ENCYCLE/TEXAS, INC.

PHASE II RCRA FACILITY INVESTIGATION REPORT ADDENDUM – SEDIMENT SAMPLING RESULTS

5500 UP RIVER ROAD
CORPUS CHRISTI, TEXAS

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ARCADIS

Infrastructure, buildings, environment, communications

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Phase II RCRA Facility Investigation Report Addendum – Sediment Sampling Results

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Table of Contents

1.0 Introduction 1

2.0 Background 1

3.0 Phase II RFI Sediment Sample Collection Methodology 2

3.1 General 2

3.2 September 30, 2003 Sediment Sampling Event 3

3.3 October 23, 2003 Sediment Sampling Event 4

4.0 Corpus Christi Ship Channel Dredging Frequency 5

5.0 Phase II RFI Sediment Sample Analytical Results 5

5.1 Background Sediment Sample Results 5

5.2 Sediment Sample Analytical Results adjacent to Encycle Facility 6

6.0 Summary and Conclusions 7

7.0 Recommendations 8

Tables

1 Sediment Sample Analytical Results (mg/kg), September – October 2003

2 Background Sediment Sample Statistical Calculations

3 Sediment Sample TOC and Grain Size Analytical Results Summary

Figures

1 Sediment Sample Locations

2 Sediment Sample Location Map, Encycle/Texas, Inc.

3 Total Cadmium Concentration in Sediment (mg/kg), 0-0.5'

4 Total Copper Concentration in Sediment (mg/kg), 0-0.5'

5 Total Manganese Concentration in Sediment (mg/kg), 0-0.5'

6 Total Mercury Concentration in Sediment (mg/kg), 0-0.5'

7 Total Zinc Concentration in Sediment (mg/kg), 0-0.5'

Appendices

A TCEQ September 4, 2003 Letter

B 01 Landfill Area Soil Boring Analytical Results Summary

C United States Coast Guard Approval Letters

D Photographs of Encycle Sediment Sample Locations, September 30, 2003

E Sediment Sample Laboratory Reports

1.0 Introduction

The results of a Phase II RCRA Facility Investigation (RFI) at the Encycle/Texas, Inc. (Encycle) facility in Corpus Christi, Texas were submitted to the Texas Commission on Environmental Quality (TCEQ) in a Phase II RFI Report dated May 9, 2003. In response to the Phase II RFI Report, the TCEQ issued a letter on September 4, 2003 requesting a revised report that includes an evaluation of the Corpus Christi Ship Channel. This Phase II RFI Report Addendum provides the results of sediment samples collected from the Corpus Christi Ship Channel during September and October 2003.

The sediment samples were collected to delineate the extent of constituents of concern (COCs) associated with the 01 Landfill at the Encycle facility. As shown on Figure 1, the Corpus Christi Ship Channel is located directly north of the 01 Landfill. The scope of work included collection of eight background sediment samples from the north side of the Corpus Christi Ship Channel, eight background sediment samples from the south side of the Corpus Christi Ship Channel, and 36 sediment samples from the Corpus Christi Ship Channel adjacent to the Encycle facility.

The Phase II RFI sediment sample collection procedures and analytical results are discussed in detail below.

2.0 Background

The RFI at the Encycle facility is being conducted as specified in Part VII.B. of the Consent Decree issued to Encycle/Texas, Inc. and ASARCO Inc., which was entered in the U.S. District Court for the Southern District of Texas on October 6, 1999. The RFI Work Plan was submitted to the TCEQ on January 31, 2000, and approved by the TCEQ on May 2, 2000. The Phase I RFI was conducted at the site between 2000 and 2002, and included investigation of twenty-one solid waste management units (SWMUs)/Areas of Concern (AOCs).

The Phase I RFI data showed that COC concentrations in soils were generally highest at the surface (0-0.5'), and at least one COC in surface soils at each SWMU/AOC exceeded background levels. COC concentrations in soil generally decreased with depth and with distance away from each SWMU/AOC. COC concentrations in groundwater were generally low to non-detectable, and none of the constituent concentrations in groundwater exceeded the Risk Reduction Standard No. 2 (RRS2) groundwater protection standards adjusted for saline groundwater. The results of the

Phase I RFI were provided to the TCEQ in the August 13, 2002 report entitled "RCRA Facility Investigation Report".

In response to the Phase I RFI, the TCEQ issued a letter on December 12, 2002 requesting a Phase II RFI. The Phase II RFI was conducted during February 2003 and involved additional soil delineation at four SWMUs/AOCs (Waste Pile, Boneyard, East and West Lagoons, 01 Landfill). The Phase II RFI analytical data showed that the horizontal and vertical extent of COCs in soil associated with the Waste Pile, Boneyard, and the East and West Lagoons had been delineated, and that the concentrations of several COCs in soil north of the 01 Landfill adjacent to the Corpus Christi Ship Channel exceeded background soil concentrations. The results of the Phase II RFI were provided to the TCEQ in the May 9, 2003 report entitled "Phase II RCRA Facility Investigation Report".

In response to the Phase II RFI Report, the TCEQ issued a letter on September 4, 2003 requesting a revised report that includes an evaluation of the Corpus Christi Ship Channel. A copy of the TCEQ September 4, 2003 letter is provided in Appendix A. The evaluation of the Corpus Christi Ship Channel was conducted during September and October 2003 as detailed below in Sections 3 and 5.

3.0 Phase II RFI Sediment Sample Collection Methodology

3.1 General

As shown on Figure 1, the Corpus Christi Ship Channel is located north of the 01 Landfill at the Encycle facility. The Corpus Christi Ship Channel, which is a manmade dredged channel, is approximately 1,000 feet in width (shoreline to shoreline) in the vicinity of Encycle. The Corpus Christi Ship Channel is approximately 9 miles in length and enters Corpus Christi Bay approximately 4 miles east of the Encycle facility. The Corpus Christi Ship Channel is listed as Segment #2484 in the Texas Surface Water Quality Standards (30 Texas Administrative Code (TAC) Chapter 307.10, Appendix C). The use classification of the Corpus Christi Ship Channel is non-contact recreation and intermediate aquatic life (30 TAC Chapter 307.10, Appendix A).

The purpose of the sediment sampling in the Corpus Christi Ship Channel was to delineate COCs associated with the 01 Landfill. Over 40 soil borings have been installed around the perimeter of the 01 Landfill during the Phase I and Phase II RFI, and the extent of the 01 Landfill has been defined based on lithologic evaluation of soil

samples collected from those soil borings. As shown on Figure 2, the northern edge of the 01 Landfill is located approximately 40 feet south of the Corpus Christi Ship Channel.

Eight soil borings (B-217 through B-224) were advanced north of the 01 Landfill during February 2003 as part of the Phase II RFI. Soil sample analytical data from these borings were provided the Phase II RFI, and this data is also summarized in Appendix B. As shown in Appendix B, the concentrations of several COCs in one or more soil samples from soil borings B-217 through B-224 exceeded background concentrations, including antimony, arsenic, cadmium, chromium, cobalt, copper, cyanide, lead, manganese, mercury, nickel, selenium, silver, thallium, tin, and zinc. Therefore, the sediment samples were analyzed for these constituents.

Prior to collection of sediment samples from the Corpus Christi Ship Channel, the Port of Corpus Christi Authority (PCCA) and the United States Coast Guard were notified. Approval to collect sediment samples from the Corpus Christi Ship Channel was granted by the United States Coast Guard. The approval letters are provided in Appendix C.

3.2 September 30, 2003 Sediment Sampling Event

A total of 28 sediment samples were collected from the Corpus Christi Ship Channel on September 30, 2003, including eight background sediment samples from the north side of the Corpus Christi Ship Channel (BKG-N1 through BKG-N8), eight background sediment samples from the south side of the Corpus Christi Ship Channel (BKG-S1 through BKG-S8), and twelve sediment samples directly north of the Encycle facility (SED-1 through SED-12). The sediment samples were all collected within 40 feet of the shoreline in water depths ranging from 2 to 5 feet, and the locations of the sediment samples were recorded using a hand-held Global Positioning System (GPS) receiver. Background sediment sample locations are shown on Figure 1, and the sediment sample locations directly north of the Encycle facility are shown on Figure 2. Photographs of the sediment sample locations directly north of the Encycle facility are provided in Appendix D.

The sediment samples were collected using a 2-inch-diameter PVC sampling tube that was lowered from a boat and advanced six inches into the sediment. Prior to each use, the PVC sampling tube was cleaned using a non-phosphate detergent wash, water rinse, and distilled water final rinse. The sediment samples were transferred from the PVC sampling tube directly into 32-ounce widemouth glass jars with Teflon-lined lids.

The sample jars were securely capped, labeled, placed into a cooler with ice, and submitted with chain of custody documents to the analytical laboratory for analysis of total metals, cyanide, and pH. In addition, four of the sediment samples (two clay lithology samples and two sand lithology samples) were analyzed for total organic carbon (TOC) and grain size.

As shown on Table 1, the lithology of the sediment samples varied along the Corpus Christi Ship Channel. The background sediment samples east of the Encycle facility generally consisted of sands and clays, and the background sediment samples west of the Encycle facility consisted predominantly of sand. The sediment samples directly north of the Encycle facility consisted of sands and clays.

3.3 October 23, 2003 Sediment Sampling Event

As detailed below in Section 5, the September 30, 2003 sediment sample analytical data showed that the concentrations of chromium, cyanide, and pH in sediment did not exceed background levels. However, the concentrations of antimony, arsenic, cadmium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, tin, and zinc in one or more of the sediment samples adjacent to the Encycle facility exceeded background levels. Therefore, 24 additional sediment samples (SED-13 through SED-36) were collected radially outward from sediment samples SED-1 through SED-12 on October 23, 2003 to complete the delineation of COCs in sediment. Sediment sample locations are shown on Figure 2.

The sediment samples collected on October 23, 2003 included sediment samples in the middle of the Corpus Christi Ship Channel, which is over 45 feet in depth. Therefore, the October 23, 2003 sediment samples were collected by a certified dive crew (In-Depth Underwater Services) using a 3-inch-diameter by 6-inch-long polyethylene sample tube with polyethylene end caps. Prior to each use, the polyethylene sample tube and end caps were cleaned using a non-phosphate detergent wash, water rinse, and distilled water final rinse. The sediment samples were transferred from the polyethylene sample tube directly into 16-ounce widemouth glass jars with Teflon-lined lids. The sample jars were securely capped, labeled, placed into a cooler with ice, and submitted with chain of custody documents to the analytical laboratory for analysis of total metals.

The locations of the October 23, 2003 sediment samples were recorded using a hand-held GPS receiver, and the water depth at each sample location was measured using a depth finder (Fathometer) in the dive crew boat. The water depths at each sediment

sample location and a lithologic description of each sediment sample are provided on Table 1.

4.0 Corpus Christi Ship Channel Dredging Frequency

ARCADIS contacted the PCCA regarding the dredging frequency of the Corpus Christi Ship Channel. Ms. Sarah Kowalski of the PCCA stated in a November 20, 2003 telephone conversation with Kenneth Brandner of ARCADIS that the Corpus Christi Ship Channel in the area of Encycle is dredged approximately once every three to five years.

5.0 Phase II RFI Sediment Sample Analytical Results

5.1 Background Sediment Sample Results

As shown on Figure 1, the background sediment samples were all collected at least ½ mile away from the Encycle facility. Eight background samples were collected on the north side of the Corpus Christi Ship Channel (BKG-N1 through BKG-N8), and eight background samples were collected on the south side of the Corpus Christi Ship Channel (BKG-S1 through BKG-S8). Background sediment sample analytical results are summarized on Table 1, and copies of the analytical laboratory reports are provided in Appendix E.

As shown on Table 1, the background sediment sample analytical results from the north side of the Corpus Christi Ship Channel are similar to the background sediment sample analytical results from the south side of the Corpus Christi Ship Channel. The metals concentrations in the background sediment samples are relatively low, and cyanide was not detected in any of the background sediment samples. The pH of the background sediment samples ranged from 8.1 to 9.0.

The sediment sample analytical data from the north side of the Corpus Christi Ship Channel (Sample IDs: BKG-N1 through BKG-N8) were utilized to determine background Upper Tolerance Limits for each constituent. The background Upper Tolerance Limits were calculated using the procedures specified in the TCEQ April 30, 1998 document *"Use of Statistics for Determining Soil/Groundwater Cleanup Levels under the Risk Reduction Rules"* and the U.S. Environmental Protection Agency April 1989 document *"Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities."* The background Upper Tolerance Limit calculations are provided on Table 2.

5.2 Sediment Sample Analytical Results adjacent to Encycle Facility

A total of 36 sediment samples were collected adjacent to the Encycle facility, including 12 sediment samples (SED-1 through SED-12) on September 30, 2003 and 24 sediment samples (SED-13 through SED-36) on October 23, 2003. Sediment sample analytical results are summarized on Table 1, and copies of the analytical laboratory reports are provided in Appendix E.

As shown on Figure 2 and Table 1, sediment samples SED-1 through SED-12 were collected within 40 feet of the Encycle shoreline north of the 01 Landfill, and in water depths ranging from 2 to 5 feet. The concentrations of chromium, cyanide, and pH in the sediment samples did not exceed background Upper Tolerance Limits. The concentrations of cobalt, nickel, and thallium in samples SED-1 through SED-12 were generally low, but one or more samples exceeded background concentrations. The concentrations of antimony, arsenic, lead, mercury, selenium, silver, and tin in some, but not all of the sediment samples exceeded background concentrations. The concentrations of cadmium, copper, manganese, and zinc in samples SED-1 through SED-12 all exceeded background concentrations.

Following receipt of the analytical results for sediment samples SED-1 through SED-12, sediment samples SED-13 through SED-36 were collected radially outward from samples SED-1 through SED-12. As shown on Figure 2 and Table 1, sediment samples SED-13 through SED-18 were collected within 60 feet of the Encycle shoreline in water depths ranging from 4 to 12 feet. Samples SED-13 through SED-18 were analyzed for all constituents that exceeded background concentrations in one or more samples from SED-1 through SED-12. As shown on Table 1, the concentrations of antimony, arsenic, cobalt, lead, nickel, selenium, silver, thallium, and tin did not exceed background levels in any of the samples from SED-13 through SED-18, indicating the northerly extent of these constituents in sediment associated with the 01 Landfill has been defined. The concentrations of cadmium, copper, manganese, mercury, and zinc in one or more sediment samples from SED-13 through SED-18 exceeded background levels. Therefore, the sediment samples collected further outward from the 01 Landfill (SED-19 through SED-36) were analyzed for cadmium, copper, manganese, mercury, and zinc to delineate the extent of these constituents in sediment.

Sediment samples SED-19 through SED-24 were collected within 200 feet of the Encycle shoreline in water depths ranging from 10 to 22 feet. Sediment samples SED-25 through SED-30 were collected near the center of the Corpus Christi Ship Channel

in water depths ranging from 50 to 53 feet. Sediment samples SED-31 through SED-36 were collected within 150 feet of the north shoreline of the Corpus Christi Ship Channel in water depths ranging from 39 to 49 feet. Analytical results for cadmium, copper, manganese, mercury, and zinc in sediment are shown on Figures 3 through 7, respectively.

As shown on Figure 3, 5, and 7, cadmium, manganese, and zinc concentrations, respectively, are generally highest in the sediment samples located closest to the 01 Landfill, and generally decrease with distance away from the 01 Landfill, indicating the 01 Landfill is likely a source of these constituents.

As shown on Figure 4, copper concentrations in sediment are highest in samples located near the north side of the Corpus Christi Ship Channel adjacent to Bulk Terminal Dock 1. Copper concentrations in sediment generally decrease with distance away from Bulk Terminal Dock 1, indicating the 01 Landfill is not the primary source of copper in the sediment samples. The 01 Landfill may be a secondary, but smaller source of copper relative to the Bulk Terminal Dock 1, primarily near the shoreline at sediment samples SED-1 and SED-10.

As shown on Figure 6, the mercury concentrations in sediment are relatively low (less than 1 mg/kg) and variable, indicating the 01 Landfill is not a significant source of mercury in sediment.

6.0 Summary and Conclusions

Sediment samples were collected from the Corpus Christi Ship Channel during September and October 2003 to delineate the extent of constituents associated with the 01 Landfill at the Encycle facility. A total of 52 sediment samples were collected, including 8 background samples from the north side of the Corpus Christi Ship Channel and 8 background samples from the south side of the Corpus Christi Ship Channel.

Twelve sediment samples (SED-1 through SED-12) were collected within 40 feet of the Encycle shoreline north of the 01 Landfill, in water depths ranging from 2 to 5 feet. The concentrations of chromium, cyanide, and pH in the sediment samples did not exceed background Upper Tolerance Limits. The concentrations of cobalt, nickel, and thallium in samples SED-1 through SED-12 were generally low, but one or more samples exceeded background concentrations. The concentrations of antimony, arsenic, lead, mercury, selenium, silver, and tin in some, but not all of the sediment

samples exceeded background concentrations. The concentrations of cadmium, copper, manganese, and zinc in samples SED-1 through SED-12 all exceeded background concentrations.

Sediment samples SED-13 through SED-18 were collected radially outward from sediment samples SED-1 through SED-12, within 60 feet of the Encycle shoreline in water depths ranging from 4 to 12 feet. Sediment samples SED-13 through SED-18 were analyzed for all constituents that exceeded background concentrations in one or more samples from SED-1 through SED-12. The concentrations of antimony, arsenic, cobalt, lead, nickel, selenium, silver, thallium, and tin in samples SED-13 through SED-18 did not exceed background levels, thus defining the northerly extent of these constituents in sediment associated with the 01 Landfill.

The concentrations of cadmium, copper, manganese, mercury, and zinc in one or more sediment samples from SED-13 through SED-18 exceeded background levels. Therefore, sediment samples collected further outward from the 01 Landfill (SED-19 through SED-36) were analyzed for cadmium, copper, manganese, mercury, and zinc to delineate the extent of these constituents in sediment. The sediment sample analytical data showed that cadmium, manganese, and zinc concentrations were highest in the samples located closest to the 01 Landfill, and generally decreased with distance away from the 01 Landfill, indicating the 01 Landfill is likely a source of these constituents. Copper concentrations in sediment are highest in samples located near the north side of the Corpus Christi Ship Channel adjacent to Bulk Terminal Dock 1. Copper concentrations in sediment generally decrease with distance away from Bulk Terminal Dock 1, indicating the 01 Landfill is not the primary source of copper in the sediment samples. Mercury concentrations in sediment are relatively low (less than 1 mg/kg) and variable, indicating the 01 Landfill is not a significant source of mercury in sediment.

7.0 Recommendations

Based on the analytical data obtained during the Phase I RFI, the Phase II RFI, and the Phase II RFI Addendum, the horizontal and vertical extent of COCs in soil, groundwater, and sediment associated with the Encycle facility have been adequately delineated. Therefore, as specified in Section VII.B., Paragraph 48 of the Consent Decree, following TCEQ approval of this Phase II RFI Report Addendum, a baseline risk assessment (BLRA) will be prepared for the Encycle facility. The BLRA will identify and evaluate risk for all potential receptors, and if necessary, identify and

evaluate corrective measures alternatives and recommend appropriate corrective measure(s) to protect human health and the environment.

The BLRA will include an ecological risk assessment (ERA). The ERA will be conducted in a tiered manner consistent with the TCEQ's December 2001 guidance entitled *"Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas", RG-263 (Revised)."* The first tier in the ERA process is a Tier 1 Exclusion Criteria Checklist. If a site fails the Tier 1 checklist, then a Tier 2 Screening-Level Ecological Risk Assessment (SLERA) is the next step in the process. Based on the sediment sample analytical data, it is anticipated that a Tier 2 SLERA will be required. The ecological risk assessment will be one of the two major components of the BLRA. The other major component of the BLRA will be the human health risk assessment (HHRA). The HHRA will be based on site-specific data, standard default exposure assumptions, and toxicity values used by the U.S. Environmental Protection Agency and the TCEQ. The HHRA will include (1) site characterization, (2) development of constituents of potential concern (COPCs) to be used in subsequent risk calculations, (3) a toxicity assessment to evaluate systemic toxicant (non-carcinogenic) and carcinogenic effects of the COPCs, (4) an exposure assessment to identify potentially complete exposure pathways, and (5) characterization of potential risks, including the development of preliminary remediation goals (PRGs) if unacceptable regulatory risks are identified.

As part of the ERA, collection of eight surface water samples from the Corpus Christi Ship Channel is recommended. Four of the surface water samples will be collected directly above the locations where constituent concentrations in sediment were highest (i.e., samples SED-1, SED-4, SED-7, SED-10). Four background surface water samples also will be collected from the Corpus Christi Ship Channel in similar water depths. The background surface water samples will be collected at least ½ mile away from the Encycle facility, with two samples from the north side of the Corpus Christi Ship Channel and two samples from the south side of the Corpus Christi Ship Channel. The surface water samples will be analyzed for the constituents that exceeded background concentrations in one or more sediment samples.

The Consent Decree states in Part VII.B., paragraph 48 that "*Upon approval of the RFI Report, if the TNRCC, in consultation with EPA, determines that there has been a Release of Hazardous Waste or Hazardous Constituents (listed in 40 CFR Part 261, Appendix VIII and/or 40 CFR Part 264 Appendix IX) into the environment, then Settlors shall propose a remedy, if necessary, in accordance with the TNRCC risk reduction rules or as otherwise specified by the TNRCC. This will require a BLRA*

and/or CMS Report to be submitted for review and approval 120 days after final approval of the RFI reports or within the time frame(s) specified by the TNRCC, in consultation with the EPA." Completion of the BLRA is recommended prior to preparation of the CMS to allow evaluation and selection of the most appropriate remedial approach for the affected media, based on cleanup levels established in the BLRA. Therefore, pending TCEQ approval, BLRA will be submitted to the TCEQ within 90 days following TCEQ approval to proceed. The CMS will be submitted to the TCEQ within 90 days following TCEQ approval of the BLRA.

TABLES

Table 1. Sediment Sample Analytical Results (mg/kg) - September - October 2003, Encycle/Texas, Inc., Corpus Christi, Texas

Sample ID	Sediment Lithology	Sample Date	Water Depth (ft)	Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Zinc	pH
Background Sediment Samples - North Side of Corpus Christi Ship Channel																				
BKG-N1	Gray clay with shell fragments	9/30/03	3	<0.8	6	<1	14	7	15	<0.1	15	167	<0.05	10	<1.3	<0.5	0.5	<5	73	8.8
BKG-N2	Gray silty fine sand with shell fragments	9/30/03	2	<0.8	<5	<1	37	43	7	<0.1	6	30	<0.05	18	<0.8	<0.5	0.7	<5	39	8.2
BKG-N3	Brown silty clay and fine sand	9/30/03	3	<0.8	<5	1	58	76	8	<0.1	11	59	<0.05	28	<0.8	<0.5	<0.5	<5	42	8.7
BKG-N4	Brown clay with silty sand with shell fragments	9/30/03	4	<0.8	7	<1	24	12	12	<0.1	40	149	<0.05	14	<1.9	<0.5	<0.5	<5	65	9.0
BKG-N5	Brown clayey silty sand	9/30/03	2	<0.8	<5	2	43	73	13	<0.1	12	43	0.08	22	<0.8	<0.5	<0.5	<5	126	9.0
BKG-N6	Brown fine sand with shell fragments	9/30/03	3	<0.8	<5	<1	63	121	6	<0.1	6	35	<0.05	32	<0.8	<0.5	<0.5	<5	29	8.6
BKG-N7	Brown fine sand with shell fragments	9/30/03	2	<0.8	<5	<1	54	94	<5	<0.1	5	31	<0.05	27	<0.8	<0.5	<0.5	<5	22	8.7
BKG-N8	Brown v. fine sand with shell fragments	9/30/03	2	<0.8	<5	<1	57	90	<5	<0.1	<5	27	<0.05	29	<0.8	<0.5	<0.5	<5	19	8.4
Background Sediment Samples - South Side of Corpus Christi Ship Channel																				
BKG-S1	Brown fine sand with shell fragments	9/30/03	3	<0.8	<5	<1	39	70	<5	<0.1	<5	42	<0.05	20	<0.8	<0.5	<0.5	<5	13	8.3
BKG-S2	Brown fine sand	9/30/03	4	<0.8	<5	<1	51	96	<5	<0.1	<5	37	<0.05	26	<0.8	<0.5	<0.5	<5	16	8.1
BKG-S3	Brown silty clayey fine sand	9/30/03	5	<0.8	<5	1	33	59	23	<0.1	13	86	0.08	29	<0.8	<0.5	<0.5	<5	117	8.7
BKG-S4	Brown fine sand	9/30/03	2	<0.8	<5	2	55	108	6	<0.1	15	30	<0.05	28	<0.8	<0.5	<0.5	<5	69	8.6
BKG-S5	Brown clayey sand	9/30/03	3	<0.8	<5	1	43	73	8	<0.1	34	70	<0.05	22	<0.8	<0.5	<0.5	<5	78	8.9
BKG-S6	Brown fine to med. sand w/shell fragments	9/30/03	2	<0.8	<5	1	66	120	6	<0.1	8	41	<0.05	33	<0.8	<0.5	<0.5	<5	31	8.8
BKG-S7	Brown clayey fine sand	9/30/03	4	<0.8	<5	<1	45	67	7	<0.1	8	67	<0.05	23	<0.8	<0.5	<0.5	<5	25	8.8
BKG-S8	Brown clayey fine sand	9/30/03	4	<0.8	<5	<1	28	65	6	<0.1	7	56	<0.05	16	<0.8	<0.5	<0.5	<5	24	8.6
Sediment Background Upper Tolerance Limits[a]																				
Sediment on north side of Corpus Christi Ship Channel:				0.4	9.46	2.44	99.95	193	23.27	0.05	50.38	249	0.093	47.56	1.14	0.25	0.88	2.5	165	7.8min 9.6max
Sediment on south side of Corpus Christi Ship Channel:				0.4	2.5	2.54	84.05	155	28.42	0.05	43.74	115	0.093	41.97	0.4	0.25	0.25	2.5	165	7.7min 9.5max
01 Landfill Step-Out Sediment Samples																				
SED-1 (step-out from boring B-224)	Brown fine sand with shell fragments	9/30/03	2	**2.6**	**33**	**163**	36	95	**743**	<0.1	**337**	**6,120**	0.09	29	**2.5**	**1.3**	<0.5	**11**	**15,800**	8.7
SED-2 (step-out from SED-1)	Gray fine sand	9/30/03	3	<0.8	**10**	**55**	23	69	**148**	<0.1	**118**	**2,610**	**0.29**	16	**1.2**	<0.5	<0.5	**5**	**6,430**	8.3
SED-3 (step-out from SED-2)	Gray fine sand	9/30/03	4	**0.9**	9	**44**	42	86	**256**	<0.1	**97**	**1,470**	**0.15**	25	<0.8	**0.5**	<0.5	**6**	**4,260**	8.2
SED-4 (step-out from boring B-222)	Gray sandy clay with shell fragments	9/30/03	2	<0.8	**10**	**69**	18	32	**93**	<0.1	**187**	**5,810**	**0.23**	**48**	<0.8	**0.6**	<0.5	<5	**8,630**	8.8
SED-5 (step-out from SED-4)	Gray fine sand with shell fragments	9/30/03	3	<0.8	<5	**30**	42	115	**83**	<0.1	42	**1,870**	0.05	25	<0.8	<0.5	<0.5	<5	**3,890**	8.7
SED-6 (step-out from SED-5)	Brown fine sand with shell fragments	9/30/03	4	<0.8	<5	**24**	32	92	**73**	<0.1	47	**1,500**	0.05	19	<0.8	<0.5	0.8	<5	**3,260**	8.6

Table 1. Sediment Sample Analytical Results (mg/kg) - September - October 2003, Encycle/Texas, Inc., Corpus Christi, Texas

Sample ID	Sediment Lithology	Sample Date	Water Depth (ft)	Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Zinc	pH
SED-7 (step-out from boring B-220)	Brown sandy clay with shell fragments	9/30/03	2	**1.9**	**11**	**23**	18	25	**120**	<0.1	**240**	**3,120**	**0.95**	31	**4.7**	**0.9**	0.6	<5	**12,200**	8.3
SED-8 (step-out from SED-7)	Gray sandy clay	9/30/03	4	<0.8	**13**	**18**	18	20	**43**	<0.1	40	**988**	0.07	17	<0.8	<0.5	0.7	<5	**2,020**	8.8
SED-9 (step-out from SED-8)	Gray sandy clay	9/30/03	5	**0.8**	7	**23**	18	24	**65**	<0.1	**70**	**826**	<0.05	28	<0.8	<0.5	**0.9**	<5	**3,090**	8.3
SED-10 (step-out from boring B-218)	Brown fine sand with shell fragments	9/30/03	2	**7.9**	**45**	**156**	43	**211**	**509**	<0.1	**465**	**7,650**	**0.43**	**162**	**2**	**2.4**	<0.5	**36**	**22,400**	7.9
SED-11 (step-out from SED-10)	Gray sandy clay with shell fragments	9/30/03	3	**97**	**83**	**18**	30	39	**174**	<0.1	**3,530**	**1,140**	**0.45**	19	**3.9**	**6.1**	<0.5	**619**	**4,900**	9.0
SED-12 (step-out from SED-11)	Gray sandy clay with shell fragments	9/30/03	4	**82**	**65**	**19**	29	39	**107**	<0.1	**2,340**	**512**	**0.11**	16	**5**	**4.5**	<0.5	**453**	**2,840**	8.8
SED-13	Gray fine sand with shell fragments	10/23/03	4	<0.8	6	**8**	---	130	**37**	---	23	232	0.09	22	<0.8	<0.5	<5	<5	**668**	---
SED-19 (step-out from SED-13)	Brownish gray silty v. fine to fine sand	10/23/03	10	---	---	**5**	---	---	**86**	---	---	227	**0.2**	---	---	---	---	---	**590**	---
SED-25 (step-out from SED-19)	Stiff, lt. gray clay	10/23/03	53	---	---	<1	---	---	19	---	---	**450**	<0.05	---	---	---	---	---	66	---
SED-31 (step-out from SED-25)	Soft, gray clay, silt, and v. fine sand	10/23/03	45	---	---	**3**	---	---	**1250**	---	---	**575**	**0.27**	---	---	---	---	---	**473**	---
SED-14 (step-out from SED-12)	Gray fine sand with shell fragments	10/23/03	9	<0.8	<5	**6**	---	69	**37**	---	24	**275**	**0.1**	11	<0.8	<0.5	<5	<5	**660**	---
SED-20 (step-out from SED-14)	Gray clayey silt	10/23/03	20	---	---	1	---	---	**54**	---	---	**321**	**0.21**	---	---	---	---	---	**232**	---
SED-26 (step-out from SED-20)	Firm, tan to gray v. fine sandy clay	10/23/03	52	---	---	<1	---	---	**24**	---	---	**1260**	<0.05	---	---	---	---	---	71	---
SED-32 (step-out from SED-26)	Soft, gray clay, silt, and v. fine sand	10/23/03	46	---	---	**3**	---	---	**2580**	---	---	**673**	**0.29**	---	---	---	---	---	**571**	---
SED-15 (step-out from SED-9)	Gray clayey v. fine sand with shell fragments	10/23/03	12	<0.8	6	1	---	36	20	---	9	88	0.06	7	<0.8	<0.5	<5	<5	108	---

Table 1. Sediment Sample Analytical Results (mg/kg) - September - October 2003, Encycle/Texas, Inc., Corpus Christi, Texas

Sample ID	Sediment Lithology	Sample Date	Water Depth (ft)	Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Zinc	pH
SED-21 (step-out from SED-15)	Gray clayey v. fine sand	10/23/03	21	---	---	**5**	---	---	**122**	---	---	246	**0.41**	---	---	---	---	---	**529**	---
SED-27 (step-out from SED-21)	Firm, tan to lt. gray clay	10/23/03	52	---	---	<1	---	---	**34**	---	---	**551**	<0.05	---	---	---	---	---	76	---
SED-33 (step-out from SED-27)	Soft, gray clay, silt, and v. fine sand	10/23/03	45	---	---	**3**	---	---	**2460**	---	---	**490**	**0.24**	---	---	---	---	---	**537**	---
SED-16 (step-out from SED-6)	Gray clayey v. fine sand	10/23/03	10	<0.8	<5	**3**	---	57	**64**	---	19	207	**0.12**	9	<0.8	<0.5	<5	<5	**398**	---
SED-22 (step-out from SED-16)	Gray silty clayey fine sand with shell fragments	10/23/03	20	---	---	**3**	---	---	**108**	---	---	**287**	**0.69**	---	---	---	---	---	**424**	---
SED-28 (step-out from SED-22)	Soft, gray clay and v. fine sand	10/23/03	53	---	---	2	---	---	**363**	---	---	**693**	**0.18**	---	---	---	---	---	**365**	---
SED-34 (step-out from SED-28)	Soft, gray v. fine to fine sand	10/23/03	39	---	---	2	---	---	**411**	---	---	168	**0.21**	---	---	---	---	---	**268**	---
SED-17 (step-out from SED-3)	Gray clayey v. fine sand with shell fragments	10/23/03	9	<0.8	<5	**5**	---	48	**66**	---	19	150	0.09	8	<0.8	<0.5	<5	<5	**399**	---
SED-23 (step-out from SED-17)	Gray silty v. fine to fine sand	10/23/03	19	---	---	**3**	---	---	**54**	---	---	143	**0.13**	---	---	---	---	---	**281**	---
SED-29 (step-out from SED-23)	Soft, gray clay, silt, and v. fine sand	10/23/03	53	---	---	**3**	---	---	**290**	---	---	**750**	**0.26**	---	---	---	---	---	**426**	---
SED-35 (step-out from SED-29)	Soft, gray v. fine to fine sand	10/23/03	45	---	---	1	---	---	**534**	---	---	**275**	**0.15**	---	---	---	---	---	**185**	---
SED-18	Gray clayey v. fine sand with shell fragments	10/23/03	4	<0.8	<5	1	---	55	**31**	---	20	76	**0.1**	11	<0.8	<0.5	<5	<5	**196**	---
SED-24 (step-out from SED-18)	Gray clayey v. fine sand	10/23/03	22	---	---	**11**	---	---	**105**	---	---	**263**	**0.94**	---	---	---	---	---	**1010**	---
SED-30 (step-out from SED-24)	Soft, gray clay, silt, and v. fine sand	10/23/03	50	---	---	2	---	---	**102**	---	---	**374**	**0.22**	---	---	---	---	---	**328**	---
SED-36 (step-out from SED-30)	Soft, gray clay, silt, and v. fine sand	10/23/03	49	---	---	2	---	---	**206**	---	---	**274**	**0.26**	---	---	---	---	---	**315**	---

Table 1. Sediment Sample Analytical Results (mg/kg) - September - October 2003, Encycle/Texas, Inc., Corpus Christi, Texas

Sample ID	Sediment Lithology	Sample Date	Water Depth (ft)	Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Zinc	pH
Equipment Blank		9/30/03	---	<0.05	<0.005	<0.01	<0.01	<0.05	<0.05	<0.004	<0.02	<0.015	<0.0005	<0.05	<0.01	<0.005	<0.002	<0.05	<0.05	---
Field Blank		9/30/03	---	<0.05	<0.005	<0.01	<0.01	<0.05	<0.05	<0.004	<0.02	<0.015	<0.0005	<0.05	<0.01	<0.005	<0.002	<0.05	0.055	---

mg/kg Milligrams per kilogram
--- Not analyzed
a See Table 2 for Upper Tolerance Limit Calculations
Note: 1) Numbers in **bold** exceed sediment background upper tolerance limit from north side of Corpus Christi Ship Channel.

Table 2. Background Sediment Sample Statistical Calculations, Encycle/Texas, Inc., Corpus Christi, Texas

Sample ID	Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Zinc	pH
Background Sediment Samples - North Side of Corpus Christi Ship Channel																	
BKG-N1	<0.8	6	<1	14	7	15	<0.1	15	167	<0.05	10	<1.3	<0.5	0.5	<5	73	8.8
BKG-N2	<0.8	<5	<1	37	43	7	<0.1	6	30	<0.05	18	<0.8	<0.5	0.7	<5	39	8.2
BKG-N3	<0.8	<5	1	58	76	8	<0.1	11	59	<0.05	28	<0.8	<0.5	<0.5	<5	42	8.7
BKG-N4	<0.8	7	<1	24	12	12	<0.1	40	149	<0.05	14	<1.9	<0.5	<0.5	<5	65	9.0
BKG-N5	<0.8	<5	2	43	73	13	<0.1	12	43	0.08	22	<0.8	<0.5	<0.5	<5	126	9.0
BKG-N6	<0.8	<5	<1	63	121	6	<0.1	6	35	<0.05	32	<0.8	<0.5	<0.5	<5	29	8.6
BKG-N7	<0.8	<5	<1	54	94	<5	<0.1	5	31	<0.05	27	<0.8	<0.5	<0.5	<5	22	8.7
BKG-N8	<0.8	<5	<1	57	90	<5	<0.1	<5	27	<0.05	29	<0.8	<0.5	<0.5	<5	19	8.4
Number of samples (n):	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Mean (X):	0.4	3.5	0.75	43.75	64.5	8.25	0.05	12.19	67.63	0.032	22.5	0.50	0.25	0.34	2.5	51.88	8.68
Standard Deviation (S):	0	1.87	0.53	17.63	40.4	4.71	0	11.98	56.88	0.019	7.86	0.20	0	0.17	0	35.60	0.28
Tolerance Interval (X + KS):[a]	0.4	9.46	2.44	99.95	193	23.27	0.05	50.38	249	0.093	47.56	1.14	0.25	0.88	2.5	165	7.8min 9.6max
Background Sediment Samples - South Side of Corpus Christi Ship Channel																	
BKG-S1	<0.8	<5	<1	39	70	<5	<0.1	<5	42	<0.05	20	<0.8	<0.5	<0.5	<5	13	8.3
BKG-S2	<0.8	<5	<1	51	96	<5	<0.1	<5	37	<0.05	26	<0.8	<0.5	<0.5	<5	16	8.1
BKG-S3	<0.8	<5	1	33	59	23	<0.1	13	86	0.08	29	<0.8	<0.5	<0.5	<5	117	8.7
BKG-S4	<0.8	<5	2	55	108	6	<0.1	15	30	<0.05	28	<0.8	<0.5	<0.5	<5	69	8.6
BKG-S5	<0.8	<5	1	43	73	8	<0.1	34	70	<0.05	22	<0.8	<0.5	<0.5	<5	78	8.9
BKG-S6	<0.8	<5	1	66	120	6	<0.1	8	41	<0.05	33	<0.8	<0.5	<0.5	<5	31	8.8
BKG-S7	<0.8	<5	<1	45	67	7	<0.1	8	67	<0.05	23	<0.8	<0.5	<0.5	<5	25	8.8
BKG-S8	<0.8	<5	<1	28	65	6	<0.1	7	56	<0.05	16	<0.8	<0.5	<0.5	<5	24	8.6
Number of samples (n):	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Mean (X):	0.4	2.5	0.88	45	82	7.63	0.05	11.25	53.63	0.032	24.6	0.4	0.25	0.25	2.5	46.63	8.60
Standard Deviation (S):	0	0	0.52	12.25	23	6.52	0	10.19	19.38	0.019	5.45	0	0	0	0	37.28	0.27
Tolerance Interval (X + KS):[a]	0.4	2.5	2.54	84.05	155	28.42	0.05	43.74	115	0.093	41.97	0.4	0.25	0.25	2.5	165	7.7min 9.5max

a K = Tolerance factor for one-sided normal tolerance interval with 0.95 probability level (U.S. EPA, Feb. 1989)

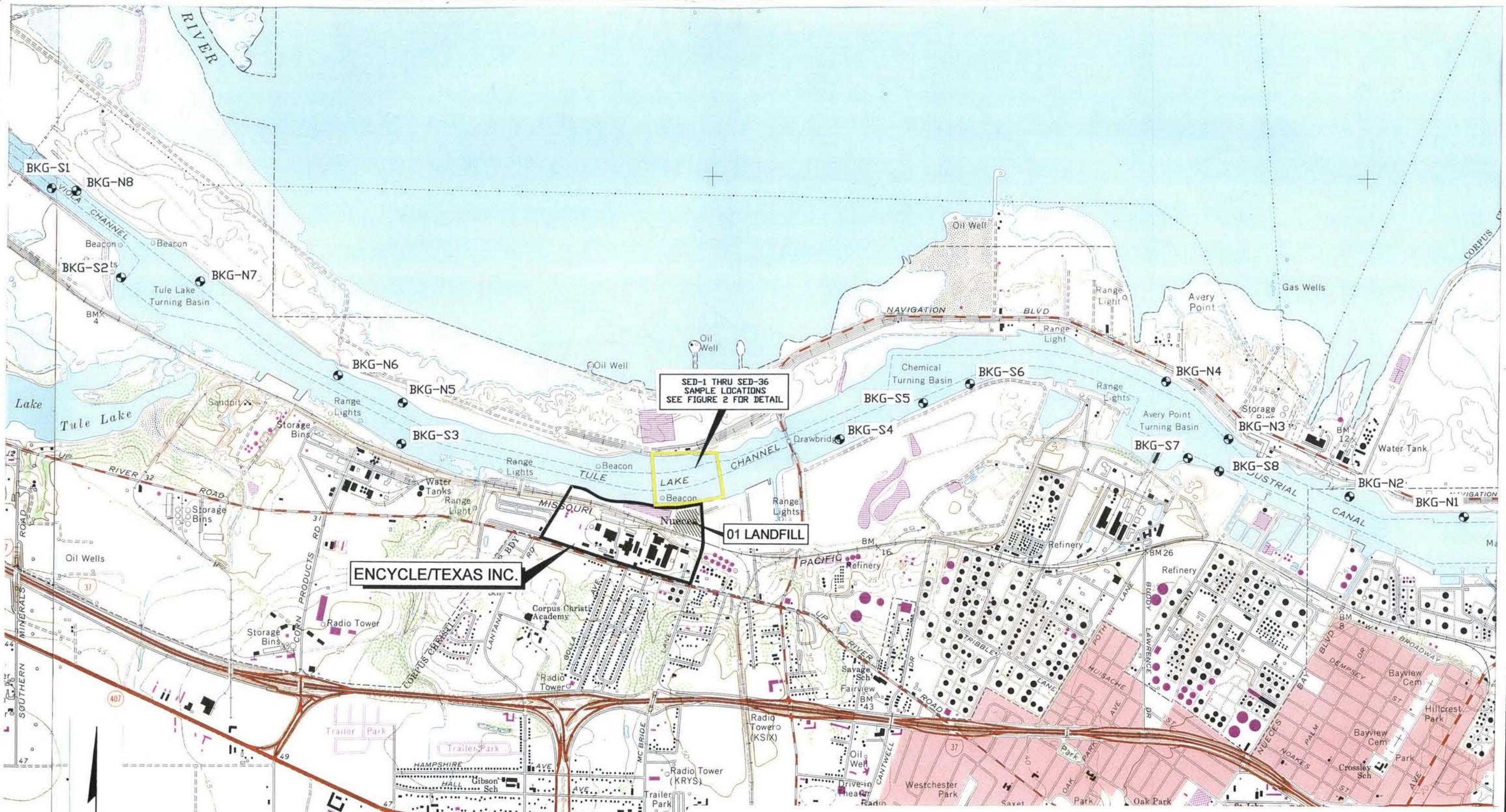
Note: For non-detects, one-half of the detection limit was used as the constituent concentration.

Table 3. Sediment Sample TOC and Grain Size Analytical Results Summary, Encycle/Texas, Inc., Corpus Christi, Texas

					Grain Size Evaluation						
					Percent Passing Sieve by Weight						
Sample ID	Sediment Lithology	Sample Date	Water Depth (ft)	TOC (ppm)	#4 sieve (4.75 mm)	#8 sieve (2.36 mm)	#16 sieve (1.18 mm)	#30 sieve (0.6 mm)	#50 sieve (0.3 mm)	#100 sieve (0.15 mm)	#200 sieve (0.075 mm)
Background Sediment Samples - North Side of Corpus Christi Ship Channel											
BKG-N1	Gray clay with shell fragments	9/30/03	3	5.4	89.6	87.0	83.1	81.2	77.7	68.0	47.8
BKG-N7	Brown fine sand with shell fragments	9/30/03	2	<2	99.2	98.9	98.1	91.7	68.3	29.6	7.1
01 Landfill Step-Out Sediment Samples											
SED-1	Brown fine sand with shell fragments	9/30/03	2	3.7	74.1	64.7	55.3	42.1	12.8	1.4	0.5
SED-11	Gray sandy clay with shell fragments	9/30/03	3	3.1	99.2	98.5	96.6	91.7	75.6	58.1	29.4

TOC Total organic carbon
ppm Parts per million
mm Millimeters (sieve size openings)

FIGURES



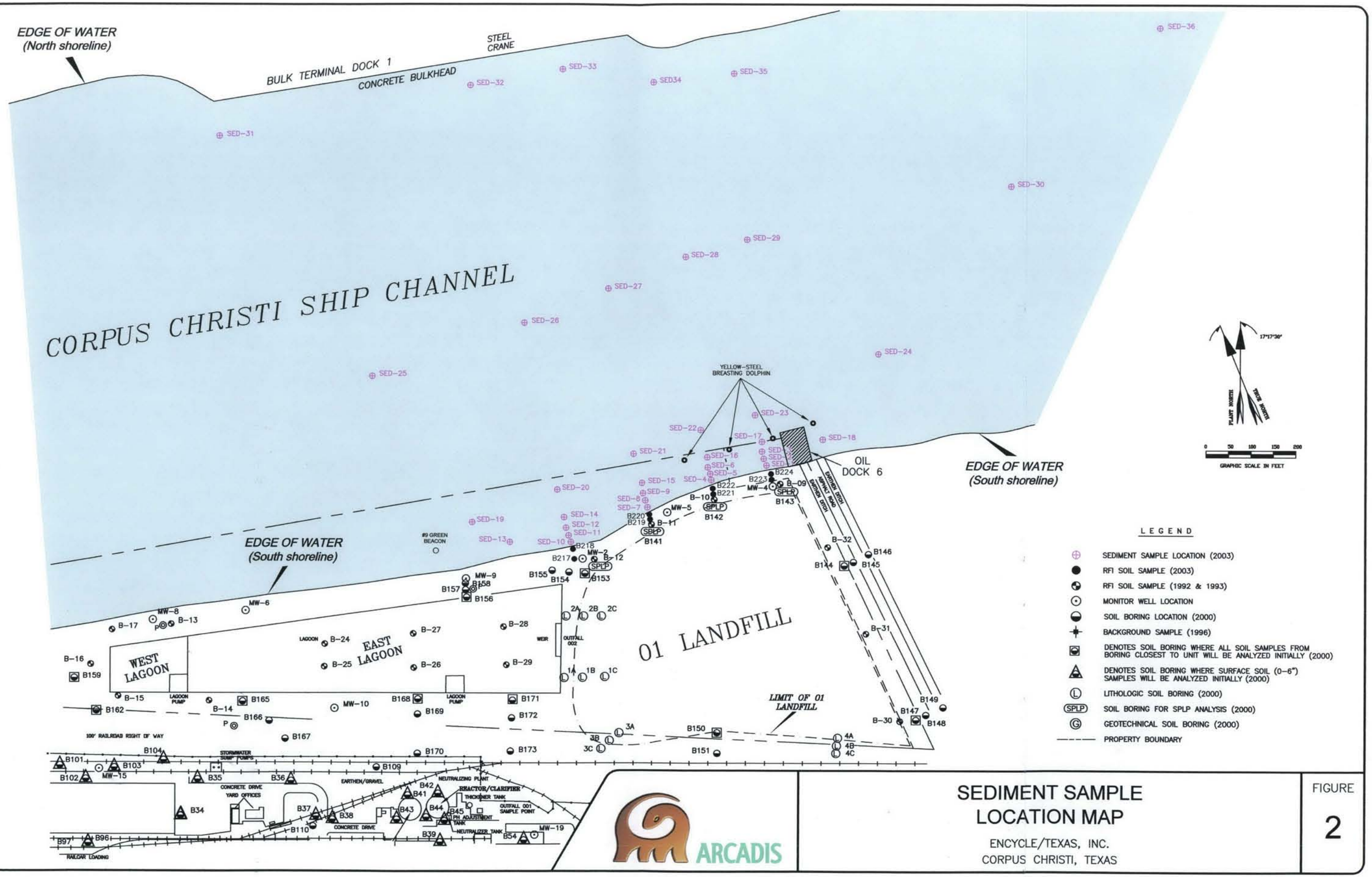
ARCADIS

SEDIMENT SAMPLE LOCATIONS

ENCYCLE/TEXAS, INC.
CORPUS CHRISTI, TEXAS

FIGURE
1

DRAFTER:
APPROVED: K. BRANDNER
CHECKED: K. BRANDNER
DRAWING: SED-TDPD
PRJCT NO.: CC00642.002 | FILE:
DWG DATE:



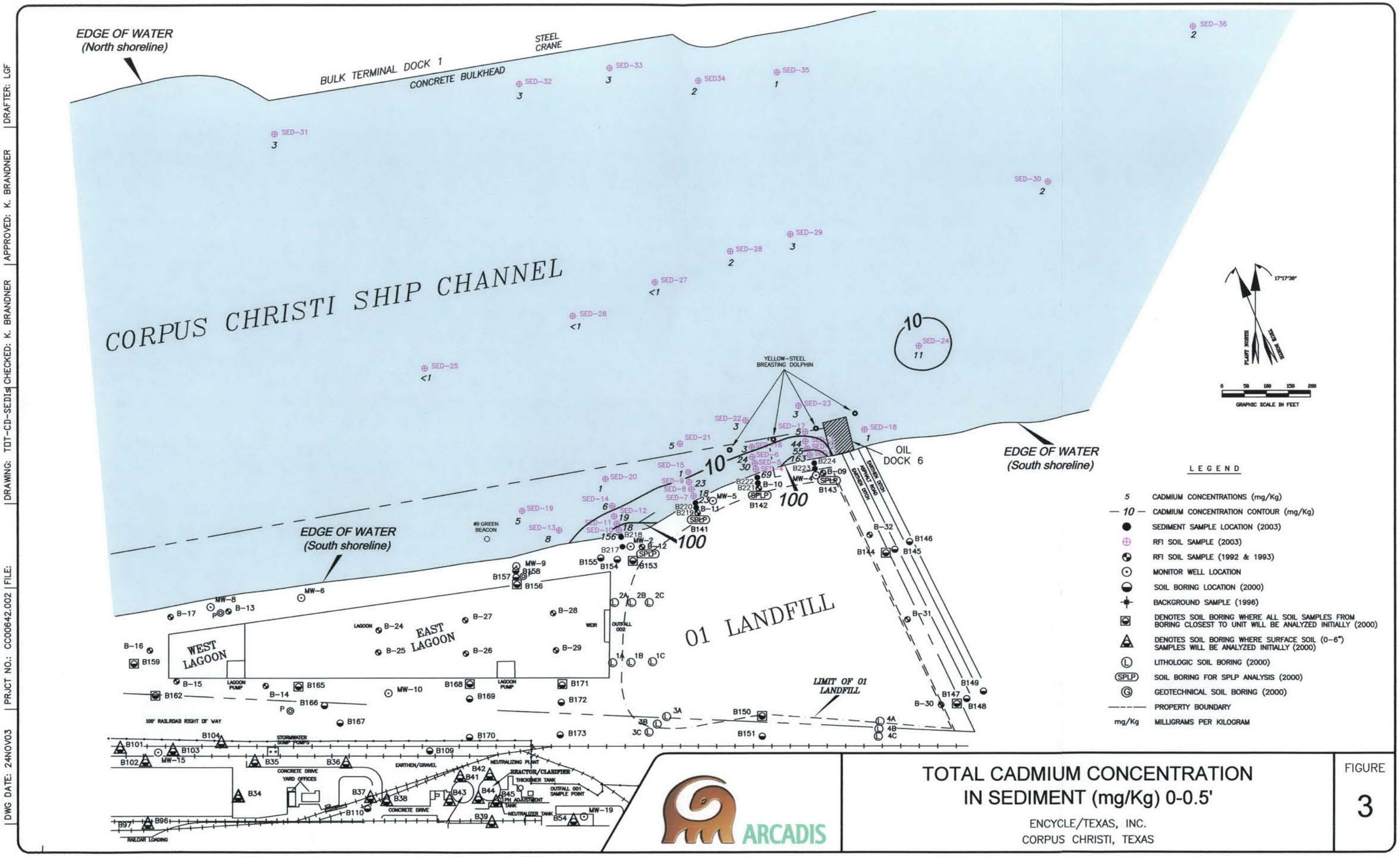
ARCADIS

SEDIMENT SAMPLE LOCATION MAP

ENCYCLE/TEXAS, INC.
CORPUS CHRISTI, TEXAS

FIGURE
2

DWG DATE: 24NOV03 | PRJCT NO.: CC00642.002 | FILE: | DRAWING: SEDI-SAMPs | CHECKED: K. BRANDNER | APPROVED: K. BRANDNER | DRAFTER: LGF



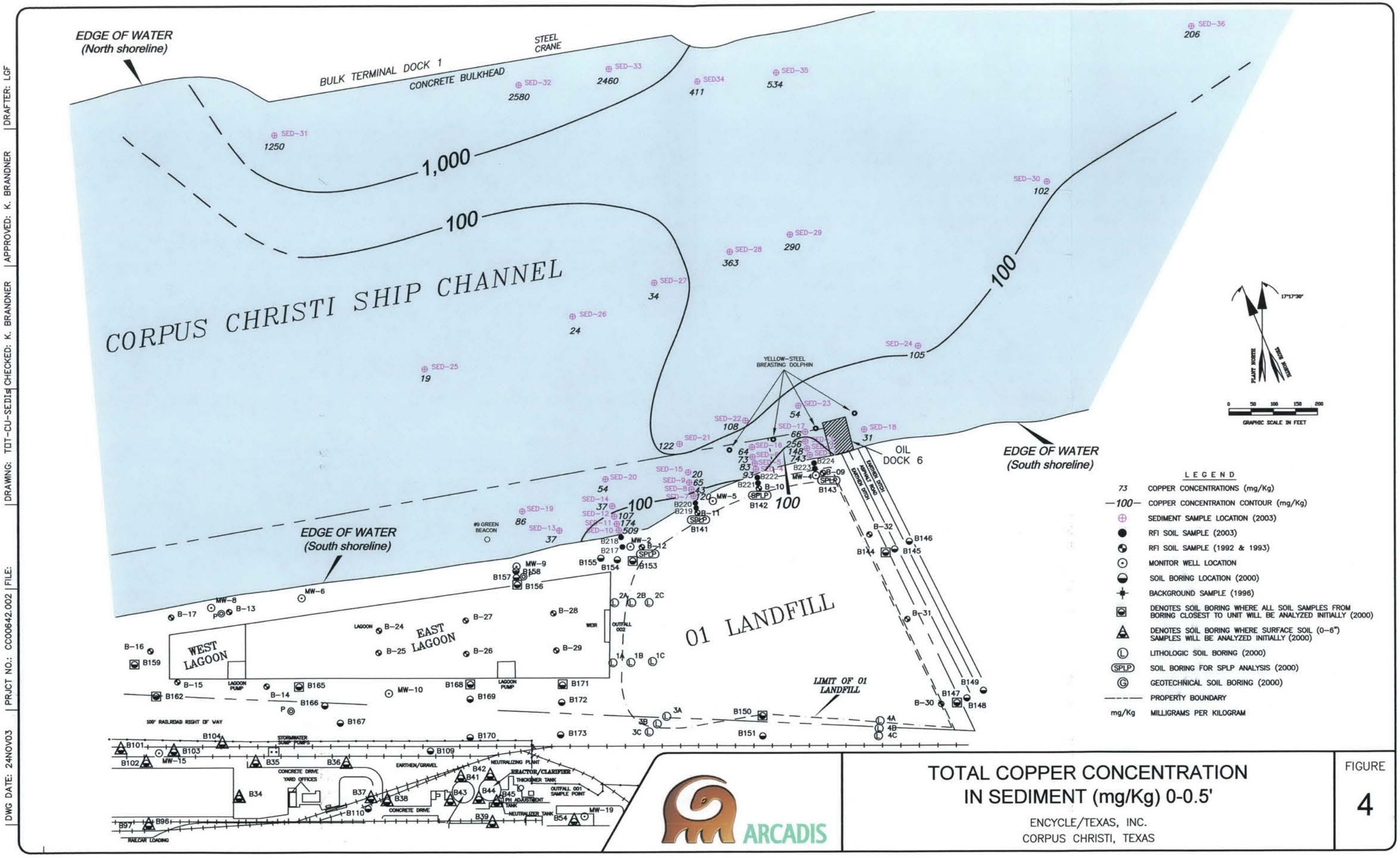
ARCADIS

TOTAL CADMIUM CONCENTRATION IN SEDIMENT (mg/Kg) 0-0.5'

ENCYCLE/TEXAS, INC.
CORPUS CHRISTI, TEXAS

FIGURE
3

DRAWING: TDT-CD-SED1s | CHECKED: K. BRANDNER | APPROVED: K. BRANDNER | DRAFTER: LGF
DWG DATE: 24NOV03 | PRJCT NO.: CC000642.002 | FILE:



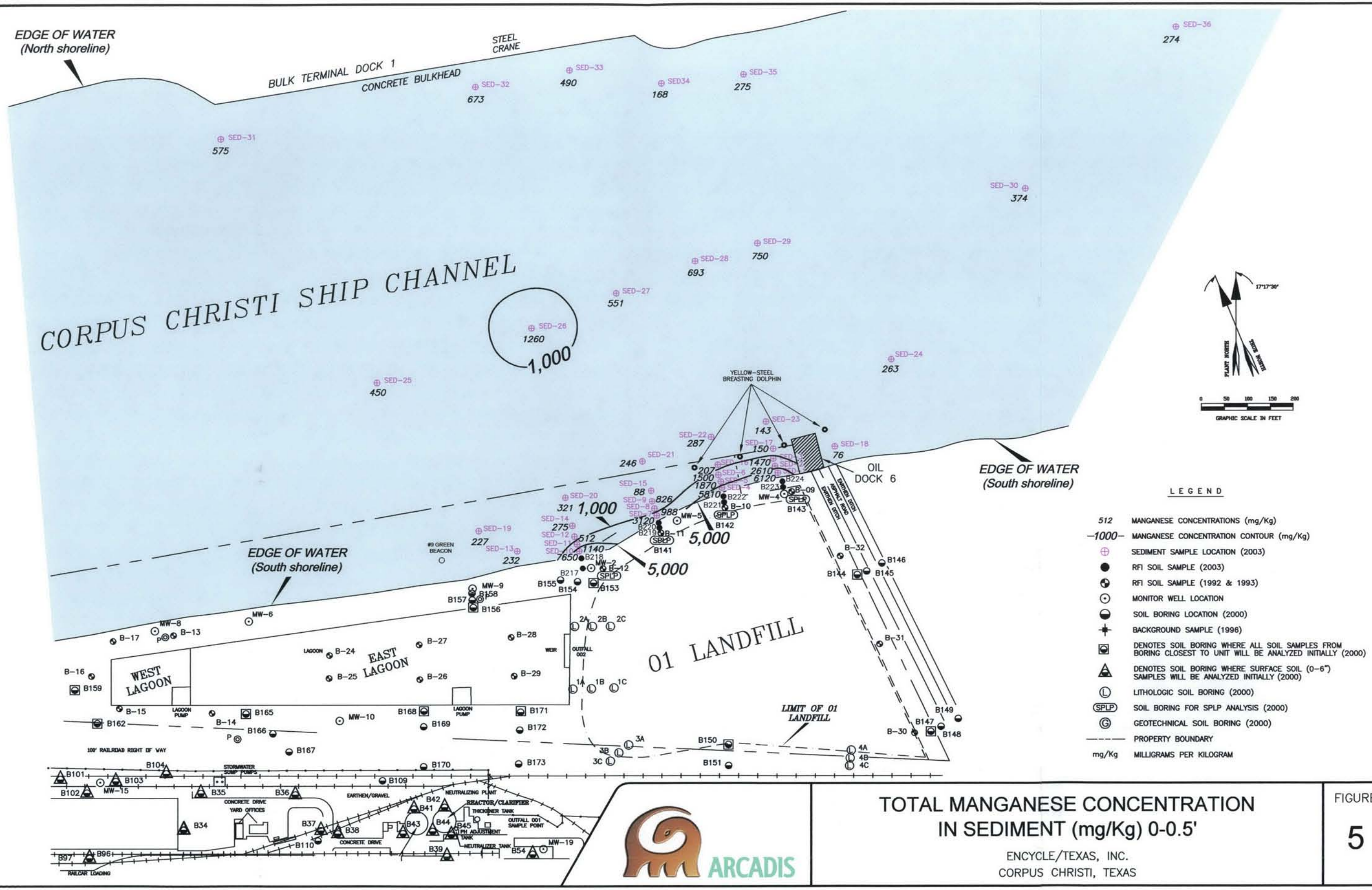
ARCADIS

TOTAL COPPER CONCENTRATION IN SEDIMENT (mg/Kg) 0-0.5'

ENCYCLE/TEXAS, INC.
CORPUS CHRISTI, TEXAS

FIGURE 4

DRAWING: TDT-CU-SEDIs | CHECKED: K. BRANDNER | APPROVED: K. BRANDNER | DRAFTER: LGF
DWG DATE: 24NOV03 | PRJCT NO.: CC00642.002 | FILE:



ARCADIS

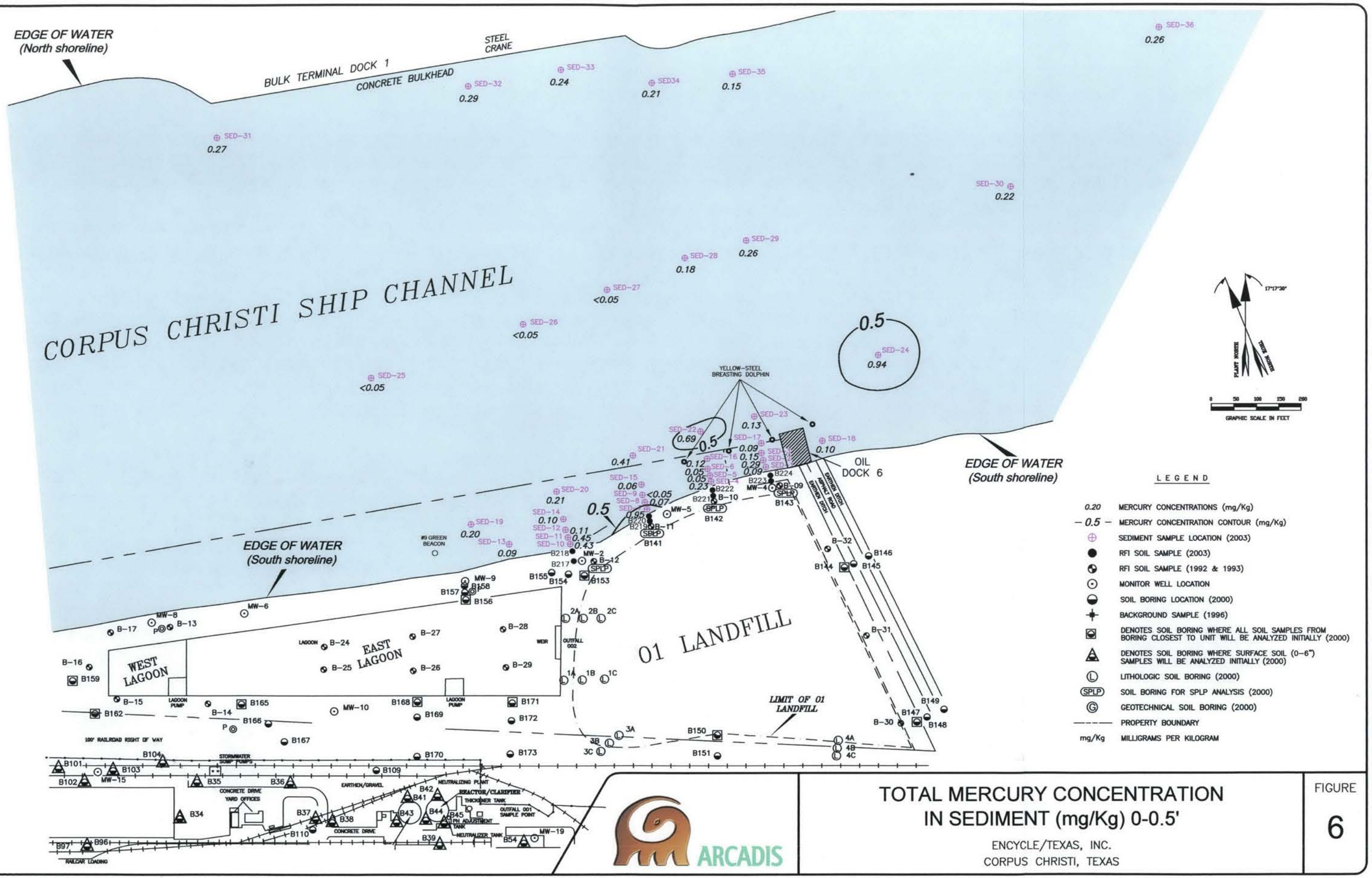
TOTAL MANGANESE CONCENTRATION IN SEDIMENT (mg/Kg) 0-0.5'

ENCYCLE/TEXAS, INC.
CORPUS CHRISTI, TEXAS

FIGURE
5

DWG DATE: 24NOV03 | PRJCT NO.: CC00642.002 | FILE: | DRAWING: TDT-MN-SEDIs | CHECKED: K. BRANDNER | APPROVED: K. BRANDNER | DRAFTER: LGF

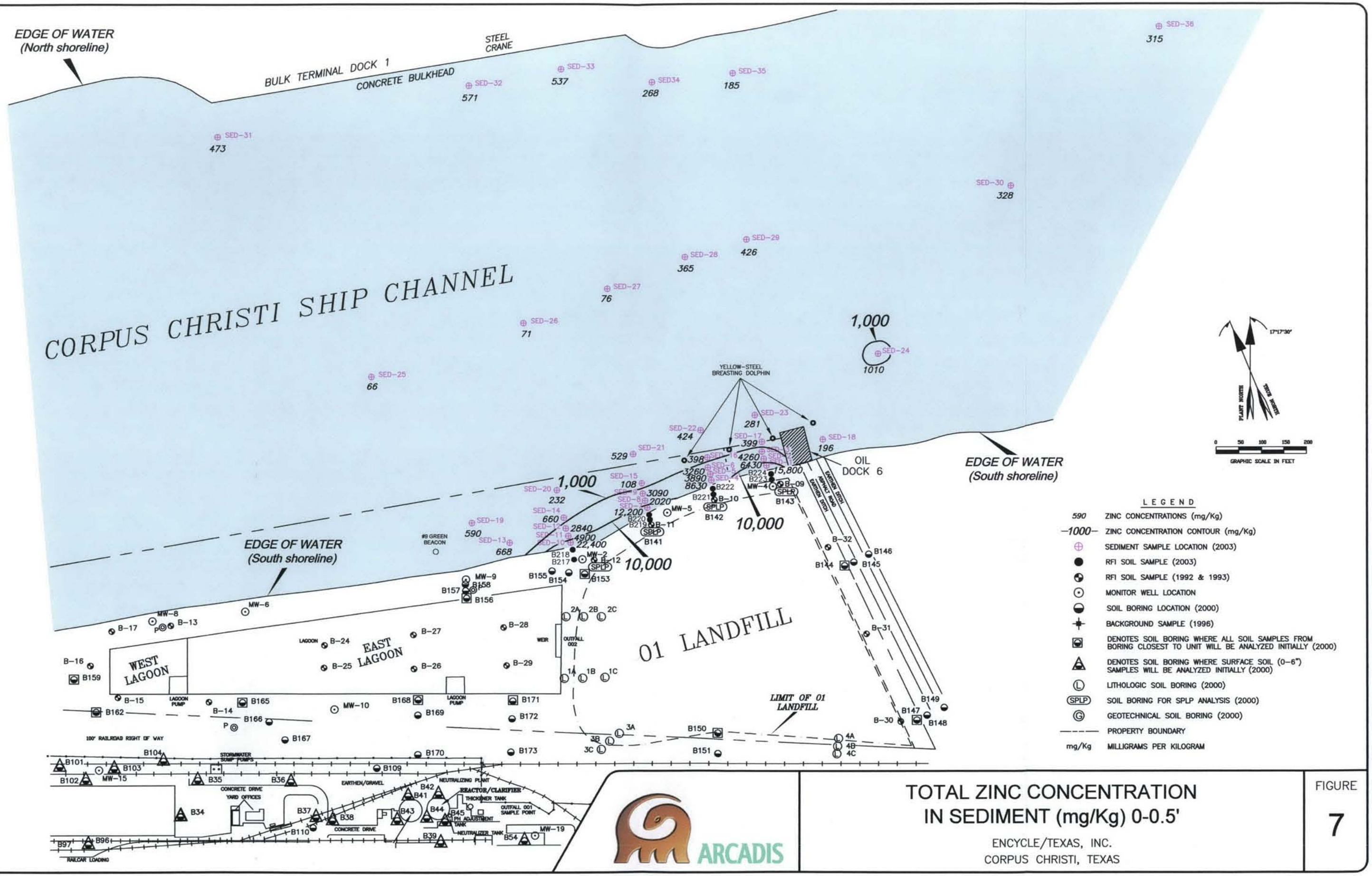
DRAFTER: LGF | APPROVED: K. BRANDNER | CHECKED: K. BRANDNER | DRAWING: TOT-HG-SEDIs | PRJCT NO.: CC000642.002 | FILE: | DWG DATE: 24NOV03



TOTAL MERCURY CONCENTRATION IN SEDIMENT (mg/Kg) 0-0.5'

ENCYCLE/TEXAS, INC.
CORPUS CHRISTI, TEXAS

FIGURE 6



ARCADIS

TOTAL ZINC CONCENTRATION IN SEDIMENT (mg/Kg) 0-0.5'

ENCYCLE/TEXAS, INC.
CORPUS CHRISTI, TEXAS

FIGURE 7

DRAWING: TOT-ZN-SEDIs | DRAFTER: LGF
CHECKED: K. BRANDNER | APPROVED: K. BRANDNER
PRJCT NO.: CC00642.002 | FILE:
DWG DATE: 24NOV03

APPENDICES

APPENDIX A

ARCADIS

Appendix A

TCEQ September 4, 2003 Letter

Robert J. Huston, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
Kathleen Hartnett White, *Commissioner*
Margaret Hoffman, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 4, 2003

Mr. Richard Marcus
Divisional Environmental Manager
Encycle - Texas Inc.
5500 Up River Road
Corpus Christi, TX 78407-1322

Re: *Phase II RCRA Facility Investigation (RFI) Report*-Encycle
TCEQ SWR No. 30003
TCEQ Hazardous Waste Permit No. HW- 50221
EPA ID No. TXD008117186
Civil Action No. H-99-1136, Enf. ID No. 1017
Agreed Consent Decree Entered October 7, 1999

Dear Mr. Marcus:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above referenced report dated May 9, 2003. Based on our review, the TCEQ cannot approve the *Phase II RCRA Facility Investigation (RFI) Report* at this time. Please submit a revised report which addresses the enclosed comments.

1. The report states that the vertical and horizontal extent of contaminates of concern COCs in soil and groundwater associated with Encycle have been adequately delineated. The report also recommends conducting a baseline risk assessment (BLRA) to identify and evaluate risk for all potential receptors. The TCEQ believes Encycle has not demonstrated extent of COCs toward the Corpus Christi Ship Channel. Please evaluate the Ship Channel for Encycle's list of constituents for possible releases and potential receptors. Encycle should also include the information on the Core of Engineering dredging frequency of the channel.

2. Encycle must gain approval from the offsite owner prior to proposing any Risk Base cleanup levels for their property. The TCEQ will need a letter from the property owner stating they understand and are willing to allow closure other than background concentrations.

An original and one copy of Encycle's extent Report must be submitted to the TCEQ no later than one hundred and eighty (180) days from the date of this letter. The extent report and any other documents that are required to be submitted by the Consent Decree should be submitted to the TCEQ Waste Section of the Enforcement Division at the letterhead address using Mail Code MC-219. An additional copy should be submitted to the Waste Program Manager, TCEQ, Region 14 Office, 6300 Ocean Dr. Ste. 1200, Corpus Christi, TX 78412-5503. The facility name, location and identification number(s) in the TCEQ reference line above should be included with the submittal.

Questions concerning this letter should be directed to me at (512) 239-2350. Please use Mail Code 127 (MC-127) when responding by mail.

Sincerely,

Brad Wilkinson, P. G.
Team I, Corrective Action Section
Remediation Division
Texas Commission on Environmental Quality

BW/bw

cc: Waste Program Manager, TCEQ Region 14 Office, Corpus Christi

APPENDIX B

ARCADIS

Appendix B

01 Landfill Area Soil Boring
Analytical Results Summary

Table 4. 01 Landfill Area Soil Boring Analytical Results Summary (mg/kg), Updated April 2003, Encycle/Texas, Inc., Corpus Christi, Texas

Boring ID	Date Sampled	Sample Depth (ft)	u/s	Antimony	Arsenic	Barium	Bismuth	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Vanadium	Zinc
B-9	05/18/93	0-0.5	(u)	---	8.4	---	---	<2.5	---	---	9.8	---	9.3	180	---	6	---	---	---	---	---	48
(01 Landfill - North Side		2-2.5	(u)	---	9.9	---	---	<2.5	---	---	11	---	12	213	---	7.6	---	---	---	---	---	262
		5-5.5	(u)	---	<5.0	---	---	8.7	---	---	1199	---	14	869	---	28	---	---	---	---	---	4802
		6.5-7	(s)	---	<5.0	---	---	52	---	---	841	---	14	1689	---	6.6	---	---	---	---	---	4070
B-10	05/18/93	0-0.5	(u)	---	8.1	---	---	<2.5	---	---	15	---	6.8	126	---	<5.0	---	---	---	---	---	29
(01 Landfill - North Side		2-2.5	(u)	---	<5.0	---	---	<2.5	---	---	11	---	15	295	---	7.3	---	---	---	---	---	25
		6-6.5	(s)	---	<5.0	---	---	93	---	---	22	---	18	456	---	<5.0	---	---	---	---	---	2116
B-11	05/18/93	0-0.5	(u)	---	<5.0	---	---	<2.5	---	---	11	---	9.3	168	---	<5.0	---	---	---	---	---	36
(01 Landfill - North Side		2-2.5	(u)	---	7.9	---	---	<2.5	---	---	9.5	---	19	284	---	7.3	---	---	---	---	---	33
		5.5-6	(u)	---	7.7	---	---	8.1	---	---	14	---	14	384	---	5.5	---	---	---	---	---	298
		8-8.5	(s)	---	30	---	---	9.7	---	---	304	---	936	5455	---	<5.0	---	---	---	---	---	962
B-12	05/18/93	0-0.5	(u)	---	14	---	---	20	---	---	42	---	101	476	---	7	---	---	---	---	---	1758
(01 Landfill - North Side		2-2.5	(u)	---	42	---	---	40	---	---	454	---	394	806	---	14	---	---	---	---	---	3922
		5-5.5	(s)	---	36	---	---	60	---	---	280	---	477	2087	---	14	---	---	---	---	---	9195
B-30	06/09/93	0-0.5	(u)	---	5.7	---	---	44	---	---	183	---	331	757	---	16	---	---	---	---	---	2128
(01 Landfill - East Side)		2-2.5	(u)	---	8.1	---	---	47	---	---	120	---	431	698	---	6.1	---	---	---	---	---	2287
		5.5-6	(u)	---	11	---	---	22	---	---	77	---	220	561	---	6.1	---	---	---	---	---	1550
		6.5-7	(s)	---	25	---	---	42	---	---	137	---	276	521	---	6.6	---	---	---	---	---	1864
B-31	06/09/93	0-0.5	(u)	---	7.6	---	---	23	---	---	111	---	213	1023	---	14	---	---	---	---	---	1392
(01 Landfill - East Side)		2-2.5	(u)	---	12	---	---	15	---	---	185	---	261	665	---	<5.0	---	---	---	---	---	1357
		4.5-5	(s)	---	6.4	---	---	24	---	---	59	---	319	2450	---	<5.0	---	---	---	---	---	24245
B-32	06/09/93	0-0.5	(u)	---	<5.0	---	---	83	---	---	94	---	60	9305	---	29	---	---	---	---	---	14990
(01 Landfill - East Side)		2-2.5	(u)	---	<5.0	---	---	24	---	---	55	---	72	1336	---	6.1	---	---	---	---	---	3452
		5.5-6	(u)	---	5.1	---	---	6	---	---	19	---	22	303	---	15	---	---	---	---	---	422
		6-6.5	(s)	---	<5.0	---	---	4.1	---	---	15	---	13	380	---	6.1	---	---	---	---	---	598
B-140	06/29/00	0-0.5	(u)	6	---	210	<4	38	15	6	---	<0.04	---	---	2.6	---	3	2	<4	12	17	---
	(SPLP)	*0-0.5*	*(u)*	---	---	---	---	*<0.05*	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(O1 landfill)		2-2.5	(u)	9	30	248	<4	28	61	22	266	<0.04	371	---	2.2	---	3	2	<10	31	13	7989
	(SPLP)	*2-2.5*	*(u)*	---	*<0.10*	---	---	*<0.05*	---	---	*<0.10*	---	*<0.10*	---	---	---	---	---	---	---	---	*0.19*
		5-5.5	(s)	87	253	603	10	42	32	16	2350	<0.04	4212	10990	1.3	---	31	21	<10	516	16	74690
	(SPLP)	*5-5.5*	*(s)*	---	*<0.10*	---	---	*<0.05*	---	---	*<0.10*	---	*<0.10*	*0.47*	---	---	---	---	---	---	---	*0.27*

Table 4. 01 Landfill Area Soil Boring Analytical Results Summary (mg/kg), Updated April 2003, Encycle/Texas, Inc., Corpus Christi, Texas

Boring ID	Date Sampled	Sample Depth (ft)	u/s	Antimony	Arsenic	Barium	Bismuth	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Vanadium	Zinc
B-141	06/29/00	0-0.5	(u)	3	---	156	<4	---	16	5	---	<0.04	---	---	<0.05	---	<0.8	<0.5	<1	<5	12	---
	(SPLP)	*0-0.5*	*(u)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(O1 landfill)		2-2.5	(u)	3	---	623	<4	---	15	6	---	<0.04	---	---	<0.05	---	<0.8	<0.5	<2	<5	25	---
	(SPLP)	*2-2.5*	*(u)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		5-5.6	(u)	3	---	234	<4	2	11	<5	---	<0.04	---	---	<0.05	---	<0.8	<0.5	<2	<5	20	---
	(SPLP)	*5-5.6*	*(u)*	---	---	---	---	*<0.05*	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		8-8.5	(s)	2	9	86	<4	16	24	11	195	<0.04	12	787	0.068	---	<0.8	<0.5	<4	<5	6	---
	(SPLP)	*8-8.5*	*(s)*	---	*<0.10*	---	---	*<0.05*	---	---	*<0.10*	---	*<0.10*	*2.0*	---	---	---	---	---	---	---	---
B-142	06/29/00	0-0.5	(u)	2	---	151	<4	---	10	<5	---	<0.04	---	---	<0.05	---	<0.8	<0.5	8	<5	10	---
	(SPLP)	0-0.5	(u)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(O1 landfill)		2-2.5	(u)	3	---	229	<4	---	16	7	---	<0.04	---	---	<0.05	---	<0.8	<0.5	2	<5	28	---
	(SPLP)	2-2.5	(u)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		6-6.5	(s)	10	---	181	<4	97	21	10	---	0.08	---	---	0.74	---	11	11	<40	38	6	---
	(SPLP)	6-6.5	(s)	---	---	---	---	*0.15*	---	---	---	---	---	---	---	---	---	---	---	---	---	---
B-143	06/29/00	0-0.5	(u)	28	---	480	6	---	48	46	---	0.3	---	---	1.9	---	6	35	<20	50	7	---
	Duplicate 39	0-0.5	(u)	15	56	241	5	447	23	53	626	0.13	1070	14270	0.31	41	1	15	<1	42	9	44310
	(SPLP)	*0-0.5*	*(u)*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(O1 landfill)		2-2.5	(u)	3	<5	181	<4	---	25	6	---	<0.04	---	---	0.052	---	<0.8	<0.5	<1	<5	21	---
	(SPLP)	*2-2.5*	*(u)*	---	*<0.10*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		5-5.5	(u)	3	---	117	<4	9	18	7	20	<0.04	---	---	0.28	---	<0.8	<0.5	<15	<5	14	1400
	(SPLP)	*5-5.5*	*(u)*	---	---	---	---	*<0.05*	---	---	*<0.10*	---	---	---	---	---	---	---	---	---	---	*0.16*
		6-6.5	(s)	3	---	58	<4	209	19	38	14	<0.04	---	15240	0.2	---	4	4	<5	<5	8	34500
	(SPLP)	*6-6.5*	*(s)*	---	---	---	---	*0.062*	---	---	*<0.10*	---	---	*28*	---	---	---	---	---	---	---	*19.0*
B-144	07/11/00	0-0.5	(u)	1	7	303	<4	4	16	8	23	<0.04	55	472	0.072	12	<0.8	<0.5	<5	<5	29	519
(O1 landfill)		2-2.5	(u)	1	5	289	<4	2	13	<5	21	<0.04	53	286	<0.05	9	<0.8	1	<1	<5	25	159
(stepout borings)		5.2-6	(s)	1	<5	211	<4	3	16	5	20	<0.04	23	180	<0.05	13	<0.8	<0.5	4	<5	36	203
	Duplicate 46	5.2-6	(u)	1	6	309	<4	4	15	6	34	<0.04	29	205	<0.05	12	<0.8	<0.5	2	<5	34	323
B-145	07/11/00	0-0.5	(u)	1	---	---	---	---	15	---	---	---	---	357	---	---	---	---	<5	---	---	654
(O1 landfill)		2-2.5	(u)	1	---	---	---	---	---	---	43	---	---	---	---	---	---	4	---	---	---	508
(stepout borings)		5.2-6	(s)	3	---	---	---	---	15	---	351	---	---	---	---	---	---	---	<5	---	15	7965
B-146	07/11/00	0-0.5	(u)	1	---	---	---	---	12	---	---	---	---	349	---	---	---	---	<1	---	---	394
(O1 landfill)		2-2.5	(u)	1	---	---	---	---	---	---	83	---	---	---	---	---	---	9	---	---	---	2030
(stepout borings)		5.2-6	(s)	1	---	---	---	---	15	---	57	---	---	---	---	---	---	---	<5	---	---	1010

Table 4. 01 Landfill Area Soil Boring Analytical Results Summary (mg/kg), Updated April 2003, Encycle/Texas, Inc., Corpus Christi, Texas

Boring ID	Date Sampled	Sample Depth (ft)	u/s	Antimony	Arsenic	Barium	Bismuth	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Vanadium	Zinc
B-147	07/11/00	0-0.5	(u)	1	14	198	<4	10	21	6	174	<0.04	94	664	0.22	11	1	2	<5	<5	24	754
(O1 landfill)		2-2.5	(u)	1	12	292	<4	17	17	5	103	<0.04	292	569	2	12	10	2	<5	75	19	1230
(stepout borings)		3.7-4	(s)	4	33	148	<4	78	11	<5	362	<0.04	831	549	363	10	641	46	<5	5	12	9900
B-148	07/11/00	0-0.5	(u)	<0.8	---	---	---	---	13	---	42	---	---	510	0.41[a]	---	<0.8	1	<5	---	---	337
(O1 landfill)		2-2.5	(u)	2	24	---	---	69	13	---	218	---	219	1270	13[a]	---	18	4	<5	8	---	4594
(stepout borings)		5-5.5	(s)	<0.8	11	---	---	18	---	---	50	---	105	---	34[a]	---	35	3	<5	---	---	3000
B-149	07/11/00	0-0.5	(u)	---	---	---	---	---	---	---	42	---	---	351	0.096[a]	---	---	2	<5	---	---	326
(O1 landfill)		2-2.5	(u)	<0.8	5	---	---	10	---	---	14	---	23	216	0.64[a]	---	2	<0.5	<5	<5	---	272
(stepout borings)		5-5.5	(s)	---	<5	---	---	2	---	---	10	---	11	---	0.37[a]	---	<0.8	<0.5	<1	---	---	76
B-150	11/05/01	0-0.5	(u)	<0.8	<5.0	87	<4.0	6.6	7.6	<5.0	20	<0.05	19	195	0.07	6.4	<0.8	<0.5	<1	<5.0	14	268
Duplicate B-150		0-0.5	(u)	<0.8	7	192	4	23	11	7.5	50	0.08	51	368	0.41	9.4	0.89	0.7	<1	6	17	909
(O1 landfill)		2-2.5	(u)	<0.8	5.9	236	6.9	28	18	12	29	<0.05	38	951	0.8	15	<0.8	<0.5	<1	5.5	35	791
(stepout borings)		2.5-3	(s)	3.1	39	753	12	443	13	92	386	0.18	1390	9498	56	45	28	17	<1	11	21	23820
B-151	11/05/01	0-0.5	(u)	---	---	---	---	87	---	---	153	---	---	---	1.6	---	---	4.7	---	---	---	4341
(O1 landfill)		1.5-2	(s)	0.91	48	526	10	281	23	76	612	---	531	2176	5.1	39	4.3	15	---	34	---	12140
(stepout borings)																						
B-152	11/05/01	0-0.5	(u)	---	---	---	---	171	---	---	464	---	---	---	0.25	---	---	20	---	---	---	27200
(O1 landfill)		1.5-2	(s)	<0.8	<5.0	---	<4.0	1.5	12	<5.0	8.8	---	18	225	<0.05	8	<0.8	<0.5	---	5.5	---	192
(stepout borings)																						
B-153	07/10/00	0-0.5	(u)	0.9	<5	625	<4	7	9	<5	15	<0.04	11	259	<0.05	6	1.1	0.6	<1	<5	18	184
(O1 landfill)		2-2.5	(u)	3.3	26	293	<4	39	13	6	245	<0.04	283	803	1.5	10	2.6	2.8	<5	7	24	3126
(stepout borings)		5.5-6	(s)	11.6	82	313	<4	253	18	66	2584	0.11	1040	7285	23	56	2.9	9.2	<5	29	21	17320
Duplicate 42		5.5-6	(s)	32	165	280	6	153	31	51	5872	0.17	1570	5084	7.5	68	7	11	<1	45	14	19580
B-154	07/10/00	0-0.5	(u)	<0.8	---	---	---	---	---	---	---	---	---	---	---	---	2.7	3.5	---	---	---	618
(O1 landfill)		2-2.5	(u)	3.1	12	---	---	13	---	---	163	---	411	562	2.3	---	23.5	3.3	<5	---	---	2470
(stepout borings)		4.7-5.5	(s)	95.9	86	---	<4	15	30	8	796	---	2920	4915	7.5	10	11.3	7.6	<5	526	---	34140
B-155	07/10/00	0-0.5	(u)	---	---	---	---	---	---	---	---	---	---	---	---	---	3.2	3.1	---	---	---	4350
(O1 landfill)		2-2.5	(u)	<0.8	11	---	---	4	---	---	323	---	1890	705	8.7	---	50.2	4.5	2	---	---	382
(stepout borings)		3-3.5	(s)	<1.5	<5	---	---	1	---	---	12	---	28	134	0.16	---	1.2	<0.5	8	<5	---	300

Table 4. 01 Landfill Area Soil Boring Analytical Results Summary (mg/kg), Updated April 2003, Encycle/Texas, Inc., Corpus Christi, Texas

Boring ID	Date Sampled	Sample Depth (ft)	u/s	Antimony	Arsenic	Barium	Bismuth	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Vanadium	Zinc
B-217	02/11/03	0-0.5	(u)	1.2	---	---	---	23	14	---	91	---	---	702	10	---	1.6	2.0	---	6.7	---	---
(O1 landfill)		2-2.5	(u)	0.83	18	---	---	28	13	8.0	83	---	118	511	0.4	---	2.9	2.1	<1	<5	---	---
(stepout borings)		3-3.5	(s)	14	23	---	---	177	12	28	453	---	524	2827	0.28	---	0.9	2.0	4	78	---	---
B-218	02/11/03	0-0.5	(s)	4.3	14	---	---	94	---	41	252	---	303	3818	0.21	---	0.92	0.8	2	9.1	---	---
(O1 landfill)																						
(stepout borings)																						
B-219	02/11/03	0-0.5	(u)	<0.8	6.9	---	---	<1	13	5.6	5.9	---	13	367	---	---	---	---	---	---	---	---
	Duplicate-2	0-0.5	(u)	<0.8	<5	---	---	<1	13	5.6	9.9	---	10	333	---	---	---	---	---	---	---	---
(O1 landfill)		2-2.5	(u)	<0.8	<5	---	---	<1	14	5.7	7.0	---	11	325	---	---	---	---	---	---	---	---
(stepout borings)		4-4.5	(s)	<0.8	12	---	---	130	12	9.2	1176	---	11	6203	---	---	---	---	---	---	---	---
B-220	02/11/03	0-0.5	(u)	---	---	---	---	---	---	---	---	---	---	384	---	---	---	---	---	---	---	---
(O1 landfill)		4.5-5	(s)	---	<5	---	---	82	---	---	315	---	---	7863	---	---	---	---	---	---	---	---
(stepout borings)																						
B-221	02/11/03	0-0.5	(u)	1.1	---	---	---	21	16	---	205	---	---	---	0.38	---	<0.8	<0.5	<1	5.2	---	---
(O1 landfill)		2-2.5	(u)	1.5	---	---	---	<1	17	---	8.7	---	---	---	<0.05	---	<0.8	<0.5	<1	<5	---	---
(stepout borings)		4.7-5	(s)	1.4	---	---	---	327	10	---	260	---	---	---	0.17	---	<0.8	2.6	<1	6.1	---	---
B-222	02/11/03	0-0.5	(u)	2.9	---	---	---	26	32	---	522	---	---	---	<0.05	---	---	---	---	---	---	---
(O1 landfill)		2-2.5	(u)	<0.8	---	---	---	---	40	---	---	---	---	---	<0.05	---	---	---	---	---	---	---
(stepout borings)		4.7-5	(s)	0.84	---	---	---	181	---	---	80	---	---	---	2.3	---	---	0.58	---	---	---	---
B-223	02/11/03	0-0.5	(u)	24	553	---	<10	343	27	53	9588	<0.1	5184	37520	1.1	49	1.0	37	---	215	---	---
(O1 landfill)		0.9-1.2	(s)	82	4443	---	<50	364	18	65	53520	0.26	9904	11320	0.56	82	23	30	---	130	---	---
(stepout borings)																						
B-224	02/11/03	0-0.4	(u)	3.0	23	---	<4	30	31	9.0	471	<0.1	370	1941	0.28	17	<0.8	1.6	---	14	---	---
(O1 landfill)		0.4-0.9	(s)	0.84	11	---	<4	26	19	6.7	131	<0.1	57	353	0.28	12	<0.8	<0.5	---	<5	---	---
(stepout borings)																						
Soil Background Concentrations																						
		0-0.5':			16.65		4.9	11.70		9.72	40.33	0.24	109.16	333.73	0.09	25.80	0.89			7.65		b
		2-2.5':			8.01			4.47			17.20		54.36	360.83		27.21						
		unsaturated below 2.5':	(u)		21.86			4.97			16.15		38.96	592.50		29.74						
		saturated soil sample:	(s)		9.8			3.64			18.26		30.92	686.68		25.86						
		clay/silt strata:		0.77		720			14.9									0.54	1.02		35.6	
		clean sand strata (SP/SW):		0.80		202			35.9									0.50	1.0		15.7	

Table 4. U1 Landfill Area Soil Boring Analytical Results Summary (mg/kg), Updated April 2003, Encycle/Texas, Inc., Corpus Christi, Texas

Boring ID	Date Sampled	Sample Depth (ft)	u/s	Antimony	Arsenic	Barium	Bismuth	Cadmium	Chromium	Cobalt	Copper	Cyanide	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Tin	Vanadium	Zinc
TCEQ RRS2 MSCs [c]																						
SAI-Ind (mg/kg):				490	200	58000	680000	1500	350000	110000	74000	37000	1000	110000	9.6	12000	9200	2800	150	610000	2900	410000
Adjusted GWP-Ind (mg/kg):				60	100	20000	510000	50	1000	61000	13000	2000	150	140000	20	20000	500	5100	20	610000	7200	310000
Adjusted GW (mg/L):				0.6	1	200	1,800	0.5	10	610	130	20	1.5	1400	0.2	200	5	51	0.2	6100	72	3100

mg/kg Milligrams per kilogram
mg/L Milligrams per liter
--- Not analyzed
(u) Unsaturated soil sample.
(s) Saturated soil sample.
(dup) Duplicate soil sample.
(SPLP) Synthetic Precipitation Leaching Procedure. Units in mg/L - analytical results shown in *italics.*
MSCs Medium specific concentrations
SAI-Ind Soil/Air and Ingestion Standard for Industrial Use (Applies to upper 2 feet of soil at commercial/industrial sites - 30 TAC Chapter 335.559(g))
Adjusted GWP-Ind Adjusted Soil-to-Groundwater Protection Standard for Industrial Use (adjusted for saline groundwater - 30 TAC Chapter 335.559(d)(3))
Adjusted GW Adjusted RRS2 MSC for groundwater (adjusted for saline groundwater)
* Surface soil sample adjacent to previously constructed background soil boring.
a Sample re-collected and re-analyzed within EPA-specified holding time. Initially collected sample not analyzed within EPA-specified holding time.
b April 28, 1997 TNRCC letter stated zinc would not be a good release indicator for a unit at the site. Therefore, zinc background level not given.
c 30 TAC Chapter 335, Subchapter S.
Notes: 1) Numbers in **bold** exceed TNRCC-approved background concentrations established for the site.
2) Numbers **boxed** exceed both background and the RRS2 SAI-Ind and/or RRS2 adjusted GWP-Ind.

APPENDIX C

ARCADIS

Appendix C

United States Coast Guard
Approval Letters

U.S. Department of Homeland Security

United States Coast Guard

Commanding Officer
Coast Guard Marine Safety Office
Corpus Christi

555 N. Carancahua, Suite 500
Corpus Christi, TX 78478
Staff Symbol: pm
Phone: (361) 888-3162
FAX: (361) 888-3115

16600
September 23, 2003

Mr. Ken Brandner
ARCADIS G&M, Inc
711 N. Carancahua ST., Suite 1700
Corpus Christi, TX 78475

Mr. Brandner,

Your request to enter the Port of Corpus Christi Inner Harbor Security Zone in conjunction with the conduct of your RCRA required phase II sampling near Encycle-Texas Inc. is approved. This approval is from 8 am through 5 pm on Tuesday, September 30, 2003.

This authorization includes only the following personnel:

Name	TX D.L number
Kenneth Brandner	13457121
Bryan Haney	14920709
18 ft Ski Nautique	TX 2303JB

This approval is based on implementing the following safety and security measures:

1. When a tank vessel is conducting transfer operations, you should not approach closer than 500 yards to the vessel and facility. A red bravo flag will identify the transfer of cargo. If you are unsure if a transfer is being conducted, contact the harbormaster at 361-882-1773.

2. Unless explicitly required for your work, no video or still photography is permitted within the Inner Harbor. If photographic documentation is required, I request that you make every effort to limit the framing of your photographs to within the confines of your vessel.

3. Each member of your group is required to have an official photographic identification on their person at all times. Also, each member is reminded to remain vigilant and report any suspicious activity to the designated vessel master, who will pass relevant information to the Coast Guard.

Subj: SECURITY ZONE ENTRY APPROVAL

16600
September 23, 2003

4. The master shall notify LT Norbert Schweinsberg at this office at 361-888-3162 ext 303 and the harbormaster prior to entering and exiting the Security Zone.

5. The vessel used must have all required fire safety, signaling and personal floatation devices, as required by applicable state and federal regulations. Ideally, you will have a marine band VHF-FM radio with channel 12 and 16, but due to the nature of your vessel an operating cell phone is acceptable.

We are sensitive to the impact of our security measures and wish to facilitate commerce as much as practicable. If there are any questions or changes to the approved schedule, please contact LT Schweinsberg of my staff at (361) 888-3162, extension 303.

Sincerely,

W. J. Wagner III
Captain, U.S. Coast Guard
Captain of the Port

Copy: Corpus Christi Harbormaster's Office

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
Coast Guard Marine Safety Office
Corpus Christi

555 N. Carancahua, Suite 500
Corpus Christi, TX 78478
Staff Symbol: pm
Phone: (361) 888-3162
FAX: (361) 888-3115

16600
October 22, 2003

Mr. Ken Brandner
ARCADIS G&M, Inc
711 N. Carancahua ST., Suite 1700
Corpus Christi, TX 78475

Mr. Brandner,

Your request to enter the Port of Corpus Christi Inner Harbor Security Zone in conjunction with the conduct of your RCRA required phase II sampling near Encycle-Texas Inc. is approved. Diving directly in conjunction with this sampling is authorized. All commercial diving activity is governed by regulations detailed in Title 46 Code of Federal Regulations part 197, please ensure that the diving conducted on your project is conducted accordingly. This authorization is for the period of 8 am through 5 pm on Thursday October 23, 2003.

This authorization includes the following ARCADIS personnel:

Name	TXDL number
Kenneth Brandner	13457121
18 ft Ski Nautique	TX 2303JB

and the following In-Depth Underwater Services personnel:

Name	TXDL number
Jack Newman	09265709
Stephen Hambley	12185809
Michael LaRoche	20208743
16' Alum, green John boat	TX6361FT

This approval is based on implementing the following safety and security measures:

1. When a tank vessel is conducting transfer operations, you should not approach closer than 500 yards to the vessel and facility. A red bravo flag will identify the transfer of

cargo. If you are unsure if a transfer is being conducted, contact the harbormaster at 361-882-1773.

2. Unless explicitly required for your work, no video or still photography is permitted within the Inner Harbor. If photographic documentation is required, I request that you make every effort to limit the framing of your photographs to within the confines of your vessel.

3. Each member of your group is required to have an official photographic identification on their person at all times. Also, each member is reminded to remain vigilant and report any suspicious activity to the designated vessel master, who will pass relevant information to the Coast Guard.

4. The master shall notify LT Norbert Schweinsberg at this office at 361-888-3162 ext 303 and the harbormaster prior to entering and exiting the Security Zone.

5. The vessel used must have all required fire safety, signaling and personal floatation devices, as required by applicable state and federal regulations. Ideally, you will have a marine band VHF-FM radio with channel 12 and 16, but due to the nature of your vessel an operating cell phone is acceptable.

We are sensitive to the impact of our security measures and wish to facilitate commerce as much as practicable. If there are any questions or changes to the approved schedule, please contact LT Schweinsberg of my staff at (361) 888-3162, extension 303.

Sincerely,

Michael Maes
Commander, U.S. Coast Guard
Alternate Captain of the Port

Copy: U.S. Coast Guard Harbor Facility Duty Officer
Corpus Christi Harbormaster's Office

APPENDIX D

ARCADIS

Appendix D

Photographs of Encycle Sediment Sample Locations, September 30, 2003

Photograph No. 1. Corpus Christi Ship Channel shoreline directly north of Encycle 01 Landfill, view facing west from Oil Dock 6. Photograph taken by K. Brandner, September 30, 2003.

Photograph No. 2. Corpus Christi Ship Channel shoreline directly north of Encycle East Lagoon, view facing east from #9 Green Beacon in channel. 01 Landfill shoreline in background. Photograph taken by K. Brandner, September 30, 2003.

APPENDIX E

ARCADIS

Appendix E

Sediment Sample Laboratory Reports

ASARCO

October 31, 2003

Mr. Ken Brandner
Arcadis Geraghty & Miller

Attached are the analytical results and quality control data for twenty-eight (28) soil and two (2) water samples collected on 09/30/03, in association with the Asarco Encycle RFI project and received by the laboratory on 10/01/03.

Oven dried, sieved, and ground soil samples were digested on 10/08/03 and 10/09/03 in accordance with EPA Method 3050 for ICP or ICP-MS analysis. The water samples were digested on 10/27/03 in accordance with EPA Method 6020M for ICP or ICP-MS analysis.

A portion was digested on 10/10/03 and analyzed for Hg per Method 7471A. Samples were distilled on 10/07/03 and analyzed for Cyanide per Method 335.2. Hg and Cyanide are reported on an as received basis.

A portion was sent to Severn Trent Laboratories, Inc. for Total Organic Carbon analysis, their original report is attached. A portion for sieve analysis was sent to American Testing and will be reported under a separate cover letter.

The analytical results meet the requirements of the National Environmental Laboratory Accreditation Conference in accordance with Chapter 5 of the 1999 NELAC Standard with the following exceptions; gravimetric analysis for moisture, digestion method 6020M, and pH by USDA Handbook 60.

If you need further information, please call me at (801) 262-2459, Extension 19.

Sincerely,

T.J. Jacobi
Sr. Chemist

cc: GRStanga (w/attach.)

ASARCO Incorporated • 3422 South 700 West • Salt Lake City, Utah 84119-4191 • (801) 262-2459 • FAX (801) 261-2194

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-001	30-SEP-03	NP BKG N1	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	6.	ppm	TJJ	10-OCT-03	6010B
			CD	<1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	7.	ppm	TJJ	10-OCT-03	6010B
			CR	14.	ppm	TJJ	10-OCT-03	6010B
			CU	15.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	167.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	45.4	%	RDC	14-OCT-03	GRAV.
			NI	10.	ppm	TJJ	10-OCT-03	6010B
			PB	15.	ppm	TJJ	10-OCT-03	6010B
			PH	8.8	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<1.3 *	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	0.5	ppm	TJJ	14-OCT-03	6020
			TOC	5.4	ppm	STL	20-OCT-03	9060
			ZN	73.	ppm	TJJ	10-OCT-03	6010B
L030540-002	30-SEP-03	NP BKG N2	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	<1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	43.	ppm	TJJ	10-OCT-03	6010B
			CR	37.	ppm	TJJ	10-OCT-03	6010B
			CU	7.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	30.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	29.1	%	RDC	14-OCT-03	GRAV.
			NI	18.	ppm	TJJ	10-OCT-03	6010B
			PB	6.	ppm	TJJ	10-OCT-03	6010B
			PH	8.2	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	0.7	ppm	TJJ	14-OCT-03	6020
			ZN	39.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-003	30-SEP-03	NP BKG N3	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	76.	ppm	TJJ	10-OCT-03	6010B
			CR	58.	ppm	TJJ	10-OCT-03	6010B
			CU	8.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	59.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	21.6	%	RDC	14-OCT-03	GRAV.
			NI	28.	ppm	TJJ	10-OCT-03	6010B
			PB	11.	ppm	TJJ	10-OCT-03	6010B
			PH	8.7	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	42.	ppm	TJJ	10-OCT-03	6010B
L030540-004	30-SEP-03	NP BKG N4	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	7.	ppm	TJJ	10-OCT-03	6010B
			CD	<1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	12.	ppm	TJJ	10-OCT-03	6010B
			CR	24.	ppm	TJJ	10-OCT-03	6010B
			CU	12.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	149.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	23.5	%	RDC	14-OCT-03	GRAV.
			NI	14.	ppm	TJJ	10-OCT-03	6010B
			PB	40.	ppm	TJJ	10-OCT-03	6010B
			PH	9.0	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<1.9 *	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	65.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-005	30-SEP-03	NP BKG N5	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	2.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	73.	ppm	TJJ	10-OCT-03	6010B
			CR	43.	ppm	TJJ	10-OCT-03	6010B
			CU	13.	ppm	TJJ	10-OCT-03	6010B
			HG	0.08	ppm	TJJ	10-OCT-03	7471
			MN	43.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	21.9	%	RDC	14-OCT-03	GRAV.
			NI	22.	ppm	TJJ	10-OCT-03	6010B
			PB	12.	ppm	TJJ	10-OCT-03	6010B
			PH	9.0	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	126.	ppm	TJJ	10-OCT-03	6010B
L030540-006	30-SEP-03	NP BKG N6	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	<1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	121.	ppm	TJJ	10-OCT-03	6010B
			CR	63.	ppm	TJJ	10-OCT-03	6010B
			CU	6.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	35.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	22.3	%	RDC	14-OCT-03	GRAV.
			NI	32.	ppm	TJJ	10-OCT-03	6010B
			PB	6.	ppm	TJJ	10-OCT-03	6010B
			PH	8.6	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	29.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-007	30-SEP-03	NP	BKG N7	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
				AS	<5.	ppm	TJJ	10-OCT-03	6010B
				CD	<1.	ppm	TJJ	10-OCT-03	6010B
				CN-	<0.1	ppm	RDC	09-OCT-03	335.2
				CO	94.	ppm	TJJ	10-OCT-03	6010B
				CR	54.	ppm	TJJ	10-OCT-03	6010B
				CU	<5.	ppm	TJJ	10-OCT-03	6010B
				HG	<0.05	ppm	TJJ	10-OCT-03	7471
				MN	31.	ppm	TJJ	10-OCT-03	6010B
				MOIST.	26.5	%	RDC	14-OCT-03	GRAV.
				NI	27.	ppm	TJJ	10-OCT-03	6010B
				PB	5.	ppm	TJJ	10-OCT-03	6010B
				PH	8.7	pH	RDC	13-OCT-03	USDA HB 60 21B
				SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
				SE	<0.8	ppm	TJJ	14-OCT-03	6020
				SN	<5.	ppm	TJJ	10-OCT-03	6010B
				TL	<0.5	ppm	TJJ	14-OCT-03	6020
				TOC	<2.0	ppm	STL	20-OCT-03	9060
				ZN	22.	ppm	TJJ	10-OCT-03	6010B
L030540-008	30-SEP-03	NP	BKG N8	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
				AS	<5.	ppm	TJJ	10-OCT-03	6010B
				CD	<1.	ppm	TJJ	10-OCT-03	6010B
				CN-	<0.1	ppm	RDC	09-OCT-03	335.2
				CO	90.	ppm	TJJ	10-OCT-03	6010B
				CR	57.	ppm	TJJ	10-OCT-03	6010B
				CU	<5.	ppm	TJJ	10-OCT-03	6010B
				HG	<0.05	ppm	TJJ	10-OCT-03	7471
				MN	27.	ppm	TJJ	10-OCT-03	6010B
				MOIST.	29.2	%	RDC	14-OCT-03	GRAV.
				NI	29.	ppm	TJJ	10-OCT-03	6010B
				PB	<5.	ppm	TJJ	10-OCT-03	6010B
				PH	8.4	pH	RDC	13-OCT-03	USDA HB 60 21B
				SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
				SE	<0.8	ppm	TJJ	14-OCT-03	6020
				SN	<5.	ppm	TJJ	10-OCT-03	6010B
				TL	<0.5	ppm	TJJ	14-OCT-03	6020
				ZN	19.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-009	30-SEP-03	NP BKG S1	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	<1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	70.	ppm	TJJ	10-OCT-03	6010B
			CR	39.	ppm	TJJ	10-OCT-03	6010B
			CU	<5.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	42.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	26.3	%	RDC	14-OCT-03	GRAV.
			NI	20.	ppm	TJJ	10-OCT-03	6010B
			PB	<5.	ppm	TJJ	10-OCT-03	6010B
			PH	8.3	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm.	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	13.	ppm	TJJ	10-OCT-03	6010B
L030540-010	30-SEP-03	NP BKG S2	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	<1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	96.	ppm	TJJ	10-OCT-03	6010B
			CR	51.	ppm	TJJ	10-OCT-03	6010B
			CU	<5.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	37.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	25.1	%	RDC	14-OCT-03	GRAV.
			NI	26.	ppm	TJJ	10-OCT-03	6010B
			PB	<5.	ppm	TJJ	10-OCT-03	6010B
			PH	8.1	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	16.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-011	30-SEP-03	NP BKG S3	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	59.	ppm	TJJ	10-OCT-03	6010B
			CR	33.	ppm	TJJ	10-OCT-03	6010B
			CU	23.	ppm	TJJ	10-OCT-03	6010B
			HG	0.08	ppm	TJJ	10-OCT-03	7471
			MN	86.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	35.0	%	RDC	14-OCT-03	GRAV.
			NI	29.	ppm	TJJ	10-OCT-03	6010B
			PB	13.	ppm	TJJ	10-OCT-03	6010B
			PH	8.7	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	117.	ppm	TJJ	10-OCT-03	6010B
L030540-012	30-SEP-03	NP BKG S4	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	2.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	108.	ppm	TJJ	10-OCT-03	6010B
			CR	55.	ppm	TJJ	10-OCT-03	6010B
			CU	6.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	30.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	26.4	%	RDC	14-OCT-03	GRAV.
			NI	28.	ppm	TJJ	10-OCT-03	6010B
			PB	15.	ppm	TJJ	10-OCT-03	6010B
			PH	8.6	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	69.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-013	30-SEP-03 NP	BKG S5	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	73.	ppm	TJJ	10-OCT-03	6010B
			CR	43.	ppm	TJJ	10-OCT-03	6010B
			CU	8.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	70.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	25.1	%	RDC	14-OCT-03	GRAV.
			NI	22.	ppm	TJJ	10-OCT-03	6010B
			PB	34.	ppm	TJJ	10-OCT-03	6010B
			PH	8.9	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	78.	ppm	TJJ	10-OCT-03	6010B
L030540-014	30-SEP-03 NP	BKG S6	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	120.	ppm	TJJ	10-OCT-03	6010B
			CR	66.	ppm	TJJ	10-OCT-03	6010B
			CU	6.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	41.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	21.8	%	RDC	14-OCT-03	GRAV.
			NI	33.	ppm	TJJ	10-OCT-03	6010B
			PB	8.	ppm	TJJ	10-OCT-03	6010B
			PH	8.8	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	31.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-015	30-SEP-03	NP BKG S7	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	<1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	67.	ppm	TJJ	10-OCT-03	6010B
			CR	45.	ppm	TJJ	10-OCT-03	6010B
			CU	7.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	67.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	26.2	%	RDC	14-OCT-03	GRAV.
			NI	23.	ppm	TJJ	10-OCT-03	6010B
			PB	8.	ppm	TJJ	10-OCT-03	6010B
			PH	8.8	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	25.	ppm	TJJ	10-OCT-03	6010B
L030540-016	30-SEP-03	NP BKG S8	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	<1.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	65.	ppm	TJJ	10-OCT-03	6010B
			CR	28.	ppm	TJJ	10-OCT-03	6010B
			CU	6.	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	56.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	35.9	%	RDC	14-OCT-03	GRAV.
			NI	16.	ppm	TJJ	10-OCT-03	6010B
			PB	7.	ppm	TJJ	10-OCT-03	6010B
			PH	8.6	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	24.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-017	30-SEP-03	NP	SED-1	AG	1.3	ppm	TJJ	10-OCT-03	6010B
				AS	33.	ppm	TJJ	10-OCT-03	6010B
				CD	163.	ppm	TJJ	10-OCT-03	6010B
				CN-	<0.1	ppm	RDC	09-OCT-03	335.2
				CO	95.	ppm	TJJ	10-OCT-03	6010B
				CR	36.	ppm	TJJ	10-OCT-03	6010B
				CU	743.	ppm	TJJ	10-OCT-03	6010B
				HG	0.09	ppm	TJJ	10-OCT-03	7471
				MN	6120.	ppm	TJJ	10-OCT-03	6010B
				MOIST.	14.1	%	RDC	14-OCT-03	GRAV.
				NI	29.	ppm	TJJ	10-OCT-03	6010B
				PB	337.	ppm	TJJ	10-OCT-03	6010B
				PH	8.7	pH	RDC	13-OCT-03	USDA HB 60 21B
				SB	2.6 **	ppm	TJJ	14-OCT-03	6020
				SE	2.5	ppm	TJJ	14-OCT-03	6020
				SN	11.	ppm	TJJ	10-OCT-03	6010B
				TL	<0.5	ppm	TJJ	14-OCT-03	6020
				TOC	3.7	ppm	STL	20-OCT-03	9060
				ZN	15800.	ppm	TJJ	14-OCT-03	6010B
L030540-018	30-SEP-03	NP	SED-2	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
				AS	10.	ppm	TJJ	10-OCT-03	6010B
				CD	55.	ppm	TJJ	10-OCT-03	6010B
				CN-	<0.1	ppm	RDC	09-OCT-03	335.2
				CO	69.	ppm	TJJ	10-OCT-03	6010B
				CR	23.	ppm	TJJ	10-OCT-03	6010B
				CU	148.	ppm	TJJ	10-OCT-03	6010B
				HG	0.29	ppm	TJJ	13-OCT-03	7471
				MN	2610.	ppm	TJJ	10-OCT-03	6010B
				MOIST.	21.6	%	RDC	14-OCT-03	GRAV.
				NI	16.	ppm	TJJ	10-OCT-03	6010B
				PB	118.	ppm	TJJ	10-OCT-03	6010B
				PH	8.3	pH	RDC	13-OCT-03	USDA HB 60 21B
				SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
				SE	1.2	ppm	TJJ	14-OCT-03	6020
				SN	5.	ppm	TJJ	10-OCT-03	6010B
				TL	<0.5	ppm	TJJ	14-OCT-03	6020
				ZN	6430.	ppm	TJJ	14-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-019	30-SEP-03	NP SED-3	AG	0.5	ppm	TJJ	10-OCT-03	6010B
			AS	9.	ppm	TJJ	10-OCT-03	6010B
			CD	44.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	86.	ppm	TJJ	10-OCT-03	6010B
			CR	42.	ppm	TJJ	10-OCT-03	6010B
			CU	256.	ppm	TJJ	10-OCT-03	6010B
			HG	0.15	ppm	TJJ	10-OCT-03	7471
			MN	1470.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	31.5	%	RDC	14-OCT-03	GRAV.
			NI	25.	ppm	TJJ	10-OCT-03	6010B
			PB	97.	ppm	TJJ	10-OCT-03	6010B
			PH	8.2	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	0.9 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	6.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	4260.	ppm	TJJ	10-OCT-03	6010B
L030540-020	30-SEP-03	NP SED-4	AG	0.6	ppm	TJJ	10-OCT-03	6010B
			AS	10.	ppm	TJJ	10-OCT-03	6010B
			CD	69.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	32.	ppm	TJJ	10-OCT-03	6010B
			CR	18.	ppm	TJJ	10-OCT-03	6010B
			CU	93.	ppm	TJJ	10-OCT-03	6010B
			HG	0.23	ppm	TJJ	13-OCT-03	7471
			MN	5810.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	36.6	%	RDC	14-OCT-03	GRAV.
			NI	48.	ppm	TJJ	10-OCT-03	6010B
			PB	187.	ppm	TJJ	10-OCT-03	6010B
			PH	8.8	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	8630.	ppm	TJJ	14-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-021	30-SEP-03	NP SED-5	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	30.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	115.	ppm	TJJ	10-OCT-03	6010B
			CR	42.	ppm	TJJ	10-OCT-03	6010B
			CU	83.	ppm	TJJ	10-OCT-03	6010B
			HG	0.05	ppm	TJJ	10-OCT-03	7471
			MN	1870.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	22.3	%	RDC	14-OCT-03	GRAV.
			NI	25.	ppm	TJJ	10-OCT-03	6010B
			PB	42.	ppm	TJJ	10-OCT-03	6010B
			PH	8.7	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	3890.	ppm	TJJ	10-OCT-03	6010B
L030540-022	30-SEP-03	NP SED-6	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5.	ppm	TJJ	10-OCT-03	6010B
			CD	24.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	92.	ppm	TJJ	10-OCT-03	6010B
			CR	32.	ppm	TJJ	10-OCT-03	6010B
			CU	73.	ppm	TJJ	10-OCT-03	6010B
			HG	0.05	ppm	TJJ	10-OCT-03	7471
			MN	1500.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	14.8	%	RDC	14-OCT-03	GRAV.
			NI	19.	ppm	TJJ	10-OCT-03	6010B
			PB	47.	ppm	TJJ	10-OCT-03	6010B
			PH	8.6	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	0.8	ppm	TJJ	14-OCT-03	6020
			ZN	3260.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-023	30-SEP-03	NP SED-7	AG	0.9	ppm	TJJ	10-OCT-03	6010B
			AS	11.	ppm	TJJ	10-OCT-03	6010B
			CD	23.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	25.	ppm	TJJ	10-OCT-03	6010B
			CR	18.	ppm	TJJ	10-OCT-03	6010B
			CU	120.	ppm	TJJ	10-OCT-03	6010B
			HG	0.95	ppm	TJJ	13-OCT-03	7471
			MN	3120.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	47.1	%	RDC	14-OCT-03	GRAV.
			NI	31.	ppm	TJJ	10-OCT-03	6010B
			PB	240.	ppm	TJJ	10-OCT-03	6010B
			PH	8.3	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	1.9 **	ppm	TJJ	14-OCT-03	6020
			SE	4.7	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	0.6	ppm	TJJ	14-OCT-03	6020
			ZN	12200.	ppm	TJJ	14-OCT-03	6010B
L030540-024	30-SEP-03	NP SED-8	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	13.	ppm	TJJ	10-OCT-03	6010B
			CD	18.	ppm	TJJ	10-OCT-03	6010B
			CN-	<0.1	ppm	RDC	09-OCT-03	335.2
			CO	20.	ppm	TJJ	10-OCT-03	6010B
			CR	18.	ppm	TJJ	10-OCT-03	6010B
			CU	43.	ppm	TJJ	10-OCT-03	6010B
			HG	0.07	ppm	TJJ	10-OCT-03	7471
			MN	988.	ppm	TJJ	10-OCT-03	6010B
			MOIST.	37.9	%	RDC	14-OCT-03	GRAV.
			NI	17.	ppm	TJJ	10-OCT-03	6010B
			PB	40.	ppm	TJJ	10-OCT-03	6010B
			PH	8.8	pH	RDC	13-OCT-03	USDA HB 60 21B
			SB	<0.8 **	ppm	TJJ	14-OCT-03	6020
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5.	ppm	TJJ	10-OCT-03	6010B
			TL	0.7	ppm	TJJ	14-OCT-03	6020
			ZN	2020.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-025	30-SEP-03	NP	SED-9	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
				AS	7.	ppm	TJJ	10-OCT-03	6010B
				CD	23.	ppm	TJJ	10-OCT-03	6010B
				CN-	<0.1	ppm	RDC	09-OCT-03	335.2
				CO	24.	ppm	TJJ	10-OCT-03	6010B
				CR	18.	ppm	TJJ	10-OCT-03	6010B
				CU	65.	ppm	TJJ	10-OCT-03	6010B
				HG	<0.05	ppm	TJJ	10-OCT-03	7471
				MN	826.	ppm	TJJ	10-OCT-03	6010B
				MOIST.	37.7	%	RDC	14-OCT-03	GRAV.
				NI	28.	ppm	TJJ	10-OCT-03	6010B
				PB	70.	ppm	TJJ	10-OCT-03	6010B
				PH	8.3	pH	RDC	13-OCT-03	USDA HB 60 21B
				SB	0.8 **	ppm	TJJ	14-OCT-03	6020
				SE	<0.8	ppm	TJJ	14-OCT-03	6020
				SN	<5.	ppm	TJJ	10-OCT-03	6010B
				TL	0.9	ppm	TJJ	14-OCT-03	6020
				ZN	3090.	ppm	TJJ	10-OCT-03	6010B
L030540-026	30-SEP-03	NP	SED-10	AG	2.4	ppm	TJJ	10-OCT-03	6010B
				AS	45.	ppm	TJJ	10-OCT-03	6010B
				CD	156.	ppm	TJJ	10-OCT-03	6010B
				CN-	<0.1	ppm	RDC	09-OCT-03	335.2
				CO	211.	ppm	TJJ	10-OCT-03	6010B
				CR	43.	ppm	TJJ	10-OCT-03	6010B
				CU	509.	ppm	TJJ	10-OCT-03	6010B
				HG	0.43	ppm	TJJ	13-OCT-03	7471
				MN	7650.	ppm	TJJ	10-OCT-03	6010B
				MOIST.	36.6	%	RDC	14-OCT-03	GRAV.
				NI	162.	ppm	TJJ	10-OCT-03	6010B
				PB	465.	ppm	TJJ	10-OCT-03	6010B
				PH	7.9	pH	RDC	13-OCT-03	USDA HB 60 21B
				SB	7.9 **	ppm	TJJ	14-OCT-03	6020
				SE	2.0	ppm	TJJ	14-OCT-03	6020
				SN	36.	ppm	TJJ	10-OCT-03	6010B
				TL	<0.5	ppm	TJJ	14-OCT-03	6020
				ZN	22400.	ppm	TJJ	14-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030540-027	30-SEP-03	NP	SED-11	AG	6.1	ppm	TJJ	10-OCT-03	6010B
				AS	83.	ppm	TJJ	10-OCT-03	6010B
				CD	18.	ppm	TJJ	10-OCT-03	6010B
				CN-	<0.1	ppm	RDC	09-OCT-03	335.2
				CO	39.	ppm	TJJ	10-OCT-03	6010B
				CR	30.	ppm	TJJ	10-OCT-03	6010B
				CU	174.	ppm	TJJ	10-OCT-03	6010B
				HG	0.45	ppm	TJJ	13-OCT-03	7471
				MN	1140.	ppm	TJJ	10-OCT-03	6010B
				MOIST.	27.0	%	RDC	14-OCT-03	GRAV.
				NI	19.	ppm	TJJ	10-OCT-03	6010B
				PB	3530.	ppm	TJJ	10-OCT-03	6010B
				PH	9.0	pH	RDC	13-OCT-03	USDA HB 60 21B
				SB	97. **	ppm	TJJ	10-OCT-03	6010B
				SE	3.9	ppm	TJJ	14-OCT-03	6020
				SN	619.	ppm	TJJ	10-OCT-03	6010B
				TL	<0.5	ppm	TJJ	14-OCT-03	6020
				TOC	3.1	ppm	STL	20-OCT-03	9060
				ZN	4900.	ppm	TJJ	10-OCT-03	6010B
L030540-028	30-SEP-03	NP	SED-12	AG	4.5	ppm	TJJ	10-OCT-03	6010B
				AS	65.	ppm	TJJ	10-OCT-03	6010B
				CD	19.	ppm	TJJ	10-OCT-03	6010B
				CN-	<0.1	ppm	RDC	09-OCT-03	335.2
				CO	39.	ppm	TJJ	10-OCT-03	6010B
				CR	29.	ppm	TJJ	10-OCT-03	6010B
				CU	107.	ppm	TJJ	10-OCT-03	6010B
				HG	0.11	ppm	TJJ	10-OCT-03	7471
				MN	512.	ppm	TJJ	10-OCT-03	6010B
				MOIST.	27.7	%	RDC	14-OCT-03	GRAV.
				NI	16.	ppm	TJJ	10-OCT-03	6010B
				PB	2340.	ppm	TJJ	10-OCT-03	6010B
				PH	8.8	pH	RDC	13-OCT-03	USDA HB 60 21B
				SB	82. **	ppm	TJJ	10-OCT-03	6010B
				SE	5.0	ppm	TJJ	14-OCT-03	6020
				SN	453.	ppm	TJJ	10-OCT-03	6010B
				TL	<0.5	ppm	TJJ	14-OCT-03	6020
				ZN	2840.	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030540

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD

* Two Se values are reported with elevated detection limit values due to unknown matrix effects.

** Sb recovery outside acceptance limits. Function of 3050 digestion. Results may be subject to bias.

Unless otherwise noted results are not blank corrected. NP = Collect time Not Provided.

Approved

Reviewer

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030499

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030499-1		QC EE19+EE7+SN Matrix Spike	AG	110	%Recovery	TJJ	10-OCT-03	6010B
			AS	98	%Recovery	TJJ	10-OCT-03	6010B
			CD	98	%Recovery	TJJ	10-OCT-03	6010B
			CO	101	%Recovery	TJJ	10-OCT-03	6010B
			CR	104	%Recovery	TJJ	10-OCT-03	6010B
			CU	114	%Recovery	TJJ	10-OCT-03	6010B
			HG	92	%Recovery	TJJ	10-OCT-03	7471
			MN	107	%Recovery	TJJ	10-OCT-03	6010B
			NI	100	%Recovery	TJJ	10-OCT-03	6010B
			PB	99	%Recovery	TJJ	10-OCT-03	6010B
			SE	76	%Recovery	TJJ	14-OCT-03	6020
			SN	103	%Recovery	TJJ	10-OCT-03	6010B
			TL	111	%Recovery	TJJ	14-OCT-03	6020
			ZN	103	%Recovery	TJJ	10-OCT-03	6010B
WG030499-2		QC 10% HCL Prep Blank	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5	ppm	TJJ	10-OCT-03	6010B
			CD	<1	ppm	TJJ	10-OCT-03	6010B
			CO	<5	ppm	TJJ	10-OCT-03	6010B
			CR	<5	ppm	TJJ	10-OCT-03	6010B
			CU	<5	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	<5	ppm	TJJ	10-OCT-03	6010B
			NI	<5	ppm	TJJ	10-OCT-03	6010B
			PB	<5	ppm	TJJ	10-OCT-03	6010B
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	<5	ppm	TJJ	10-OCT-03	6010B
WG030499-3		QC ERA D036-540 Lab Control Sample	AG	112	%Recovery	TJJ	10-OCT-03	6010B
			AS	104	%Recovery	TJJ	10-OCT-03	6010B
			CD	105	%Recovery	TJJ	10-OCT-03	6010B
			CO	107	%Recovery	TJJ	10-OCT-03	6010B
			CR	108	%Recovery	TJJ	10-OCT-03	6010B
			CU	115	%Recovery	TJJ	10-OCT-03	6010B
			HG	102	%Recovery	TJJ	13-OCT-03	7471
			MN	107	%Recovery	TJJ	10-OCT-03	6010B
			NI	107	%Recovery	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030499

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030499-3		QC ERA D036-540 Lab Control Sample	PB	112	%Recovery	TJJ	10-OCT-03	6010B
			SE	91	%Recovery	TJJ	14-OCT-03	6020
			SN	114	%Recovery	TJJ	10-OCT-03	6010B
			TL	108	%Recovery	TJJ	14-OCT-03	6020
			ZN	105	%Recovery	TJJ	10-OCT-03	6010B
WG030499-4		QC EE19+EE7+SN Matrix Spike Duplicate	AG	0.9	% RPD	TJJ	10-OCT-03	6010B
			AS	0.2	% RPD	TJJ	10-OCT-03	6010B
			CD	1.0	% RPD	TJJ	10-OCT-03	6010B
			CO	1.3	% RPD	TJJ	10-OCT-03	6010B
			CR	2.0	% RPD	TJJ	10-OCT-03	6010B
			CU	2.2	% RPD	TJJ	10-OCT-03	6010B
			HG	7.1	% RPD	TJJ	10-OCT-03	7471
			MN	5.1	% RPD	TJJ	10-OCT-03	6010B
			NI	1.0	% RPD	TJJ	10-OCT-03	6010B
			PB	2.0	% RPD	TJJ	10-OCT-03	6010B
			SE	1.1	% RPD	TJJ	14-OCT-03	6020
			SN	3.7	% RPD	TJJ	10-OCT-03	6010B
			TL	0.9	% RPD	TJJ	14-OCT-03	6020
			ZN	5.6	% RPD	TJJ	10-OCT-03	6010B
WG030499-5		QC EE19+EE7+SN Matrix Spike	AG	103	%Recovery	TJJ	10-OCT-03	6010B
			AS	89	%Recovery	TJJ	10-OCT-03	6010B
			CD	96	%Recovery	TJJ	10-OCT-03	6010B
			CO	96	%Recovery	TJJ	10-OCT-03	6010B
			CR	117	%Recovery	TJJ	10-OCT-03	6010B
			CU	104	%Recovery	TJJ	10-OCT-03	6010B
			HG	104	%Recovery	TJJ	10-OCT-03	7471
			MN	93	%Recovery	TJJ	10-OCT-03	6010B
			NI	108	%Recovery	TJJ	10-OCT-03	6010B
			PB	94	%Recovery	TJJ	10-OCT-03	6010B
			SB	60 *	%Recovery	TJJ	10-OCT-03	6010B
			SE	76	%Recovery	TJJ	14-OCT-03	6020
			SN	108	%Recovery	TJJ	10-OCT-03	6010B
			TL	95	%Recovery	TJJ	14-OCT-03	6020
			ZN	95	%Recovery	TJJ	10-OCT-03	6010B
WG030499-6		QC 10% HCL Prep Blank	AG	<0.5	ppm	TJJ	10-OCT-03	6010B
			AS	<5	ppm	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030499

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030499-6		QC 10% HCL Prep Blank	CD	<1	ppm	TJJ	10-OCT-03	6010B
			CO	<5	ppm	TJJ	10-OCT-03	6010B
			CR	<5	ppm	TJJ	10-OCT-03	6010B
			CU	<5	ppm	TJJ	10-OCT-03	6010B
			HG	<0.05	ppm	TJJ	10-OCT-03	7471
			MN	<5	ppm	TJJ	10-OCT-03	6010B
			NI	<5	ppm	TJJ	10-OCT-03	6010B
			PB	<5	ppm	TJJ	10-OCT-03	6010B
			SB	<0.8	ppm	TJJ	10-OCT-03	6010B
			SE	<0.8	ppm	TJJ	14-OCT-03	6020
			SN	<5	ppm	TJJ	10-OCT-03	6010B
			TL	<0.5	ppm	TJJ	14-OCT-03	6020
			ZN	<5	ppm	TJJ	10-OCT-03	6010B
WG030499-7		QC ERA D036-540 Lab Control Sample	AG	105	%Recovery	TJJ	10-OCT-03	6010B
			AS	98	%Recovery	TJJ	10-OCT-03	6010B
			CD	103	%Recovery	TJJ	10-OCT-03	6010B
			CO	105	%Recovery	TJJ	10-OCT-03	6010B
			CR	106	%Recovery	TJJ	10-OCT-03	6010B
			CU	110	%Recovery	TJJ	10-OCT-03	6010B
			HG	97	%Recovery	TJJ	13-OCT-03	7471
			MN	109	%Recovery	TJJ	10-OCT-03	6010B
			NI	105	%Recovery	TJJ	10-OCT-03	6010B
			PB	105	%Recovery	TJJ	10-OCT-03	6010B
			SB	97	%Recovery	TJJ	10-OCT-03	6010B
			SE	87	%Recovery	TJJ	14-OCT-03	6020
			SN	111	%Recovery	TJJ	10-OCT-03	6010B
			TL	112	%Recovery	TJJ	14-OCT-03	6020
			ZN	103	%Recovery	TJJ	10-OCT-03	6010B
WG030499-8		QC EE19+EE7+SN Matrix Spike Duplicate	AG	0.2	% RPD	TJJ	10-OCT-03	6010B
			AS	4.1	% RPD	TJJ	10-OCT-03	6010B
			CD	1.5	% RPD	TJJ	10-OCT-03	6010B
			CO	2.7	% RPD	TJJ	10-OCT-03	6010B
			CR	4.5	% RPD	TJJ	10-OCT-03	6010B
			CU	0.9	% RPD	TJJ	10-OCT-03	6010B
			HG	24.1	% RPD	TJJ	10-OCT-03	7471
			MN	2.5	% RPD	TJJ	10-OCT-03	6010B
			NI	2.7	% RPD	TJJ	10-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030499

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030499-8		QC EE19+EE7+SN Matrix Spike Duplicate	PB	1.4	% RPD	TJJ	10-OCT-03	6010B
			SB	0.3	% RPD	TJJ	10-OCT-03	6010B
			SE	3.9	% RPD	TJJ	14-OCT-03	6020
			SN	11.0	% RPD	TJJ	10-OCT-03	6010B
			TL	2.4	% RPD	TJJ	14-OCT-03	6020
			ZN	3.2	% RPD	TJJ	10-OCT-03	6010B
WG030499-9		QC Reporting Limit	AG	0.5	ppm			6010B
			AS	5	ppm			6010B
			CD	1	ppm			6010B
			CN-	0.1	ppm			335.2
			CO	5	ppm			6010B
			CR	5	ppm			6010B
			CU	5	ppm			6010B
			HG	0.05	ppm			7471
			MN	5	ppm			6010B
			NI	5	ppm			6010B
			PB	5	ppm			6010B
			SB	0.8	ppm			6020
			SE	0.8	ppm			6020
			SN	5	ppm			6010B
			TL	0.5	ppm			6020
			TOC	2.0	ppm			9060
			ZN	5	ppm			6010B
WG030499-10		QC 1ML OF 10PPM STD Matrix Spike	CN-	80	%Recovery	RDC	09-OCT-03	335.2
WG030499-11		QC 0.2N NAOH Prep Blank	CN-	<0.1	ppm	RDC	09-OCT-03	335.2
WG030499-12		QC WP 102 Lab Control Sample	CN-	104	%Recovery	RDC	09-OCT-03	335.2
WG030499-13		QC L030540-001 Duplicate	CN-	<0.1	% RPD	RDC	09-OCT-03	335.2
WG030499-14		QC 1ML OF 10PPM STD Matrix Spike	CN-	86	%Recovery	RDC	09-OCT-03	335.2
WG030499-15		QC 0.2N NAOH Prep Blank	CN-	<0.1	ppm	RDC	09-OCT-03	335.2
WG030499-16		QC WP 102 Lab Control Sample	CN-	93	%Recovery	RDC	09-OCT-03	335.2

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030499

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030499-17		QC L030540-021 Duplicate	CN-	7.2	% RPD	RDC	09-OCT-03	335.2
WG030499-18		QC L030540-002 Duplicate	MOIST.	5.0	% RPD	RDC	14-OCT-03	GRAV.
			PH	<0.1	% RPD	RDC	13-OCT-03	USDA HB 60 21B
WG030499-19		QC L030540-023 Duplicate	MOIST.	1.5	% RPD	RDC	14-OCT-03	GRAV.
			PH	<0.1	% RPD	RDC	13-OCT-03	USDA HB 60 21B
WG030499-20		QC EE19+EE7+SN Matrix Spike	SB	26 *	%Recovery	TJJ	14-OCT-03	6020
WG030499-21		QC 10% HCL Prep Blank	SB	<0.8	ppm	TJJ	14-OCT-03	6020
WG030499-22		QC ERA D036-540 Lab Control Sample	SB	93	%Recovery	TJJ	14-OCT-03	6020
WG030499-23		QC EE19+EE7+SN Matrix Spike Duplicate	SB	12.3	% RPD	TJJ	14-OCT-03	6020
WG030499-24		QC EE19+EE7+SN Matrix Spike	SB	58 *	%Recovery	TJJ	14-OCT-03	6020
WG030499-25		QC 10% HCL Prep Blank	SB	<0.8	ppm	TJJ	14-OCT-03	6020
WG030499-26		QC ERA D036-540 Lab Control Sample	SB	101	%Recovery	TJJ	14-OCT-03	6020
WG030499-27		QC EE19+EE7+SN Matrix Spike Duplicate	SB	1.2	% RPD	TJJ	14-OCT-03	6020
WG030499-28		QC Matrix Spike	TOC	102	%Recovery	STL	20-OCT-03	9060
WG030499-29		QC Prep Blank	TOC	<2.0	ppm	STL	20-OCT-03	9060
WG030499-30		QC Lab Control Sample	TOC	102	%Recovery	STL	20-OCT-03	9060
WG030499-31		QC Matrix Spike Duplicate	TOC	0.2	% RPD	STL	20-OCT-03	9060

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030499

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD

* Sb recovery outside acceptance limits. Function of 3050 digestion. Results may be subject to bias.

Unless otherwise noted results are not blank corrected. NP = Collect time Not Provided.

Approved

Reviewer

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030541

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030541-001	30-SEP-03	NP	FIELD BLANK	AG	<0.005	ppm	TJJ	29-OCT-03	6020
				AS	<0.005	ppm	TJJ	29-OCT-03	6020
				CD	<0.010	ppm	TJJ	29-OCT-03	6020
				CN-	<0.004	ppm	RDC	09-OCT-03	335.2
				CO	<0.050	ppm	TJJ	30-OCT-03	6010B
				CR	<0.010	ppm	TJJ	29-OCT-03	6020
				CU	<0.050	ppm	TJJ	29-OCT-03	6020
				HG	<0.0005	ppm	TJJ	30-OCT-03	245.1
				MN	<0.015	ppm	TJJ	30-OCT-03	6010B
				NI	<0.050	ppm	TJJ	29-OCT-03	6020
				PB	<0.020	ppm	TJJ	29-OCT-03	6020
				SB	<0.050	ppm	TJJ	29-OCT-03	6020
				SE	<0.010	ppm	TJJ	29-OCT-03	6020
				SN	<0.050	ppm	TJJ	30-OCT-03	6010B
				TL	<0.002	ppm	TJJ	29-OCT-03	6020
				ZN	0.055	ppm	TJJ	29-OCT-03	6020
L030541-002	30-SEP-03	NP	EQUIPMENT BLANK	AG	<0.005	ppm	TJJ	29-OCT-03	6020
				AS	<0.005	ppm	TJJ	29-OCT-03	6020
				CD	<0.010	ppm	TJJ	29-OCT-03	6020
				CN-	<0.004	ppm	RDC	09-OCT-03	335.2
				CO	<0.050	ppm	TJJ	30-OCT-03	6010B
				CR	<0.010	ppm	TJJ	29-OCT-03	6020
				CU	<0.050	ppm	TJJ	29-OCT-03	6020
				HG	<0.0005	ppm	TJJ	30-OCT-03	245.1
				MN	<0.015	ppm	TJJ	30-OCT-03	6010B
				NI	<0.050	ppm	TJJ	29-OCT-03	6020
				PB	<0.020	ppm	TJJ	29-OCT-03	6020
				SB	<0.050	ppm	TJJ	29-OCT-03	6020
				SE	<0.010	ppm	TJJ	29-OCT-03	6020
				SN	<0.050	ppm	TJJ	30-OCT-03	6010B
				TL	<0.002	ppm	TJJ	29-OCT-03	6020
				ZN	<0.050	ppm	TJJ	29-OCT-03	6020

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030541

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD

Unless otherwise noted results are not blank corrected. NP = Collect time Not Provided.

Approved

Reviewer

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030537

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030537-1		QC Matrix Spike	AG	103	%Recovery	TJJ	29-OCT-03	6020
			AS	100	%Recovery	TJJ	29-OCT-03	6020
			CD	100	%Recovery	TJJ	29-OCT-03	6020
			CN-	80	%Recovery	RDC	09-OCT-03	335.2
			CO	103	%Recovery	TJJ	30-OCT-03	6010B
			CR	98	%Recovery	TJJ	29-OCT-03	6020
			CU	100	%Recovery	TJJ	29-OCT-03	6020
			HG	95	%Recovery	TJJ	30-OCT-03	245.1
			MN	105	%Recovery	TJJ	30-OCT-03	6010B
			NI	99	%Recovery	TJJ	29-OCT-03	6020
			PB	103	%Recovery	TJJ	29-OCT-03	6020
			SB	99	%Recovery	TJJ	29-OCT-03	6020
			SE	96	%Recovery	TJJ	29-OCT-03	6020
			SN	110	%Recovery	TJJ	30-OCT-03	6010B
			TL	100	%Recovery	TJJ	29-OCT-03	6020
			ZN	96	%Recovery	TJJ	29-OCT-03	6020
WG030537-2		QC Prep Blank	AG	<0.005	ppm	TJJ	29-OCT-03	6020
			AS	<0.005	ppm	TJJ	29-OCT-03	6020
			CD	<0.010	ppm	TJJ	29-OCT-03	6020
			CN-	<0.004	ppm	RDC	09-OCT-03	335.2
			CO	<0.050	ppm	TJJ	30-OCT-03	6010B
			CR	<0.010	ppm	TJJ	29-OCT-03	6020
			CU	<0.050	ppm	TJJ	29-OCT-03	6020
			HG	<0.0005	ppm	TJJ	30-OCT-03	245.1
			MN	<0.015	ppm	TJJ	30-OCT-03	6010B
			NI	<0.050	ppm	TJJ	29-OCT-03	6020
			PB	<0.020	ppm	TJJ	29-OCT-03	6020
			SB	<0.050	ppm	TJJ	29-OCT-03	6020
			SE	<0.010	ppm	TJJ	29-OCT-03	6020
			SN	<0.050	ppm	TJJ	30-OCT-03	6010B
			TL	<0.002	ppm	TJJ	29-OCT-03	6020
			ZN	<0.050	ppm	TJJ	29-OCT-03	6020
WG030537-3		QC Lab Control Sample	AG	104	%Recovery	TJJ	29-OCT-03	6020
			AS	103	%Recovery	TJJ	29-OCT-03	6020
			CD	102	%Recovery	TJJ	29-OCT-03	6020
			CN-	110	%Recovery	RDC	09-OCT-03	335.2
			CO	105	%Recovery	TJJ	30-OCT-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030537

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030537-3		QC Lab Control Sample	CR	97	%Recovery	TJJ	29-OCT-03	6020
			CU	100	%Recovery	TJJ	29-OCT-03	6020
			HG	95	%Recovery	TJJ	30-OCT-03	245.1
			MN	106	%Recovery	TJJ	30-OCT-03	6010B
			NI	98	%Recovery	TJJ	29-OCT-03	6020
			PB	104	%Recovery	TJJ	29-OCT-03	6020
			SB	102	%Recovery	TJJ	29-OCT-03	6020
			SE	102	%Recovery	TJJ	29-OCT-03	6020
			SN	83	%Recovery	TJJ	30-OCT-03	6010B
			TL	103	%Recovery	TJJ	29-OCT-03	6020
			ZN	99	%Recovery	TJJ	29-OCT-03	6020
WG030537-5		QC Matrix Spike Duplicate	AG	0.2	% RPD	TJJ	29-OCT-03	6020
			AS	2.1	% RPD	TJJ	29-OCT-03	6020
			CD	2.6	% RPD	TJJ	29-OCT-03	6020
			CO	1.4	% RPD	TJJ	30-OCT-03	6010B
			CR	1.3	% RPD	TJJ	29-OCT-03	6020
			CU	0.8	% RPD	TJJ	29-OCT-03	6020
			HG	<0.1	% RPD	TJJ	30-OCT-03	245.1
			MN	0.8	% RPD	TJJ	30-OCT-03	6010B
			NI	0.7	% RPD	TJJ	29-OCT-03	6020
			PB	2.2	% RPD	TJJ	29-OCT-03	6020
			SB	4.6	% RPD	TJJ	29-OCT-03	6020
			SE	2.2	% RPD	TJJ	29-OCT-03	6020
			SN	+/-RL	% RPD	TJJ	30-OCT-03	6010B
			TL	4.6	% RPD	TJJ	29-OCT-03	6020
			ZN	0.6	% RPD	TJJ	29-OCT-03	6020
WG030537-6		QC Reporting Limit	AG	0.005	ppm			6020
			AS	0.005	ppm			6020
			CD	0.010	ppm			6020
			CN-	0.004	ppm			335.2
			CO	0.050	ppm			6010B
			CR	0.010	ppm			6020
			CU	0.050	ppm			6020
			HG	0.0005	ppm			245.1
			MN	0.015	ppm			6010B
			NI	0.050	ppm			6020
			PB	0.020	ppm			6020

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030537

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030537-6		QC Reporting Limit	SB	0.050	ppm			6020
			SE	0.010	ppm			6020
			SN	0.050	ppm			6010B
			TL	0.002	ppm			6020
			ZN	0.050	ppm			6020

Unless otherwise noted results are not blank corrected. NP = Collect time Not Provided.

Approved

Reviewer

SEVERN TRENT STL

ANALYTICAL REPORT

Encycle

STL Denver Lot #: D3J170349

Vince Keller

ASARCO Technical Services
3440 South 700 West
Salt Lake City, UT 84119

STL DENVER

Patrick J. McEntee
Project Manager

October 24, 2003

Severn Trent Laboratories, Inc.
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Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	17

- **Table of Contents**
- **Case Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

Case Narrative

Enclosed is the report for four samples received at STL's Denver laboratory on October 17, 2003. The results included in this report have been reviewed for compliance with STL's Quality Assurance/Quality Control (QA/QC) plan. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

This report may include data with reporting limits (RLs) less than STL's standard reporting limit. These data and reporting limits are being used specifically to meet the needs of this project. Note that data are not customarily reported to these levels without qualifiers because they are inherently less reliable and potentially less defensible than the latest industry standards require.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated. A summary of quality control parameters is provided below.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Quality Control Summary for Lot D3J170349

Sample Receiving

- The cooler temperature upon receipt at the Denver laboratory was 18.8°C.

Holding Times

- The samples were analyzed within the required holding time.

Method SW846 9060, Total Organic Carbon Analysis

- No anomalies were observed. All associated batch QC samples were within control limits.

EXECUTIVE SUMMARY - Detection Highlights

D3J170349

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
L030540-001 09/30/03 001				
Total Organic Carbon	5.4	2.0	g/kg	SW846 9060
L030540-007 09/30/03 002				
Total Organic Carbon	0.88 B	2.0	g/kg	SW846 9060
L030540-017 09/30/03 003				
Total Organic Carbon	3.7	2.0	g/kg	SW846 9060
L030540-027 09/30/03 004				
Total Organic Carbon	3.1	2.0	g/kg	SW846 9060

METHODS SUMMARY

D3J170349

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Total Organic Carbon	SW846 9060	SW846 9060

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D3J170349

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 9060	Ewa Kudla	001167

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D3J170349

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
F2V19	001	L030540-001	09/30/03	
F2V2A	002	L030540-007	09/30/03	
F2V2C	003	L030540-017	09/30/03	
F2V2D	004	L030540-027	09/30/03	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

ASARCO TSC LABORATORY

Client Sample ID: L030540-001

General Chemistry

Lot-Sample #...: D3J170349-001 **Work Order #...:** F2V19 **Matrix.....:** SOLID
Date Sampled...: 09/30/03 **Date Received..:** 10/17/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon	5.4	2.0	g/kg	SW846 9060	10/20/03	3293606

Dilution Factor: 1 Analysis Time..: 18:00

ASARCO TSC LABORATORY

Client Sample ID: L030540-007

General Chemistry

Lot-Sample #...: D3J170349-002 Work Order #...: F2V2A Matrix.....: SOLID
Date Sampled...: 09/30/03 Date Received..: 10/17/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon	0.88 B	2.0	g/kg	SW846 9060	10/20/03	3293606

Dilution Factor: 1 Analysis Time..: 18:00

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

ASARCO TSC LABORATORY

Client Sample ID: L030540-017

General Chemistry

Lot-Sample #...: D3J170349-003 Work Order #...: F2V2C Matrix.....: SOLID
Date Sampled...: 09/30/03 Date Received..: 10/17/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon	3.7	2.0	g/kg	SW846 9060	10/20/03	3293606

Dilution Factor: 1 Analysis Time..: 18:00

ASARCO TSC LABORATORY

Client Sample ID: L030540-027

General Chemistry

Lot-Sample #...: D3J170349-004 Work Order #...: F2V2D Matrix.....: SOLID
Date Sampled...: 09/30/03 Date Received..: 10/17/03

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon	3.1	2.0	g/kg	SW846 9060	10/20/03	3293606

Dilution Factor: 1 Analysis Time..: 18:00

QC DATA ASSOCIATION SUMMARY

D3J170349

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	SOLID	SW846 9060		3293606	3293372
002	SOLID	SW846 9060		3293606	3293372
003	SOLID	SW846 9060		3293606	3293372
004	SOLID	SW846 9060		3293606	3293372

METHOD BLANK REPORT

General Chemistry

Client Lot #...: D3J170349 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon		Work Order #: F216L1AA		MB Lot-Sample #:	D3J200000-606	
	ND	2.0	g/kg	SW846 9060	10/20/03	3293606
		Dilution Factor: 1				
		Analysis Time..: 18:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: D3J170349 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon		WO#:F216L1AD-LCS/F216L1AE-LCSD				LCS Lot-Sample#: D3J200000-606	
	102	(91 - 111)			SW846 9060	10/20/03	3293606
	102	(91 - 111)	0.0	(0-10)	SW846 9060	10/20/03	3293606

Dilution Factor: 1 Analysis Time..: 18:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Lot-Sample #...: D3J170349 Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon		WO#:F216L1AD-LCS/F216L1AE-LCSD LCS Lot-Sample#: D3J200000-606						
	120	122	g/kg	102		SW846 9060	10/20/03	3293606
	120	122	g/kg	102	0.0	SW846 9060	10/20/03	3293606

Dilution Factor: 1 Analysis Time..: 18:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: D3J170349 **Matrix.....:** SOLID
Date Sampled...: 10/15/03 **Date Received..:** 10/17/03

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon		WO#:	F2V0N1AC-MS/F2V0N1AD-MSD			MS Lot-Sample #: D3J170341-001	
	102	(85 - 117)			SW846 9060	10/20/03	3293606
	102	(85 - 117)	0.24	(0-10)	SW846 9060	10/20/03	3293606

Dilution Factor: 1
Analysis Time..: 18:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: D3J170349 **Matrix.....:** SOLID
Date Sampled...: 10/15/03 **Date Received..:** 10/17/03

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon			WO#: F2V0N1AC-MS/F2V0N1AD-MSD				MS Lot-Sample #: D3J170341-001		
	0.84	120	123	g/kg	102		SW846 9060	10/20/03	3293606
	0.84	120	123	g/kg	102	0.24	SW846 9060	10/20/03	3293606

Dilution Factor: 1
Analysis Time...: 18:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

18.8°C
10/17/03

Technical Services Center

LABORATORY SERVICES REQUEST FORM

Environmental

PLANT INFORMATION	II. REPORT INSTRUCTIONS	Send Requests To:
ant Requesting Service: ENCYCLE	Original Report To: VINCE KELLER	ASARCO TSC LABORATORY
erson Requesting Service: VINCE KELLER	Additional Copy Of Report To: —	3422 South 700 West
oject Description:	Services Request Below are Requested No	Salt Lake City, Utah 84119
our Project No.:	Later Than (Date):	Your Customer Service
amples Collected By: —	Please Forward Results by: Mail(X) Fed-Ex( ) Fax(X)	Representative is: Maureen Ottley
	or e-mail 801-264-9838	Phone # (801) 262-2459 ext: 10
		Fax # (801) 264-9838

.TYPE OF SERVICE REQUESTED

Please send the following supplies:

( ) Sampling media or containers — Please Specify

( ) Laboratory services forms — ( ) Other

Sampling Date & Time	Sample I.D./Description	No. of Containers	Analyses Requested	Comments
9.30.03	L030540-001	1	TOC	
9.30.03	L030540-007	1	TOC	
9.30.03	L030540-017	1	TOC	
9.30.03	L030540-027	1	TOC	
			Please telephone Tim Jacobi for questions	
			801-262-2459 ex 19 or 10	

. CHAIN OF CUSTODY RECORD

portant: Use Signatures Below This Point

spatched By:	Flatley	Date/Time	10.16.03	Courier Company Name: Fed Ex		Shipping Airbill #	Custody Seal
elinquished By:		Date/Time		Received By:	Date:	Time:	Intact?
elinquished By:		Date/Time		Received for Lab By:	Date: 10/17/03	Time: 1000	Yes / No

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 2

Project Number/Name CC000642.0002

Project Location Corpus Christi, TX

Laboratory ASARCO Lab, Salt Lake City, UT

Project Manager Ken Brandner

Sampler(s)/Affiliation Bryan Haney & Ken Brandner/ARCADIS

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Total Antimony, Arsenic, Cadmium, Chromium, cobalt, copper, cyanide, lead,	manganese, mercury, nickel, selenium, silver, thallium, Tin	Zinc, pH	C32 oz glass jar w/ teflon lined lid)			Remarks	Total
Bkg N1	S	9/30/03		X							1
Bkg N2				X							1
Bkg N3				X							1
Bkg N4				X							1
Bkg N5				X							1
Bkg N6				X							1
Bkg N7				X							1
Bkg N8				X							1
Bkg S1				X							1
Bkg S2				X							1
Bkg S3				X							1
Bkg S4				X							1
Bkg S5				X							1
Bkg S6				X							1
Bkg S7				X							1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 15

Relinquished by: Kenneth J Brandner	Organization: ARCADIS	Date 9/30/03	Time PM	Seal Intact?
Received by: [signature]	Organization: ASARCO	Date 10/01/03	Time 10:30	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Results to Ken Brandner of ARCADIS. Need Results in 2 weeks
Hold all samples for possible Fraction Organic Carbon and grain size analyses.

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05 12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Project Number/Name CC000642.0002

Project Location Corpus Christi, TX

Laboratory ASARCO Lab, Salt Lake City, UT

Project Manager Ken Brandner

Sampler(s)/Affiliation Bryan Haney & Ken Brandner / ARCADIS

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Total Antimony, Arsenic, Cadmium, Chromium, Cobalt, Copper, Cyanide, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Thallium, Tin, Zinc, pH	(3207 glass w/ Teflon-lined lid)	Total Metals (1 pt. poly w/ HNO3)	Cyanide (1 qt. poly w/ NaOH)		Remarks	Total
BKg S8	S	9/30/03		X						1
SED-1				X						1
SED-2				[Hold]						1
SED-3				[Hold]						1
SED-4				X						1
SED-5				[Hold]						1
SED-6				[Hold]						1
SED-7				X						1
SED-8				[Hold]						1
SED-9				[Hold]						1
SED-10				X						1
SED-11				[Hold]						1
SED-12				[Hold]						1
Field Blank	L			X		1	1		Total Metals - 1 pt. poly w/ HNO3	2
Equipment Blank	L			X		1	1		Cyanide - 1 qt. poly w/ NaOH	2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 17

Relinquished by: Kenneth J Brandner	Organization: ARCADIS	Date 9/30/03	Time PM	Seal Intact?
Received by: Maureen Carney	Organization: ASARCO	Date 10/01/03	Time 10:30	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Results to Ken Brandner of ARCADIS. Need results in 2 weeks.
Hold all samples for possible fraction organic carbon and grain size analyses.

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

ASARCO

November 18, 2003

Mr. Ken Brandner
Arcadis Geraghty & Miller

Attached are the analytical results for four (4) sediment samples collected on 09/30/03, in association with the Asarco Encycle RFI project and received by the laboratory on 10/01/03.

This is the original report from American Testing for the sieve analyses.

If you need further information, please call me at (801) 262-2459, Extension 19.

Sincerely,

T.J. Jacobi
Sr. Chemist

cc: GRStanga (w/attach.)

ASARCO Incorporated • 3422 South 700 West • Salt Lake City, Utah 84119-4191 • (801) 262-2459 • FAX (801) 261-2194

American Testing Services Inc.

2580 South West Temple • Salt Lake City, Utah 84115
Phone (801) 487-1333 • FAX (801) 487-7141

Asarco
3422 South 700 West
Salt Lake City, UT 84119

Report #: 4
Date: October 31, 2003
Work Order #: 55034

Test Date: October 30, 2003
Material Origin: Encycle Texas A4TF CT940G0107002
Reference: Asarco

Sample Description: Dark grey silt and sand with a trace of shell.
Sample Location: L030540-001
Sample Elevation: BKG N1

SIEVE ANALYSIS REPORT ASTM C136

SIEVE OPENING	WEIGHT RETAINED	WEIGHT PASSING	PERCENT PASSING	TARGET BAND	PASS FAIL
# 4	33.8	292.3	89.6		
# 8	42.3	283.8	87.0		
# 16	55.1	271.0	83.1		
# 30	61.3	264.8	81.2		
# 50	72.8	253.3	77.7		
# 100	104.5	221.6	68.0		
# 200	170.3	155.8	47.8		

WT. OF TOTAL SAMPLE 326.1
WT. OF SPLIT SAMPLE
WT. PRIOR TO SPLIT
CORRECTION FACTOR

CERTIFIED TEST COPY: Viola Bogan
AMERICAN TESTING SERVICES INC.

a9540

American Testing Services Inc.

2580 South West Temple • Salt Lake City, Utah 84115
Phone (801) 487-1333 • FAX (801) 487-7141

Asarco
3422 South 700 West
Salt Lake City, UT 84119

Report #: 1
Date: October 31, 2003
Work Order #: 55034

Test Date: October 30, 2003
Material Origin: Encycle Texas A4TF CT940G0107002 **Reference:** Asarco

Sample Description: Light grey silty sand with some shell.
Sample Location: L030540-007
Sample Elevation: BKG N7

SIEVE ANALYSIS REPORT ASTM C136

SIEVE OPENING	WEIGHT RETAINED	WEIGHT PASSING	PERCENT PASSING	TARGET BAND	PASS FAIL
# 4	5.8	685.7	99.2		
# 8	7.6	683.9	98.9		
# 16	12.8	678.7	98.1		
# 30	57.6	633.9	91.7		
# 50	219.0	472.5	68.3		
# 100	486.9	204.6	29.6		
# 200	642.5	49.0	7.1		

WT. OF TOTAL SAMPLE 691.5
WT. OF SPLIT SAMPLE
WT. PRIOR TO SPLIT
CORRECTION FACTOR

CERTIFIED TEST COPY: Lola Bogan
AMERICAN TESTING SERVICES INC.

a9540

American Testing Services Inc.

2580 South West Temple • Salt Lake City, Utah 84115
Phone (801) 487-1333 • FAX (801) 487-7141

Asarco
3422 South 700 West
Salt Lake City, UT 84119

Report #: 3
Date: October 31, 2003
Work Order #: 55034

Test Date: October 30, 2003
Reference: Asarco

Material Origin: Encycle Texas A4TF CT940G0107002

Sample Description: Light grey course sand with shell.
Sample Location: L030540-017
Sample Elevation: SED-1

SIEVE ANALYSIS REPORT ASTM C136

SIEVE OPENING	WEIGHT RETAINED	WEIGHT PASSING	PERCENT PASSING	TARGET BAND	PASS FAIL
# 4	137.7	393.0	74.1		
# 8	187.1	343.6	64.7		
# 16	237.0	293.7	55.3		
# 30	307.1	223.6	42.1		
# 50	462.9	67.8	12.8		
# 100	523.4	7.3	1.4		
# 200	528.0	2.7	0.5		

WT. OF TOTAL SAMPLE 530.7
WT. OF SPLIT SAMPLE
WT. PRIOR TO SPLIT
CORRECTION FACTOR

CERTIFIED TEST COPY: Lola Bogan
AMERICAN TESTING SERVICES INC.

a9540

American Testing Services Inc.

2580 South West Temple • Salt Lake City, Utah 84115
Phone (801) 487-1333 • FAX (801) 487-7141

Asarco
3422 South 700 West
Salt Lake City, UT 84119

Report #: 2
Date: October 31, 2003
Work Order #: 55034

Test Date: October 30, 2003
Reference: Asarco

Material Origin: Encycle Texas A4TF CT940G0107002

Sample Description: Medium grey silty sand with a little shell.
Sample Location: L030540-027
Sample Elevation: SED-11

SIEVE ANALYSIS REPORT ASTM C136

SIEVE OPENING	WEIGHT RETAINED	WEIGHT PASSING	PERCENT PASSING	TARGET BAND	PASS FAIL
# 4	5.1	635.0	99.2		
# 8	9.8	630.3	98.5		
# 16	21.8	618.3	96.6		
# 30	53.2	586.9	91.7		
# 50	156.0	484.1	75.6		
# 100	268.5	371.6	58.1		
# 200	452.2	187.9	29.4		

WT. OF TOTAL SAMPLE 640.1
WT. OF SPLIT SAMPLE
WT. PRIOR TO SPLIT
CORRECTION FACTOR

CERTIFIED TEST COPY: Lola Bogan
AMERICAN TESTING SERVICES INC.

a9540

ASARCO

November 21, 2003

Mr. Ken Brandner
Arcadis Geraghty & Miller

Attached are the analytical results and quality control data for twenty-four (24) sediment and one (1) water samples collected on 10/23/03, in association with the Asarco Encycle RFI project and received by the laboratory on 10/24/03.

Oven dried, sieved, and ground sediment samples were digested on 11/05/03 and 11/06/03 in accordance with EPA Method 3050 for ICP or ICP-MS analysis. A soil portion was digested on 10/29/03 and analyzed for Hg per Method 7471A. Metals are reported on a dry weight basis with the exception of Hg which is reported on an as received basis.

The water sample was digested on 10/27/03 in accordance with EPA Method 6020M for ICP or ICP-MS analysis. A second portion was digested on 10/28/03 for Hg per Method 245.1.

The analytical results meet the requirements of the National Environmental Laboratory Accreditation Conference in accordance with Chapter 5 of the 1999 NELAC Standard with the following exceptions; gravimetric analysis for moisture and digestion method 6020M.

If you need further information, please call me at (801) 262-2459, Extension 19.

Sincerely,

T.J. Jacobi
Sr. Chemist

cc: GRStanga (w/attach.)

ASARCO Incorporated • 3422 South 700 West • Salt Lake City, Utah 84119-4191 • (801) 262-2459 • FAX (801) 261-2194

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030591

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030591-001	23-OCT-03	NP	SED-13	AG	<0.5	ppm	TJJ	11-NOV-03	6020
				AS	6	ppm	TJJ	10-NOV-03	6010B
				CD	8	ppm	TJJ	10-NOV-03	6010B
				CO	130	ppm	TJJ	10-NOV-03	6010B
				CU	37	ppm	TJJ	10-NOV-03	6010B
				HG	0.09	ppm	TJJ	30-OCT-03	7471
				MN	232	ppm	TJJ	10-NOV-03	6010B
				MOIST.	16.2	%	TJJ	10-NOV-03	GRAV.
				NI	22	ppm	TJJ	10-NOV-03	6010B
				PB	23	ppm	TJJ	10-NOV-03	6010B
				SB	<0.8	ppm	TJJ	11-NOV-03	6020
				SE	<0.8	ppm	TJJ	11-NOV-03	6020
				SN	<5*	ppm	TJJ	13-NOV-03	6020
				TL	<5*	ppm	TJJ	13-NOV-03	6020
				ZN	668	ppm	TJJ	10-NOV-03	6010B
L030591-002	23-OCT-03	NP	SED-14	AG	<0.5	ppm	TJJ	11-NOV-03	6020
				AS	<5	ppm	TJJ	10-NOV-03	6010B
				CD	6	ppm	TJJ	10-NOV-03	6010B
				CO	69	ppm	TJJ	10-NOV-03	6010B
				CU	37	ppm	TJJ	10-NOV-03	6010B
				HG	0.10	ppm	TJJ	30-OCT-03	7471
				MN	275	ppm	TJJ	10-NOV-03	6010B
				MOIST.	20.2	%	TJJ	10-NOV-03	GRAV.
				NI	11	ppm	TJJ	10-NOV-03	6010B
				PB	24	ppm	TJJ	10-NOV-03	6010B
				SB	<0.8	ppm	TJJ	11-NOV-03	6020
				SE	<0.8	ppm	TJJ	11-NOV-03	6020
				SN	<5*	ppm	TJJ	13-NOV-03	6020
				TL	<5*	ppm	TJJ	13-NOV-03	6020
				ZN	660	ppm	TJJ	10-NOV-03	6010B
L030591-003	23-OCT-03	NP	SED-15	AG	<0.5	ppm	TJJ	11-NOV-03	6020
				AS	6	ppm	TJJ	10-NOV-03	6010B
				CD	1	ppm	TJJ	10-NOV-03	6010B
				CO	36	ppm	TJJ	10-NOV-03	6010B
				CU	20	ppm	TJJ	10-NOV-03	6010B
				HG	0.06	ppm	TJJ	30-OCT-03	7471
				MN	88	ppm	TJJ	10-NOV-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030591

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030591-003	23-OCT-03	NP	SED-15	MOIST.	22.4	%	TJJ	10-NOV-03	GRAV.
				NI	7	ppm	TJJ	10-NOV-03	6010B
				PB	9	ppm	TJJ	10-NOV-03	6010B
				SB	<0.8	ppm	TJJ	11-NOV-03	6020
				SE	<0.8	ppm	TJJ	11-NOV-03	6020
				SN	<5*	ppm	TJJ	13-NOV-03	6020
				TL	<5*	ppm	TJJ	13-NOV-03	6020
				ZN	108	ppm	TJJ	10-NOV-03	6010B
L030591-004	23-OCT-03	NP	SED-16	AG	<0.5	ppm	TJJ	11-NOV-03	6020
				AS	<5	ppm	TJJ	10-NOV-03	6010B
				CD	3	ppm	TJJ	10-NOV-03	6010B
				CO	57	ppm	TJJ	10-NOV-03	6010B
				CU	64	ppm	TJJ	10-NOV-03	6010B
				HG	0.12	ppm	TJJ	30-OCT-03	7471
				MN	207	ppm	TJJ	10-NOV-03	6010B
				MOIST.	26.3	%	TJJ	10-NOV-03	GRAV.
				NI	9	ppm	TJJ	10-NOV-03	6010B
				PB	19	ppm	TJJ	10-NOV-03	6010B
				SB	<0.8	ppm	TJJ	11-NOV-03	6020
				SE	<0.8	ppm	TJJ	11-NOV-03	6020
				SN	<5*	ppm	TJJ	13-NOV-03	6020
				TL	<5*	ppm	TJJ	13-NOV-03	6020
				ZN	398	ppm	TJJ	10-NOV-03	6010B
L030591-005	23-OCT-03	NP	SED-17	AG	<0.5	ppm	TJJ	11-NOV-03	6020
				AS	<5	ppm	TJJ	10-NOV-03	6010B
				CD	5	ppm	TJJ	10-NOV-03	6010B
				CO	48	ppm	TJJ	10-NOV-03	6010B
				CU	66	ppm	TJJ	10-NOV-03	6010B
				HG	0.09	ppm	TJJ	30-OCT-03	7471
				MN	150	ppm	TJJ	10-NOV-03	6010B
				MOIST.	20.0	%	TJJ	10-NOV-03	GRAV.
				NI	8	ppm	TJJ	10-NOV-03	6010B
				PB	19	ppm	TJJ	10-NOV-03	6010B
				SB	<0.8	ppm	TJJ	11-NOV-03	6020
				SE	<0.8	ppm	TJJ	11-NOV-03	6020
				SN	<5*	ppm	TJJ	13-NOV-03	6020
				TL	<5*	ppm	TJJ	13-NOV-03	6020

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030591

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030591-005	23-OCT-03	NP	SED-17	ZN	399	ppm	TJJ	10-NOV-03	6010B
L030591-006	23-OCT-03	NP	SED-18	AG	<0.5	ppm	TJJ	11-NOV-03	6020
				AS	<5	ppm	TJJ	10-NOV-03	6010B
				CD	1	ppm	TJJ	10-NOV-03	6010B
				CO	55	ppm	TJJ	10-NOV-03	6010B
				CU	31	ppm	TJJ	10-NOV-03	6010B
				HG	0.10	ppm	TJJ	30-OCT-03	7471
				MN	76	ppm	TJJ	10-NOV-03	6010B
				MOIST.	23.0	%	TJJ	10-NOV-03	GRAV.
				NI	11	ppm	TJJ	10-NOV-03	6010B
				PB	20	ppm	TJJ	10-NOV-03	6010B
				SB	<0.8	ppm	TJJ	11-NOV-03	6020
				SE	<0.8	ppm	TJJ	11-NOV-03	6020
				SN	<5*	ppm	TJJ	13-NOV-03	6020
				TL	<5*	ppm	TJJ	13-NOV-03	6020
				ZN	196	ppm	TJJ	10-NOV-03	6010B
L030591-007	23-OCT-03	NP	SED-19	CD	5	ppm	TJJ	10-NOV-03	6010B
				CU	86	ppm	TJJ	10-NOV-03	6010B
				HG	0.20	ppm	TJJ	30-OCT-03	7471
				MN	227	ppm	TJJ	10-NOV-03	6010B
				MOIST.	18.3	%	TJJ	10-NOV-03	GRAV.
				ZN	590	ppm	TJJ	10-NOV-03	6010B
L030591-008	23-OCT-03	NP	SED-20	CD	1	ppm	TJJ	10-NOV-03	6010B
				CU	54	ppm	TJJ	10-NOV-03	6010B
				HG	0.21	ppm	TJJ	30-OCT-03	7471
				MN	321	ppm	TJJ	10-NOV-03	6010B
				MOIST.	37.0	%	TJJ	10-NOV-03	GRAV.
				ZN	232	ppm	TJJ	10-NOV-03	6010B
L030591-009	23-OCT-03	NP	SED-21	CD	5	ppm	TJJ	10-NOV-03	6010B
				CU	122	ppm	TJJ	10-NOV-03	6010B
				HG	0.41	ppm	TJJ	31-OCT-03	7471
				MN	246	ppm	TJJ	10-NOV-03	6010B
				MOIST.	31.9	%	TJJ	10-NOV-03	GRAV.
				ZN	529	ppm	TJJ	10-NOV-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030591

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030591-010	23-OCT-03	NP	SED-22	CD	3	ppm	TJJ	10-NOV-03	6010B
				CU	108	ppm	TJJ	10-NOV-03	6010B
				HG	0.69	ppm	TJJ	31-OCT-03	7471
				MN	287	ppm	TJJ	10-NOV-03	6010B
				MOIST.	24.9	%	TJJ	10-NOV-03	GRAV.
				ZN	424	ppm	TJJ	10-NOV-03	6010B
L030591-011	23-OCT-03	NP	SED-23	CD	3	ppm	TJJ	10-NOV-03	6010B
				CU	54	ppm	TJJ	10-NOV-03	6010B
				HG	0.13	ppm	TJJ	30-OCT-03	7471
				MN	143	ppm	TJJ	10-NOV-03	6010B
				MOIST.	21.8	%	TJJ	10-NOV-03	GRAV.
				ZN	281	ppm	TJJ	10-NOV-03	6010B
L030591-012	23-OCT-03	NP	SED-24	CD	11	ppm	TJJ	10-NOV-03	6010B
				CU	105	ppm	TJJ	10-NOV-03	6010B
				HG	0.94	ppm	TJJ	31-OCT-03	7471
				MN	263	ppm	TJJ	10-NOV-03	6010B
				MOIST.	35.2	%	TJJ	10-NOV-03	GRAV.
				ZN	1010	ppm	TJJ	10-NOV-03	6010B
L030591-013	23-OCT-03	NP	SED-25	CD	<1	ppm	TJJ	10-NOV-03	6010B
				CU	19	ppm	TJJ	10-NOV-03	6010B
				HG	<0.05	ppm	TJJ	30-OCT-03	7471
				MN	450	ppm	TJJ	10-NOV-03	6010B
				MOIST.	32.6	%	TJJ	10-NOV-03	GRAV.
				ZN	66	ppm	TJJ	10-NOV-03	6010B
L030591-014	23-OCT-03	NP	SED-26	CD	<1	ppm	TJJ	10-NOV-03	6010B
				CU	24	ppm	TJJ	10-NOV-03	6010B
				HG	<0.05	ppm	TJJ	30-OCT-03	7471
				MN	1260	ppm	TJJ	10-NOV-03	6010B
				MOIST.	30.1	%	TJJ	10-NOV-03	GRAV.
				ZN	71	ppm	TJJ	10-NOV-03	6010B
L030591-015	23-OCT-03	NP	SED-27	CD	<1	ppm	TJJ	10-NOV-03	6010B
				CU	34	ppm	TJJ	10-NOV-03	6010B
				HG	<0.05	ppm	TJJ	30-OCT-03	7471
				MN	551	ppm	TJJ	10-NOV-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030591

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030591-015	23-OCT-03	NP	SED-27	MOIST.	30.8	%	TJJ	10-NOV-03	GRAV.
				ZN	76	ppm	TJJ	10-NOV-03	6010B
L030591-016	23-OCT-03	NP	SED-28	CD	2	ppm	TJJ	10-NOV-03	6010B
				CU	363	ppm	TJJ	10-NOV-03	6010B
				HG	0.18	ppm	TJJ	30-OCT-03	7471
				MN	693	ppm	TJJ	10-NOV-03	6010B
				MOIST.	64.0	%	TJJ	10-NOV-03	GRAV.
				ZN	365	ppm	TJJ	10-NOV-03	6010B
L030591-017	23-OCT-03	NP	SED-29	CD	3	ppm	TJJ	10-NOV-03	6010B
				CU	290	ppm	TJJ	10-NOV-03	6010B
				HG	0.26	ppm	TJJ	31-OCT-03	7471
				MN	750	ppm	TJJ	10-NOV-03	6010B
				MOIST.	62.7	%	TJJ	10-NOV-03	GRAV.
				ZN	426	ppm	TJJ	10-NOV-03	6010B
L030591-018	23-OCT-03	NP	SED-30	CD	2	ppm	TJJ	10-NOV-03	6010B
				CU	102	ppm	TJJ	10-NOV-03	6010B
				HG	0.22	ppm	TJJ	30-OCT-03	7471
				MN	374	ppm	TJJ	10-NOV-03	6010B
				MOIST.	54.0	%	TJJ	10-NOV-03	GRAV.
				ZN	328	ppm	TJJ	10-NOV-03	6010B
L030591-019	23-OCT-03	NP	SED-31	CD	3	ppm	TJJ	10-NOV-03	6010B
				CU	1250	ppm	TJJ	10-NOV-03	6010B
				HG	0.27	ppm	TJJ	31-OCT-03	7471
				MN	575	ppm	TJJ	10-NOV-03	6010B
				MOIST.	63.9	%	TJJ	10-NOV-03	GRAV.
				ZN	473	ppm	TJJ	10-NOV-03	6010B
L030591-020	23-OCT-03	NP	SED-32	CD	3	ppm	TJJ	10-NOV-03	6010B
				CU	2580	ppm	TJJ	10-NOV-03	6010B
				HG	0.29	ppm	TJJ	31-OCT-03	7471
				MN	673	ppm	TJJ	10-NOV-03	6010B
				MOIST.	61.7	%	TJJ	10-NOV-03	GRAV.
				ZN	571	ppm	TJJ	10-NOV-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030591

LAB NO	DATE/TIME COLLECTED		DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
L030591-021	23-OCT-03	NP	SED-33	CD	3	ppm	TJJ	10-NOV-03	6010B
				CU	2460	ppm	TJJ	10-NOV-03	6010B
				HG	0.24	ppm	TJJ	30-OCT-03	7471
				MN	490	ppm	TJJ	10-NOV-03	6010B
				MOIST.	63.5	%	TJJ	10-NOV-03	GRAV.
				ZN	537	ppm	TJJ	10-NOV-03	6010B
L030591-022	23-OCT-03	NP	SED-34	CD	2	ppm	TJJ	10-NOV-03	6010B
				CU	411	ppm	TJJ	10-NOV-03	6010B
				HG	0.21	ppm	TJJ	30-OCT-03	7471
				MN	168	ppm	TJJ	10-NOV-03	6010B
				MOIST.	40.0	%	TJJ	10-NOV-03	GRAV.
				ZN	268	ppm	TJJ	10-NOV-03	6010B
L030591-023	23-OCT-03	NP	SED-35	CD	1	ppm	TJJ	10-NOV-03	6010B
				CU	534	ppm	TJJ	10-NOV-03	6010B
				HG	0.15	ppm	TJJ	30-OCT-03	7471
				MN	275	ppm	TJJ	10-NOV-03	6010B
				MOIST.	45.8	%	TJJ	10-NOV-03	GRAV.
				ZN	185	ppm	TJJ	10-NOV-03	6010B
L030591-024	23-OCT-03	NP	SED-36	CD	2	ppm	TJJ	10-NOV-03	6010B
				CU	206	ppm	TJJ	10-NOV-03	6010B
				HG	0.26	ppm	TJJ	31-OCT-03	7471
				MN	274	ppm	TJJ	10-NOV-03	6010B
				MOIST.	52.5	%	TJJ	10-NOV-03	GRAV.
				ZN	315	ppm	TJJ	10-NOV-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: L030591

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD

* One of the two Prep Blanks was >RL. Results may be subject to bias.

Unless otherwise noted results are not blank corrected. NP = Collect time Not Provided.

Approved

Reviewer

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030559

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030559-1		QC Matrix Spike	AG	101	%Recovery	TJJ	11-NOV-03	6020
			AS	90	%Recovery	TJJ	10-NOV-03	6010B
			CD	94	%Recovery	TJJ	10-NOV-03	6010B
			CO	97	%Recovery	TJJ	10-NOV-03	6010B
			CU	104	%Recovery	TJJ	10-NOV-03	6010B
			HG	111	%Recovery	TJJ	30-OCT-03	7471
			MN	105	%Recovery	TJJ	10-NOV-03	6010B
			NI	150	%Recovery	TJJ	10-NOV-03	6010B
			PB	99	%Recovery	TJJ	10-NOV-03	6010B
			SB	95	%Recovery	TJJ	11-NOV-03	6020
			SE	93	%Recovery	TJJ	11-NOV-03	6020
			SN	97	%Recovery	TJJ	13-NOV-03	6020
			TL	72	%Recovery	TJJ	13-NOV-03	6020
			ZN	98	%Recovery	TJJ	10-NOV-03	6010B
WG030559-2		QC Prep Blank	AG	<0.5	ppm	TJJ	11-NOV-03	6020
			AS	<5	ppm	TJJ	10-NOV-03	6010B
			CD	<1	ppm	TJJ	10-NOV-03	6010B
			CO	<5	ppm	TJJ	10-NOV-03	6010B
			CU	<5	ppm	TJJ	10-NOV-03	6010B
			HG	<0.05	ppm	TJJ	30-OCT-03	7471
			MN	<5	ppm	TJJ	10-NOV-03	6010B
			NI	<5	ppm	TJJ	10-NOV-03	6010B
			PB	<5	ppm	TJJ	10-NOV-03	6010B
			SB	<0.8	ppm	TJJ	11-NOV-03	6020
			SE	<0.8	ppm	TJJ	11-NOV-03	6020
			SN	<5	ppm	TJJ	13-NOV-03	6020
			TL	<5	ppm	TJJ	13-NOV-03	6020
			ZN	<5	ppm	TJJ	10-NOV-03	6010B
WG030559-3		QC Lab Control Sample	AG	116	%Recovery	TJJ	11-NOV-03	6020
			AS	110	%Recovery	TJJ	10-NOV-03	6010B
			CD	102	%Recovery	TJJ	10-NOV-03	6010B
			CO	106	%Recovery	TJJ	10-NOV-03	6010B
			CU	114	%Recovery	TJJ	10-NOV-03	6010B
			HG	114	%Recovery	TJJ	30-OCT-03	7471
			MN	109	%Recovery	TJJ	10-NOV-03	6010B
			NI	106	%Recovery	TJJ	10-NOV-03	6010B
			PB	120	%Recovery	TJJ	10-NOV-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030559

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030559-3		QC Lab Control Sample	SB	100	%Recovery	TJJ	11-NOV-03	6020
			SE	110	%Recovery	TJJ	11-NOV-03	6020
			SN	118	%Recovery	TJJ	13-NOV-03	6020
			TL	81	%Recovery	TJJ	13-NOV-03	6020
			ZN	107	%Recovery	TJJ	10-NOV-03	6010B
WG030559-4		QC Duplicate	MOIST.	1.2	% RPD	TJJ	10-NOV-03	GRAV.
WG030559-5		QC Matrix Spike Duplicate	AG	<0.1	% RPD	TJJ	11-NOV-03	6020
			AS	4.1	% RPD	TJJ	10-NOV-03	6010B
			CD	1.1	% RPD	TJJ	10-NOV-03	6010B
			CO	4.5	% RPD	TJJ	10-NOV-03	6010B
			CU	0.9	% RPD	TJJ	10-NOV-03	6010B
			HG	3.2	% RPD	TJJ	31-OCT-03	7471
			MN	4.8	% RPD	TJJ	10-NOV-03	6010B
			NI	3.5	% RPD	TJJ	10-NOV-03	6010B
			PB	0.3	% RPD	TJJ	10-NOV-03	6010B
			SB	4.3	% RPD	TJJ	11-NOV-03	6020
			SE	1.6	% RPD	TJJ	11-NOV-03	6020
			SN	1.0	% RPD	TJJ	13-NOV-03	6020
			TL	8.6	% RPD	TJJ	13-NOV-03	6020
			ZN	5.4	% RPD	TJJ	10-NOV-03	6010B
WG030559-6		QC Reporting Limit	AG	0.5	ppm			6020
			AS	5	ppm			6010B
			CD	1	ppm			6010B
			CO	5	ppm			6010B
			CU	5	ppm			6010B
			HG	0.05	ppm	TJJ	30-OCT-03	7471
			MN	5	ppm			6010B
			NI	5	ppm			6010B
			PB	5	ppm			6010B
			SB	0.8	ppm			6020
			SE	0.8	ppm			6020
			SN	5	ppm			6020
			TL	5	ppm			6020
			ZN	5	ppm			6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030559

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030559-7		QC Matrix Spike	AG	97	%Recovery	TJJ	11-NOV-03	6020
			AS	89	%Recovery	TJJ	10-NOV-03	6010B
			CD	91	%Recovery	TJJ	10-NOV-03	6010B
			CO	95	%Recovery	TJJ	10-NOV-03	6010B
			CU	101	%Recovery	TJJ	10-NOV-03	6010B
			HG	98	%Recovery	TJJ	31-OCT-03	7471
			MN	99	%Recovery	TJJ	10-NOV-03	6010B
			NI	95	%Recovery	TJJ	10-NOV-03	6010B
			PB	97	%Recovery	TJJ	10-NOV-03	6010B
			SB	81	%Recovery	TJJ	11-NOV-03	6020
			SE	87	%Recovery	TJJ	11-NOV-03	6020
			SN	102	%Recovery	TJJ	13-NOV-03	6020
			TL	85	%Recovery	TJJ	13-NOV-03	6020
			ZN	98	%Recovery	TJJ	10-NOV-03	6010B
WG030559-8		QC Prep Blank	AG	<0.5	ppm	TJJ	11-NOV-03	6020
			AS	<5	ppm	TJJ	10-NOV-03	6010B
			CD	<5	ppm	TJJ	10-NOV-03	6010B
			CO	<5	ppm	TJJ	10-NOV-03	6010B
			CU	<5	ppm	TJJ	10-NOV-03	6010B
			HG	<0.05	ppm	TJJ	30-OCT-03	7471
			MN	<5	ppm	TJJ	10-NOV-03	6010B
			NI	<5	ppm	TJJ	10-NOV-03	6010B
			PB	<5	ppm	TJJ	10-NOV-03	6010B
			SB	<0.8	ppm	TJJ	11-NOV-03	6020
			SE	<0.8	ppm	TJJ	11-NOV-03	6020
			SN	14 *	ppm	TJJ	13-NOV-03	6020
			TL	6 *	ppm	TJJ	13-NOV-03	6020
			ZN	6 *	ppm	TJJ	10-NOV-03	6010B
WG030559-9		QC Lab Control Sample	AG	115	%Recovery	TJJ	11-NOV-03	6020
			AS	102	%Recovery	TJJ	10-NOV-03	6010B
			CD	98	%Recovery	TJJ	10-NOV-03	6010B
			CO	103	%Recovery	TJJ	10-NOV-03	6010B
			CU	111	%Recovery	TJJ	10-NOV-03	6010B
			HG	108	%Recovery	TJJ	30-OCT-03	7471
			MN	109	%Recovery	TJJ	10-NOV-03	6010B
			NI	103	%Recovery	TJJ	10-NOV-03	6010B
			PB	108	%Recovery	TJJ	10-NOV-03	6010B

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

Encycle/Texas

(Project A4TF CT940G0107002)

Batch No: WG030559

LAB NO	DATE/TIME COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	METHOD
WG030559-9		QC Lab Control Sample	SB	170	%Recovery	TJJ	11-NOV-03	6020
			SE	102	%Recovery	TJJ	11-NOV-03	6020
			SN	122	%Recovery	TJJ	13-NOV-03	6020
			TL	82	%Recovery	TJJ	13-NOV-03	6020
			ZN	104	%Recovery	TJJ	10-NOV-03	6010B
WG030559-10		QC Duplicate	MOIST.	0.5	% RPD	TJJ	10-NOV-03	GRAV.
WG030559-11		QC Matrix Spike Duplicate	AG	9.6	% RPD	TJJ	11-NOV-03	6020
			AS	9.1	% RPD	TJJ	10-NOV-03	6010B
			CD	13.3	% RPD	TJJ	10-NOV-03	6010B
			CO	13.3	% RPD	TJJ	10-NOV-03	6010B
			CU	15.3	% RPD	TJJ	10-NOV-03	6010B
			HG	6.1	% RPD	TJJ	31-OCT-03	7471
			MN	13.2	% RPD	TJJ	10-NOV-03	6010B
			NI	12.6	% RPD	TJJ	10-NOV-03	6010B
			PB	14.1	% RPD	TJJ	10-NOV-03	6010B
			SB	19.7	% RPD	TJJ	11-NOV-03	6020
			SE	10.2	% RPD	TJJ	11-NOV-03	6020
			SN	10.9	% RPD	TJJ	13-NOV-03	6020
			TL	4.8	% RPD	TJJ	13-NOV-03	6020
			ZN	15.5	% RPD	TJJ	10-NOV-03	6010B

* One of the two Prep Blanks was >RL. Results may be subject to bias.

Unless otherwise noted results are not blank corrected. NP = Collect time Not Provided.

Approved

Reviewer

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Project Number/Name: C C000642.0002

Project Location: Corpus Christi, TX

Laboratory: ASARCO Lab, Salt Lake City

Project Manager: Ken Brandner

Sampler(s)/Affiliation: Ken Brandner / ARCADIS

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Total Antimony, Arsenic, Cadmium, Cobalt, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Thallium, Tin, Zinc (16 oz. wide mouth glass jar w/ Teflon-lined lid)						Remarks	Total
SED-13	S	10/23/03		X							1
SED-14				X							1
SED-15				X							1
SED-16				X							1
SED-17				X							1
SED-18				X							1
SED-19				[HOLD]							1
SED-20											1
SED-21											1
SED-22											1
SED-23											1
SED-24											1
SED-25											1
SED-26											1
SED-27											1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 15

Relinquished by: Ken Brandner	Organization: ARCADIS	Date 10/23/03	Time PM	Seal Intact?	
Received by: [illegible]	Organization: ASARCO	Date 10/24/03	Time 9:20	Yes No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks: Need results in 2 weeks.

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 2 of 2

Project Number/Name CC000642.0002

Project Location Corpus Christi, TX

Laboratory ASARCO Lab, Salt Lake City

Project Manager Ken Brandner

Sampler(s)/Affiliation Ken Brandner, ARCADIS

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Total antimony, arsenic, cadmium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, ~~thallium, tin, zinc~~ (16oz. widemouth glass jar w/ Teflon-lined lid)						Remarks	Total
SED-28	S	10/23/03		[HOLD]							1
SED-29											1
SED-30											1
SED-31											1
SED-32											1
SED-33											1
SED-34											1
SED-35											1
SED-36											1
Equipment Blank	L	10/23/03		X							1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 10

Relinquished by: Ken Brandner	Organization: ARCADIS	Date 10/23/03	Time PM	Seal Intact? Yes No N/A
Received by: Maureen Ottley	Organization: ASARCO	Date 10/24/03	Time 9:30	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Need Results in 2 weeks

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597