	Temp:	4°C	Duration:	30 min	O2 Level:	<1%

Centrifugation 1

ARI ID	Start Time	Estimated Recovery	Decant Time
A	12:35	300 ml	13:15

Centrifugation 2

ARI ID	Start Time	Estimated Recovery	Decant Time
A	13:20	300 ml	14:05

Notes: