2011 REMEDIAL ACTION ANNUAL EFFECTIVENESS REPORT

ALCOA (POINT COMFORT) / LAVACA BAY SUPERFUND SITE

Prepared for:

ALCOA INC.
State Highway 35
Point Comfort, Texas 77978

March 2012

665255

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

CAPA	Chlor-Alkali Process Area
CCND	Calhoun County Navigation District
CD	Consent Decree
CDF	Confined Disposal Facility
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DMPA	Dredge Material Placement Area
DNAPL	Dense Non-Aqueous Phase Liquid
EE/CA	Engineering Evaluation/Cost Analysis
FS	Feasibility Study
GPA	Gypsum Placement Area
MSL	Mean Sea Level
NGVD	National Geodetic Vertical Datum
OMMP	Operation, Maintenance and Monitoring Plan
RAAER	Remedial Action Annual Effectiveness Report
RDR	Remedial Design Report
RI	Remedial Investigation
ROD	Record of Decision
SOW	Statement of Work
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

1.1 Objective

This 2011 Remedial Action Annual Effectiveness Report (RAAER) for the Alcoa (Point Comfort)/Lavaca Bay Superfund Site (the "Site") in Point Comfort, Texas satisfies the requirements of the CERCLA Consent Decree/Statement of Work between Alcoa (Alcoa Inc. and Alcoa World Alumina Atlantic, L.L.C.), the United States of America and the State of Texas, entered in the United States District Court, Southern District on the effective date of March 1, 2005 (United States et al., 2005).

The objective of the RAAER is to create an integrated assessment of the progress towards achieving the overall Site remediation goals using results from all monitoring performed subsequent to the lodging of the Consent Decree.

1.2 CD/SOW Requirements for the RAAER

Per the Statement of Work attached to the Consent Decree, the RAAER:

> *"...shall be prepared to evaluate the effectiveness of the RA [Remedial Action] including, but not limited to, an evaluation of the performance of the hydraulic control system at CAPA, natural recovery of sediments in Lavaca Bay, trends in fish/shellfish tissue values, and an evaluation of O&M activities. In preparing the report, Settling Defendants shall use the O&M and Performance Monitoring data collected and any data collected during construction of the remedy. The Annual Effectiveness Report shall be submitted to EPA in accordance with the schedule contained in the Remedial Action Work Plan."*

The Remedial Action Work Plan (Alcoa, 2005a) specifies that the RAAER be submitted by March 31 of the year following the completion of each monitoring program.

The Statement of Work attached to the Consent Decree states that specific topics to be discussed in the RAAER include:

- Site information;
- Media description;
- Treatment system description;

- Treatment system performance;
- Observations and lessons learned; and
- Verification that site conditions have not changed and there have been no land use or property development changes that may affect the remedial action.

1.3 Site Description and Status of Remedial Activities

The Site is defined in the Consent Decree as:

> *"...the Alcoa/Lavaca Bay Superfund Site, generally consisting of the Plant, Dredge Island, Formosa Tract, and portions of Lavaca Bay, Cox Bay, Cox Creek, Cox Cove, Cox Lake (Cox Creek, Cox Cove, and Cox Lake are also known as Huisache Creek, Cove and Lake) and western Matagorda Bay located in Calhoun County, Texas, and areas containing hazardous substances depicted generally on the map attached as Appendix C." (Note: map from Consent Decree not presented herein).*

Although all areas of the Site were investigated during the Remedial Investigation, the risk assessments indicated that only certain parts of Lavaca Bay, the Dredge Island, and two areas on the Plant/Mainland (the Chlor-Alkali Process Area [CAPA] and the Witco Area) required development of remedial action objectives and subsequent remediation. Remediation of the Site, as described in the Record of Decision (ROD) (USEPA, 2001), consisted of actions that were initiated prior to the ROD (some of which were completed prior to the ROD and some of which are ongoing), and several future actions. This RAAER presents monitoring information that reflects the effects of both the completed actions and the ongoing activities. The following remedial actions have either been completed or represent an ongoing activity at the Site:

- Stabilization of the Dredge Island (completed as a non-time critical removal action prior to the ROD);
- Removal of CAPA sediment and sediment near Dredge Island (completed as a treatability study prior to the ROD);
- Extraction and treatment of groundwater at the CAPA (initiated as a treatability study prior to the ROD and continuing as an ongoing remedial action pursuant to the Consent Decree);
- Dredging of the Witco Channel (completed as part of routine plant maintenance prior to the ROD);
- Installation of a soil cap at the CAPA, with institutional controls to manage exposure to soil (completed prior to the ROD);
- Removal of Building R-300 at the CAPA (completed prior to the ROD);

- Natural recovery of sediments (ongoing activity);
- Institutional controls to manage exposure to finfish/shellfish (ongoing activity)
- Installation of a Dense Non-Aqueous Phase Liquid (DNAPL) containment system (slurry wall vertical barrier) at the Witco Area (installed in 2006);
- Installation of soil caps at the Witco Area, with institutional controls to manage exposure to soil (installed in 2006); and
- Dredging of the Witco Marsh (completed in 2006).

On May 23, 2007, USEPA published notice that an Explanation of Significant Differences (ESD) had been signed for the Site. The ESD indicates that enhanced natural recovery north of Dredge Island is no longer a necessary component of remedial action for the Site. The notice states:

> *"Although the remediation goal for sediment in open water areas of Lavaca Bay has been achieved, Alcoa will continue to monitor mercury levels in fish and marsh sediment. Results from the ongoing monitoring will be updated in the annual Remedial Action Effectiveness Report. EPA will review the report to determine if the remedy continues to be protective of human health and the environment. If EPA determines that the remedy is not protective, EPA can require Alcoa to undertake additional response actions."*

The Preliminary Close Out Report (PCOR) for the Alcoa/Lavaca Bay site was signed by USEPA on July 23, 2007. The PCOR documents that all construction activities required by the Record of Decision were completed. Long term monitoring of red drum and blue crab is required to evaluate the recovery of mercury levels in fish and shellfish.

The Consent Decree specifies certain performance monitoring activities to evaluate the effectiveness of the remedy. The scopes of each of these monitoring activities are contained in the Remedial Design Reports (RDRs) and/or Operation, Maintenance and Monitoring Plans (OMMPs) attached to the Consent Decree. The Consent Decree documents that govern operation, maintenance and monitoring for currently completed or ongoing activities are:

- Chlor-Alkali Process Area RDR and OMMP (Appendix A);
- Lavaca Bay Sediment Remediation and Long-Term Monitoring Plan OMMP (Appendix H);
- Lavaca Bay Finfish and Shellfish OMMP (Appendix I);
- Dredge Island OMMP (Appendix D);
- Chlor-Alkali Process Area Soils RDR and OMMP (Appendix F);

- Witco Tank Farm DNAPL Containment System RDR and OMMP (Appendix B); and
- Witco Area Soils RDR and OMMP (Appendix G).

The RDRs/OMMPs provide detailed descriptions of the performance monitoring that is summarized in this RAAER. Although the general scopes of the relevant OMMPs are described subsequently, the reader is directed to the RDR/OMMP documents for specific details about each monitoring program. Due to the large size of the RDR/OMMP documents, they are not reproduced here.

USEPA issued the First 5-year Review Report in June 2011 (USEPA, 2011) and provided the following summary. The review concluded:

> *". . . that the completed and ongoing remedial activities and natural recovery processes have resulted in downward trends of mercury concentrations in open water sediment and marsh sediment. Overall, a significant amount of sediment recovery has occurred since sampling conducted during the RI in 1996. Small localized areas of open water sediment are not recovering as quickly as predicted in the Feasibility Study. Average mercury concentrations of red drum tissue measured in the Closed Area of Lavaca Bay continue to exhibit positive and negative inter-annual fluctuations. The fluctuations appear to be related in part to remediation and in part to physical, chemical and biological conditions not influenced by remedial activities.*

Based on the data review, document review, and site inspection, the following issues have been identified:

- *Empirical sediment recovery rates indicate that natural recovery of open-water sediment mercury concentrations is occurring, but at somewhat slower rate than predicted in the FS. The Marsh 14 Island left by the Dredge Island non-time critical removal action, and perhaps to a lesser extent Mainland Shoreline No. 3 and the Witco Harbor and channel appear to serve as an ongoing source of mercury-contaminated soil and sediment to Lavaca Bay. These soils and sediment appear to be decreasing the rate of sediment recovery predicted in the FS.*
- *Due to bimodal and/or outlier data distributions, it is difficult to determine temporal trends in marsh sediment concentrations. In order to calculate an accurate average sediment concentration in marshes, it is appropriate to review the statistical design of the marsh sediment monitoring program to assess whether the number and placement of samples should be modified to better capture the variability in sediment concentrations and to improve the understanding of temporal trends.*
- *Mercury studies performed at the beginning of the RI indicated that methylation occurs at a shallow depth (often one or two centimeters at depth). A smaller core sample interval, closer to the sediment surface may provide more useful information about where and how methyl mercury enters the food web.*
- *Inspections at Dredge Island are conducted quarterly and indicate that the island is in good shape and the performance objectives are met. Erosion of the interior side slopes of the confined disposal facility (CDF) caused by wave action of water in the CDF*

continues to be the most significant maintenance issue. Other items that need to be addressed on Dredge Island include: 1) erosion of the un-vegetated areas of the exterior side-slopes, 2) possible damage to the northeast decant structure below the mud line, 3) corrosion of metal portions of the decant structures, and 4) vegetation within the stone armor on the exterior side-slopes.

To address the issues identified during the first five-year review, the following recommendations and follow-up actions have been identified:

- *Develop a plan to perform a focused, additional remedial measure in the area of the Dredge Island stabilization project, in order to assess whether the rate of finfish/shellfish tissue recovery can be accelerated.*
- *Assess the statistical design of the marsh sediment monitoring program to determine whether the number or placement of samples can be modified to better capture the variability in sediment concentrations and to improve the understanding of temporal trends.*
- *Evaluate a smaller core sample interval, closer to the sediment surface for future sediment sampling to provide more useful information about where and how methyl mercury enters the food web.*
- *Address the following issues related to the Dredge Island Stabilization Project:*
    - *Erosion of the interior side slops of the CDF caused by wave action of water in the CDF continues to be the most significant maintenance issue*
    - *Erosion of the un-vegetated areas of the exterior side-slopes.*
    - *Possible damage to the northeast decant structure below the mud line.*
    - *Corrosion of metal portions of the decant structures.*
    - *Vegetation within the stone armor on the exterior side-slopes."*

These recommendations and follow-up actions are to be addressed in 2012.

2.0 OVERVIEW OF O&M AND PERFORMANCE MONITORING PROGRAMS

2.1 Chlor-Alkali Process Area Groundwater Extraction and Treatment System

The CAPA groundwater extraction and treatment system began full-scale operation in May 1998. The primary system components are four groundwater extraction wells, an air stripper that removes volatile organic compounds from the groundwater, and a series of carbon vessels that remove mercury. Ancillary piping, filters, pumps, tanks, etc. comprise the rest of the system. The objective of the groundwater extraction system is to provide hydraulic control of that portion of the dissolved mercury plume that was believed to contribute over 98 percent of the mercury mass flux from Zone B groundwater to Lavaca Bay prior to groundwater control. A treatability test conducted in 1997/1998 indicated that an aggregate extraction rate of approximately 10 gallons per minute (gpm) from the four extraction wells creates a cone of depression that extends parallel to the shoreline along the line of wells.

The system has operated continuously since 1998, with only minor interruptions for maintenance or trouble-shooting, or during power interruptions at the Point Comfort Operations (PCO) facility. Detailed information for the CAPA groundwater extraction and treatment system, including the results of investigations and system design, is provided in the CAPA Focused Investigation Data Report (Alcoa, 1998) and CAPA Groundwater Treatability Study Data Report (Alcoa, 1999).

Operations, maintenance, and monitoring were conducted in 2011 in accordance with the CAPA Groundwater RDR/OMMP (Consent Decree, Appendix A). The various maintenance activities, operational checks and sampling requirements are summarized in Table 3-3 of the RDR/OMMP. The discharge standards for the system effluent are shown in Table 3-1 of the RDR/OMMP. A summary of the CAPA groundwater extraction and treatment system performance is provided in Section 3.1 of this report.

2.2 Chlor-Alkali Process Area Offshore Surface Water Sampling

As discussed in the 2006 RAAER (Alcoa, 2007), the performance objective for this component of the OMMP was achieved in 2006 and it is no longer part of the annual monitoring program.

2.3 Lavaca Bay Sediment Monitoring

A key factor in the success of the Lavaca Bay remedy is the reduction of sediment mercury concentrations through targeted sediment removal efforts, capping, natural recovery, and/or enhanced natural recovery. The purpose of the sediment monitoring program is to verify that source control and remedial measures have been effective in reducing sediment concentrations to acceptable levels.

As described in the Lavaca Bay Sediment Remediation and Long-Term Monitoring Plan (Consent Decree Appendix H), the sediment monitoring program was designed to evaluate surface (0-5 cm) sediment mercury concentrations from open water and marsh areas within the Closed Area. The boundaries of the Closed Area are defined in the Texas State Department of Health and Human Services (TSDHHS) Order against taking of finfish and shellfish for consumption.

The Consent Decree requires that the open water sediment monitoring program be performed until a mean mercury concentration of less than 0.5 mg/Kg (ppm) dry weight is measured in the Closed Area in two consecutive years. As documented in the 2005 RAAER (Alcoa, 2006a), this occurred in 2004 and 2005 when average concentrations of 0.293 ppm and 0.276 ppm, respectively, were measured in surface open water sediment samples from the Closed Area. Thus the performance objective of the open water sediment monitoring program established in the Consent Decree has been met. However, Alcoa has elected to continue monitoring of the northern half of the open water sediment sampling grid on a voluntary basis as part of its ongoing effort to better understand trends in fish tissue concentrations in the Closed Area of Lavaca Bay. In 2009 Alcoa decided to monitor the open water sediment every two years (even numbered years. The full suite of open water samples was not collected in 2011 because it was an odd numbered year. However, as part of the program to assess improvements to the marsh sampling design, a select number of open-water sediment sampling locations were monitored in 2011. The purpose of collecting these additional samples is to help assess the relationship between marsh sediment concentrations and nearby open-water sediment concentrations.

The marsh sediment monitoring program began in 2004 with the collection of surface sediment samples from the eight largest marshes within the Closed Area ("one" of these eight marshes was actually two adjacent marshes, Marshes 1 and 2). The number of sub-samples used to yield a composite mercury concentration for each marsh ranged initially from three to five depending on the relative size of each marsh. The original marsh identification (ID) numbers and number of sub-samples initially collected (i.e., 2004 and 2005 annual monitoring events) were:

Marsh ID	Number of Sub-samples
1 and 2	5
3	3
5	5
7	3
11	5
14	3
15	3
19	4

The following recommendations were provided in the 2005 RAAER:

- *"The 2005 event identified what appears to be an outlier subsample (SUP0007) with elevated mercury concentrations in one marsh (Marsh 1). Modifications to the monitoring program to identify and deal with statistical outliers should be considered.*
- *The chemical analysis of marsh sediment subsamples, followed by mathematical averaging to derive a composite marsh mercury concentration for use in attaining performance standards seems to be a more informative approach to monitoring than compositing subsamples and obtaining just a single composite mercury analysis. We recommend that the chemical analysis of individual marsh sediment subsamples be performed in future monitoring events."*

Based on these recommendations, the sampling plan was revised for the 2006 marsh sediment monitoring event to 1) increase the number of samples in each marsh; and 2) individually analyze each marsh subsample, thereby allowing the identification of potential outliers yet still affording the opportunity to calculate an average mercury concentration of sediment in each marsh. The revised marsh sampling plan was submitted to USEPA on October 13, 2006 (Alcoa, 2006b).

In order to develop the revised sampling plan, an *a priori* power analysis was conducted to establish the number of samples that would be necessary to determine whether the mean mercury concentration of an individual marsh was different from the remedial goal, given the variability in the 2005 data. The power analysis determined that a total sample size of 70 would result in a power greater than 95%. Based on a sample size of 70, and the total length of the nine target marshes identified in 2005 (6,132 feet), samples were evenly distributed across the nine marshes. A minimum of six samples for any marsh was applied based on the median of the marsh lengths, 490 feet. This cutoff ensured that shorter marshes were not too sparsely sampled while retaining sufficient numbers to add samples for characterizing the longer marshes.

The following number of samples was collected from each marsh beginning with the 2006 annual monitoring event, and continuing with subsequent annual monitoring events:

Marsh ID	Number of Sub-samples
1	12
2	6
3	6
5	6
6	10
7	6
14	6
15	10
19	8

Marshes 1 and 2 are now treated as separate marshes to better understand spatial variability and outliers. Details on the location of the 2011 samples are provided in Appendix A. Due to natural changes in the footprint of the marsh areas, some sample locations visited in 2011 are no longer in marshes, but sediment samples were collected to ensure uniformity of the data set through time.

The Consent Decree states that the objective of the marsh performance standard is to attain an average mercury concentration in each marsh of less than 0.25 mg/Kg dry weight. Monitoring is to occur annually until the remediation goals are met for two consecutive events. If the marsh sediment monitoring data attain the remediation goal for two consecutive annual events in a given marsh, monitoring of that marsh is complete, even if monitoring of other marshes continues. Marsh 11 was dropped from the monitoring program in 2006 because the performance objective of attaining an average mercury sediment concentration of less than 0.25 mg/Kg dry weight in two consecutive years was met in 2005, as described in the 2005 RAAER (Alcoa, 2006a). The 2007 RAAER (Alcoa, 2008a) documented that Marshes 1, 2, 3 and 19 met the performance objective. These four marshes were monitored subsequently on a voluntary annual basis in an ongoing effort to better understand trends in fish tissue concentrations in the Closed Area of Lavaca Bay.

Based on review of the 2007 supplemental data presented in the Amended 2007 RAAER (Alcoa, 2008b), measurements of methyl mercury (MeHg) and total organic carbon (TOC) were added to total mercury (THg) for the analytical suite for the 2008 and subsequent marsh monitoring programs. The marsh MeHg and TOC samples were initially collected from a depth interval of 0-5 cm depth. Based on redesign of the marsh sampling program in accordance with the recommendations of the USEPA First 5-Year Review (Section 1.3), the marsh sample depth interval was changed in 2011 from 0-5 cm to 0-2 cm. The purpose of the change in sediment sampling depth is to better characterize MeHg concentrations in the shallowest sediment that may be more relevant to biota uptake relationships. The Mercury Reconnaissance Studies performed at the beginning of the Remedial Investigation (Alcoa, 1999b) showed that methylation occurs at a sharp redox boundary, often only one or two centimeters at depth.

2.4 Finfish and Shellfish Monitoring

The purpose of the Lavaca Bay Finfish and Shellfish OMMP is to collect and evaluate data to document whether the remediation goals have been met, and mercury levels in fish tissue have been reduced such that the overall risk throughout Lavaca Bay approaches that which would be present but for the historic Point Comfort Operations. Mercury concentrations in red drum tissue are used as a surrogate of risk, and the remediation goal for Lavaca Bay will be met when the mercury concentrations of red drum collected in the Closed Area have recovered to the levels measured in red drum collected from the Open Area. As discussed in Section 3.4, a rigorous statistical approach is used to compare the mercury concentrations of Closed Area and Open Area red drum tissue samples and to determine when the remediation goal has been met.

The OMMP also provides for collection of information to assess short-term trends in tissue recovery and to "qualitatively" evaluate remedy effectiveness. Trends in concentrations of red drum and juvenile blue crab are evaluated graphically. The OMMP states that increasing trends, based on multiple annual events, indicate that the sediment remediation efforts are not effective at reducing tissue concentrations, and would warrant consideration of additional remedial measures. Decreasing trends, also based on multiple annual events, indicate that the sediment remedies are having the desired effects, subject to quantitative confirmation by statistical comparison of Closed Area and Open Area red drum tissue samples. Static or fluctuating trends indicate that multiple parameters are influencing tissue concentrations, and further monitoring and possibly consideration of additional remedial measures may be necessary.

2.5 Dredge Island Inspections

An Engineering Evaluation/Cost Analysis (EE/CA) for a non-time-critical removal action was conducted by Alcoa for the Dredge Island in 1997 (Alcoa, 1997). A streamlined risk evaluation, prepared as part of the EE/CA, indicated that mercury from Dredge Island could enter Lavaca Bay via erosion of mercury-contaminated soils. Based on that finding, the EE/CA documented the selection of a removal action that minimized the potential for the release of mercury from the island due to either uncontrolled erosion during normal storm events or due to the effects of more intense storms (e.g., hurricanes).

The removal action was conducted between 1998 and 2001, and is referred to as the "Dredge Island Stabilization Project." The project included relocating the contents of the Dredge Materials Placement Areas (DMPAs) that contained elevated levels of mercury (approximately 523,000 cubic yards) into the Gypsum Placement Areas (GPAs). In addition, the containment dikes surrounding the GPAs were raised so that they would not be overtopped during a 100-year storm event (i.e., a storm event that has a probability of occurring once within 100 years). This required increasing 10,700 linear feet of dike to an approximate elevation of 30 feet MSL. As part of this work, most of the marshes on the north end of the island were removed. Erosion protection and runoff control structures were also installed on the island. The final design and as-built drawings for the Dredge Island remedy are contained in the Dredge Island Removal Action Plan, Volume 4 - Phase 1 Dredge Island Stabilization Completion Report (Alcoa, 2002).

The performance objective for the Dredge Island remedy is to interrupt the potential direct exposure pathway of contaminants in soils and sediments from Dredge Island as a result of a significant storm event or uncontrolled erosion during storm water runoff. The removal action and reconfiguration of Dredge Island was designed to achieve this objective through engineering means. Remaining tasks for Alcoa include preservation of the integrity of the reconfigured island through periodic inspections and maintenance and/or repairs, as needed.

The requirements provided in the OMMP for Dredge Island include inspection of the following primary components:

- The access bridge from mainland to northern shore of Dredge Island;

- The 10,500 lineal feet of the Alcoa Confined Disposal Facility (CDF) containment dikes;
- The storm protection on the Alcoa CDF dike exterior, including the armor layer, under-layer, and dike toe protection;
- The gravel erosion protection on the exterior dike slopes above the armor protections and the interior dike slopes above 26.5 ft. (NGVD 1929);
- The 25-ft. long concrete emergency spillway;
- The two dredge decant structures including the discharge structures;
- The two water stops installed in the Calhoun County Navigation District (CCND) CDF dikes; and
- The road on the Alcoa CDF dikes.

The access bridge was damaged during Hurricane Claudette in 2003 and subsequent Dredge Island inspections have not included detailed inspection of the bridge. However, Alcoa continues to maintain signage and navigational lighting to prevent access to and collision with the bridge.

2.6 CAPA Soil Cap Inspections

Soils contaminated with mercury greater than the applicable risk-based values were identified during the RI at the CAPA. These soils were generally associated with the area to the west of former Building R-300, and encompassed an area of approximately 1.8 acres. The remedial action objective for CAPA soils was to reduce the future exposure potential of site workers to mercury in soils at the CAPA. A clay/gravel cap was installed, which was graded for storm water drainage, and the storm water management structures were modified to collect only surface runoff. The grading objective was met by compaction of a clay sub-grade over the entire area, from approximately several inches thick at the perimeter to 1.2 feet thick at the center. A six-inch crushed limestone material was then placed over the compacted clay sub-grade. To limit usage of the area by Plant and contractor personnel, three-by-six feet warning signs were placed on the north and west sides of the capped area. Also, a memorandum was distributed to Plant employees to inform workers of the upgrades made to the area, the restrictions on the capped area, and disciplinary actions for not complying with the restrictions. Additional information is contained in the CAPA Soils RDR/OMMP. A similar memorandum is distributed annually for review by Site workers.

An inspection and maintenance program was developed for the capped area, as described in the RDR/OMMP. This program consists of quarterly inspections, and maintenance as required. The main components of the inspection are:

- Cap integrity (e.g., signs of vehicular traffic, burrowing, erosion, etc.);
- Vegetation growth;
- Signage integrity (e.g., upright and legible);
- Storm drains free of debris; and
- No equipment or waste storage.

All items noted on the inspections are corrected as soon as practicable.

2.7 Witco Area Inspections

Containment of DNAPL containing PAHs and capping of PAH-impacted soils at the Witco Area were components of the remedy as described in the Consent Decree. DNAPL and sediments/soil visibly contaminated with polyaromatic hydrocarbons (PAHs) had been observed at several locations at the Witco Area during previous investigations. In addition, surface soils in portions of the Witco Area exhibited elevated concentrations of PAHs that exceeded response action objectives (RAOs) associated with potential on-site worker exposure to surface soils. Additional information is contained in the Former Witco Area DNAPL Containment System and Witco Area Soils RDR/OMMPs.

Construction was performed during the period March 8, 2006 to December 29, 2006. The following remedial construction activities were performed:

- Construction of a new drainage channel, including the removal of visually-impacted sediments;
- Construction of a 100-foot long soil attapulgite slurry wall;
- Construction of a soil cap in the former tank farm area; and
- Removal of an oil/water separator and construction of a soil cap in the former processing area.

A Construction Completion Report was submitted in June 2007, and operations and maintenance activities were initiated in July 2007, as follows:

- Quarterly inspections (for two years, annual thereafter) of the drainage channel;
- Quarterly inspections of the soil caps at the former tank farm and oil/water separator;
- Placement of signage regarding prohibition of activities at the site (a Management Memo was developed and distributed at the facility);
- Inspections of the DNAPL collection sump (monthly for six months, quarterly thereafter until two years after construction, frequency to be reviewed at that time based on findings); and
- Removal of any DNAPL that collects in the sump.

A memorandum was distributed to Plant employees to inform workers of upgrades made to the area, the capped area restrictions and disciplinary actions for not complying with restrictions. A similar memorandum has been submitted annually for review by Site workers.

3.0 MONITORING RESULTS

3.1 Chlor-Alkali Process Area Groundwater Extraction and Treatment System

The primary monitoring results for the CAPA groundwater extraction and treatment system are provided in Tables 3.1-1, 3.1-2, 3.1-3, 3.1-4, and 3.1-5. Selected potentiometric data are shown on Figures 3.1-1, 3.1-2, 3.1-3, and 3.1-4. The potentiometric contours for the areas near Lavaca Bay utilize a surface water elevation for Lavaca Bay measured at a tidal gauge located south of the CAPA (CA Bay). In other words, contouring assumes that Lavaca Bay is in hydraulic connection with Zone B, as has been demonstrated previously due to the deep dredging of the Alcoa Industrial Channel. Graphs showing the concentrations of mercury and carbon tetrachloride in samples from the recovery wells over time are shown on Figures 3.1-5 and 3.1-6. The concentrations of mercury and carbon tetrachloride in the samples from the recovery wells have decreased over time since the groundwater extraction and treatment system has been operating. Field records and logs from system operational checks and maintenance activities are kept in project binders and maintained in the project filing system.

The data collected from the treatment system indicates that it is operating efficiently and as designed. Hydraulic control has been achieved and appears to be effectively reducing the potential for migration of mercury-impacted groundwater in Zone B west of former Building R-300 to Lavaca Bay. This conclusion is based on the observed potentiometric surface. Concentrations of mercury and volatile organic compounds in system effluent samples were all less than the discharge standards listed in the RDR/OMMP. Therefore, all performance standards were met during 2011.

A release of approximately 225 gallons of water from the groundwater treatment system at CAPA occurred on April 6, 2011. A root-cause accident analysis was conducted and several changes were made to the system to prevent future occurrences. The incident was reported to the agencies, and the incident is documented in a memorandum prepared by Pastor, Behling & Wheeler LLC (2012).

3.2 Chlor-Alkali Process Area Offshore Surface Water Sampling

As stated in Section 2.2 of this report, the performance objective for this component of the OMMP was achieved in 2006 and it is no longer part of the annual monitoring program.

3.3 Sediment Monitoring

As discussed in Section 2.3, the long-term sediment monitoring program originally included open water sediment samples and marsh sediment samples within the Closed Area. The open water sediment monitoring objectives were completed with the 2005 monitoring event, as described in the 2005 RAAER (Alcoa, 2006a). Alcoa has continued monitoring of the northern half of the open water sediment sampling grid since 2006 voluntarily as part of its ongoing effort to better understand trends in tissue concentrations in the Closed Area of Lavaca Bay. In 2009 Alcoa decided to monitor the open water sediment sampling grid every two years (even numbered years), Therefore, no open water sediment samples were collected during the 2011 monitoring event. As discussed in Section 2.3, fifteen open water sediment samples were collected in 2011 to help assess the relationships of marsh sediment conditions and nearby open water sediments. The depth interval for the 2011 open water sediment samples was 0-2 cm.

As described in the 2008 RAAER (Alcoa, 2009), open-water surface sediment mercury concentrations in most of the northern half of the Closed Area are less than 0.5 mg/Kg dry weight, and many samples are less than 0.25 mg/Kg dry weight. Downward concentration trends are also evident in the broad areas west of Dredge Island, although the rate of decrease is more subtle than north of the Smelter Channel because of the low initial concentrations of mercury in the western areas. Variable concentrations in localized areas may reflect ranges in sediment concentrations over small distances and/or greater re-suspension of sediment by natural or anthropogenic influences, relative to the areas north and west of Dredge Island.

As discussed in the Feasibility Study (Alcoa, 2000), recovery rates are characterized by the sediment mercury half-life, defined as the time needed for sediment concentrations to decrease by 50%. Assessment of recovery rates using observed data are termed empirical rates because they simply represent the observed change in mercury concentrations between two points in time. By definition, the empirical recovery rate assumes a linear decrease. Actual sediment recovery will typically occur in a non-linear fashion, with the rate of change decreasing asymptotically with time. Nonetheless, the empirical recovery rates provide useful real-time observations to compare against the projections presented in the Feasibility Study. Empirical sediment mercury half-lives ($t_{1/2}$) were calculated for open water sediment locations with surficial sediment mercury data available for the 2004 to 2008, and 2006 to 2010 (t_1 to t_2) monitoring events using the following formula:

$$t_{1/2} = [(t_1 - t_2) \times (Hg_{t1} \times 0.5)] / (Hg_{t1} - Hg_{t2})$$

where t_1 and t_2 are the starting and ending times (in years) respectively, and Hg_{t1} and Hg_{t2} are the mercury concentrations (in mg/kg) for t_1 and t_2, respectively.

In the 2009 RAAER, empirical rates of sediment recovery over the 2004 to 2008 period were calculated to quantify the observed natural recovery process. The 2004/2008 recovery rates presented in the 2009 RAAER confirmed that much of the open water sediment mercury concentrations decreased in the 2004 to 2008 period. There were several areas west of the north end of Dredge Island that increased slightly. The average 2004/2008 $t_{1/2}$ value in areas of decreasing sediment concentration is approximately 12 years; the minimum and maximum values are 4.3 and 29 years, respectively. By comparison, the average $t_{1/2}$ value for the Lavaca Bay sediment recovery stations measured in the RIFS is 7 years (Alcoa, 2000). Comparison of these results indicates that, based on empirical data, the natural recovery of open water sediment mercury concentrations is occurring, but at a somewhat slower rate than originally predicted.

In the 2010 RAAER, the empirical sediment mercury half-lives were calculated for the 2006 and 2010 data in order to begin to understand sediment recovery on a "moving window" basis, i.e., are empirical recovery rates similar with time, or is the rate of recovery increasing or decreasing? The empirical sediment mercury half-lives over the 2006 to 2010 window of time were calculated using the formula presented above. Consistent with comparisons of prior time periods, most of the open water sediment mercury concentrations decreased in the 2006 to 2010 period.

The 2006/2010 calculations are compared to the 2004/2008 recovery half-lives in the following table:

Empirical Sediment Recovery Half-Lives (years)

Time Period	Mean	Minimum	Maximum	# of Samples
2004-2008	12	4	29	38
2006-2010	10	2	49	58

The mean recovery rate for the 2006-2010 period is similar to the rate calculated for the 2004-2008 period, possibly within the precision of the estimation method. Both recovery rates are somewhat slower than the rate predicted in the RIFS.

The "moving-window" approach to assess sediment recovery trends cannot be performed using the 2011 data because of the change in sample depth interval in 2011 (i.e., from 0-5 cm to 0-2 cm). To qualitatively assess the relative influence of changing sample depth intervals versus natural recovery trends, the 2011 0-2 cm open-water sediment data are compared to the 2010 0-5 cm data collected from the same sampling stations in the following table:

Station ID	Total Hg (mg/kg, dw)		
	2010 (0-5cm)	2011 (0-2cm)	Change
SMP004	0.177	0.180	0.003
STO0201	0.271	0.227	-0.044
SMP0009	0.549	0.572	0.023
SUP0016	0.404	0.344	-0.060
STO0189	0.329	0.261	-0.068
LVB0909	0.185	0.180	-0.005
SUP0107	0.322	0.356	0.034
SMP0016	0.418	0.527	0.109
SUP0020	0.365	0.426	0.061
SUP0021	0.924	0.678	-0.246
LVB0917	0.267	0.060	-0.207
SMP0041	0.0895	0.110	0.021
SMP0040	0.319	0.390	0.071
SUP0043	0.464	0.739	0.275
SUP0053	0.474	0.557	0.083

Review of this table indicates that the 2011 mercury concentrations are lower than the 2010 concentrations at 6 of the 15 sampling stations, and the maximum decrease is 0.246 mg/Kg total mercury. The decrease is less than 0.07 mg/Kg at 4 of the 6 locations. The remaining stations reported an increase in concentration in 2011 versus the 2010 data. The maximum increase is 0.275 mg/Kg, but the increase is less than 0.09 mg/Kg in 7 of the 9 locations. The locations of the samples are shown in Figure 3.3-1. The locations exhibiting an increase in mercury concentration between 2010 and 2011, even with the difference in sample depth interval, are located in the area north of Dredge Island, in the vicinity of Marsh 14 and to a lesser extent, Mainland Shoreline No. 3. This observation is consistent with conclusions of the 2010 RAAER, and further supports the need for additional remediation activity in the vicinity of Marsh 14, and possibly Mainland Shoreline No. 3. The temporal changes in deposition chemistry and natural recovery trends seem to be more relevant to observed mercury concentrations than the effect of changing sample depth intervals from 0-5 cm to 0-2 cm in open water sediment monitoring locations. Based on this observation, as well as the ability to continue to use the historical data, the biannual open water sediment sampling program will continue to collect surficial sediment samples using the 0-5 cm depth interval.

The 2011 marsh sediment data are provided in Appendix A. The temporal trends in the monitoring data are illustrated in Figure 3.3-2. The two graphs shown on Figure 3.3-2 separate the marsh trends into two groups, those that have met the remedial objective of less than 0.25 mg/Kg in two consecutive prior years, and those that have not.

As discussed in prior RAAERs, the average concentrations of several marshes appear to be influenced by bimodal distributions and/or the presence of outliers. In the 2011 marsh dataset there are three samples which have significant outliers at the 0.01 level, as determined by the Dixon Q-test. The subsamples of the marshes shown in Figure 3.3-2 are depicted in ascending rank order.

The highest concentrations of mercury in the subsamples collected from Marshes 6, 15 and 19 are visible outliers relative to the range in concentrations of the remaining subsamples from these marshes. Without the outliers, the average mercury concentrations of the Marshes 6, 15 and 19 are 0.30, 0.36 and 0.35 mg/Kg, respectively. Consistent with the recommendations of the USEPA First 5-Year Review, application of these statistical tests to remove outliers indicates that the remaining data set is consistent with prior years, and the number of marsh sampling stations currently monitored appears to be adequate. The graphs in Figure 3.3-2 depict average marsh concentrations excluding the outlier samples.

Of the marshes that have met the remedial objective, Marshes 2 and 3 continue to provide sediment samples below 0.25 mg/Kg. The average of the 2011 Marsh 19 samples (excluding the outlier) is 0.35 mg/Kg, and thus remains above the remedial objective. The trends for Marsh 19 data shown in Figure 3.3-2 use averages calculated without the 2009 and 2011 outlier samples.

In the 2010 RAAER it was noted that Marsh 1 also contained an outlier. The average 2009 concentration for Marsh 1 shown in Figure 3.3-2 uses the average calculated without the outlier sample.

The average concentrations of total mercury measured in the remaining marshes continued to exceed the remedial objective of 0.25 mg/Kg. The Marsh 7 samples averaged 0.22 mg/Kg total mercury in 2010 which was the first year that an average concentration below the remedial action objective was recorded for Marsh 7. However the average of the 2011 Marsh 7 samples is 0.38 (mg/kg), which is higher than the remedial objective.

The Amended 2007 RAAER (Alcoa 2008b) presented supplemental information on the distributions of MeHg and TOC in Closed Area and Open Area marshes at juvenile blue crab monitoring locations. Comparison of Closed Area and Open Area 2007 marsh data suggested that lower TOC-normalized MeHg concentrations were associated with lower juvenile blue crab mercury concentrations. Therefore MeHg and TOC have been measured in Closed Area marsh sediment monitoring locations since 2007. The 2011 data are presented in Appendix A, and Figure 3.3-3. Direct comparison between the 2011 data and the historic MeHg and TOC concentrations should be avoided because the sample depth interval changed from 0-5 cm to 0-2 cm in 2011 (Section 2.3). The post-2007 Closed Area marsh MeHg and TOC results are graphed with the 2007 supplemental data in Figure 3.3-3. Review of this figure indicates that the post-2007 TOC measurements are generally shifted to higher concentrations than the 2007 measurements, and encompass the range of TOC concentrations observed in Open Area marshes in 2007. The Closed Area TOC measurements collected in 2007 appear anomalous relative to Closed Area TOC measurements from subsequent years.

The post-2007 (including the 2011 event) MeHg data for the Closed Area marshes are similar to the data collected in 2007 in that many Closed Area MeHg measurements are within the range observed in the Open Area. There is, however, a subset, or skewed "tail" of the Closed Area data that is higher than the concentrations observed in the Open Area. The concentrations of the 2011 MeHg measurements are slightly higher than the other post-2007 data, which may reflect the change to a shallower sample depth interval in 2011, and focusing on the depth interval of active mercury methylation.

When the 2007 Closed Area data were normalized to TOC concentrations (Alcoa 2008b), a greater distinction between the Closed Area and Open Area data sets were observed (i.e., a noticeable subset of 2007 data in the Closed Area exceeded the range of TOC-normalized MeHg concentrations observed in the Open Area). The post-2007 Closed Area data also contain a subset of samples that exceed the range of TOC-normalized MeHg concentrations observed in the Open Area. However, there are fewer such samples in the post-2007 data (including the 2011 event) than were observed in 2007. That is, the majority of the post-2007 Closed Area normalized data plot within the range of Open Area data collected in 2007. Two subsamples collected in 2010 Closed Area marsh, and one subsample collected in 2011 Closed Area marsh exceeded the range of TOC-normalized MeHg concentrations observed in the Open Area in 2007.

As discussed in Section 2.3, a select number of open-water sediment stations were monitored in 2011 to assess the relationship between marsh sediment concentrations and nearby open water sediment concentrations. The average concentrations of sediment for each marsh are plotted versus the average concentrations of the nearest open-water sediment monitoring stations on Figure 3.3-4. If the concentrations of the measurements of mercury species in open water and marsh samples represented a single population (i.e., they have a common source), then the results should plot along a linear trend with a slope of unity (shown on the figure). If the samples are drawn from separate populations (and have different sources) they would not plot along the unity trend line.

The THg, MeHg and TOC normalized MeHg data generally do not plot along the unity trend line, indicating the open-water and marsh samples are not a single population. The MeHg and TOC normalized MeHg data collected in marshes plot distinctly to the right of the unity trend line, which indicates that MeHg measured in the marsh sediment samples is not being imported as MeHg in resuspended open water sediment transported into the marshes by surface water. Instead, a significant amount of MeHg is being generated in the marsh sediment environment. This is consistent with observations obtained during the RI, and information in the literature. Although natural recovery of sediment in open-water sediments and marsh sediments will still be required to meet the remedial objectives for fish tissue, ultimately decreasing the rate of MeHg production in the marsh environment will be a threshold criterion for remediation of the system.

Long-term trends in marsh sediment concentrations can be illustrated by cumulative probability graphs. A cumulative probability graph is a plot of the data in rank order (i.e., lowest to highest) against the probability of a value equal to less than each plotted value. The probabilities are calculated using the convention that such probability is defined by rank divided by the number of data points plus 1. The probability scale is set so that the data will plot as a straight line if they are samples from a normally distributed population. Gaps or inflection points in the plot indicates that the data contains multiple subpopulations.

Co-located data from the 2008 and 2011 marsh sediment sampling events are shown on the cumulative probability graph in Figure 3.3-5. Comparison of the two lines suggests that the concentration range of the low sub-population has remained relatively similar. The high sub-population appears to have decreased slightly in concentration between 2008 to 2011. As discussed in the 2011 RAAER, cumulative probability graphs can be used to help assess whether the elevated sediment concentrations reflect an ongoing internal source of sediment containing mercury. Marsh sediment data from both years plot with a marked change in slope, indicating that two subpopulations of sediment are present. Most of the samples plot along a trend line with a flatter slope than the few samples to the right of the curve, which plot along a steeply dipping slope. The locations of the two subpopulations of sediment data are plotted in Figures 3.3-6 and 3.3-7 to gain insight as to where the subpopulation of higher concentrations occur. Review of these maps indicates that the subpopulation of elevated mercury (shown as blue dots) occur in the area of the Dredge Island Stabilization Project dredging areas and the remaining Marsh 14 Island, and to a lesser extent, Mainland Shoreline No. 3 and the Witco Harbor and channel. The 2011 marsh data reinforce conclusions made in the 2011 RAAER that the spatial relationships of sediment subpopulations provide an additional weight of evidence that these areas are a source of sediment containing elevated mercury available for re-suspension and redistribution into other parts of the Closed Area.

3.4 Finfish and Shell Fish Monitoring

3.4.1 Red Drum Monitoring

As described in Section 2.4, the evaluation of red drum mercury monitoring data includes both a qualitative review of temporal trends in red drum tissue concentrations and a quantitative statistical review of red drum concentrations from the Closed and Open Areas.

3.4.1.1 Qualitative Review of Red Drum Trends

A summary of the mean mercury concentrations in red drum tissue measured in samples collected during Fall monitoring events since 1997 is provided in Table 3.4-1, and a box-and-whisker plot of the data is shown in Figure 3.4-1. A box-and-whisker plot (Tukey, 1977) displays differences between populations without making assumptions about the underlying statistical distribution (a quantitative statistical evaluation of the data is provided in Section 3.4.1.2). The box-and-whisker plot displays the minimum value, the lower quartile, the median, the upper quartile, and the maximum value, and allows empirical observation of the spread and skewness in the data trends. Over the period since 1997, the box-and-whisker plot indicates there is considerable spread in the data from year to year. There are positive and negative inter-annual variations of the median, and the "box" defined by the upper and lower quartile values generally tends to mimic the trends of the median value (e.g., when the median value trends upward, the quartile "box" tends to trend upward, and vice versa).

The mean value of red drum samples in the 2011 Closed Area data set is higher than the mean values measured in 2008, 2009 and 2010. The mean concentration of mercury in red drum sampled in the Closed Area in 2011 was 1.17 mg/Kg. Beginning with the 2008 RAAER (Alcoa, 2009) red drum data for the Closed Area were evaluated to identify the presence of subpopulations of red drum that might provide insight into recovery trends and progress towards remedial objectives. The process used to identify subpopulations was provided in the Amended 2007 RAAER (Alcoa, 2008b), and is based upon cumulative probability graphs (defined previously). The cumulative probability graph for the 2011 data is provided in Figure 3.4-2, and indicates that similar to prior years, the red drum data include three subpopulations: low, intermediate and high mercury concentrations. The gap between the intermediate and high subpopulations is about the same as observed previously (i.e., ~1.5 mg/Kg). The gap between the intermediate and low subpopulations on Figure 3.4-2 appears to be ~0.8 mg/Kg, which is slightly higher than in prior years (~0.5 mg/Kg). Variations in the number of organisms caught in each sub-population likely contribute to the subtle changes in the threshold concentrations between each subpopulation, though the consistent year-to-year presence of three subpopulations is an important characteristic of the distribution and uptake of methyl mercury in red drum. As discussed in Alcoa (2008b), the three red drum subpopulations may reflect foraging in different areas. The low subpopulation may represent fish that obtain the majority of their prey items from areas of the Bay with low rates of methyl mercury uptake to prey items, possibly including areas outside of the Closed Area. The high subpopulation may reflect feeding primarily in areas of elevated uptake of methyl mercury to prey items. The intermediate subpopulation may feed in areas of less focused uptake of methyl mercury to prey items and/or migrate between the low and high methyl mercury uptake areas.

Geographic distributions of low, intermediate, and high subpopulations of red drum measured in 2011 are illustrated in Figure 3.4-3. The high subpopulation fish are collected in the Closed Area primarily east of Dredge Island and in the Witco Harbor. The intermediate and low subpopulations of red drum collected in 2011 were found throughout the Closed Area. The average concentrations of red drum collected in the northern half of the Closed Area (Zones 1 and 2) are plotted versus corresponding concentrations of red drum collected in the southern half of the Closed Area (Zone 3 and 4) in Figure 3.4-4. The 2011 data are consistent with data from prior monitoring events, and indicate that tissue samples collected in the northern part of the Closed Area typically contain more of the high subpopulation fish than samples from the southern part of the Closed Area. Samples from both the northern and southern part of the Closed Area contributed to the increase in red drum tissue concentrations in 2011.

The higher concentrations of mercury in red drum observed in 2011 may have been influenced by higher salinity in the bay brought on by drought conditions, and possibly a red tide event. These events may create temporal and spatial changes in the abundance and distribution of prey items. In the fish tissue sampling procedure undertaken by Benchmark Ecological Services, Inc. (BESI) in 2011, a difference was noted between the gut contents of the red drum collected in the Closed Area and the Open Area. BESI noted that the gut content of the red drum in the Closed Area at the time of sampling consisted of 38.6 percent gizzard shad followed by 22 percent striped mullet. In contrast the gut content of the Open Area red drum at the time of sampling consisted of 47.4 percent striped mullet, 27.3 percent unidentified fish, and zero percent gizzard shad.

3.4.1.2 Quantitative Review of Red Drum Trends

The following statistical analyses were conducted to quantitatively evaluate the 2011 red drum monitoring data in accordance with the methods prescribed in the OMMP. Specifically, the OMMP specifies the following steps:

- Sample up to 30 red drum each from the Open and Closed Areas for mercury analysis. Due to logistical constraints, this target number may not be achievable; but as long as the total sample sizes from each area are reasonably close to the target, the statistical test can accommodate the variability from the ideal target sample size.
- Evaluate assumptions of normality using normal quantile plots and a Kolmogorov-Smirnov goodness of fit test. Evaluate equality of variance using Bartlett's test
  - Transformations to the data should be made as appropriate. If the data are better fitted to a log-normal distribution, a logarithmic transformation may be appropriate prior to conducting the means testing. Quantile plots and a Kolmogorov-Smirnov goodness of fit test will be used to determine whether the untransformed or transformed data are more appropriate for use in the means test.
- If data are normally distributed, conduct a parametric means test (t-test). If the data are not normally distributed, also conduct a non-parametric means test (Wilcoxon/Mann-Whitney or equivalent).
- Conduct a post-hoc power analysis using the variance, mean differences, and sample size from the data to establish the event-specific decision error rates.
  - If necessary, discuss deviations from the statistical test assumptions
  - For years that [Hg_{Closed}] > [Hg_{Open}], the post-hoc power analysis will not inform the decision making.
  - For years when [Hg_{Closed}] = [Hg_{Open}], the post-hoc power analysis will provide the probability that a false positive error might have been made. To ensure that a Type II error has not been made when the null hypothesis is not rejected, statistical test assumptions should be met and the test power should be greater than 95 percent.

A total of 60 red drum tissue samples were collected in the 2011 monitoring event, 30 from the Closed Area and 30 from the Open Area. Details of the 2011 red drum sampling and analysis event are provided in Appendix B. The distribution of all red drum samples was evaluated visually and statistically to assess normality.

Figure 3.4-8a depicts histograms and normal quantile plots of the untransformed data. The heavy solid line on the histogram depicts the predicted normal distribution, and the light solid line depicts the predicted log-normal distribution. The predicted distributions are based on the scale and shape of the actual data. The histogram depiction of the data shows that a log-normal distribution is a better fit to the data. The normal quantile plot in figure 3.4-8a depicts the data and the expected confidence intervals. Where the data points fall generally within the expected confidence intervals, the data can be assumed to be relatively normally distributed.

Figure 3.4-8b depicts a histogram and normal quantile plot of the log-transformed data. The heavy line on the histogram depicts the predicted normal distribution on the log-transformed data. The light line depicts the predicted log-normal distribution of the transformed data. The normal distribution line provides the best fit to the log-transformed data. The log-transformed data points on the quantile plot generally fall between the confidence intervals and were assumed to be normally distributed.

In addition to the above visual analysis, a Kolmogorov-Smirnov goodness of fit test was used to evaluate the data. The Kolmogorov-Smirnov goodness of fit test to the untransformed data indicated that the data were not statistically different from a log-normal distribution ($p<0.01$). Therefore, based on the above analyses, the data were natural log transformed for the subsequent means test. The transformed data were normally distributed.

Using the log-transformed data, the equality of the variance of the Open and Closed areas was assessed using a Bartlett test. The variance was determined to be unequal for these two groups ($p=0.002$).

Based on the determination that the log-transformed data were normally distributed and that the variances of the Open and Closed groups were unequal, a t-test and non-parametric Wilcoxon test were both used for evaluating the test hypothesis:

Null Hypothesis: $[Hg_{Closed}] = [Hg_{Open}]$ or $[Hg_{Closed}] - [Hg_{Open}] = 0$
Alternative Hypothesis: $[Hg_{Closed}] > [Hg_{Open}]$ or $[Hg_{Closed}] - [Hg_{Open}] > 0$

Table 3.4-2 presents the summary data for the 2011 annual red drum monitoring event. Both the t-test and non-parametric Wilcoxon results indicate that the mean of the Closed Area samples was significantly higher than the mean of the Open Area samples ($p<0.001$ for the log transformed data for both tests). In summary, these tests indicate that the mean of the Closed Area red drum samples remains statistically elevated compared to the Open Area red drum samples, and the remedial objective has not been achieved.

3.4.2 Juvenile Blue Crab Monitoring

The short-term trends in juvenile blue crab are used to qualitatively evaluate the remedy effectiveness. Juvenile blue crab are selected for this purpose because they are lower trophic level organisms with a much smaller foraging range than red drum, and consequently should demonstrate a more focused response than red drum to changes in mercury availability.

As discussed in Section 2.4, the direction of the juvenile blue crab concentration trends (increasing versus decreasing) and the magnitude of the trend (how fast are concentrations increasing or decreasing) may provide a preliminary assessment of remedy effectiveness.

The juvenile blue crab sampling program was expanded in 2011 to include more samples in the marsh areas north of and across the bay from Dredge Island. The increase in juvenile blue crab sample size and co-location with marsh mercury, methyl mercury and TOC data should improve our understanding about mercury uptake into the food web via juvenile blue crab.

A cumulative probability analysis of juvenile blue crab mercury data is presented in Figure 3.4-5. Using methodology similar to the earlier years, three subpopulations are again identified in the 2011 data: low (less than 0.18 mg/Kg), intermediate (between 0.18 mg/Kg and 0.30 mg/Kg) and high (greater than 0.30 mg/Kg). The lower subpopulation in 2011 includes more data points than previous years. Also in 2011 the observed threshold between low and intermediate subpopulations was increased from 0.15 mg/Kg to 0.18 mg/Kg to accommodate the larger range of the low subpopulation samples. Geographic distributions of low, medium and high subpopulations of juvenile blue crabs measured in 2011 are illustrated in Figure 3.4-6. In general, the juvenile blue crabs from the high subpopulation are found primarily in the area north and east of Dredge Island, as has been observed in prior years.

The exponential trend line of the average mercury concentrations of juvenile blue crabs from the northern half of the Closed Area is shown in Figure 3.4-7. Although there are inter-annual variations, a downward trend line for the period of record continues to be measured for juvenile blue crabs collected in the northern part of the Closed Area. This is the area where uptake of methyl mercury is focused based on congruent trends in red drum and juvenile blue crab concentrations. A downward trend is not evident in the average of the juvenile blue crab concentrations measured in the southern part of the Closed Area. Biological and chemical processes that cause inter-annual fluctuations in methyl mercury uptake may make the downward trends due to remediation more difficult to observe in crab collected from the southern part of the Closed Area due to their generally lower range of concentrations.

Review of Figure 3.4-7 also indicates that juvenile blue crab samples collected in the northern part of the Closed Area continue to contain more mercury than samples of juvenile blue crab from the southern part of the Closed Area. This continuing trend supports the hypothesis presented in prior RAAERs that the focused area of uptake of methyl mercury to the high subpopulation of red drum is primarily in the fringe marsh areas north and east of Dredge Island.

The increased number of juvenile blue crab samples collected in 2011 provided the first opportunity since the 2007 supplemental studies to reassess the relationships between the concentration of mercury in juvenile blue crab and concentrations of mercury species in nearby marsh samples. The average concentrations of mercury in juvenile blue crab and sediment mercury species are plotted for each marsh in Figure 3.4-8. There is considerable scatter in the data, in part because there are more marsh sediment samples (six to ten per marsh), designed to represent the entire marsh area, whereas there are fewer juvenile blue crab sample composites (one to three per marsh). Thus the crab and sediment data are not uniformly collocated.

Figure 3.4-8 also depicts trend lines and Pearson correlation coefficients. Commonly used criteria for Pearson correlation coefficients are:

Strength of Association	Coefficient, r
Small	0.1 – 0.3
Medium	0.3 – 0.5
Large	0.5 – 1.0

Review of Figure 3.4-8 indicates that there is a little strength of association between the concentration of THg in marsh sediment and the juvenile blue crab concentration. There is a small strength of association between the concentration of MeHg in marsh sediment and juvenile blue crab concentration. The best correlation is between the concentrations of TOC normalized MeHg in sediment and mercury in juvenile blue crab, albeit a medium strength of association.

These results reaffirm the conclusions of both the RI and the 2007 supplemental studies that uptake of MeHg in marsh sediments to prey items is an important source of mercury uptake to the food web in the Closed Area. Figure 3.4-8 also indicates that the average MeHg concentration in Marsh 14 is the highest of all the monitored marshes.

The average concentrations of mercury in red drum and juvenile blue crab collected in the northern part of the Closed Area are plotted in Figure 3.4-10. Although the average concentration of mercury in the Closed Area red drum samples increased in 2011, the average juvenile blue crab concentration decreased slightly. This divergence in trends may reflect the change in the abundance and distribution of red drum prey items during a drought year and a red tide, and the associated short-term changes in feeding habits.

The 2006 RAAER (Alcoa, 2007) discussed the hypothesis that changes in diet of the red drum from year to year may influence the mercury trends in red drum tissue samples. The supposition was that the red drum diet may be influenced by inter-annual changes in salinity (which could change the relative abundance of shrimp, juvenile blue crab and other prey items). Each food source has a different body burden for mercury, which would result in dissimilar uptake by red drum. The trends of red drum mercury concentration and salinity of the upper Lavaca Bay system measured by Texas Parks and Wildlife Department have been updated with data from 2011 (Figure 3.4-11). The data appear to be somewhat congruent, although there is considerable scatter. The changes from normal precipitation patterns may alter the normal physical and biological factors that influence the red drum feeding strategies in the Closed Area and the associated uptake of mercury. Additionally, there may be seasonal influences within a given year that contribute to the mercury levels measured in red drum collected during the fall event. Note, for example, the pronounced change in salinity recorded during the drought year of 2011.

3.5 Dredge Island Inspections

Dredge Island inspections were conducted quarterly throughout 2011. The inspection records are provided in Appendix C. The inspections indicate that the island is in good shape and the performance objectives are met. Erosion of the interior side slopes of the confined disposal facility (CDF) caused by wave action of water in the CDF continues to be the most significant maintenance issue and a maintenance event was conducted in the third quarter of 2011. The following items were addressed during the maintenance event:

- Interior side slope erosion - Approximately 1,800 feet of the interior levee side slope on the north end of the CDF was repaired. Soil that had eroded from the side slope into the CDF was picked up, placed on the levee, and compacted. The slope was then re-seeded.
- Erosion on the north entrance ramp - The exterior side slopes of the entrance ramp on the north end of the island were repaired. Soil that had eroded from the side slope was picked up, placed on the ramp, and compacted. Hay bales were placed along the slope to control erosion.
- Northeast decant structure - Excavation of sediment from around the decant structure was conducted and showed that several of the boards were damaged. These boards were replaced with new boards and the entire decant structure on the inside of the CDF was wrapped with fresh plastic to keep water and/or sediment from entering the structure below the water/sediment line. The outfall pipe was also found to be clogged with sediment, and was removed. The outfall flap valve was also repaired;
- Southwest decant structure - The southwest decant structure was inspected and found to be in good condition. No boards were replaced. The structure was wrapped in fresh plastic.
- Vegetation on the exterior and interior side-slopes: All large trees and brush were removed along the entire exterior and interior side slopes of the CDF levee.

3.6 CAPA Soil Cap Inspections

Quarterly inspections were conducted during 2011 as required by the RDRs/OMMPs. The inspection records are contained in Appendix D. The most common maintenance issue is the presence of vegetation, which must be controlled to maintain cap integrity. A soil sterilizer is used to control vegetation.

3.7 Witco Area Inspections

Inspections were conducted at the Witco Area in 2011 as required by the RDRs/OMMPs. Inspections records are contained in Appendix E.

The major conclusions of the 2011 inspections are as follows:

- No DNAPL has been observed in the collection sump since its installation. Several methods have been used to detect the presence of DNAPL, including the use of an interface probe, a weighted bailer, and weighted rope (to check for visual evidence of dark or oily substances).
- The soil caps are functioning well and no damage has been observed. Mowing is now performed on a regular basis.

Inspections and maintenance will continue at the frequency described in the RDR/OMMPs.

3.8 Verification of Site Conditions and Land Use

Site conditions and land uses within the Site remain consistent with those described in the ROD. The Texas Department of Health Order against taking of finfish and shellfish within the Closed Area remains current. The Alcoa PCO plant continues to operate and periodic maintenance dredging in the Alcoa and Matagorda Ship Channel continues to occur.

The 2006 RAAER reported that permit applications had been submitted for industrial developments within the CCND harbor and that a project to widen and deepen the Matagorda Ship Channel had been proposed. The permitting process for both of these activities involves input and coordination with USEPA and Alcoa to assure that the remediation objectives of the Site are met and that construction is consistent with the sediment management framework contained in the CERCLA Feasibility Study. At the time of preparation of the 2011 RAAER, Alcoa is not aware of any activity on these permit applications

4.0 CONCLUSIONS

4.1 Comparisons to Performance Standards

Monitoring data collected in 2011 support the following conclusions:

- The CAPA groundwater extraction and treatment system continues to effectively control the discharge of mercury to the Bay System from Zone B groundwater beneath the CAPA. This conclusion is supported by the system effluent concentration data and the potentiometric data obtained from the groundwater extraction and treatment system.
- The performance standard for open water sediment was met in 2005. Ongoing voluntary monitoring of surface sediment mercury concentrations indicates that most of the northern half of the Closed Area continues to be less than 0.5 mg/Kg dry weight, and many samples are less than 0.25 mg/Kg dry weight.
- Of the marshes that have met the remedial objective, Marshes 2 and 3 provided sediment samples below the remedial objective of 0.25 mg/Kg in 2011. The average of the samples from Marsh 6, 15, and 19 collected in 2011 each appears to be skewed by an outlier sample. The average total mercury content of Marsh 6, 15, and 19 subsamples without the outlier sample is 0.30, 0.36, and 0.35 mg/Kg.
- The average concentrations of total mercury measured in the remaining marshes exceed the remedial objective. The average concentration of total mercury measured in Marsh 7 subsamples in 2010 was 0.22, but a concentration of 0.38 mg/Kg is reported in 2011. Marsh 7 has not yet met the remedial objective for two consecutive years.
- Methyl mercury (MeHg) and total organic carbon (TOC) measurements were again collected in marshes in 2011. The post-2007 (including the 2011 event) MeHg data for the Closed Area are similar to the data collected in 2007 in that most Closed Area MeHg measurements are within the range observed in the Open Area, although there is a subset, or skewed "tail" of the Closed Area data that is higher than the concentrations observed in the Open Area marsh data. In 2011 the samples were taken at a depth interval of 0-2 cm (as opposed to 0-5 cm) in order to better characterize the zone in which methylation occurs. Accordingly, the MeHg concentrations reported in the 2011 data set are slightly higher than prior years.
- The full set of open water sediment samples were not collected because 2011 is an odd numbered year. However, select open water sediment samples were collected to assess relationships with marsh sediment samples. Comparison of the 2011 open water sediment data with the data from the same locations for 2010 indicates that the locations exhibiting an increase in mercury concentration in the last year are located in the area north and east of Dredge Island, including the vicinity of Marsh 14, and to a lesser extent, Mainland Shoreline No. 3 and the Witco channel. This observation is consistent with conclusions of the 2010 RAAER, and further supports the need for the remediation activity in the vicinity of Marsh 14 planned for 2012.
- As discussed above, a select number of open water sediment stations were monitored in 2011 to help assess the relationship between marsh sediment

concentrations and nearby open-water sediment concentrations. Graphs of these data indicate that MeHg measured in the marsh sediment samples is not being imported as MeHg in resuspended open water sediment transported into the marshes by surface water. Instead, a significant amount of MeHg is being generated in the marsh sediment environment. This is consistent with observations obtained during the RI, and information in the literature.

- The mean concentration of mercury in red drum sampled in the Closed Area in 2011 was 1.17 mg/Kg and in higher than the mean values measured in 2008, 2009 and 2010. The mean concentration of mercury measured in red drum from the Open Area during 2011 is similar to the 2010, 2008 and 2009 mean values. As discussed in the OMMP, fluctuating trends in tissue concentrations are likely indicative of the influence of multiple parameters on the uptake of mercury by red drum and juvenile blue crab. Some of these parameters are related to remedial actions and others are likely beyond the influence of remedial actions.
- The concentrations of mercury in the 2011 red drum samples from the Closed Area remain statistically elevated relative to the concentrations of red drum samples collected from the Open Area.
- The geographic trends in 2011 red drum and juvenile blue crab concentrations continue to confirm the trends initially presented in the Amended 2007 RAAER (Alcoa, 2008b), that suggests the focused uptake of methyl mercury to red drum occurs in the Closed Area north and east of Dredge Island.
- The overall trend of the average concentrations of mercury in juvenile blue crabs collected in the northern part of the Closed Area is downward over the period 2002 to 2011, although there are inter-annual fluctuations.
- Comparison of juvenile blue crab concentrations and marsh sediment concentrations of mercury species indicates that the strongest correlation is between the concentrations of TOC normalized MeHg in sediment and mercury in juvenile blue crab, albeit at a medium strength of association. These results reaffirm the conclusions of both the RI and the 2007 supplemental studies that methylation of Hg in marsh sediments and subsequent uptake to prey items is an important source of mercury uptake to the food web in the Closed Area.
- The 2010 inspections of Dredge Island indicate that the island is in stable condition and the performance objectives are met.
- No significant maintenance issues were noted for the CAPA soil cap during inspections performed in 2011. Erosion in the southwest corner of the cap observed in 2010 was repaired in early 2011.
- Inspections of the Witco Area indicate that no DNAPL has accumulated and that soil caps are functioning well.

4.2 Plans for Subsequent Monitoring

All required annual monitoring activities conducted in 2011 will be continued in 2012 (red drum, juvenile blue crab and marsh sediment sampling).

Alcoa will voluntarily continue to perform sediment sampling in marshes in the northern part of the Closed Area that have met the remedial objective of 0.25 mg/Kg in two consecutive years as part of the ongoing effort to better understand trends in tissue concentrations in the Closed Area of Lavaca Bay. The marsh sampling analytical suite will include total mercury, MeHg, TOC, and moisture content. Alcoa proposes to conduct the 2012 marsh, juvenile blue crab and red drum monitoring events using the same sampling design as deployed in 2011, except where modifications may be required by the Marsh 14 remediation program planned for 2012. The full array of open-water sediment stations in the northern half of the closed area will be monitored in 2012, as it is an even numbered year.

4.3 Summary of Overall Remedy Effectiveness

In summary, the completed and ongoing remedial activities and natural recovery processes have resulted in downward trends in open water sediment and marsh sediment mercury concentrations in many parts of the Closed Area. A total of five marshes have met the remediation goal (Marshes 1, 2, 3, 11 and 19).

The mean open water sediment recovery half-life value for the 2006-2010 period is similar to the half-life calculated for the 2004-2008 period. Both recovery rates are somewhat slower than the rate predicted in the RIFS. Overall, a significant amount of sediment recovery has occurred since the RI sampling was performed in 1996.

Small localized areas of open water sediment are not recovering as expected (e.g., west of the northern end of Dredge Island and in some areas adjacent to Mainland Shoreline No. 3 and the Witco Harbor and channel). These trends are possibly due to residual effects of the Dredge Island Stabilization Project performed in the period 1998 – 2001 (i.e., the residual island containing Marsh 14) and to a lesser extent, possibly runoff from Mainland Shoreline No. 3 and marine operations in the Witco Harbor.

Average mercury concentrations of red drum measured in the Closed Area continue to exhibit positive and negative inter-annual fluctuations. These fluctuations appear to be related in part to remediation and in part to physical, chemical and biologic conditions not influenced by remedial activities (e.g., salinity of upper Lavaca Bay). The mercury concentrations of red drum collected in the Closed Area remain statistically elevated relative to red drum collected in the Adjacent Open Area.

4.4 Recommendations

As discussed in the USEPA First 5-Year Review, Alcoa will prepare a plan to remediate the Marsh 14 area in 2012. Monitoring data collected in subsequent years after the Marsh 14 remediation project will be used to assess the need for additional remediation, if required.

In 2012 Alcoa will evaluate options to better correlate the locations of juvenile blue crab and marsh sediment sampling locations to allow further focus on areas of uptake of mercury to the food web.

5.0 REFERENCES

Alcoa, 1997, Engineering Evaluation/Cost Analysis (EE/CA) for a Non-Time Critical Removal Action at the Dredge Island, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. July.

_____, 1998, Chlor-Alkali Process Area Focused Investigation Data Report (Volume B6L), Alcoa (Point Comfort)/Lavaca Bay Superfund Site. July.

_____, 1999a, Chlor-Alkali Process Area Groundwater Treatability Study Data Report (Volume M3), Alcoa (Point Comfort)/Lavaca Bay Superfund Site. October.

_____, 1999b, Remedial Investigation Report, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. November.

_____, 2000, Feasibility Study, Alcoa (Point Comfort)/Lavaca Bay Superfund Site.

_____, 2002, Dredge Island Removal Action Plan, Volume 4 - Phase 1 Dredge Island Stabilization Completion Report, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. August.

_____, 2005a, Remediation Action Work Plan, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. August.

_____, 2005b, Interim Data Deliverable, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. December.

_____, 2006a, 2005 Remedial Action Annual Effectiveness Report, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. March 3.

_____, 2006b, Revisions to Lavaca Bay Marsh Monitoring Program, memorandum dated October 6, 2006, submitted to USEPA October 13, 2006.

_____, 2007, 2006 Remedial Action Annual Effectiveness Report, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. March 30.

_____, 2008a, 2007 Remedial Action Annual Effectiveness Report, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. March 31.

_____, 2008b, Amended 2007 Remedial Action Annual Effectiveness Report, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. October 23.

Dean, R.B. and Dixon W.J. (1951), Simplified Statistics for Small Numbers of Observations, Anal. Chem. 1951, 23(4), p. 636-638.

Pastor, Behling & Wheeler, LLC (2011), Memorandum to Ron Weddell, Alcoa, titled "Incident at Chlor-Alkali Process Area, April 6, 2011; memorandum dated July 9, 2011.

Tukey, J.W., 1977, Box-and-Whisker Plots" § 2C in Exploratory Data Analysis, Addison-Wiley, pp. 39-43.

USEPA, 2001, Record of Decision for the Alcoa (Point Comfort)/Lavaca Bay Superfund Site. December.

United States et al. v. Alcoa Inc., et al., 2005, Consent Decree for CERCLA Response Actions and Response Costs (Civil Action Number V: 04-CV-119). February.

USEPA, 2011, Five-Year Review Report, Alcoa (Point Comfort)/Lavaca Bay Superfund Site. June.

TABLES

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG[3]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-C[6]	5/18/98		0.0019		<	0.001		<	0.001		<	0.001		<	0.001		<	0.001			
	5/29/98		0.00035		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001			
	6/4/98		0.00021		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001			
	6/9/98																			7.00	
	6/10/98		0.00041		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001			
	6/18/98		0.00021		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001			
	6/24/98		0.00027		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001			
	7/1/98		0.00017			0.00041	J	<	0.001		<	0.002		<	0.001		<	0.001			
	7/1/98		0.0009																		Duplicate
	7/2/98																			5.17	
	7/8/98		0.00016		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		5.20	
	7/15/98		0.00018		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.00	
	7/22/98		0.00027		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001			
	7/28/98		0.00042		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.45	
	8/5/98		0.00047		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.42	
	8/12/98		0.00042		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.52	
	8/19/98		0.00075		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001			
	8/25/98		0.00052		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.86	
	9/2/98		-0.0007	J	<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.73	
	9/9/98		0.00027	J	<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.82	
	9/16/98		0.0010		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001			
	9/23/98		0.0010		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		7.10	
	10/1/98		0.00076		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001			
	10/7/98		0.00090		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		7.12	
	10/14/98		0.00173		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.40	
	10/21/98		0.00053		<	0.001		<	0.001		<	0.002			0.0001	J	<	0.001		6.23	
	10/28/98		0.00050		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.31	
	11/4/98		0.00053		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.41	
	11/11/98		0.00007		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.45	
	11/18/98		0.00045		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.56	
	11/24/98		0.00012	J	<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.51	
	12/2/98		0.00034		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.64	
	12/9/98		0.00038		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.85	
	12/16/98		0.00070		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.89	
	12/22/98		0.0010		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.92	
	12/29/98		0.0008			0.00028	J	<	0.001		<	0.002		<	0.001		<	0.001		5.53	
	1/6/99		0.00073		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		6.03	
	1/13/99		0.00033	J	<	0.001		<	0.001			0.00008	J	<	0.001		<	0.001		5.74	
	1/26/99		0.00048		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		5.70	
	2/3/99		0.00058		<	0.001		<	0.001			0.001	J		0.00029	J	<	0.001		7.08	
	2/17/99		0.00078	J	<	0.001		<	0.001			0.0012	J		0.00036	J	<	0.001		7.13	
	2/24/99		0.00128		<	0.001		<	0.001			0.0019	J		0.00037	J	<	0.001		6.63	
	3/5/99		0.00159		<	0.001		<	0.001			0.0018	J		0.00036	J	<	0.001		6.65	
	3/10/99		0.00116		<	0.001		<	0.001			0.0017	J	<	0.001		<	0.001		6.68	
	3/17/99		0.00064		<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		7.08	
	3/24/99		0.00002	J	<	0.001		<	0.001			0.0016	J		0.000042	J	<	0.001		7.06	
	4/1/99		0.00023	J	<	0.001			0.00027	J		0.0022			0.00014	J	<	0.001		6.96	
	4/6/99		0.00020	J	<	0.001		<	0.001			0.0019	J	<	0.001		<	0.001		6.87	
	4/13/99		0.00070	J	<	0.001			0.00075	J		0.002	J	<	0.001		<	0.001		6.98	
	4/21/99		0.00120		<	0.001			0.00104			0.0018	J	<	0.001		<	0.001		6.98	
	4/28/99		0.00110		<	0.001			0.00224		<	0.002			0.00037	J	<	0.001		6.97	
	5/5/99		0.00066		<	0.001			0.00363		<	0.002			0.00029	J	<	0.001		7.00	
	5/12/99		0.00143			0.00065	J		0.00644		<	0.002		<	0.001		<	0.001		7.15	
	5/19/99		0.00169			0.00039	J		0.00482			0.00076	J	<	0.001		<	0.001		6.82	
	5/26/99		0.00135			0.00131			0.00884			0.00051	J	<	0.001		<	0.001		7.25	
	6/2/99		0.00201			0.00261			0.01224			0.00046	J	<	0.001		<	0.001		6.93	
	6/9/99		0.00181			0.00915			0.01922			0.000302	J	<	0.001		<	0.001		7.02	
	6/16/99		0.00148			0.01192			0.02667			0.00022	J	<	0.001		<	0.001		6.92	
	6/23/99		0.00228			0.0214			0.03472			0.000117	J	<	0.001		<	0.001		7.23	
	6/30/99		0.00076			0.01999			0.03766		<	0.002		<	0.001		<	0.001		6.68	
	7/14/99																			7.04	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2] MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE			pH	COMMENTS
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-A	7/22/99																			7.82	Carbon change out
	7/28/99																			7.82	
	8/4/99																			7.23	
	8/11/99																			7.51	
	8/18/99																			6.92	
	8/25/99		0.00086			0.004364			0.000146	J	<	0.002		<	0.001		<	0.001		6.94	
	9/1/99		0.00014	J		0.00486		<	0.001		<	0.002		<	0.001		<	0.001		6.95	
	9/8/99		0.00043	J		0.003008		<	0.001		<	0.002		<	0.001		<	0.001		7.21	
	9/15/99		0.00043	J		0.002892			0.000185	J	<	0.002		<	0.001		<	0.001		7.06	
	9/22/99		0.00089			0.002616			0.000152	J	<	0.002		<	0.001		<	0.001		7.21	
	9/29/99		0.00006	J		0.003224		<	0.001		<	0.002		<	0.001		<	0.001		7.27	
	10/6/99		0.00018	J		0.002757			0.000408		<	0.002		<	0.001		<	0.001		7.49	
	10/13/99		0.00021	J		0.00291			0.000788	J	<	0.002		<	0.001		<	0.001		7.36	
	10/20/99		0.00059			0.00136			0.001111		<	0.002		<	0.001		<	0.001		7.28	
	10/27/99		0.00033	J		0.003327			0.00275		<	0.002		<	0.001		<	0.001		7.22	
	11/3/99		0.00002	J		0.003567			0.004421		<	0.002		<	0.001		<	0.001		7.61	
	11/10/99		0.00118	J		0.003112			0.00622		<	0.002		<	0.001		<	0.001		7.50	
	11/17/99		0.00089	J		0.004599			0.009552		<	0.002		<	0.001		<	0.001		7.65	
	11/23/99		0.00062	J		0.007814			0.012587		<	0.002		<	0.001		<	0.001		7.22	
	12/2/99		0.00072	J		0.012289			0.016635		<	0.002		<	0.001		<	0.001		7.14	
	12/8/99		0.00072	J		0.011109			0.017479		<	0.002		<	0.001		<	0.001		7.33	
	12/15/99		0.00041	J		0.014068			0.013601		<	0.002		<	0.001		<	0.001		7.37	
	12/22/99		0.00040	J		0.01353			0.013122		<	0.002		<	0.001		<	0.001		7.40	
	12/29/99		0.00013	J		0.010233			0.016454		<	0.002		<	0.001		<	0.001		7.00	
	1/5/00		0.00074	J		0.021707			0.025836		<	0.002		<	0.001		<	0.001		7.41	
	1/12/00		0.00011	J		0.035346			0.036077		<	0.002		<	0.001		<	0.001		7.38	
	1/19/00		0.00061	J		0.062926			0.048082		<	0.002		<	0.001		<	0.001		7.06	
	1/26/00		0.00044	J		0.07067			0.042044		<	0.002		<	0.001		<	0.001		6.88	
	2/2/00		0.00010	J		0.115509			0.052529		<	0.002		<	0.001		<	0.001		6.82	
	2/9/00		0.00014	J		0.155503			0.059467		<	0.002		<	0.001		<	0.001		7.01	
	2/16/00		0.00016	J		0.177621			0.060686		<	0.002		<	0.001		<	0.001		6.80	
	2/24/00		0.00097			0.00194		<	0.001		<	0.002		<	0.001		<	0.001		7.66	
ST-B	3/3/00		0.00026	J	<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		8.90	Carbon change out
	3/9/00		0.00011	J	<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		7.20	
	3/15/00		0.00034	J	<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		7.70	
	3/22/00		0.00002	J	<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		7.10	
	3/29/00		0.00030	J	<	0.001		<	0.001		<	0.002		<	0.001		<	0.001		7.05	
	4/4/00		0.00030		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.58	
	4/12/00		0.00060			0.008		<	0.001		<	0.005		<	0.001		<	0.001		7.10	
	4/19/00	<	0.00020		<	0.001		<	0.001		<	0.005			0.004		<	0.001		7.06	
	4/26/00	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.60	
	5/3/00	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.57	
	5/10/00	<	0.00040		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.49	
	5/17/00	<	0.00040		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.55	
	5/24/00		0.00110		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.45	
	5/31/00	<	0.00020		<	0.001			0.003		<	0.005		<	0.001		<	0.001		6.80	
	6/7/00	<	0.00020			0.01			0.005		<	0.005		<	0.001		<	0.001		6.87	
	6/14/00	<	0.00020		<	0.001			0.011		<	0.005		<	0.001		<	0.001			
	6/21/00		0.00030		<	0.001			0.019		<	0.005		<	0.001		<	0.001			
	6/29/00	<	0.00020			0.01			0.022		<	0.005		<	0.001		<	0.001			
	7/6/00		0.00020			0.013			0.029		<	0.005		<	0.001		<	0.001		6.75	
	7/12/00	<	0.00040			0.012			0.026		<	0.005		<	0.001		<	0.001		6.57	
	7/19/00	<	0.00020			0.02			0.032		<	0.005		<	0.001		<	0.001		7.05	
	7/26/00	<	0.00020			0.026			0.041		<	0.005		<	0.001		<	0.001		6.58	
	8/2/00		0.00030			0.038			0.037		<	0.005		<	0.001		<	0.001		6.35	
	8/9/00		0.00020			0.055			0.042		<	0.005		<	0.001		<	0.001			
	8/16/00		0.00030			0.07			0.05		<	0.005		<	0.001		<	0.001		6.41	
	8/23/00		0.00030			0.076			0.051		<	0.005		<	0.001		<	0.001		6.80	
	8/29/00		0.00020			0.095			0.052		<	0.005		<	0.001		<	0.001		6.43	
ST-C	9/6/00		0.00580		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		8.43	Carbon change out
	9/12/00	<	0.00100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.91	
	9/19/00	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		8.27	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-C Continued	9/27/00		0.00100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.12	
	10/3/00	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.97	
	10/11/00	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.21	
	10/18/00		0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.88	
	10/25/00		0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.95	
	11/1/00		0.00030		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.13	
	11/8/00		0.00030		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.18	
	11/15/00		0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.40	
	11/21/00		0.00040		<	0.001			0.001		<	0.005		<	0.001		<	0.001		7.36	
	11/28/00		0.00040		<	0.001			0.002		<	0.005		<	0.001		<	0.001		7.01	
	12/6/00		0.00040		<	0.001			0.002		<	0.005		<	0.001		<	0.001		7.56	
	12/13/00		0.00030			0.001			0.002		<	0.005		<	0.001		<	0.001		6.98	
	12/20/00		0.00040			0.002			0.003		<	0.005		<	0.001		<	0.001		7.34	
	12/27/00		0.00030			0.003			0.004		<	0.005		<	0.001		<	0.001		7.64	
	1/3/01		0.00020			0.003			0.003		<	0.005		<	0.001		<	0.001		7.14	
	1/10/01		0.00040			0.007			0.005		<	0.005		<	0.001		<	0.001		7.20	
	1/17/01		0.00040			0.011			0.006		<	0.005		<	0.001		<	0.001		7.48	
	1/24/01		0.00030			0.014			0.007		<	0.005		<	0.001		<	0.001		7.27	
	1/30/01		0.00040			0.018			0.008		<	0.005		<	0.001		<	0.001		7.29	
	2/6/01		0.00030			0.021			0.009		<	0.005		<	0.001		<	0.001		7.30	
	2/14/01		0.00040			0.026			0.01		<	0.005		<	0.001		<	0.001		7.36	
	2/22/01		0.00030			0.032			0.011		<	0.005		<	0.001		<	0.001		7.40	
	2/28/01		0.00030			0.033			0.011		<	0.005		<	0.001		<	0.001		7.38	
	3/7/01		0.00630			0.039			0.013		<	0.005		<	0.001		<	0.001		7.48	
	3/15/01		0.00040			0.071			0.02		<	0.005		<	0.001		<	0.001		7.16	
	3/21/01		0.00040			0.087			0.023		<	0.005		<	0.001		<	0.001		6.89	
	3/28/01		0.00040			0.087			0.02		<	0.005		<	0.001		<	0.001		6.79	
	4/4/01		0.00050			0.12			0.025		<	0.005		<	0.001		<	0.001		6.54	
	4/11/01		0.00040			0.14			0.03		<	0.005		<	0.001		<	0.001		7.49	
ST-A	4/19/01	<	0.00020			0.001		<	0.001		<	0.005		<	0.001		<	0.001		8.98	Carbon change out
	4/26/01	<	0.00020			0.0001		<	0.001		<	0.005		<	0.001		<	0.001		8.71	
	5/2/01	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.80	
	5/9/01		0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.08	
	5/16/01	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.95	
	5/23/01	<	0.00020			0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.90	
	5/30/01	<	0.00020			0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.92	
	6/7/01	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.05	
	6/13/01	<	0.00020			0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.85	
	6/20/01	<	0.00020			0.002		<	0.001		<	0.005		<	0.001		<	0.001		7.04	
	6/27/01	<	0.00020			0.002		<	0.001		<	0.005		<	0.001		<	0.001		6.94	
	7/3/01	<	0.00020			0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.96	
	7/11/01	<	0.00020			0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.94	
	7/17/01	<	0.00200			0.001		<	0.001		<	0.005		<	0.001		<	0.001			
	7/25/01	<	0.00020			0.18			0.01		<	0.005		<	0.001		<	0.001		6.99	
	8/1/01	<	0.00020			0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.01	
	8/9/01	<	0.00020			0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.93	
	8/15/01		0.00020			0.001			0.002		<	0.005		<	0.001		<	0.001		6.80	
	8/21/01	<	0.00020			0.001			0.003		<	0.005		<	0.001		<	0.001		6.90	
	8/30/01		0.00030			0.001			0.004		<	0.005		<	0.001		<	0.001		6.96	
	9/5/01		0.00020			0.002			0.005		<	0.005		<	0.001		<	0.001		6.98	
	9/14/01	<	0.00020			0.003			0.009		<	0.005		<	0.001		<	0.001			
	9/21/01	<	0.00020			0.005			0.012		<	0.005		<	0.001		<	0.001		6.94	
	9/24/01		0.00020			0.006			0.012		<	0.005		<	0.001		<	0.001		6.98	
	10/1/01	<	0.00020			0.006			0.01		<	0.005		<	0.001		<	0.001		7.01	
	10/9/01	<	0.00100			0.006			0.011		<	0.005		<	0.001		<	0.001		6.91	
	10/15/01	<	0.00100			0.008			0.011		<	0.005		<	0.001		<	0.001		6.94	
	10/22/01	<	0.00020			0.009			0.013		<	0.005		<	0.001		<	0.001		7.44	
	10/29/01		0.00050			0.014			0.013		<	0.005		<	0.001		<	0.001		7.03	
	11/5/01	<	0.00100			0.16			0.015		<	0.005		<	0.001		<	0.001		7.07	
	11/12/01	<	0.00100			0.019			0.015		<	0.005		<	0.001		<	0.001		7.51	
	11/20/01	<	0.00100			0.015			0.012		<	0.005		<	0.001		<	0.001		7.73	
	11/28/01		0.00100			0.014			0.011		<	0.005		<	0.001		<	0.001		7.30	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2] MERCURY Q[3]	MERCURY RESULT	MERCURY FLAG[4]	CARBON TETRACHLORIDE Q	CARBON TETRACHLORIDE RESULT	CARBON TETRACHLORIDE FLAG	CHLOROFORM Q	CHLOROFORM RESULT	CHLOROFORM FLAG	METHYLENE CHLORIDE Q	METHYLENE CHLORIDE RESULT	METHYLENE CHLORIDE FLAG	TETRACHLOROETHENE Q	TETRACHLOROETHENE RESULT	TETRACHLOROETHENE FLAG	TRICHLOROETHENE Q	TRICHLOROETHENE RESULT	TRICHLOROETHENE FLAG	pH	COMMENTS
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-A Continued	12/4/01	<	0.00100			0.02			0.013		<	0.005		<	0.001		<	0.001		7.49	
	12/10/01		0.00020			0.022			0.013		<	0.005		<	0.001		<	0.001		7.44	
	12/21/01		0.00020			0.038			0.015		<	0.005		<	0.001		<	0.001		7.26	
	12/27/01		0.00030			0.046			0.015		<	0.005		<	0.001		<	0.001		7.21	
	1/2/02	<	0.00020			0.0039			0.014		<	0.005		<	0.001		<	0.001		7.20	
	1/7/02	<	0.00020			0.038			0.013		<	0.005		<	0.001		<	0.001		7.20	
	1/14/02		0.00030			0.055			0.17		<	0.005		<	0.001		<	0.001		7.14	
	1/21/02		0.00020			0.066			0.017		<	0.005		<	0.001		<	0.001		7.18	
	1/29/02		0.00030			0.066			0.017		<	0.005		<	0.001		<	0.001		7.11	
	2/4/02	<	0.00020			0.066			0.016		<	0.005		<	0.001		<	0.001		7.11	
	2/11/02	<	0.00020			0.069			0.014		<	0.005		<	0.001		<	0.001		7.15	
ST-B	2/21/02		0.07500		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		8.11	Carbon change out
	2/25/02		0.03100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.69	
	3/4/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.32	
	3/11/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.17	
	3/18/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.14	
	3/25/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.07	
	4/2/02	<	0.00100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.09	
	4/8/02	<	0.00100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.07	
	4/15/02		0.02200		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.08	
	4/22/02		0.00100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.11	
	4/30/02	<	0.00100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.92	
	5/6/02		0.04800		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.98	
	5/13/02		0.14000		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.03	
	5/20/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.10	
	5/29/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.14	
	6/3/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.11	
	6/10/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.02	
	6/18/02		0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.10	
	6/24/02		0.00030		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.07	
	7/1/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.05	
	7/8/02		0.00030		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.13	
	7/15/02		0.00040		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.02	
	7/23/02		0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.10	
	7/29/02		0.00050		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.00	
	8/5/02		0.00050		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		[redacted]	
	8/12/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		8.16	
	8/19/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.10	
	8/26/02		0.00030		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.04	
	9/3/02	<	0.00020		<	0.001			0.001		<	0.005		<	0.001		<	0.001		7.16	
	9/11/02	<	0.00020		<	0.001			0.001		<	0.005		<	0.001		<	0.001		7.04	
	9/16/02	<	0.00020		<	0.001			0.002		<	0.005		<	0.001		<	0.001		7.06	
	9/23/02	<	0.00020		<	0.001			0.003		<	0.005		<	0.001		<	0.001		6.96	
	9/30/02	<	0.00020			0.002			0.005		<	0.005		<	0.001		<	0.001		6.99	
	10/8/02	<	0.00020			0.002			0.006		<	0.005		<	0.001		<	0.001		[redacted]	
	10/15/02	<	0.00020			0.002			0.006		<	0.005		<	0.001		<	0.001		[redacted]	
	10/22/02		0.00020			0.005			0.008		<	0.005		<	0.001		<	0.001		6.77	
	10/28/02		0.00040			0.008			0.01		<	0.005		<	0.001		<	0.001		7.13	
	11/4/02		0.00060			0.009			0.011		<	0.005		<	0.001		<	0.001		7.07	
	11/13/02	<	0.00020			0.013			0.011		<	0.005		<	0.001		<	0.001		6.80	
	11/20/02		0.00030			0.017			0.011		<	0.005		<	0.001		<	0.001		6.73	
	11/25/02		0.00020			0.018			0.013		<	0.005		<	0.001		<	0.001		6.91	
	12/2/02	<	0.00020			0.02			0.014		<	0.005		<	0.001		<	0.001		6.95	
	12/9/02	<	0.00020			0.027			0.014		<	0.005		<	0.001		<	0.001		7.20	
ST-C	12/16/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.91	Carbon change out
	12/23/02	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.22	
	1/3/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.13	
	1/6/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.04	
	1/14/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.21	
	1/22/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.43	
	1/27/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.15	
	2/3/03		0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.10	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-C Continued	2/11/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.22	
	2/18/03		0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.04	
	2/24/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.15	
	3/3/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.11	
	3/10/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.17	
	3/18/03		0.00030		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001			
	3/24/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.20	
	4/3/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.88	
	4/8/03	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.15	
	4/15/03		0.00060		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.12	
	4/22/03	<	0.00020		<	0.001			0.001		<	0.005		<	0.001		<	0.001		6.61	
	4/29/03	<	0.00020		<	0.001			0.001		<	0.005		<	0.001		<	0.001		7.12	
	5/5/03	<	0.00020		<	0.001			0.002		<	0.005		<	0.001		<	0.001		7.01	
	5/13/03	<	0.00020		<	0.001			0.002		<	0.005		<	0.001		<	0.001			
	5/19/03	<	0.00020		<	0.001			0.003		<	0.005		<	0.001		<	0.001		7.10	
	5/28/03	<	0.00020		<	0.001			0.003		<	0.005		<	0.001		<	0.001		7.24	
	6/2/03	<	0.00020		<	0.001			0.004		<	0.005		<	0.001		<	0.001		7.21	
	6/9/03		0.00060		<	0.001			0.004		<	0.005		<	0.001		<	0.001		6.97	
	6/17/03		0.00040		<	0.001			0.005		<	0.005		<	0.001		<	0.001		6.84	
	6/23/03		0.00030		<	0.001			0.005		<	0.005		<	0.001		<	0.001		7.06	
	6/30/03	<	0.00020		<	0.001			0.005		<	0.005		<	0.001		<	0.001		7.14	
	7/8/03	<	0.00020		<	0.001			0.005		<	0.005		<	0.001		<	0.001		7.04	
	7/14/03	<	0.00020		<	0.001			0.005		<	0.005		<	0.001		<	0.001		7.03	
	7/21/03	<	0.00020		<	0.001			0.006		<	0.005		<	0.001		<	0.001		7.14	
	7/28/03	<	0.00020			0.001			0.007		<	0.005		<	0.001		<	0.001		7.12	
	8/5/03	<	0.00020			0.003			0.008		<	0.005		<	0.001		<	0.001		6.99	
	8/11/03	<	0.00020			0.003			0.008		<	0.005		<	0.001		<	0.001		6.93	
	8/20/03	<	0.00020			0.006			0.011		<	0.005		<	0.001		<	0.001		7.10	
	8/29/03	<	0.00020			0.006			0.01		<	0.005		<	0.001		<	0.001		7.24	
	9/1/03	<	0.00020			0.006			0.01		<	0.005		<	0.001		<	0.001		8.61	
	9/8/03	<	0.00020			0.011			0.009		<	0.005		<	0.001		<	0.001		6.89	
	9/17/03	<	0.00020			0.011			0.009		<	0.005		<	0.001		<	0.001		6.95	
	9/22/03	<	0.00020			0.016			0.01		<	0.005		<	0.001		<	0.001		6.90	
	9/29/03	<	0.00020			0.017			0.01		<	0.005		<	0.001		<	0.001		6.88	
	10/6/03	<	0.00020			0.025			0.013		<	0.005		<	0.001		<	0.001		6.98	
	10/13/03	<	0.00020			0.027			0.011		<	0.005		<	0.001		<	0.001		6.92	
	10/20/03	<	0.00020			0.03			0.011		<	0.005		<	0.001		<	0.001		7.00	
	10/27/03	<	0.00020			0.033			0.01		<	0.005		<	0.001		<	0.001		7.00	
	11/3/03	<	0.00020			0.041			0.012		<	0.005		<	0.001		<	0.001		6.97	
	11/11/03		0.00030			0.036			0.01		<	0.005		<	0.001		<	0.001		6.68	
	11/17/03	<	0.00020			0.046			0.011		<	0.005		<	0.001		<	0.001		6.70	
	11/25/03	<	0.00020			0.036			0.008		<	0.005		<	0.001		<	0.001		6.95	
ST-A	12/2/03		0.00140		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.01	Carbon change out
	12/8/03		0.00170		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.04	
	12/15/03		0.00140		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.73	
	12/22/03		0.00200		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.95	
	1/1/04		0.00220		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.90	
	1/7/04		0.00150		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.97	
	1/13/04		0.00220		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.86	
	1/21/04		0.00180		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.85	
	1/27/04		0.00140		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.90	
	2/4/04		0.00170		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.88	
	2/10/04		0.00140		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.89	
	2/17/04		0.00100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.87	
	2/23/04		0.00100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.88	
	3/1/04		0.00080		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.88	
	3/8/04		0.00030		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.10	
	3/19/04	<	0.00020			0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.32	
	3/22/04	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.74	
	4/2/04	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.87	
	4/5/04	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.18	
	4/12/04		0.00060		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.00	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-A Continued	4/20/04	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.72	
	5/5/04	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.68	
	5/10/04		0.00040		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.56	
	5/20/04		0.00030		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.83	
	5/24/04	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.15	
	6/1/04	<	0.00020		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.82	
	6/8/04		0.00050		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.80	
	6/14/04		0.00070		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.67	
	6/22/04		0.00070		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.87	
	6/30/04		0.00130		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.77	
	7/7/04		0.00140		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.92	
	7/13/04		0.00060		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.00	
	7/22/04		0.00100		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.70	
	7/27/04		0.00060		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.86	
	8/2/04		0.00100		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.89	
	8/10/04		0.00120		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.73	
	8/18/04		0.00150		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.68	
	8/25/04		0.00150		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.60	
	9/3/04		0.00120		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.78	
	9/8/04		0.00140		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.79	
	9/13/04		0.00040		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.82	
	9/20/04		0.00070		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.80	
	9/27/04		0.00120		<	0.001			0.002		<	0.005		<	0.001		<	0.001		6.88	
	10/6/04		0.00170			0.001			0.002		<	0.005		<	0.001		<	0.001		6.83	
	10/11/04		0.00100			0.001			0.002		<	0.005		<	0.001		<	0.001		7.02	
	10/21/04		0.00050			0.001			0.002		<	0.005		<	0.001		<	0.001		6.79	
	10/26/04	<	0.00020		<	0.005		<	0.005		<	0.05		<	0.005		<	0.005		6.73	
	11/1/04		0.00210			0.001			0.002		<	0.005		<	0.001		<	0.001		6.77	
	11/8/04		0.00120			0.002			0.003		<	0.005		<	0.001		<	0.001		6.71	
	11/15/04		0.00160			0.003			0.004		<	0.005		<	0.001		<	0.001		6.52	
	11/22/04		0.00160			0.004			0.003		<	0.005		<	0.001		<	0.001		7.03	
ST-B	11/29/04		0.00130		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.35	Carbon change out
	12/8/04		0.00070		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.80	
	12/13/04		0.00090		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.13	
	12/20/04		0.00130		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.95	
	12/28/04		0.00080		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.87	
	1/3/05		0.0022		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.69	
	1/11/05		0.003		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		8.66	
	1/17/05		0.0003		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.73	
	1/25/05		0.0005		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.14	
	2/1/05		0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.60	
	2/9/05		0.0003		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.00	
	2/14/05		0.0002		<	0.005		<	0.005		<	0.005		<	0.005		<	0.005		6.94	
	2/21/05		0.0004		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.91	
	2/28/05		0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.98	
	3/7/05		0.00028		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.08	
	3/14/05	B	0.00013		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.05	
	3/21/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.84	
	3/29/05		0.00029		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.15	
	4/5/05		0.00023		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.87	
	4/11/05		0.00033		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.84	
	4/19/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.72	
	4/27/05	B	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.12	
	5/2/05	B	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.14	
	5/9/05		0.00051		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.90	
	5/16/05	B	0.00026		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.71	
	5/24/05		0.00051		<	0.001		J	0.0002		<	0.005		<	0.001		<	0.001		6.83	
	5/30/05		0.00074		<	0.001		J	0.0002		<	0.005		<	0.001		<	0.001		6.83	
	6/6/05		0.00035		<	0.001		J	0.0004		<	0.005		<	0.001		<	0.001		6.88	
	6/13/05	<	0.0002	B	<	0.001		J	0.0004		<	0.005		<	0.001		<	0.001		7.00	
	6/23/05	<	0.0002		<	0.001		J	0.0003		<	0.005		<	0.001		<	0.001		6.40	
	6/27/05		0.0005		J	0.0002		J	0.0006		<	0.005		<	0.001		<	0.001		7.82	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-C	7/7/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.40	Carbon change out 6/29/05
	7/11/05		0.00032		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		8.07	
	7/18/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.82	
	7/25/05		0.00037		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.85	
	8/2/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.82	
	8/9/05	B	0.00014		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.36	
	8/15/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.68	
	8/23/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.89	
	8/29/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.80	
	9/6/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.90	
	9/13/05		0.00065		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.77	
	9/20/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.59	
	9/30/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.76	
	10/4/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.91	
	10/12/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.68	
	10/17/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.77	
	10/25/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.78	
	11/2/05	B	0.00011		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.79	
	11/9/05	B	0.00018		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.56	
	11/14/05		0.0004		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.82	
	11/23/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.77	
	11/29/05	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.68	
	12/5/05	<	0.0001		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.55	
	12/16/05	<	0.0001		<	0.001		<	0.001		J	0.0005		<	0.001		<	0.001		6.75	
	12/19/05	<	0.0001		<	0.001		<	0.001		J	0.0002		<	0.001		<	0.001		7.60	
	12/28/05	<	0.0001	Y	<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.60	
	1/5/06	B	0.0001		<	0.001		<	0.001		J	0.0002		<	0.001		<	0.001		6.63	
	1/10/06	B	0.0001		<	0.001		<	0.001		J	0.0003		<	0.001		<	0.001		6.68	
	1/17/06		0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.82	
	1/25/06	B	0.00017		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.89	
	1/31/06		0.00024		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.79	
	2/6/06	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.85	
	2/13/06	<	0.0002		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		6.78	
	2/24/06	J	0.00019		<	0.0002		<	0.0002		<	0.0002		<	0.0002		<	0.0002		6.42	
	2/27/06	<	0.0001		<	0.0002		<	0.0002		<	0.0002		<	0.0002		<	0.0002		7.36	
	3/6/06	<	0.0001		H, <	0.0001		H, <	0.0002		H, <	0.0002		H, <	0.0002		H, <	0.0002		6.75	
	3/13/06		0.00057		<	0.0002		<	0.0002		<	0.0002		<	0.0002		<	0.0002		6.77	
	3/20/06		0.00032		<	0.0002		<	0.0002		<	0.0002		<	0.0002		<	0.0002		7.00	
	3/27/06	<	0.0001		<	0.0002		<	0.0002		<	0.0002		<	0.0002		<	0.0002		6.66	
	4/3/06	J	0.00018		<	0.0002		<	0.0002		<	0.0002		<	0.0002		<	0.0002		7.23	
	4/11/06	<	0.00013		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		6.86	
	4/18/06	<	0.00013		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		6.40	
	4/25/06	<	0.00013		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		6.76	
	5/3/06	<	0.00013		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		6.30	
	5/11/06		0.00052		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		6.86	
	5/17/06		0.00038		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		6.82	
	5/22/06	<	0.00013		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		7.06	
	5/30/06	J	0.00015		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		6.95	
	6/5/06	<	0.00013		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		7.14	
	6/12/06	B	0.00038		<	0.00025		J	0.00026		<	0.00053		<	0.0002		<	0.00032		6.81	
	6/23/06	J	0.00016		<	0.00025		J	0.00039		<	0.00053		<	0.0002		<	0.00032		6.97	
	6/27/06	J	0.00018		<	0.00025		<	0.0002		<	0.00053		<	0.0002		<	0.00032		7.24	
	7/6/06	<	0.00013		<	0.00025		J	0.00048		<	0.00053		<	0.0002		<	0.00032		6.96	
	7/11/06	<	0.00013		<	0.00025		J	0.00053		<	0.00053		<	0.0002		<	0.00032		6.96	
	7/17/06	<	0.00013		<	0.00025			0.001		<	0.00053		<	0.0002		<	0.00032		7.01	
	7/24/06	B	0.00028		<	0.00025			0.001		<	0.00053		<	0.0002		<	0.00032		6.81	
	7/31/06		0.00026		J	0.00031			0.0017		<	0.00053		<	0.0002		<	0.00032		6.90	
	8/7/06		0.00022		J	0.00042			0.0017		<	0.00053		<	0.0002		<	0.00032		6.98	
	8/16/06	<	0.00013		J	0.0007			0.0024		<	0.00053		<	0.0002		<	0.00032		6.64	
	8/23/06	J	0.00018		J	0.00069			0.0026		<	0.00053		<	0.0002		<	0.00032		6.80	
	8/29/06	<	0.00013		J	0.00088			0.0029		<	0.00053		<	0.0002		<	0.00032		6.73	
	9/6/06	J	0.00017		J	0.00057			0.0022		<	0.00053		<	0.0002		<	0.00032		6.77	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-C Continued	9/13/06	J	0.00017		J	0.00095			0.0027		<	0.00053		<	0.0002		<	0.00032		6.58	
	9/18/06	<	0.00013			0.001			0.0033		<	0.00053		<	0.0002		<	0.00032		6.94	
	9/26/06	<	0.00013			0.0015			0.0038		<	0.00053		<	0.0002		<	0.00032		6.88	
	10/3/06	<	0.00013			0.0017			0.0037		<	0.00053		<	0.0002		<	0.00032		6.78	
	10/9/06		0.00046			0.0015			0.0031		<	0.00053		<	0.0002		<	0.00032		6.88	
	10/17/06		0.00022		J	0.00084			0.0026		<	0.00053		<	0.0002		<	0.00032		6.58	
	10/24/06		0.00026			0.0013			0.0038		<	0.00053		<	0.0002		<	0.00032		7.06	
	11/2/06		0.00024			0.0016			0.0036		<	0.00053		<	0.0002		<	0.00032		6.67	
	11/8/06	<	0.00013			0.0015			0.004		<	0.00053		<	0.0002		<	0.00032		7.04	
	11/15/06	<	0.00013			0.0014		B	0.0035		<	0.00053		<	0.0002		<	0.00032		6.78	
	11/21/06	<	0.00013			0.0016			0.0031		<	0.00053		<	0.0002		<	0.00032		7.00	
	11/27/06		0.00034			0.0019			0.0039		<	0.00053		<	0.0002		<	0.00032		7.26	
	12/5/06		0.00071			0.0021			0.0034		<	0.00053		<	0.0002		<	0.00032		6.67	
	12/14/06	<	0.00013			0.0027			0.0037		<	0.00053		<	0.0002		<	0.00032		6.93	
	12/20/06		0.00022			0.0032			0.0034		<	0.00053		<	0.0002		<	0.00032		7.08	
	12/27/06		0.00051			0.0029			0.003		<	0.00053		<	0.0002		<	0.00032		7.04	
	1/2/07	<	0.00013			0.0026			0.0026		<	0.00053		<	0.0002		<	0.00032		6.70	
	1/11/07	<	0.00013			0.0029			0.003		<	0.00053		<	0.0002		<	0.00032		6.88	
	1/18/07	J	0.00016			0.0023			0.0022		<	0.00053		<	0.0002		<	0.00032		6.40	
	1/25/07		0.00023			0.0026			0.0025		<	0.00053		<	0.0002		<	0.00032		6.58	
	2/1/07	<	0.00013			0.0023			0.0023		<	0.00053		<	0.0002		<	0.00032		6.63	
	2/8/07		0.00025			0.003			0.0028		<	0.00053		<	0.0002		<	0.00032		6.70	
	2/13/07		0.00023			0.0026			0.0023		<	0.00053		<	0.0002		<	0.00032		6.90	
	2/20/07		0.00035			0.0045			0.0032		<	0.00053		<	0.0002		<	0.00032		6.96	
	3/1/07	<	0.00013			0.0036			0.0029		<	0.00053		<	0.0002		<	0.00032		6.65	
	3/8/07	<	0.00013			0.0039			0.0032		<	0.00053		<	0.0002		<	0.00032		6.58	
	3/16/07	<	0.00013			0.003			0.0027		<	0.00053		<	0.0002		<	0.00032		6.61	
	3/19/07	<	0.00013			0.0034			0.0032		<	0.00053		<	0.0002		<	0.00032		6.56	
	3/27/07	<	0.00013			0.0026			0.0026		<	0.00053		<	0.0002		<	0.00032		6.86	
	4/3/07	<	0.00013			0.0045			0.0031		<	0.00053		<	0.0002		<	0.00032		6.40	
	4/12/07	<	0.00013			0.0036			0.0025		<	0.00053		<	0.0002		<	0.00032		6.36	
	4/19/07	<	0.00013			0.0042			0.0024		<	0.00053		<	0.0002		<	0.00032		6.29	
	4/24/07	J	0.00013			0.005			0.0031		<	0.00053		<	0.0002		<	0.00032		6.30	
	5/1/07	<	0.00013			0.0051			0.0026		<	0.00053		<	0.0002		<	0.00032		6.80	
	5/10/07	<	0.00013			0.0032			0.0025		<	0.00053		<	0.0002		<	0.00032		6.63	
	5/18/07	<	0.00013			0.0032			0.0023		<	0.00053		<	0.0002		<	0.00032		6.50	
	5/25/07	B	0.00033			0.0038			0.0029		<	0.00053		<	0.0002		<	0.00032		5.49	
	5/31/07	B	0.00073			0.0047			0.0022		<	0.00053		<	0.0002		<	0.00032		6.51	
	6/6/07		0.00031			0.0039			0.0021		<	0.00053		<	0.0002		<	0.00032		6.32	
	6/15/07		0.00038			0.0058			0.0022		<	0.00053		<	0.0002		<	0.00032		6.19	
	6/21/07		0.00038			0.0066			0.0024		<	0.00053		<	0.0002		<	0.00032		6.90	
	6/25/07	<	0.00013			0.0056			0.0025		<	0.00053		<	0.0002		<	0.00032		6.87	
	7/6/07		0.00027			0.0053			0.0019		<	0.00053		<	0.0002		<	0.00032		6.88	
	7/11/07		0.0002			0.0055			0.0021		<	0.00053		<	0.0002		<	0.00032		6.89	
ST-A	7/20/07		0.00096		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		7.32	Carbon change out 7/16/07
	7/23/07		0.00027		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.82	
	7/30/07		0.00027		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		7.38	
	8/6/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.48	
	8/13/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.93	
	8/20/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.38	
	8/29/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.93	
	9/5/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.92	
	9/12/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.93	
	9/20/07	J	0.00019		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.19	
	9/26/07		0.00021		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.78	
	10/1/07	J	0.00014		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.78	
	10/10/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.78	
	10/18/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.78	
	10/25/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.97	
	10/29/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.65	
	11/7/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.20	
	11/16/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		5.98	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG[?]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
St-A Continued	11/19/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.81	
	11/29/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.28	
	12/3/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.30	
	12/11/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.38	
	12/17/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.66	
	12/26/07	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.38	
	1/3/08	J	0.0014		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.99	
	1/9/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.20	
	1/14/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.35	
	1/23/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.43	
	2/1/08		0.00027		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.22	
	2/7/08		0.00023		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.47	
	2/13/08		0.00031	B	<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.22	
	2/22/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		[redacted]	
	2/27/08		0.00024		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		5.68	
	3/5/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		7.47	
	3/11/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.38	
	3/20/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.33	
	3/26/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.60	
	4/4/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.68	
	4/10/08	J	0.00017		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.65	
	4/18/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.49	
	4/24/08		0.00027		<	0.00025		<	0.0002		<	0.001		J,B	0.00089		<	0.00032		6.32	
	4/28/08		0.00022		<	0.00025		<	0.0002		<	0.001		J,B	0.00049		<	0.00032		6.33	
	5/8/08		0.00021		<	0.00025		J	0.00038		<	0.001		<	0.0002		<	0.00032		6.56	
	5/15/08	J	0.00019		<	0.00025		J	0.00048		<	0.001		<	0.0002		<	0.00032		6.35	
	5/22/08		0.00021		<	0.00025		J	0.00061		<	0.001		<	0.0002		<	0.00032		6.19	
	5/28/08	<	0.00013		<	0.00025		J	0.00071		<	0.001		<	0.0002		<	0.00032		6.05	
	6/4/08	<	0.00013		<	0.00025		<	0.0002		<	0.001		<	0.0002		<	0.00032		6.96	
	6/11/08	<	0.00013		<	0.00025		J	0.00097		<	0.001		<	0.0002		<	0.00032		6.88	
	6/20/08	<	0.00013		<	0.00025			0.0011		<	0.001		<	0.0002		<	0.00032		6.88	
	6/27/08		0.00049		<	0.00025			0.0012		<	0.001		<	0.0002		<	0.00032		6.76	
	7/2/08	<	0.00013		<	0.00025			0.0013		<	0.001		<	0.0002		<	0.00032		6.75	
	7/8/08	J	0.00016		<	0.00025			0.0013		<	0.002		<	0.0002		<	0.00032		6.75	
	7/14/08		0.00033		<	0.00025			0.0014		<	0.002		<	0.0002		<	0.00032		7.07	
	7/22/08	J	0.00016		<	0.00025		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.88	
	7/31/08	<	0.00013			0.0011			0.0016		<	0.002		<	0.0002		<	0.00032		6.74	
	8/4/08		0.00021		J	0.00083			0.0021		<	0.002		<	0.0002		<	0.00032		6.74	
	8/11/08	<	0.00013			0.0011			0.0019		<	0.002		<	0.0002		<	0.00032		6.34	
	8/21/08		0.00026			0.0018			0.002		<	0.002		<	0.0002		<	0.00032		6.74	
	8/25/08		0.00028			0.0036			0.0018		<	0.002		<	0.0002		<	0.00032		6.55	
	9/4/08		0.00051			0.033			0.0033		<	0.002		<	0.0002		<	0.00032		6.77	
	9/8/08		0.00038			0.057			0.005		<	0.002		<	0.0002		<	0.00032		6.74	
	9/19/08	<	0.00013			0.065			0.0071		<	0.002		<	0.0002		<	0.00032		6.67	
	9/25/08	<	0.00013			0.09			0.0089		<	0.002		<	0.0002		<	0.00032		6.93	
ST-B	10/3/08		0.00072			0.0017		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.64	Carbon change out 10/2/08
	10/9/08		0.00086		J	0.00096		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.64	
	10/13/08		0.00091		J	0.00059		<	0.0002		<	0.002		<	0.0002		<	0.00032		7.01	
	10/22/08		0.00071		J	0.00062		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.95	
	10/27/08		0.00093		<	0.00025		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.95	
	11/6/08		0.00048		J	0.0007		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.93	
	11/14/08		0.00038		<	0.00025		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.44	
	11/21/08		0.00027		J	0.00043		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.93	
	11/26/08		0.00055		<	0.00025		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.66	
	12/3/08		0.00032		<	0.00025		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.77	
	12/11/08		0.00029		J	0.00044		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.60	
	12/19/08		0.00025		<	0.00025		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.90	
	12/22/08		0.00033		<	0.00025		<	0.0002		<	0.002		<	0.0002		<	0.00032		7.01	
	12/31/08		0.00022		<	0.00025		<	0.0002		<	0.002		<	0.0002		<	0.00032		6.84	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-B Continued	1/7/09		0.000419		U	0.0005		U	0.0005		J	0.00076		U	0.0006		U	0.0005		6.70	ALS Laboratory Group (2009)
	1/13/09		0.00026		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.97	
	1/23/09		0.00119		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.97	
	1/29/09		0.000288		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.07	
	2/4/09		0.000282		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.04	
	2/10/09	J	0.00009		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.72	
	2/19/09	J	0.000091		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.59	
	2/26/09	J	0.000079		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.98	
	3/4/09	J	0.0016		J	0.0017		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.77	
	3/10/09	J	0.00012		J	0.0022		J	0.00069		U	0.0005		U	0.0006		U	0.0005		6.90	
	3/19/09	J	0.000057		J	0.0025		J	0.00079		U	0.0005		U	0.0006		U	0.0005		6.60	
	3/26/09	J	0.000191		U	0.0005		J	0.0013		U	0.0005		U	0.0006		U	0.0005		6.65	
	4/2/09		0.000213			0.0072		J	0.0018		U	0.0005		U	0.0006		U	0.0005		7.11	
	4/7/09	J	0.000196			0.0074		J	0.0018		U	0.0005		U	0.0006		U	0.0005		6.61	
	4/17/09	J	0.000155			0.0099		J	0.0024		U	0.0005		U	0.0006		U	0.0005		6.75	
	4/23/09		0.00021			0.014		J	0.0031		U	0.0005		U	0.0006		U	0.0005		6.67	
	5/1/09	J	0.000045			0.012		J	0.0032		U	0.0005		U	0.0006		U	0.0005		6.72	
	5/5/09	J	0.000151			0.015		J	0.0034		U	0.0005		U	0.0006		U	0.0005		7.18	
	5/15/09	J	0.00017			0.019		J	0.0044		U	0.0005		U	0.0006		U	0.0005		6.90	
	5/21/09		0.000357			0.023		J	0.0041		U	0.0005		U	0.0006		U	0.0005		7.16	
	5/29/09		0.000266			0.018		J	0.0044		U	0.0005		U	0.0006		U	0.0005		7.01	
	6/1/09		0.000251			0.025			0.0051		U	0.0005		U	0.0006		U	0.0005		6.98	
	6/8/09		0.000379			0.031			0.0056		U	0.0005		U	0.0006		U	0.0005		6.87	
	6/18/09		0.000284			0.03			0.0059		U	0.0005		J	0.00065		U	0.0005		7.13	
	6/22/09		0.000222			0.03			0.0059		U	0.0005		U	0.0006		U	0.0005		7.20	
ST-C	7/3/09	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.94	Carbon change out
	7/9/09	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.40	
	7/15/09	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.95	
	7/22/09	J	0.000074		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.93	
	7/31/09	J	0.000065		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.05	
	8/7/09	J	0.000074		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.03	
	8/13/09	J	0.000082		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.59	
	8/20/09	J	0.000096		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.38	
	8/26/09	J	0.000094		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.40	
	9/3/09	J	0.000111		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.18	
	9/11/09	J	0.00014		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.09	
	9/15/09	J	0.000158		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.20	
	9/25/09	J	0.000126		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.36	
	10/1/09	J	0.000127		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.93	
	10/6/09	J	0.000188		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.76	
	10/16/09	J	0.000096		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.90	
	10/22/09	J	0.00014		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.04	
	10/28/09	J	0.000176		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.99	
	11/4/09	J	0.000156		J	0.0027		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.00	
	11/10/09	J	0.000106		U	0.0005		J	0.0005		U	0.0005		U	0.0006		U	0.0005		7.09	
	11/16/09	J	0.000122		U	0.0005		J	0.00061		U	0.0005		U	0.0006		U	0.0005		6.99	
	11/24/09	J	0.000132		U	0.0005		J	0.00065		U	0.0005		U	0.0006		U	0.0005		7.05	
	11/30/09	J	0.000165		J	0.0027		J	0.00091		U	0.0005		U	0.0006		U	0.0005		6.97	
	12/8/09	J	0.00014		J	0.0015		J	0.0011		U	0.0005		U	0.0006		U	0.0005		7.04	
	12/15/09	J	0.00014		U	0.005		J	0.0013		U	0.0005		U	0.0006		U	0.0005		7..05	
	12/21/09	J	0.000096			0.0052		J	0.0014		U	0.0005		U	0.0006		U	0.0005		6.97	
	12/28/09	J	0.000165		J	0.0045		J	0.0016		U	0.0005		U	0.0006		U	0.0005		7.17	
	1/5/10	J	0.000096			0.0063		J	0.0017		U	0.0005		U	0.0006		U	0.0005		7.08	
	1/12/10	J	0.000131			0.0116		J	0.0046		J	0.002		U	0.0006		U	0.0005		6.42	
	1/19/10	J	0.000131			0.0069		J	0.0026		U	0.0005		U	0.0006		U	0.0005		6.18	
	1/25/10	J	0.000092		J	0.0039		J	0.0018		U	0.0005		U	0.0006		U	0.0005		6.38	
	2/1/10	J	0.000139			0.013		J	0.0037		U	0.0005		U	0.0006		U	0.0005		7.73	
	2/11/10	J	0.000141			0.033			0.0076		U	0.0005		U	0.0006		U	0.0005		6.60	
	2/17/10	J	0.000144			0.036			0.0082		U	0.0005		U	0.0006		U	0.0005		7.32	
	2/22/10	J	0.000108			0.032			0.0089		U	0.0005		U	0.0006		U	0.0005		6.77	
	3/2/10	J	0.000145			0.038			0.0083		U	0.0005		U	0.0006		U	0.0005		7.03	
	3/10/10	J	0.00016			0.044			0.009		U	0.0005		U	0.0006		U	0.0005		6.39	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-A	3/17/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.14	Carbon change out
	3/22/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.46	
	3/31/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.03	
	4/6/10	J	0.000084		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.20	
	4/12/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.63	
	4/22/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.44	
	4/28/10	J	0.000083		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.87	
	5/4/10	J	0.000043		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.62	
	5/10/10	J	0.000081		U	0.0005		J	0.00078		U	0.0005		U	0.0006		U	0.0005		6.75	
	5/20/10	U	0.000042		U	0.0005		J	0.0014		J	0.00077		U	0.0006		U	0.0005		6.58	
	5/24/10	J	0.000149		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.76	
	6/2/10	U	0.000042		U	0.0005		J	0.0017		U	0.0005		U	0.0006		U	0.0005		7.02	
	6/7/10	J	0.000066		J	0.0043		J	0.0019		U	0.0005		U	0.0006		U	0.0005		7.00	
	6/14/10	J	0.000088		J	0.0011		J	0.0021		U	0.0005		U	0.0006		U	0.0005		7.28	
	6/23/10	J	0.000159		J	0.0025		J	0.0032		U	0.0005		U	0.0006		U	0.0005		6.71	
	7/1/10	U	0.000042		J	0.0032		J	0.0044		U	0.0005		U	0.0006		U	0.0005		6.51	
	7/6/10	J	0.000049			0.066		J	0.0042		U	0.0005		U	0.0006		U	0.0005		6.48	
	7/12/10	U	0.000042			0.0081			0.0055		U	0.0005		U	0.0006		U	0.0005		6.99	
	7/22/10	J	0.000092			0.0084			0.007		U	0.0005		U	0.0006		U	0.0005		7.64	
	7/26/10	J	0.000069			0.0085			0.0071		U	0.0005		U	0.0006		U	0.0005		7.61	
	8/2/10	J	0.000069			0.015			0.0076		U	0.0005		U	0.0006		U	0.0005		7.40	
	8/12/10	U	0.000042			0.012			0.0081		U	0.0005		U	0.0006		U	0.0005		6.39	
	8/18/10	J	0.000078			0.016			0.0082		U	0.0005		U	0.0006		U	0.0005		6.51	
	8/23/10	J	0.00008			0.021			0.0096		U	0.0005		U	0.0006		U	0.0005		6.79	
	8/30/10	J	0.000075			0.02			0.0096		U	0.0005		U	0.0006		U	0.0005		6.85	
	9/8/10	U	0.000042			0.021			0.0092		U	0.0005		U	0.0006		U	0.0005		6.34	
ST-C	9/14/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.53	Carbon change out 9/10/10
	9/20/10	J	0.000043		U	0.0005		U	0.0005		U	0.0005		J	0.0011		U	0.0005		7.37	
	9/27/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.12	
	10/4/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.15	
	10/12/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.13	
	10/18/10		0.000439		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.18	
	10/28/10	J	0.000043		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.86	
	11/4/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.62	
	11/8/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.15	
	11/15/10	J	0.000048		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.43	
	11/23/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.33	
	11/29/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.96	
	12/6/10	J	0.000043		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.11	
	12/14/10	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.83	
	12/21/10	J	0.000075		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.88	
	12/28/10	J	0.000061		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		4.78	
	1/3/11	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.16	
	1/13/11	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.86	
	1/17/11	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.78	
	1/24/11	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.53	
	1/31/11	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.51	
	2/7/11	J	0.000058		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.58	
	2/14/11	J	0.000052		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.63	
	2/24/11	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.79	
	3/1/11	J	0.000057		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.36	
	3/11/11	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.80	
	3/18/11	J	0.000060		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.66	
	3/25/11	J	0.000054		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.10	
	4/1/11	J	0.000084		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.22	
	4/6/11	J	0.000055		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.44	
	4/13/11	U	0.000042		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.36	
	4/19/11	J	0.000055		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.07	
	4/25/11	J	0.000076		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		8.04	
	5/3/11	J	0.000049		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		7.18	
	5/13/11	J	0.000045		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.73	
	5/20/11	J	0.000048		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.75	

TABLE 3.1-1
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
TREATMENT SYSTEM EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG		
TREATED GROUNDWATER DISCHARGE STANDARDS (mg/L)[5]			0.01			0.38			0.325			NA[4]			0.164			NA		6.0 - 9.0	
ST-C Continued	5/26/11	J	0.000047		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		6.81	
	6/2/11	U	0.000042		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.02	
	6/8/11	J	0.000060		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.60	
	6/16/11	J	0.000079		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.43	
	6/22/11	J	0.000084		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.23	
	6/30/11	J	0.000104		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.32	
	7/7/11	J	0.000078		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.50	
	7/11/11	J	0.000126		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.25	
	7/22/11	J	0.000092		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.38	
	7/29/11	J	0.000101		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.38	
	8/4/11	J	0.000079		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.27	
	8/8/11	J	0.000082		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.34	
	8/19/11	J	0.000104		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.14	
	8/25/11	J	0.000108		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.39	
	9/1/11	J	0.000077		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.17	
	9/6/11	J	0.000102		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.00	
	9/12/11	J	0.000110		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		6.82	
	9/19/11		0.001950		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.26	
	9/26/11	J	0.000049		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		6.99	
	10/3/11	J	0.000084		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.22	
	10/10/11	J	0.000051		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.24	
	10/17/11	J	0.000091		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.20	
	10/27/11	J	0.001100		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.18	
	11/4/11	U	0.000042		U	0.0018		J	0.0015		U	0.0013		U	0.0017		U	0.0011		6.58	
	11/11/11	J	0.000084		U	0.0018		J	0.0013		U	0.0013		U	0.0017		U	0.0011		6.85	
	11/16/11	J	0.000071		U	0.0018		J	0.0016		U	0.0013		U	0.0017		U	0.0011		6.50	
	11/20/11	J	0.000063		U	0.0018		J	0.0017		U	0.0013		U	0.0017		U	0.0011		6.35	
	12/2/11	U	0.000042		U	0.0018		J	0.0014		U	0.0013		U	0.0017		U	0.0011		6.58	
	12/9/11	J	0.000052		U	0.0018		J	0.0014		U	0.0013		U	0.0017		U	0.0011		6.58	
	12/16/11		0.001480		U	0.0018		J	0.0015		U	0.0013		U	0.0017		U	0.0011		6.42	
	12/20/11	J	0.000048		U	0.0018		J	0.0016		U	0.0013		U	0.0017		U	0.0011		6.64	
	12/30/11	J	0.000046		U	0.0018		J	0.0013		U	0.0013		U	0.0017		U	0.0011		7.25	

NOTES:
1) mg/L - milligrams per liter
2) Grey cells indicate analyses not requested.
3) Q - Qualifier
< - Not detected (ND) at a value greater than the reporting limit (RL), for data prior to 2/24/06.
< - Not detected at a value greater than the method detection limit (MDL). (noted in Result column, for data 2/24/06 to 12/31/08.
U - Not detected at a value greater than the method detection limit (MDL), noted in Result column, for data 12/31/08 to present.
B - Indicates that a value for an inorganic analysis is an estimate. It is used when a compound is determined to be greater then the MDL but at a concentration less than the quantitation limit of the method, for data prior to 2/24/06.
B - Indicates that the compound was found in the blank sample for both inorganic and metals analysis, for data 2/24/06 to 12/31/08.
H - Indicates a sample was prepped or analyzed beyond the specified holding time
J - Value for an organic analysis is an estimate, for data prior to 2/24/06.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value, for data 2/24/06 to 12/31/08.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value, for data 12/31/08to present.
4) Flag
B - Indicates that an analyte is present in the method blank as well as in the sample.
J - Value is an estimate; result falls within the MDL and the limit of quantitation (LQ) (Lancaster Laboratories).
Y - Used to identify a spike or spike duplicate recovery is outside the specified quality control limits
5) Treated groundwater discharge limitations recommended by the EPA in a letter dated 7/20/1998 to Mr. Ron Weddell.
6) ST - Sample tap; sample tap either (A, B, or C) depends on arrangement of carbon canisters, which changes after each carbon change out.

TABLE 3.1-2
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
RECOVERY WELLS

SAMPLE	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE			
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	
CA050B	5/18/98		3.9			52			1.3		<	0.5			0.33		<	0.5		
	5/29/98		4.2			116			1.8		<	0.2			0.34		<	0.1		
	7/1/98		4.0			125			2.1		<	0.1			0.34		<	0.1		
	7/28/98		3.3			128			1.9		<	0.2			0.31		<	0.1		
	8/25/98		3.4			130			2.0		<	0.2			0.29		<	0.1		
	12/22/98		2.2			142			2.3			0.012	J		0.24			0.004	J	
	4/28/99		1.8			89			1.6		<	0.2			0.19		<	0.1		
	6/30/99		1.7			50			1.4		<	0.1			0.16		<	0.05		
	10/20/99		1.52			44.3			0.9		<	0.1			0.099		<	0.05		
	2/2/00		1.46			77.4			0.9		<	0.05			0.11		<	0.025		
	9/27/00		0.44			40			1.1		<	1		<	0.2		<	0.2		
	1/10/01		1.08			74			1.1		<	2		<	0.4		<	0.4		
	5/30/01		0.94			74			1.1		<	2		<	0.5		<	0.5		
	10/22/01		0.78			75			0.9		<	4		<	0.8		<	0.8		
	3/25/02		0.45			14			0.5		<	0.5		<	0.1		<	0.1		
	8/12/02		0.69			53			0.7		<	2		<	0.5		<	0.5		
	1/3/03		0.7			65			0.7		<	2		<	0.5		<	0.5		
	5/19/03		0.87			70			0.8		<	2		<	0.4		<	0.4		
	10/6/03		0.79			64			0.8		<	2		<	0.5		<	0.5		
	2/23/04		0.41			64			0.9		<	2		<	0.5		<	0.5		
	7/13/04		0.71			68			0.8		<	2		<	0.5		<	0.5		
	11/29/04		0.96			78			0.8		<	2		<	0.4		<	0.4		
	5/16/05		0.813			34			0.5		<	1		J	0.11		<	0.2		
	5/3/06		0.59			38			0.6		J,B	0.13		J	0.14		<	0.064		
	9/20/07		1.6			69			0.7		<	0.4		J	0.26		<	0.13		
	10/13/08		0.54			39			0.5		<	0.8		J	0.14		<	0.12		
	7/9/09		0.503			40			0.4		U	0.0005			0.12			0.013		
	7/9/09		0.503			40			0.4		<	0.0005			0.12			0.013		
	7/6/10		0.393			52			0.5		U	0.0005			0.14			0.013		
	7/22/11		0.404			35.0			0.45		U	0.065		J	0.11		U	0.055		pH: 6.81
CA051B	5/18/98		0.98			73			1.20		<	0.5		<	0.5		<	0.5		
	5/29/98		0.88			94			1.60		<	0.2			0.11		<	0.1		
	7/1/98		0.76			79			1.80		<	0.2			0.11		<	0.1		
	7/28/98		0.61			69			1.50		<	0.1			0.078		<	0.05		
	8/25/98		0.54			64			1.60		<	0.05			0.075			0.007	J	
	12/22/98		0.36			59			2.00		<	0.02			0.083		<	0.02		
	4/28/99		0.37			37			1.60		<	0.05			0.061			0.004	J	
	6/30/99		0.33			29			1.60			0.005	J		0.063			0.004	J	
	10/20/99		0.342			37.2			1.50		<	0.02			0.072			0.006452	J	
	2/2/00		0.312			40.5			1.40		<	0.02			0.06			0.00478	J	
	9/27/00		0.201			21			1.50		<	1		<	0.2		<	0.2		
	1/10/01		0.37			11			0.98		<	0.2			0.06		<	0.05		
	5/30/01		0.16			12			1.00		<	0.5		<	0.1		<	0.1		
	10/22/01		0.56			52			7.00		<	2		<	0.4		<	0.4		
	3/25/02		0.045			13			1.20		<	0.5		<	0.1		<	0.1		
	8/12/02		0.072			15			1.20		<	0.005			0.05			0.005		
	1/3/03		0.067			5.6			0.92		<	0.001			0.04		<	0.002		
	5/19/03		0.101			17			0.87		<	0.1			0.04		<	0.02		
	10/6/03		0.096			15			0.90		<	0.5		<	0.1		<	0.1		
	2/23/04		0.049			4.4			0.73		<	0.1			0.04		<	0.02		
	7/13/04		0.04			4.3			0.83		<	0.1			0.05		<	0.02		
	11/29/04		0.15			21			0.90		<	1		<	0.2		<	0.2		
	5/16/05		0.116			9.7			0.73		<	0.25		J	0.038		<	0.05		
	5/3/06		0.081			12			0.72		J,B	0.052		J	0.045		<	0.016		
	9/20/07		0.13			12			0.75		<	0.08		J	0.029		<	0.026		
	10/13/08		0.065			12			0.54		<	0.16		J	0.04		<	0.025		
	7/9/09		0.0958			8.5			0.41		U	0.0005			0.03		J	0.0044		
	7/9/09		0.0958			8.5			0.41		<	0.0005			0.03		J	0.0044		
	7/6/10		0.0134			1.6			0.32		U	0.0005			0.02		J	0.0067		
	7/22/11		0.0268			5.0			0.44		U	0.0065		J	0.025		U	0.0055		pH: 6.60
CA052B	5/18/98		5.8			49			1.8		<	0.5			1.4		<	0.5		
	5/29/98		0.30			64			2.5		<	0.2			1.8			0.092	J	
	6/24/98		0.23																	
	7/1/98		0.32			66			2.2		<	0.2			1.5			0.076	J	
	7/28/98		0.24			72			1.6		<	0.1			1.0			0.051		
	8/25/98		0.27			207			1.8		<	0.2			1.2			0.062	J	

TABLE 3.1-2
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
RECOVERY WELLS

SAMPLE	DATE	ANALYTICAL RESULTS (mg/L)[1,2]																		COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE			
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	
CA052B Continued	4/28/99		0.25			34			1.4		<	0.1			0.4			0.02	J	
	6/30/99		0.09			23			0.9		<	0.04			0.4			0.016	J	
	10/20/99		0.87			55.1			2.3			0.029			0.48			0.025	J	
	2/2/00		0.0472			12			0.7			0.00125	J		0.15			0.00795		
	9/27/00		0.044			25			1.1		<	1		<	0.2		<	0.2		
	1/10/01		0.06			16			0.6		<	0.5		<	0.1		<	0.1		
	5/30/01		0.031			21			0.8		<	0.5			0.1		<	0.1		
	10/22/01		0.036			21			0.6		<	1		<	0.2		<	0.2		
	3/25/02		0.024			22			0.6		<	1		<	0.2		<	0.2		
	8/12/02		0.025			22			0.5		<	0.5			0.1		<	0.1		
	1/3/03		0.025			16			0.6		<	0.5			0.1		<	0.1		
	5/19/03		0.025			17			0.5		<	0.5			0.1		<	0.1		
	10/6/03		0.023			18			0.5		<	0.5			0.1		<	0.1		
	2/23/04		0.025			18			0.5		<	0.5			0.1		<	0.1		
	7/13/04		0.018			19			0.4		<	0.5			0.2		<	0.1		
	11/29/04		0.02			17			0.4		<	0.5			0.1		<	0.1		
	5/16/05		0.0197			12			0.39		<	0.5		J	0.077		<	0.1		
	5/3/06		0.016			10			0.38		J,B	0.11		J	0.079		<	0.032		
	9/20/07		0.025			13			0.4		<	0.08			0.14		<	0.026		
	10/13/08		0.014			8			0.3		<	0.16		J	0.056		<	0.025		
	7/9/09		0.0134			10			0.27		<	0.0005			0.074		J	0.0027		
	7/9/09		0.0134			10			0.3		U	0.0005			0.074		J	0.0027		
	7/6/10		0.007			8.8			0.26		U	0.0005			0.098		J	0.0031		
	7/22/11		0.00559			9.9			0.30		U	0.032		J	0.079		U	0.028		pH: 6.83
CA0U23B	5/18/98		3.9			88			2.6		<	0.5		<	0.5		<	0.5		
	5/29/98		2.5			118			3.4			0.04	J		0.64			0.026	J	
	7/1/98		2.4			112			3.4			0.055	J		0.63			0.025	J	
	7/28/98		2.4			119			3.4			0.025	J		0.62		<	0.1		
	8/25/98		2.8			124			3.4			0.032			0.55		<	0.1		
	12/22/98		1.4			127			3.6			0.039	J		0.79			0.044		
	4/28/99		1.2			81			2.8		<	0.2			0.60		<	0.1		
	6/30/99		1.2			54			3.0			0.043	J		0.59			0.031	J	
	10/20/99		0.0887			23.6			0.8			0.004479	J		0.30			0.016		
	2/2/00		0.705			58.9			2.2			0.01564	J		0.47			0.0258		
	9/27/00		0.78			45			2.0		<	1			0.40		<	0.2		
	1/10/01		0.044			48			2.0		<	1			0.40		<	0.2		
	5/30/01		0.5			25			0.8		<	1			0.20		<	0.2		
	10/22/01		0.41			38			1.3		<	1			0.50		<	0.2		
	3/25/02		0.22			52			19.0		<	2			0.50		<	0.4		
	8/12/02		0.45			36			1.3		<	1			0.40		<	0.2		
	1/3/03		0.49			44			1.4		<	2			0.50		<	0.4		
	5/19/03		0.23			31			1.8		<	1			0.40		<	0.2		
	10/6/03		0.26			31			2.2		<	1			0.50		<	0.2		
	2/23/04		0.27			32			2.0		<	1			0.60		<	0.2		
	7/13/04		0.3			36			1.5		<	1			0.60		<	0.2		
	11/29/04		0.31			40			1.6		<	1			0.60		<	0.2		
	5/16/05		0.259			38			1.6		J	0.042			0.52		J	0.064		
	5/3/06		0.14			28			1.7		J,B	0.15			0.41		<	0.064		
	9/20/07		0.25			26			1.2		<	0.2			0.38		J	0.076		
	10/13/08		0.14			21			1.1		<	0.4			0.35		<	0.063		
	7/9/09		0.141			20			1.0		J	0.0036			0.31			0.039		
	7/6/10		0.123			20			1.2		J	0.0034			0.45			0.051		
	7/22/11		0.102			15.0			0.89		U	0.032			0.31		J	0.031		pH: 6.77

NOTE:
1) mg/L - milligrams per liter
2) Grey cells indicate analyses not requested.
3) Q - Qualifier
< - Not detected (ND) at a value greater than the reporting limit (RL), for data prior to 2/24/06.
< - Not detected at a value greater than the method detection limit (MDL), noted in Result column, for data 2/24/06 to 12/31/08.
U - Not detected at a value greater than the method detection limit (MDL), noted in Result column, for data 12/31/08 to present.
J - Value for an organic analysis is an estimate, for data prior to 2/24/06.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value, for data 2/24/06 to 12/31/08.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value, for data 12/31/08 to present.
4) Flag
B - Indicates that an analyte is present in the method blank as well as in the sample.
J - Value is an estimate; result falls within the MDL and the limit of quantitation (LQ) (Lancaster Laboratories).

TABLE 3.1-3
CAPA GROUNDWATER TREATMENT SYSTEM
ANALYTICAL RESULTS
STRIPPER EFFLUENT

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,2] MERCURY Q[3]	MERCURY RESULT	MERCURY FLAG[4]	CARBON TETRACHLORIDE Q	CARBON TETRACHLORIDE RESULT	CARBON TETRACHLORIDE FLAG	CHLOROFORM Q	CHLOROFORM RESULT	CHLOROFORM FLAG	METHYLENE CHLORIDE Q	METHYLENE CHLORIDE RESULT	METHYLENE CHLORIDE FLAG	TETRACHLOROETHENE Q	TETRACHLOROETHENE RESULT	TETRACHLOROETHENE FLAG	TRICHLOROETHENE Q	TRICHLOROETHENE RESULT	TRICHLOROETHENE FLAG	COMMENTS
ST-9	5/18/98					0.63			0.034			0.0016			0.002		<	0.001		
	5/29/98		1.7																	
	6/10/98		1.0																	
	6/24/98		0.6																	
	7/1/98					0.33			0.018			0.00047	J		0.00079	J	<	0.001		
	7/28/98					0.32			0.019			0.00017	J		0.00062	J	<	0.001		
	8/25/98					0.26			0.018		<	0.002			0.00062	J	<	0.001		
	9/23/98					0.17			0.013		<	0.002			0.001		<	0.001		
	10/1/98					0.29			0.021		<	0.002			0.0008	J	<	0.001		
	10/7/98					0.037			0.006		<	0.002		<	0.001		<	0.001		
	12/16/98					0.026			0.0009		<	0.002		<	0.001		<	0.001		
	2/17/99					0.146			0.00324		<	0.002			0.001		<	0.001		
	3/10/99					0.050415			0.001822		<	0.002			0.00034	J	<	0.001		
	4/6/99					0.30273			0.006957		<	0.002			0.003346		<	0.001		
	5/5/99					0.872			0.062		<	0.002			0.007			0.0004	J	
	9/1/99					0.178			0.007		<	0.002			0.000979	J	<	0.001		
	9/29/99					0.033			0.0009		<	0.002			0.000204	J	<	0.001		
	10/27/99					11.931			0.516	J	<	0.002			0.172	J	<	0.001		
	2/24/00					0.00607			0.000256	J	<	0.002		<	0.001		<	0.001		
	8/9/00				<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		
	10/5/00					0.048			0.011		<	0.005		<	0.001		<	0.001		
	1/10/01					0.001		<	0.001		<	0.005		<	0.001		<	0.001		
	5/30/01					0.005			0.021		<	0.005		<	0.001		<	0.001		
	10/22/01				<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		
	3/25/02				<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		
	8/12/02				<	0.001			0.006		<	0.005		<	0.001		<	0.001		
	1/3/03					0.003		<	0.001		<	0.005		<	0.001		<	0.001		
	5/19/03					0.001		<	0.001		<	0.005		<	0.001		<	0.001		
	10/6/03					0.001		<	0.001		<	0.005		<	0.001		<	0.001		
	11/3/03					0.001		<	0.001		<	0.005		<	0.001		<	0.001		
	2/23/04					0.002		<	0.001		<	0.005		<	0.001		<	0.001		
	7/13/04				<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		
	11/29/04					0.001		<	0.001		<	0.005		<	0.001		<	0.001		
	5/16/05					0.001		J	0.4		<	0.005		<	0.001		<	0.001		
	6/13/05		0.106	B																
	1/5/06				J	0.0007		J	0.0002		<	0.005		<	0.001		<	0.001		
	9/18/06				<	0.00025			0.001		<	0.00053		<	0.0002		<	0.00032		
	7/20/07				<	0.00025			0.0016		<	0.001		<	0.0002		<	0.00032		
	11/29/07				J	0.00042		<	0.0002		<	0.001		<	0.0002		<	0.00032		
	3/20/08				J	0.00073		<	0.0002		<	0.001		<	0.0002		<	0.00032		
	10/22/08					0.034			0.0014		<	0.002		J	0.0005		<	0.00032		
	11/26/08					0.0023		J	0.0002		<	0.002		<	0.0002		<	0.00032		
	3/4/09				J	0.0016		U	0.0005		U	0.0005		U	0.0006		U	0.0005		ALS Laboratory Group (2009)
	12/8/09				J	0.00069		U	0.0005		U	0.0005		U	0.0006		U	0.0005		
	3/10/10				U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		
	8/18/10				J	0.0038		J	0.0037		U	0.0005		U	0.0006		U	0.0005		
	8/30/10		0.18		U	0.0005		U	0.0005		U	0.0005		U	0.0006		U	0.0005		pH: 6.77
	3/18/11		0.188		J	0.0016		U	0.0005		U	0.0005		U	0.0006		U	0.0005		pH: 8.03
	7/29/11		0.177		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		pH: 7.80

NOTES:
1) mg/L - milligrams per liter
2) Grey cells indicate analyses not requested.
3) Q - Qualifier
< - Not detected (ND) at a value greater than the reporting limit (RL), for data prior to 2/24/06.
< - Not detected at a value greater than the method detection limit (MDL), noted in Result column, for data 2/24/06 to 12/31/08.
U - Not detected at a value greater than the method detection limit (MDL), noted in Result column, for data 12/31/08 to present.
J - Value for an organic analysis is an estimate, for data prior to 2/24/06.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value, for data 2/24/06 to 12/31/08.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value, for data 12/31/08 to present.
4) Flag
B - Indicates that an analyte is present in the method blank as well as in the sample.
J - Value is an estimate; result falls within the MDL and the limit of quantitation (LQ) (Lancaster Laboratories).

TABLE 3.1-4
CAPA GROUNDWATER TREATMENT SYSTEM
RECOVERY WELL PUMPING DATA

YEAR	MONTH	CA050B (gal)[1]	CA051B (gal)	CA052B (gal)	CA0U23B (gal)	TOTAL INFLUENT (gal)
1998	June	94,940	120,650	44,346	59,007	318,943
	July	94,464	143,035	46,670	103,993	388,162
	August	82,659	123,384	0	86,436	292,479
	September	52,560	168,124	27,020	13,602	261,306
	October	148,429	106,740	0	45,082	300,251
	November	84,170	70,057	0	90,008	244,235
	December	134,556	143,925	0	140,915	419,396
	TOTAL	**691,778**	**875,915**	**118,036**	**539,043**	**2,224,772**
1999	January	56,244	58,568	38,400	57,835	211,047
	February	43,480	41,230	14,454	66,873	166,037
	March	32,402	52,900	17,521	57,332	160,155
	April	86,908	73,850	25,635	89,265	275,658
	May	52,110	43,020	30,810	53,470	179,410
	June	51,070	50,110	32,000	52,310	185,490
	July	94,520	137,330	70,210	98,850	400,910
	August	60,300	91,700	62,790	63,870	278,660
	September	54,440	84,460	55,250	61,830	255,980
	October	59,750	118,130	65,400	82,860	326,140
	November	61,620	84,320	63,950	67,910	277,800
	December	33,170	41,080	38,180	37,680	150,110
	TOTAL	**686,014**	**876,698**	**514,600**	**790,085**	**2,867,397**
	CUMULATIVE TOTAL, ALL WELLS					**5,092,169**
2000	January	63,290	84,390	71,800	77,950	297,430
	February	77,580	96,090	84,360	79,630	337,660
	March	79,810	101,600	81,090	70,760	333,260
	April	58,820	75,800	63,660	56,470	254,750
	May	90,340	67,330	76,340	74,720	308,730
	June	94,060	111,140	73,990	83,730	362,920
	July	88,230	65,640	46,950	67,490	268,310
	August	60,300	91,700	62,790	63,870	278,660
	September	37,980	84,460	55,250	61,830	239,520
	October	103,210	67,430	77,250	96,270	344,160
	November	102,960	71,210	91,510	93,480	359,160
	December	90,830	2,450	76,480	41,210	210,970
	TOTAL	**947,410**	**919,240**	**861,470**	**867,410**	**3,595,530**
	CUMULATIVE TOTAL, ALL WELLS					**8,687,699**
2001	January	106,250	57,650	83,430	88,310	335,640
	February	65,070	29,070	75,050	100,330	269,520
	March	69,460	62,430	65,310	86,790	283,990
	April	71,520	57,640	52,830	63,090	245,080
	May	120,620	79,750	81,700	52,480	334,550
	June	61,820	56,160	89,260	47,550	254,790
	July	52,500	61,180	74,640	66,440	254,760
	August	69,270	72,300	118,580	81,120	341,270
	September	44,410	49,250	77,680	77,570	248,910
	October	107,030	33,520	66,620	47,870	255,040
	November	59,710	16,210	53,650	48,180	177,750
	December	81,500	81,500	71,100	60,800	294,900
	TOTAL	**909,160**	**656,660**	**909,850**	**820,530**	**3,296,200**
	CUMULATIVE TOTAL, ALL WELLS					**11,983,899**
2002	January	98,390	36,800	95,520	61,250	291,960
	February	74,600	28,450	72,020	52,110	227,180
	March	42,770	58,080	55,110	54,960	210,920
	April	84,520	85,820	75,770	82,670	328,780
	May	50,210	49,080	68,130	70,820	238,240
	June	83,990	77,020	64,090	73,860	298,960
	July	103,700	91,110	123,550	89,760	408,120
	August	79,220	75,700	80,840	73,170	308,930
	September	68,450	67,680	65,470	57,150	258,750
	October	83,260	83,700	83,860	86,470	337,290
	November	47,870	49,790	71,700	70,480	239,840
	December	83,500	74,330	67,720	82,790	308,340
	TOTAL	**900,480**	**777,560**	**923,780**	**855,490**	**3,457,310**
	CUMULATIVE TOTAL, ALL WELLS					**15,441,209**
2003	January	84,500	58,060	51,490	73,880	267,930
	February	49,680	48,730	52,040	23,230	173,680
	March	110,080	110,650	62,330	75,600	358,660
	April	83,350	64,460	73,230	60	221,100
	May	56,140	67,810	66,560	36,000	226,510
	June	80,680	89,200	62,490	35,640	268,010
	July	91,660	93,820	96,350	39,310	321,140
	August	64,540	77,480	94,940	29,610	266,570
	September	94,950	104,220	127,540	49,560	376,270
	October	36,780	83,190	100,920	68,590	289,480
	November	231,100	38,770	88,930	58,910	417,710
	December	110,190	27,090	108,400	24,090	269,770
	TOTAL	**1,093,650**	**863,480**	**985,220**	**514,480**	**3,456,830**
	CUMULATIVE TOTAL, ALL WELLS					**18,898,039**
2004	January	129,290	55,140	128,330	4,280	317,040
	February	97,630	59,860	58,300	35,060	250,850
	March	118,330	82,990	104,600	80,830	386,750
	April	76,220	51,410	52,430	61,080	241,140
	May	46,090	57,900	43,250	44,740	191,980
	June	66,830	62,810	64,390	49,760	243,810
	July	65,080	47,690	60,780	44,380	217,930
	August	67,980	79,900	61,700	45,760	255,360
	September	16,150	98,950	71,040	51,720	237,860
	October	15,930	42,940	69,920	50,340	179,130
	November	103,390	93,870	93,770	54,780	345,810
	December	64,540	77,000	76,890	56,320	274,750
	TOTAL	**867,460**	**810,460**	**885,400**	**579,090**	**3,142,410**
	CUMULATIVE TOTAL, ALL WELLS					**22,040,449**

TABLE 3.1-4
CAPA GROUNDWATER TREATMENT SYSTEM
RECOVERY WELL PUMPING DATA

YEAR	MONTH	CA050B (gal)[1]	CA051B (gal)	CA052B (gal)	CA0U23B (gal)	TOTAL INFLUENT (gal)
2005	January	78,750	35,700	65,760	47,560	227,770
	February	103,650	88,410	92,250	65,270	349,580
	March	95,120	47,260	78,380	51,580	272,340
	April	96,680	51,890	81,280	51,610	281,460
	May	103,370	102,640	89,680	38,940	334,630
	June	95,330	11,800	29,580	16,830	153,540
	July	64,660	54,670	56,790	18,940	195,060
	August	74,190	68,130	64,470	22,380	229,170
	September	73,810	75,280	63,620	38,040	250,750
	October	84,450	20,350	73,040	52,010	229,850
	November	125,440	18,950	99,370	38,910	282,670
	December	94,040	62,280	53,740	16,780	226,840
	TOTAL	**1,089,490**	**637,360**	**847,960**	**458,850**	**3,033,660**
	CUMULATIVE TOTAL, ALL WELLS					**25,074,109**
2006	January	91,090	65,510	62,440	67,880	286,920
	February	99,040	69,830	180	24,420	193,470
	March	82,410	69,150	40,220	50,430	242,210
	April	107,470	96,190	105,340	43,880	352,880
	May	130,240	79,280	127,530	73,690	410,740
	June	95,670	96,640	102,141	57,010	351,461
	July	114,830	110,010	131,199	67,870	423,909
	August	86,450	83,190	108,970	57,850	336,460
	September	5,190	113,640	146,870	74,010	339,710
	October	0	95,820	99,390	16,770	211,980
	November	36,240	93,710	68,760	43,920	242,630
	December	93,760	66,030	48,040	27,460	235,290
	TOTAL	**942,390**	**1,039,000**	**1,041,080**	**605,190**	**3,627,660**
	CUMULATIVE TOTAL, ALL WELLS					**28,701,769**
2007	January	56,240	73,810	0	59,320	189,370
	February	47,980	68,410	33,980	28,040	178,410
	March	41,510	41,310	34,260	33,140	150,220
	April	56,420	67,350	57,220	51,730	232,720
	May	57,130	55,440	56,500	28,740	197,810
	June	76,370	79,230	68,240	45,520	269,360
	July	86,610	70,410	43,660	31,250	231,930
	August	22,350	100,910	6,030	41,540	170,830
	September	58,700	73,050	51,800	12,340	195,890
	October	81,650	115,960	88,890	18,300	304,800
	November	17,440	77,710	80,430	50	175,630
	December	39,410	83,380	101,580	30,440	254,810
	TOTAL	**641,810**	**906,970**	**622,590**	**380,410**	**2,551,780**
	CUMULATIVE TOTAL, ALL WELLS					**31,253,549**
2008	January	75,870	85,800	71,610	48,490	281,770
	February	49,440	52,010	49,930	21,670	173,050
	March	28,360	89,270	77,750	34,140	229,520
	April	115,960	111,690	123,590	54,420	405,660
	May	61,950	65,360	97,900	43,270	268,480
	June	117,100	59,990	77,420	24,440	278,950
	July	90,450	96,410	113,900	51,380	352,140
	August	89,370	94,570	86,520	57,080	327,540
	September	77,560	88,830	37,870	56,980	261,240
	October	111,200	119,510	130,040	49,750	410,500
	November	117,320	89,360	107,970	45,400	360,050
	December	118,970	99,220	109,240	44,320	371,750
	TOTAL	**1,053,550**	**1,052,020**	**1,083,740**	**531,340**	**3,720,650**
	CUMULATIVE TOTAL, ALL WELLS					**34,974,199**
2009	January	102,620	98,940	68,640	39,400	309,600
	February	89,130	133,220	88,930	42,180	353,460
	March	89,510	97,320	84,060	44,870	315,760
	April	120,620	66,890	106,260	63,360	357,130
	May	78,350	90,300	101,380	60,280	330,310
	June	80,660	77,260	88,190	45,520	291,630
	July	91,040	100,080	98,360	53,990	343,470
	August	75,240	72,520	88,650	39,080	275,490
	September	89,350	75,160	91,560	46,250	302,320
	October	96,500	95,480	102,630	49,900	344,510
	November	113,300	99,640	111,400	52,860	377,200
	December	105,430	124,530	76,840	46,590	353,390
	TOTAL	**1,131,750**	**1,131,340**	**1,106,900**	**584,280**	**3,954,270**
	CUMULATIVE TOTAL, ALL WELLS					**38,928,469**
2010	January	52,720	57,060	56,230	38,510	204,520
	February	83,730	89,630	91,960	59,560	324,880
	March	65,750	84,780	103,060	63,970	317,560
	April	90,970	89,470	94,390	34,190	309,020
	May	61,190	68,940	84,160	55,090	269,380
	June	60,580	60,580	81,780	55,590	258,530
	July	87,350	93,790	89,940	66,060	337,140
	August	75,280	80,100	98,830	77,610	331,820
	September	78,290	68,920	82,540	28,350	258,100
	October	70,800	62,941	86,310	45,620	265,671
	November	84,990	93,090	87,220	71,100	336,400
	December	80,300	74,120	78,910	62,000	295,330
	TOTAL	**891,950**	**923,421**	**1,035,330**	**657,650**	**3,508,351**
	CUMULATIVE TOTAL, ALL WELLS					**42,436,820**

TABLE 3.1-4
CAPA GROUNDWATER TREATMENT SYSTEM
RECOVERY WELL PUMPING DATA

YEAR	MONTH	CA050B (gal)[1]	CA051B (gal)	CA052B (gal)	CA0U23B (gal)	TOTAL INFLUENT (gal)
2011	January	78,430	71,580	92,590	63,870	306,470
	February	63,050	55,840	48,380	34,460	201,730
	March	76,350	36,750	82,880	58,020	254,000
	April	71,410	53,250	90,600	75,830	291,090
	May	99,970	12,790	82,730	51,340	246,830
	June	44,800	162,810	32,220	68,900	308,730
	July	99,970	103,510	78,120	64,040	345,640
	August	101,610	102,590	75,780	65,340	345,320
	September	98,190	95,810	81,800	66,250	342,050
	October	89,080	71,740	92,250	74,890	327,960
	November	54,220	61,580	67,800	46,580	230,180
	December	46,060	35,400	53,940	28,430	163,830
	TOTAL	**923,140**	**863,650**	**879,090**	**697,950**	**3,363,830**
	CUMULATIVE TOTAL, ALL WELLS					**45,800,650**

NOTE:
1) gal - gallons

TABLE 3.1-5
CAPA GROUNDWATER TREATMENT SYSTEM
APPROXIMATE MASS OF MERCURY REMOVED
RECOVERY WELLS

YEAR	MONTH	CA050B			CA051B			CA052B			CA0U23B			MERCURY REMOVED, ALL WELLS
		CUMULATIVE FLOW	MERCURY		CUMULATIVE FLOW	MERCURY		CUMULATIVE FLOW	MERCURY		CUMULATIVE FLOW	MERCURY		
		(gal)[1]	(mg/L)[2,3]	(lbs)[4]	(gal)	(mg/L)	(lbs)	(gal)	(mg/L)	(lbs)	(gal)	(mg/L)	(lbs)	(lbs)
1998	June	94,940	4.2	3.33	120,650	0.76	0.77	44,346	0.32	0.12	59,007	2.8	1.38	5.59
	July	94,464	4	3.15	143,035	0.61	0.73	46,670	0.27	0.11	103,993	1.4	1.22	5.20
	August	82,659	3.3	2.28	123,384	0.54	0.56	0	0.25	0.00	86,436	1.2	0.87	3.70
	September	52,560	3.4	1.49	168,124	0.36	0.51	27,020	0.09	0.02	13,602	1.2	0.14	2.15
	October	148,429	3.4	4.21	106,740	0.36	0.32	0	0.09	0.00	45,082	1.2	0.45	4.98
	November	84,170	3.4	2.39	70,057	0.36	0.21	0	0.09	0.00	90,008	1.2	0.90	3.50
	December	134,556	3.4	3.82	143,925	0.36	0.43	0	0.09	0.00	140,915	1.2	1.41	5.66
	TOTAL	**691,778**		**20.67**	**875,915**		**3.52**	**118,036**		**0.24**	**539,043**		**6.38**	**30.79**
1999	January	56,244	2.2	1.03	58,568	0.37	0.18	38,400	0.09	0.03	57,835	0.0887	0.04	1.29
	February	43,480	2.2	0.80	41,230	0.37	0.13	14,454	0.09	0.01	66,873	0.0887	0.05	0.99
	March	32,402	2.2	0.59	52,900	0.37	0.16	17,521	0.09	0.01	57,332	0.0887	0.04	0.81
	April	86,908	2.2	1.60	73,850	0.37	0.23	25,635	0.09	0.02	89,265	0.0887	0.07	1.91
	May	52,110	1.8	0.78	43,020	0.33	0.12	30,810	0.87	0.22	53,470	0.705	0.31	1.44
	June	51,070	1.8	0.77	50,110	0.33	0.14	32,000	0.87	0.23	52,310	0.705	0.31	1.45
	July	94,520	1.7	1.34	137,330	0.342	0.39	70,210	0.0472	0.03	98,850	0.78	0.64	2.40
	August	60,300	1.7	0.86	91,700	0.342	0.26	62,790	0.0472	0.02	63,870	0.78	0.42	1.56
	September	54,440	1.7	0.77	84,460	0.342	0.24	55,250	0.0472	0.02	61,830	0.78	0.40	1.44
	October	59,750	1.7	0.85	118,130	0.342	0.34	65,400	0.0472	0.03	82,860	0.78	0.54	1.75
	November	61,620	1.52	0.78	84,320	0.312	0.22	63,950	0.044	0.02	67,910	0.044	0.02	1.05
	December	33,170	1.52	0.42	41,080	0.312	0.11	38,180	0.044	0.01	37,680	0.044	0.01	0.56
	TOTAL	**686,014**		**10.59**	**876,698**		**2.51**	**514,600**		**0.67**	**790,085**		**2.86**	**16.63**
	CUMULATIVE TOTAL	***1,377,792***		***31.26***	***1,752,613***		***6.03***	***632,636***		***0.91***	***1,329,128***		***9.22***	***47.42***
2000	January	63,290	1.52	0.80	84,390	0.312	0.22	71,800	0.044	0.03	77,950	0.044	0.03	1.08
	February	77,580	1.46	0.95	96,090	0.201	0.16	84,360	0.06	0.04	79,630	0.5	0.33	1.48
	March	79,810	1.46	0.97	101,600	0.201	0.17	81,090	0.06	0.04	70,760	0.5	0.30	1.48
	April	58,820	1.46	0.72	75,800	0.201	0.13	63,660	0.06	0.03	56,470	0.5	0.24	1.11
	May	90,340	1.46	1.10	67,330	0.201	0.11	76,340	0.06	0.04	74,720	0.5	0.31	1.56
	June	94,060	1.46	1.15	111,140	0.201	0.19	73,990	0.06	0.04	83,730	0.5	0.35	1.72
	July	88,230	1.46	1.08	65,640	0.201	0.11	46,950	0.06	0.02	67,490	0.5	0.28	1.49
	August	60,300	1.46	0.73	91,700	0.201	0.15	62,790	0.06	0.03	63,870	0.5	0.27	1.19
	September	37,980	1.46	0.46	84,460	0.201	0.14	55,250	0.06	0.03	61,830	0.5	0.26	0.89
	October	103,210	0.44	0.38	67,430	0.37	0.21	77,250	0.031	0.02	96,270	0.41	0.33	0.94
	November	102,960	0.44	0.38	71,210	0.37	0.22	91,510	0.031	0.02	93,480	0.41	0.32	0.94
	December	90,830	0.44	0.33	2,450	0.37	0.01	76,480	0.031	0.02	41,210	0.41	0.14	0.50
	TOTAL	**947,410**		**9.05**	**919,240**		**1.82**	**861,470**		**0.36**	**867,410**		**3.15**	**14.38**
	CUMULATIVE TOTAL	***2,325,202***		***40.30***	***2,671,853***		***7.85***	***1,494,106***		***1.27***	***2,196,538***		***12.37***	***61.80***
2001	January	106,250	1.08	0.96	57,650	0.16	0.08	83,430	0.036	0.03	88,310	0.22	0.16	1.22
	February	65,070	1.08	0.59	29,070	0.16	0.04	75,050	0.036	0.02	100,330	0.22	0.18	0.83
	March	69,460	1.08	0.63	62,430	0.16	0.08	65,310	0.036	0.02	86,790	0.22	0.16	0.89
	April	71,520	1.08	0.64	57,640	0.16	0.08	52,830	0.036	0.02	63,090	0.22	0.12	0.85
	May	120,620	1.08	1.09	79,750	0.16	0.11	81,700	0.036	0.02	52,480	0.22	0.10	1.31
	June	61,820	0.94	0.48	56,160	0.56	0.26	89,260	0.024	0.02	47,550	0.45	0.18	0.94
	July	52,500	0.94	0.41	61,180	0.56	0.29	74,640	0.024	0.01	66,440	0.45	0.25	0.96
	August	69,270	0.94	0.54	72,300	0.56	0.34	118,580	0.024	0.02	81,120	0.45	0.30	1.21
	September	44,410	0.94	0.35	49,250	0.56	0.23	77,680	0.024	0.02	77,570	0.45	0.29	0.89
	October	107,030	0.94	0.84	33,520	0.56	0.16	66,620	0.024	0.01	47,870	0.45	0.18	1.19
	November	59,710	0.78	0.39	16,210	0.045	0.01	53,650	0.025	0.01	48,180	0.49	0.20	0.60
	December	81,500	0.78	0.53	81,500	0.045	0.03	71,100	0.025	0.01	60,800	0.49	0.25	0.82
	TOTAL	**909,160**		**7.45**	**656,660**		**1.69**	**909,850**		**0.22**	**820,530**		**2.37**	**11.73**
	CUMULATIVE TOTAL	***3,234,362***		***47.75***	***3,328,513***		***9.54***	***2,403,956***		***1.49***	***3,017,068***		***14.74***	***73.53***
2002	January	98,390	0.78	0.64	36,800	0.045	0.01	95,520	0.025	0.02	61,250	0.49	0.25	0.92
	February	74,600	0.78	0.49	28,450	0.045	0.01	72,020	0.025	0.02	52,110	0.49	0.21	0.72
	March	42,770	0.78	0.28	58,080	0.045	0.02	55,110	0.025	0.01	54,960	0.49	0.22	0.54
	April	84,520	0.45	0.32	85,820	0.072	0.05	75,770	0.025	0.02	82,670	0.23	0.16	0.54
	May	50,210	0.45	0.19	49,080	0.072	0.03	68,130	0.025	0.01	70,820	0.23	0.14	0.37
	June	83,990	0.45	0.32	77,020	0.072	0.05	64,090	0.025	0.01	73,860	0.23	0.14	0.52
	July	103,700	0.45	0.39	91,110	0.072	0.05	123,550	0.025	0.03	89,760	0.23	0.17	0.64
	August	79,220	0.69	0.46	75,700	0.067	0.04	80,840	0.025	0.02	73,170	0.26	0.16	0.67
	September	68,450	0.69	0.39	67,680	0.067	0.04	65,470	0.025	0.01	57,150	0.26	0.12	0.57
	October	83,260	0.69	0.48	83,700	0.067	0.05	83,860	0.025	0.02	86,470	0.26	0.19	0.73
	November	47,870	0.69	0.28	49,790	0.067	0.03	71,700	0.025	0.01	70,480	0.26	0.15	0.47
	December	83,500	0.69	0.48	74,330	0.067	0.04	67,720	0.025	0.01	82,790	0.26	0.18	0.72
	TOTAL	**900,480**		**4.70**	**777,560**		**0.42**	**923,780**		**0.19**	**855,490**		**2.10**	**7.42**
	CUMULATIVE TOTAL	***4,134,842***		***52.45***	***4,106,073***		***9.97***	***3,327,736***		***1.68***	***3,872,558***		***16.84***	***80.95***

TABLE 3.1-5
CAPA GROUNDWATER TREATMENT SYSTEM
APPROXIMATE MASS OF MERCURY REMOVED
RECOVERY WELLS

YEAR	MONTH	CA050B			CA051B			CA052B			CA0U23B			MERCURY REMOVED, ALL WELLS
		CUMULATIVE FLOW	MERCURY		CUMULATIVE FLOW	MERCURY		CUMULATIVE FLOW	MERCURY		CUMULATIVE FLOW	MERCURY		
		(gal)[1]	(mg/L)[2,3]	(lbs)[4]	(gal)	(mg/L)	(lbs)	(gal)	(mg/L)	(lbs)	(gal)	(mg/L)	(lbs)	(lbs)
2003	January	84,500	0.7	0.49	58,060	0.101	0.05	51,490	0.023	0.01	73,880	0.27	0.17	0.72
	February	49,680	0.7	0.29	48,730	0.101	0.04	52,040	0.023	0.01	23,230	0.27	0.05	0.39
	March	110,080	0.7	0.64	110,650	0.101	0.09	62,330	0.023	0.01	75,600	0.27	0.17	0.92
	April	83,350	0.7	0.49	64,460	0.101	0.05	73,230	0.023	0.01	60	0.27	0.00	0.56
	May	56,140	0.7	0.33	67,810	0.101	0.06	66,560	0.023	0.01	36,000	0.27	0.08	0.48
	June	80,680	0.87	0.59	89,200	0.096	0.07	62,490	0.025	0.01	35,640	0.3	0.09	0.76
	July	91,660	0.87	0.67	93,820	0.096	0.08	96,350	0.025	0.02	39,310	0.3	0.10	0.86
	August	64,540	0.87	0.47	77,480	0.096	0.06	94,940	0.025	0.02	29,610	0.3	0.07	0.62
	September	94,950	0.87	0.69	104,220	0.096	0.08	127,540	0.025	0.03	49,560	0.3	0.12	0.92
	October	36,780	0.79	0.24	83,190	0.049	0.03	100,920	0.018	0.02	68,590	0.31	0.18	0.47
	November	231,100	0.79	1.52	38,770	0.049	0.02	88,930	0.018	0.01	58,910	0.31	0.15	1.71
	December	110,190	0.79	0.73	27,090	0.049	0.01	108,400	0.018	0.02	24,090	0.31	0.06	0.82
	TOTAL	**1,093,650**		**7.14**	**863,480**		**0.65**	**885,220**		**0.18**	**514,480**		**1.25**	**9.22**
	CUMULATIVE TOTAL	***5,228,492***		***59.60***	***4,969,553***		***10.62***	***4,312,956***		***1.87***	***4,387,038***		***18.09***	***90.17***
2004	January	129,290	0.79	0.85	55,140	0.049	0.02	128,330	0.018	0.02	4,280	0.31	0.01	0.91
	February	97,630	0.79	0.64	59,860	0.049	0.02	58,300	0.018	0.01	35,060	0.31	0.09	0.77
	March	118,330	0.41	0.40	82,990	0.04	0.03	104,600	0.02	0.02	80,830	0.259	0.17	0.62
	April	76,220	0.41	0.26	51,410	0.04	0.02	52,430	0.02	0.01	61,080	0.259	0.13	0.42
	May	46,090	0.41	0.16	57,900	0.04	0.02	43,250	0.02	0.01	44,740	0.259	0.10	0.28
	June	66,830	0.41	0.23	62,810	0.04	0.02	64,390	0.02	0.01	49,780	0.259	0.11	0.37
	July	65,080	0.71	0.39	47,690	0.15	0.06	60,780	0.0197	0.01	44,380	0.14	0.05	0.51
	August	67,980	0.71	0.40	79,900	0.15	0.10	61,700	0.0197	0.01	45,780	0.14	0.05	0.57
	September	16,150	0.71	0.10	98,950	0.15	0.12	71,040	0.0197	0.01	51,720	0.14	0.06	0.29
	October	15,930	0.71	0.09	42,940	0.15	0.05	69,920	0.0197	0.01	50,340	0.14	0.06	0.22
	November	103,390	0.71	0.61	93,870	0.15	0.12	93,770	0.0197	0.02	54,780	0.14	0.06	0.81
	December	64,540	0.96	0.52	77,000	0.116	0.07	76,890	0.016	0.01	56,320	0.25	0.12	0.72
	TOTAL	**887,460**		**4.66**	**810,460**		**0.66**	**885,400**		**0.14**	**579,090**		**1.02**	**6.48**
	CUMULATIVE TOTAL	***6,095,952***		***64.25***	***5,780,013***		***11.28***	***5,198,356***		***2.01***	***4,966,128***		***19.11***	***96.65***
2005	January	78,750	0.96	0.63	35,700	0.116	0.03	65,760	0.016	0.01	47,560	0.25	0.10	0.77
	February	103,650	0.96	0.83	88,410	0.116	0.09	92,250	0.016	0.01	65,270	0.25	0.14	1.06
	March	95,120	0.96	0.76	47,260	0.116	0.05	78,380	0.016	0.01	51,580	0.25	0.11	0.93
	April	96,680	0.96	0.77	51,890	0.116	0.05	81,280	0.016	0.01	51,610	0.25	0.11	0.94
	May	103,370	0.813	0.70	102,640	0.081	0.07	89,680	0.025	0.02	38,940	0.14	0.05	0.83
	June	95,330	0.813	0.65	11,800	0.081	0.01	29,580	0.025	0.01	16,830	0.14	0.02	0.68
	July	64,660	0.813	0.44	54,670	0.081	0.04	56,790	0.025	0.01	18,940	0.14	0.02	0.51
	August	74,190	0.813	0.50	68,130	0.081	0.05	64,470	0.025	0.01	22,380	0.14	0.03	0.59
	September	73,810	0.813	0.50	75,280	0.081	0.05	63,620	0.025	0.01	38,040	0.14	0.04	0.61
	October	84,450	0.813	0.57	20,350	0.081	0.01	73,040	0.025	0.02	52,010	0.14	0.06	0.66
	November	125,440	0.813	0.85	18,950	0.081	0.01	99,370	0.025	0.02	38,910	0.14	0.05	0.93
	December	94,040	0.813	0.64	62,280	0.081	0.04	53,740	0.025	0.01	16,780	0.14	0.02	0.71
	TOTAL	**1,089,490**		**7.85**	**637,360**		**0.50**	**847,960**		**0.15**	**458,850**		**0.73**	**9.23**
	CUMULATIVE TOTAL	***7,185,442***		***72.11***	***6,417,373***		***11.77***	***6,046,316***		***2.16***	***5,424,978***		***19.84***	***105.88***
2006	January	91,090	0.813	0.62	65,510	0.081	0.04	62,440	0.025	0.01	67,880	0.14	0.08	0.75
	February	99,040	0.813	0.67	69,830	0.081	0.05	180	0.025	0.00	24,420	0.14	0.03	0.75
	March	82,410	0.813	0.56	69,150	0.081	0.05	40,220	0.025	0.01	50,430	0.14	0.06	0.67
	April	107,470	0.813	0.73	96,190	0.081	0.07	105,340	0.025	0.02	43,880	0.14	0.05	0.87
	May	130,240	0.59	0.64	79,280	0.13	0.09	127,530	0.014	0.01	73,690	0.141	0.09	0.83
	June	95,670	0.59	0.47	96,640	0.13	0.10	102,141	0.014	0.01	57,010	0.141	0.07	0.65
	July	114,830	0.59	0.57	110,010	0.13	0.12	131,199	0.014	0.02	67,870	0.141	0.08	0.78
	August	86,450	0.59	0.43	83,190	0.13	0.09	108,970	0.014	0.01	57,850	0.141	0.07	0.60
	September	5,190	0.59	0.03	113,640	0.13	0.12	146,870	0.014	0.02	74,010	0.141	0.09	0.25
	October	0	0.59	0.00	95,820	0.13	0.10	99,390	0.014	0.01	16,770	0.141	0.02	0.14
	November	36,240	0.59	0.18	93,710	0.13	0.10	68,760	0.014	0.01	43,920	0.141	0.05	0.34
	December	93,760	0.59	0.46	66,030	0.13	0.07	48,040	0.014	0.01	27,460	0.141	0.03	0.57
	TOTAL	**942,390**		**5.35**	**1,039,000**		**1.00**	**1,041,080**		**0.14**	**605,190**		**0.71**	**7.20**
	CUMULATIVE TOTAL	***8,127,832***		***77.45***	***7,456,373***		***12.78***	***7,087,396***		***2.30***	***6,030,168***		***20.55***	***113.09***

TABLE 3.1-5
CAPA GROUNDWATER TREATMENT SYSTEM
APPROXIMATE MASS OF MERCURY REMOVED
RECOVERY WELLS

YEAR	MONTH	CA050B CUMULATIVE FLOW (gal)[1]	CA050B MERCURY (mg/L)[2,3]	CA050B MERCURY (lbs)[4]	CA051B CUMULATIVE FLOW (gal)	CA051B MERCURY (mg/L)	CA051B MERCURY (lbs)	CA052B CUMULATIVE FLOW (gal)	CA052B MERCURY (mg/L)	CA052B MERCURY (lbs)	CA0U23B CUMULATIVE FLOW (gal)	CA0U23B MERCURY (mg/L)	CA0U23B MERCURY (lbs)	MERCURY REMOVED, ALL WELLS (lbs)
2007	January	56,240	0.59	0.28	73,810	0.13	0.08	0	0.014	0.00	59,320	0.141	0.07	0.43
	February	47,980	0.59	0.24	68,410	0.13	0.07	33,980	0.014	0.00	28,040	0.141	0.03	0.35
	March	41,510	0.59	0.20	41,310	0.13	0.04	34,260	0.014	0.00	33,140	0.141	0.04	0.29
	April	56,420	0.59	0.28	67,350	0.13	0.07	57,220	0.014	0.01	51,730	0.141	0.06	0.42
	May	57,130	0.59	0.28	55,440	0.13	0.06	56,500	0.014	0.01	28,740	0.141	0.03	0.38
	June	76,370	0.59	0.38	79,230	0.13	0.09	68,240	0.014	0.01	45,520	0.141	0.05	0.52
	July	86,610	0.59	0.43	70,410	0.13	0.08	43,660	0.014	0.01	31,250	0.141	0.04	0.54
	August	22,350	0.59	0.11	100,910	0.13	0.11	6,030	0.014	0.00	41,540	0.141	0.05	0.27
	September	58,700	0.59	0.29	73,050	0.13	0.08	51,800	0.014	0.01	12,340	0.141	0.01	0.39
	October	81,650	1.6	1.09	115,960	0.065	0.06	88,890	0.0134	0.01	18,300	0.123	0.02	1.18
	November	17,440	1.6	0.23	77,710	0.065	0.04	80,430	0.0134	0.01	50	0.123	0.00	0.28
	December	39,410	1.6	0.53	83,380	0.065	0.05	101,580	0.0134	0.01	30,440	0.123	0.03	0.61
	TOTAL	**641,810**		**4.33**	**906,970**		**0.83**	**622,590**		**0.07**	**380,410**		**0.44**	**5.67**
	CUMULATIVE TOTAL	***8,769,642***		***81.78***	***8,363,343***		***13.61***	***7,709,986***		***2.37***	***6,410,578***		***20.99***	***118.76***
2008	January	75,870	1.6	1.01	85,800	0.065	0.05	71,610	0.0134	0.01	48,490	0.123	0.05	1.12
	February	49,440	1.6	0.66	52,010	0.065	0.03	49,930	0.0134	0.01	21,670	0.123	0.02	0.72
	March	28,360	1.6	0.38	89,270	0.065	0.05	77,750	0.0134	0.01	34,140	0.123	0.04	0.47
	April	115,960	1.6	1.55	111,690	0.065	0.06	123,590	0.0134	0.01	54,420	0.123	0.06	1.68
	May	61,950	1.6	0.83	65,360	0.065	0.04	97,900	0.0134	0.01	43,270	0.123	0.04	0.92
	June	117,100	1.6	1.56	59,990	0.065	0.03	77,420	0.0134	0.01	24,440	0.123	0.03	1.63
	July	90,450	1.6	1.21	96,410	0.065	0.05	113,900	0.0134	0.01	51,380	0.123	0.05	1.33
	August	89,370	1.6	1.19	94,570	0.065	0.05	86,520	0.0134	0.01	57,080	0.123	0.06	1.31
	September	77,560	1.6	1.04	88,830	0.065	0.05	37,870	0.0134	0.00	56,980	0.123	0.06	1.15
	October	111,200	0.54	0.50	119,510	0.0958	0.10	130,040	0.0134	0.01	49,750	0.102	0.04	0.65
	November	117,320	0.54	0.53	89,360	0.0958	0.07	107,970	0.0134	0.01	45,400	0.102	0.04	0.65
	December	118,970	0.54	0.54	99,220	0.0958	0.08	109,240	0.0134	0.01	44,320	0.102	0.04	0.67
	TOTAL	**1,053,550**		**10.99**	**1,052,020**		**0.65**	**1,083,740**		**0.12**	**531,340**		**0.52**	**12.29**
	CUMULATIVE TOTAL	***9,823,192***		***92.77***	***9,415,363***		***14.26***	***8,793,726***		***2.49***	***6,941,918***		***21.51***	***131.04***
2009	January	102,620	0.54	0.46	98,940	0.0958	0.08	68,640	0.0134	0.01	39,400	0.102	0.03	0.58
	February	89,130	0.54	0.40	133,220	0.0958	0.11	88,930	0.0134	0.01	42,180	0.102	0.04	0.55
	March	89,510	0.54	0.40	97,320	0.0958	0.08	84,060	0.0134	0.01	44,870	0.102	0.04	0.53
	April	120,620	0.54	0.54	66,890	0.0958	0.05	106,260	0.0134	0.01	63,360	0.102	0.05	0.66
	May	78,350	0.54	0.35	90,300	0.0958	0.07	101,380	0.0134	0.01	60,280	0.102	0.05	0.49
	June	80,660	0.54	0.36	77,260	0.0958	0.06	88,190	0.0134	0.01	45,520	0.102	0.04	0.47
	July	91,040	0.503	0.38	100,080	0.0134	0.01	98,360	0.007	0.01	53,990	0	0.00	0.40
	August	75,240	0.503	0.32	72,520	0.0134	0.01	88,650	0.007	0.01	39,080	0	0.00	0.33
	September	89,350	0.503	0.38	75,160	0.0134	0.01	91,560	0.007	0.01	46,250	0	0.00	0.39
	October	96,500	0.503	0.41	95,480	0.0134	0.01	102,630	0.007	0.01	49,900	0	0.00	0.42
	November	113,300	0.503	0.48	99,640	0.0134	0.01	111,400	0.007	0.01	52,860	0	0.00	0.49
	December	105,430	0.503	0.44	124,530	0.0134	0.01	76,840	0.007	0.00	46,590	0	0.00	0.46
	TOTAL	**1,131,750**		**4.92**	**1,131,340**		**0.51**	**1,106,900**		**0.09**	**584,280**		**0.25**	**5.78**
	CUMULATIVE TOTAL	***10,954,942***		***97.70***	***10,546,703***		***14.78***	***9,900,626***		***2.59***	***7,526,198***		***21.76***	***136.83***
2010	January	52,720	0.503	0.22	57,060	0.0134	0.01	56,230	0.007	0.00	38,510	0	0.00	0.23
	February	83,730	0.503	0.35	89,630	0.0134	0.01	91,960	0.007	0.01	59,560	0	0.00	0.37
	March	65,750	0.503	0.28	84,780	0.0134	0.01	103,060	0.007	0.01	63,970	0	0.00	0.29
	April	90,970	0.503	0.38	89,470	0.0134	0.01	94,390	0.007	0.01	34,190	0	0.00	0.40
	May	61,190	0.503	0.26	68,940	0.0134	0.01	84,160	0.007	0.00	55,090	0	0.00	0.27
	June	60,580	0.503	0.25	60,580	0.0134	0.01	81,780	0.007	0.00	55,590	0	0.00	0.27
	July	87,350	0.393	0.29	93,790	0.0268	0.02	89,940	3.9	2.93	66,060	0	0.00	3.23
	August	75,280	0.393	0.25	80,100	0.0268	0.02	98,830	3.9	3.22	77,610	0	0.00	3.48
	September	78,290	0.393	0.26	68,920	0.0268	0.02	82,540	3.9	2.69	28,350	0	0.00	2.96
	October	70,800	0.393	0.23	62,941	0.0268	0.01	86,310	3.9	2.81	45,620	0	0.00	3.06
	November	84,990	0.393	0.28	93,090	0.0268	0.02	87,220	3.9	2.84	71,100	0	0.00	3.14
	December	80,300	0.393	0.26	74,120	0.0268	0.02	78,910	3.9	2.57	62,000	0	0.00	2.85
	TOTAL	**891,950**		**3.31**	**923,421**		**0.16**	**1,035,330**		**17.08**	**657,650**		**0.00**	**20.54**
	CUMULATIVE TOTAL	***11,846,892***		***101.00***	***11,470,124***		***14.93***	***10,935,956***		***19.66***	***8,183,848***		***21.76***	***157.37***

TABLE 3.1-5
CAPA GROUNDWATER TREATMENT SYSTEM
APPROXIMATE MASS OF MERCURY REMOVED
RECOVERY WELLS

YEAR	MONTH	CA050B CUMULATIVE FLOW (gal)[1]	CA050B MERCURY (mg/L)[2,3]	CA050B MERCURY (lbs)[4]	CA051B CUMULATIVE FLOW (gal)	CA051B MERCURY (mg/L)	CA051B MERCURY (lbs)	CA052B CUMULATIVE FLOW (gal)	CA052B MERCURY (mg/L)	CA052B MERCURY (lbs)	CA0U23B CUMULATIVE FLOW (gal)	CA0U23B MERCURY (mg/L)	CA0U23B MERCURY (lbs)	MERCURY REMOVED, ALL WELLS (lbs)
2011	January	78,430	0.393	0.26	71,580	0.0268	0.02	92,590	3.9	3.01	63,870	0	0.00	3.29
	February	63,050	0.393	0.21	55,840	0.0268	0.01	48,380	3.9	1.57	34,460	0	0.00	1.79
	March	76,350	0.393	0.25	36,750	0.0268	0.01	82,880	3.9	2.70	58,020	0	0.00	2.96
	April	71,410	0.393	0.23	53,250	0.0268	0.01	90,600	3.9	2.95	75,830	0	0.00	3.19
	May	99,970	0.393	0.33	12,790	0.0268	0.00	82,730	3.9	2.69	51,340	0	0.00	3.02
	June	44,800	0.393	0.15	162,810	0.0268	0.04	32,220	3.9	1.05	68,900	0	0.00	1.23
	July	99,970	0.404	0.34	103,510	5.8	5.01	78,120	2.5	1.63	64,040	0	0.00	6.98
	August	101,610	0.404	0.34	102,590	5.8	4.97	75,780	2.5	1.58	65,340	0	0.00	6.89
	September	98,190	0.404	0.33	95,810	5.8	4.64	81,800	2.5	1.71	66,250	0	0.00	6.68
	October	89,080	0.404	0.30	71,740	5.8	3.47	92,250	2.5	1.92	74,890	0	0.00	5.70
	November	54,220	0.404	0.18	61,580	5.8	2.98	67,800	2.5	1.41	46,580	0	0.00	4.58
	December	46,060	0.404	0.16	35,400	5.8	1.71	53,940	2.5	1.13	28,430	0	0.00	2.99
	TOTAL	**923,140**		**3.07**	**863,650**		**22.87**	**879,090**		**23.36**	**697,950**		**0.00**	**49.30**
	CUMULATIVE TOTAL	***12,770,032***		***104.08***	***12,333,774***		***37.80***	***11,815,046***		***43.02***	***8,881,798***		***21.76***	***206.66***

Notes:
1) gal - gallons
2) mg/L - milligrams per liter
3) Mercury samples collected during the first half of the month were reported as that months' concentration. Mercury samples collected during the second half of the month were reported as the following month's concentration. If a sample was not collected during a specific month, the previous month's result was reported.
4) lbs - pounds

MARSH	2004	2005	2006	2007	2008	2009	2010	2011
Marsh 1/2	0.263	0.495						
Marsh 1			0.111	0.153	0.097	0.112	0.113	0.1306
Marsh 2			0.066	0.064	0.084	0.073	0.081	0.0635
Marsh 3	0.279	0.298	0.129	0.211	0.111	0.155	0.148	0.1161
Marsh 5	0.644	0.495	0.367	0.275	0.375	0.399	0.405	0.2862
Marsh 6	N.A.	0.337	0.377	0.386	0.430	0.422	0.384	0.3002
Marsh 7	0.625	0.347	0.297	0.279	0.422	0.391	0.219	0.3814
Marsh 11	0.019	0.0205	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Marsh 14	0.626	0.587	1.05	0.909	1.26	1.109	0.535	0.7193
Marsh 15	0.943	0.273	0.369	0.327	0.321	0.374	0.440	0.5219
Marsh 19	0.447	0.478	0.126	0.214	0.1545	0.201	0.210	0.3527

TABLE 3.3-1

SUMMARY OF MARSH SEDIMENT MERCURY CONCENTRATIONS

Notes:

1. Concentrations are milligrams per Kilogram dry weight
2. Marsh locations shown in Appendix A
3. Basic Data provided in Appendix A
4. Remediation goal is 0.25 mg/Kg measured in two consecutive years (Highlighted if goal is met)
5. N.A. – not analyzed
6. Marshes 1 and 2 were sampled as a single marsh in 2004 and 2005, but beginning in 2006 are sampled separately.

TABLE 3.4-1

SUMMARY OF RED DRUM AND JUVENILE BLUE CRAB TISSUE DATA 1997-2011

	Closed Area		Adjacent Open Area	
Red Drum Sampling Event	**Number of Samples**	**Mean Hg (mg/Kg ww)**	**Number of Samples**	**Mean Hg (mg/Kg ww)**
4Q97	34	1.41	27	0.51
2001 Annual	30	1.33	15	0.49
2002 Annual	22	1.03	8	0.64
2003 Annual	29	1.09	30	0.48
2004 Annual	29	0.76	32	0.47
2005 Annual	30	0.87	36	0.48
2006 Annual	30	1.17	30	0.43
2007 Annual	30	1.29	30	0.65
2008 Annual	30	0.9	30	0.4
2009 Annual	30	0.85	30	0.38
2010 Annual	30	0.88	30	0.38
2011 Annual	30	1.17	30	0.33
Juvenile Blue Crab Sampling Event	**Number of Samples**	**Mean Hg (mg/Kg ww)**	**Number of Samples**	**Mean Hg (mg/Kg ww)**
4Q97	49	0.59	27	0.19
2001 Annual	33	0.48	16	0.22
2002 Annual	71	0.26	26	0.11
2003 Annual	30	0.25	30	0.07
2004 Annual	31	0.14	30	0.07
2005 Annual	27	0.22	30	0.05
2006 Annual	30	0.21	30	0.08
2007 Annual	30	0.18	30	0.08
2008 Annual	30	0.16	30	0.06
2009 Annual	30	0.22	30	0.09
2010 Annual	30	0.23	30	0.09
2011 Annual	30	0.23	30	0.06

TABLE 3.4-2

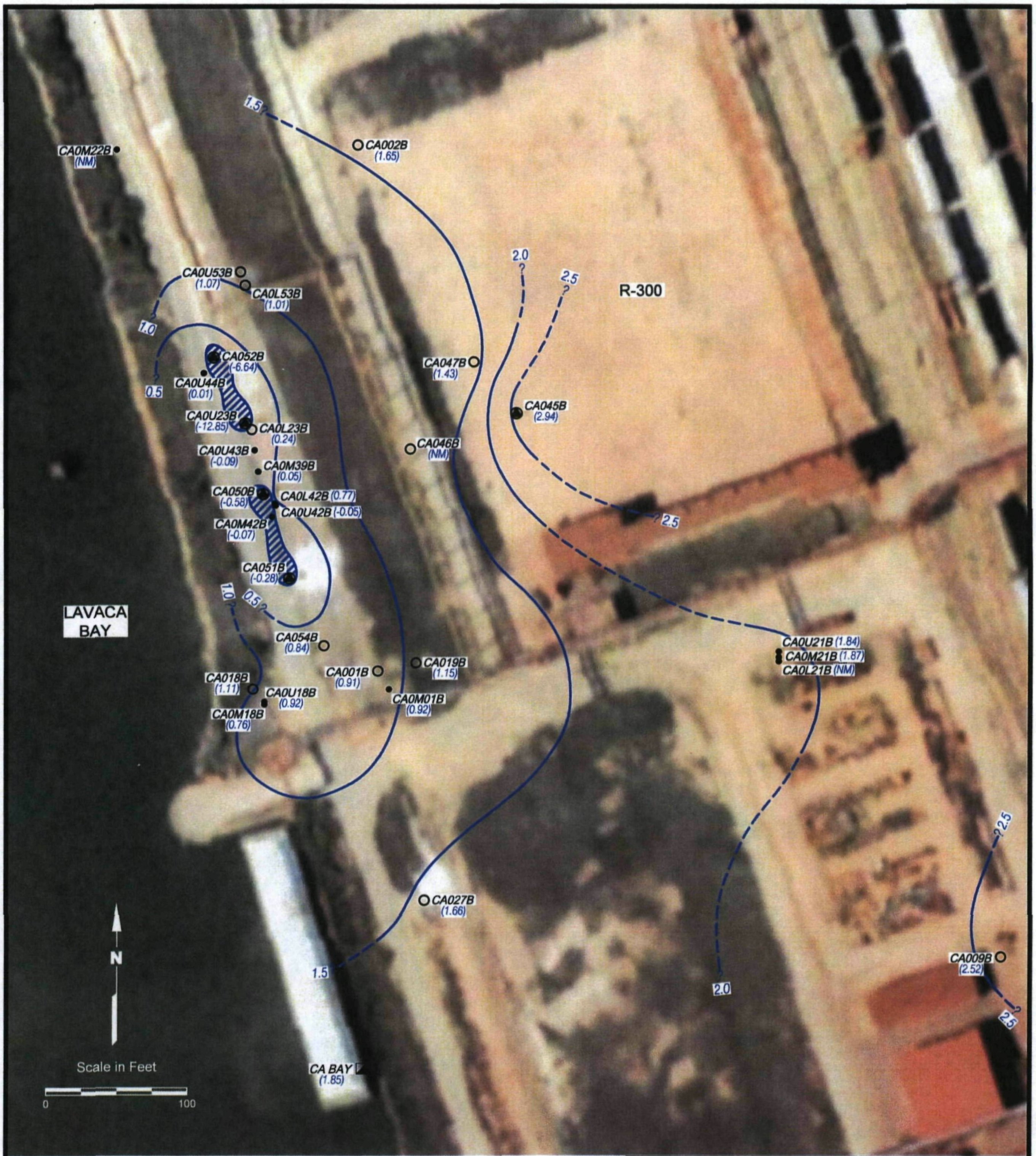
SUMMARY OF 2011 RED DRUM TISSUE MERCURY RESULTS

Area	Sample Size	Mean Hg (mg/kg ww)[1]	Standard Deviation
CLOSED	30	1.17	0.690
OPEN	30	0.33	0.111

Note:

1) mg/kg ww – milligrams per kilogram wet weight
2) Basic data presented in Appendix B.

FIGURES



EXPLANATION

CA018B	Well Designation
○	Monitoring Well
•	Piezometer
●	Recovery Well
◪	Tidal Gauge

—1.5— Estimated Potentiometric Surface Contour (Ft) C.I. = 0.5 Ft

Area of Drawdown of Potentiometric Surface Caused by Pumping (not contoured)

Notes:
1. Groundwater elevations measured in pumping wells are probably influenced by well inefficiencies.
2. Groundwater elevations are corrected for salinity effects.
3. NM = Not measured.
4. Only wells measured for water levels are shown on this figure.
5. Surface water elevation used for contouring is from tidal gauge located south of CAPA (CA Bay).

SOURCE:
Aerial image from Lanmon Aerial Photography Inc, dated 10/13/11.

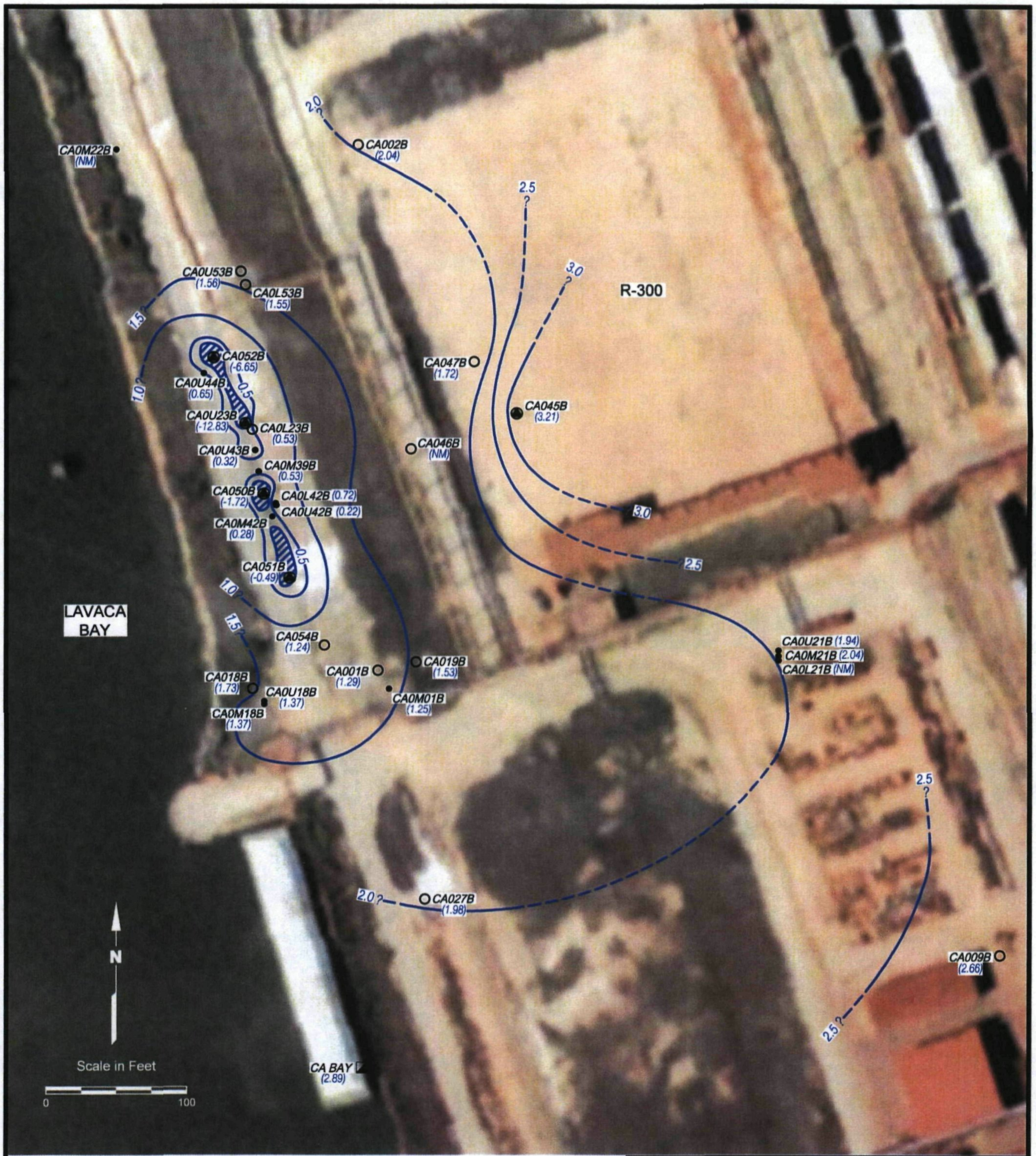
ALCOA

FIGURE 3.1-1

POTENTIOMETRIC SURFACE OF ZONE B GROUNDWATER (3/18/2011)

PROJECT: 3240	DATE: MARCH, 2012	
REV:	BY: AJD	CHECKED: MKW

ALCOA
Point Comfort Operations



EXPLANATION

CA018B	Well Designation
O	Monitoring Well
•	Piezometer
●	Recovery Well
◪	Tidal Gauge

—1.5— Estimated Potentiometric Surface Contour (Ft) C.I. = 0.5 Ft

Area of Drawdown of Potentiometric Surface Caused by Pumping (not contoured)

Notes:
1. Groundwater elevations measured in pumping wells are probably influenced by well inefficiencies.
2. Groundwater elevations are corrected for salinity effects.
3. NM = Not measured.
4. Only wells measured for water levels are shown on this figure.
5. Surface water elevation used for contouring is from tidal gauge located south of CAPA (CA Bay).

SOURCE:
Aerial image from Lanmon Aerial Photography Inc, dated 10/13/11.

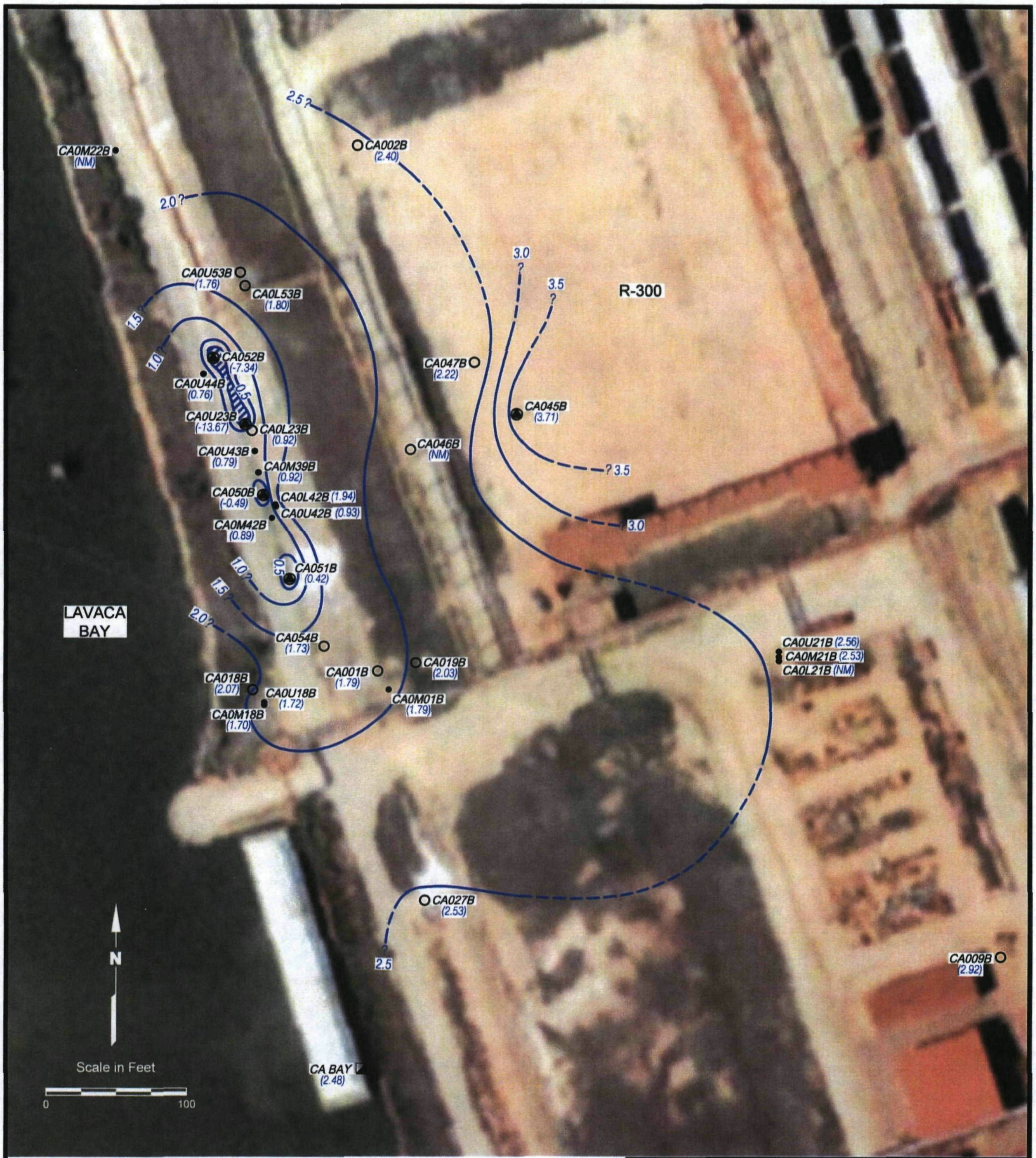
ALCOA

FIGURE 3.1-2

POTENTIOMETRIC SURFACE OF ZONE B GROUNDWATER (6/30/2011)

PROJECT: 3240	DATE: MARCH, 2012	
REV:	BY: AJD	CHECKED: MKW

ALCOA
Point Comfort Operations



EXPLANATION

CA018B	Well Designation
O	Monitoring Well
•	Piezometer
●	Recovery Well
◪	Tidal Gauge
—1.5—	Estimated Potentiometric Surface Contour (Ft) C.I. = 0.5 Ft
(hatched area)	Area of Drawdown of Potentiometric Surface Caused by Pumping (not contoured)

Notes:
1. Groundwater elevations measured in pumping wells are probably influenced by well inefficiencies.
2. Groundwater elevations are corrected for salinity effects.
3. NM = Not measured.
4. Only wells measured for water levels are shown on this figure.
5. Surface water elevation used for contouring is from tidal gauge located south of CAPA (CA Bay).

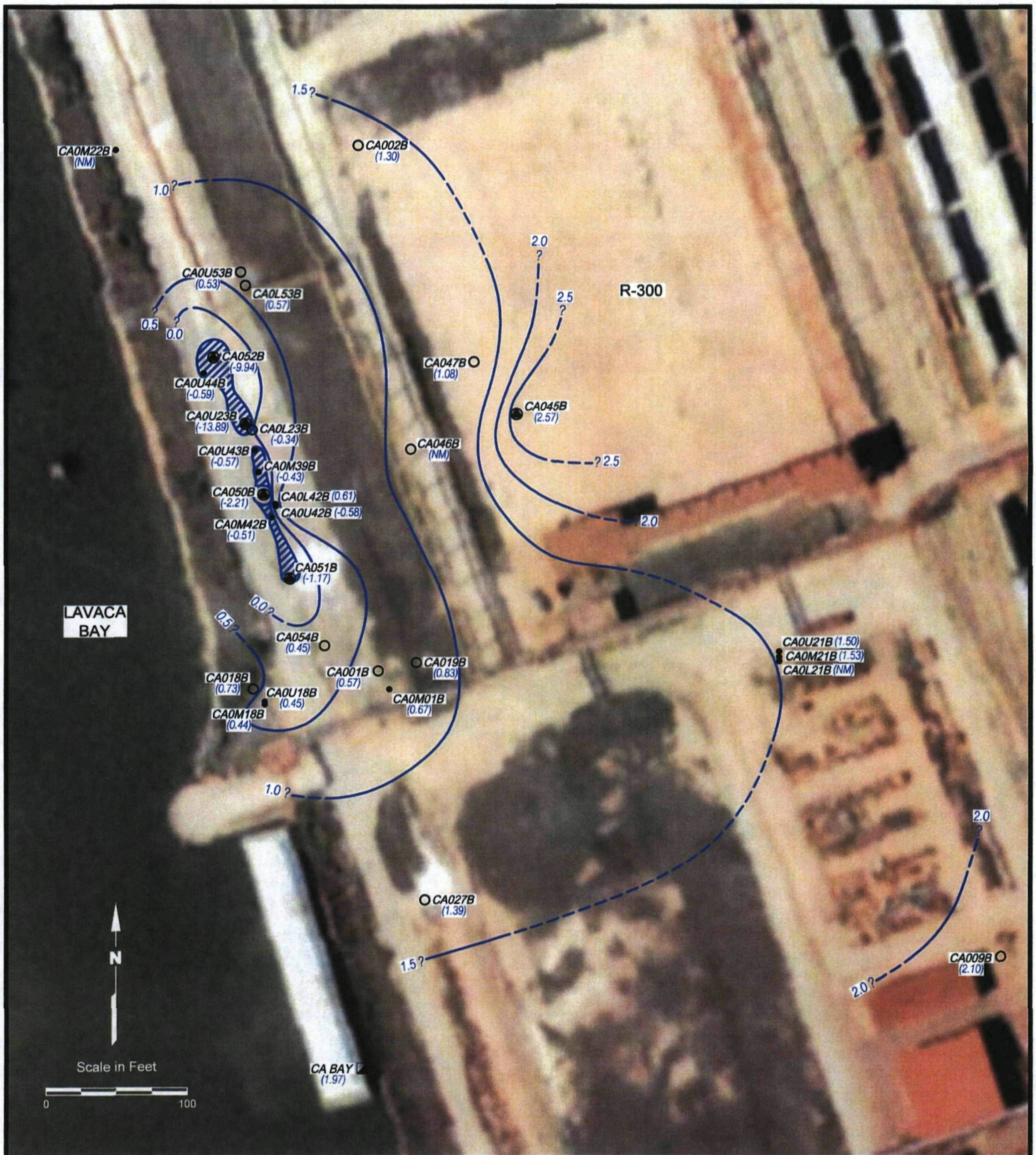
SOURCE:
Aerial image from Lanmon Aerial Photography Inc, dated 10/13/11.

ALCOA

FIGURE 3.1-3
POTENTIOMETRIC SURFACE OF ZONE B GROUNDWATER (10/3/2011)

PROJECT: 3240	DATE: MARCH, 2012	
REV:	BY: AJD	CHECKED: MKW

ALCOA
Point Comfort Operations



EXPLANATION

CA018B	Well Designation
O	Monitoring Well
•	Piezometer
●	Recovery Well
◪	Tidal Gauge

—1.5— Estimated Potentiometric Surface Contour (Ft) C.I. = 0.5 Ft

Area of Drawdown of Potentiometric Surface Caused by Pumping (not contoured)

Notes:
1. Groundwater elevations measured in pumping wells are probably influenced by well inefficiencies.
2. Groundwater elevations are corrected for salinity effects.
3. NM = Not measured.
4. Only wells measured for water levels are shown on this figure.
5. Surface water elevation used for contouring is from tidal gauge located south of CAPA (CA Bay).

SOURCE:
Aerial image from Lanmon Aerial Photography Inc, dated 10/13/11.

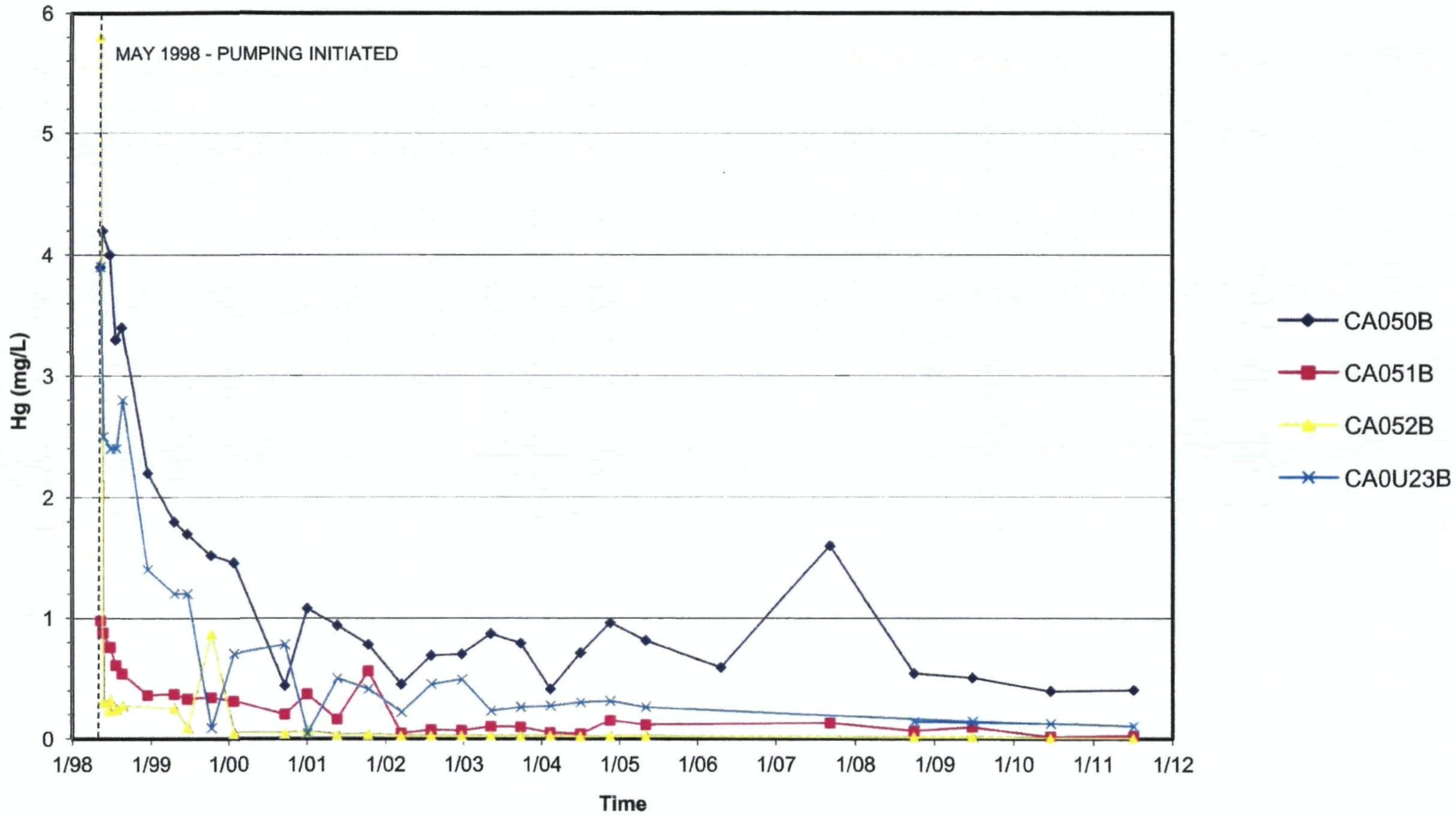
ALCOA

FIGURE 3.1-4

POTENTIOMETRIC SURFACE OF ZONE B GROUNDWATER (12/30/2011)

PROJECT: 3240	DATE: MARCH, 2012	
REV:	BY: AJD	CHECKED: MKW

ALCOA
Point Comfort Operations

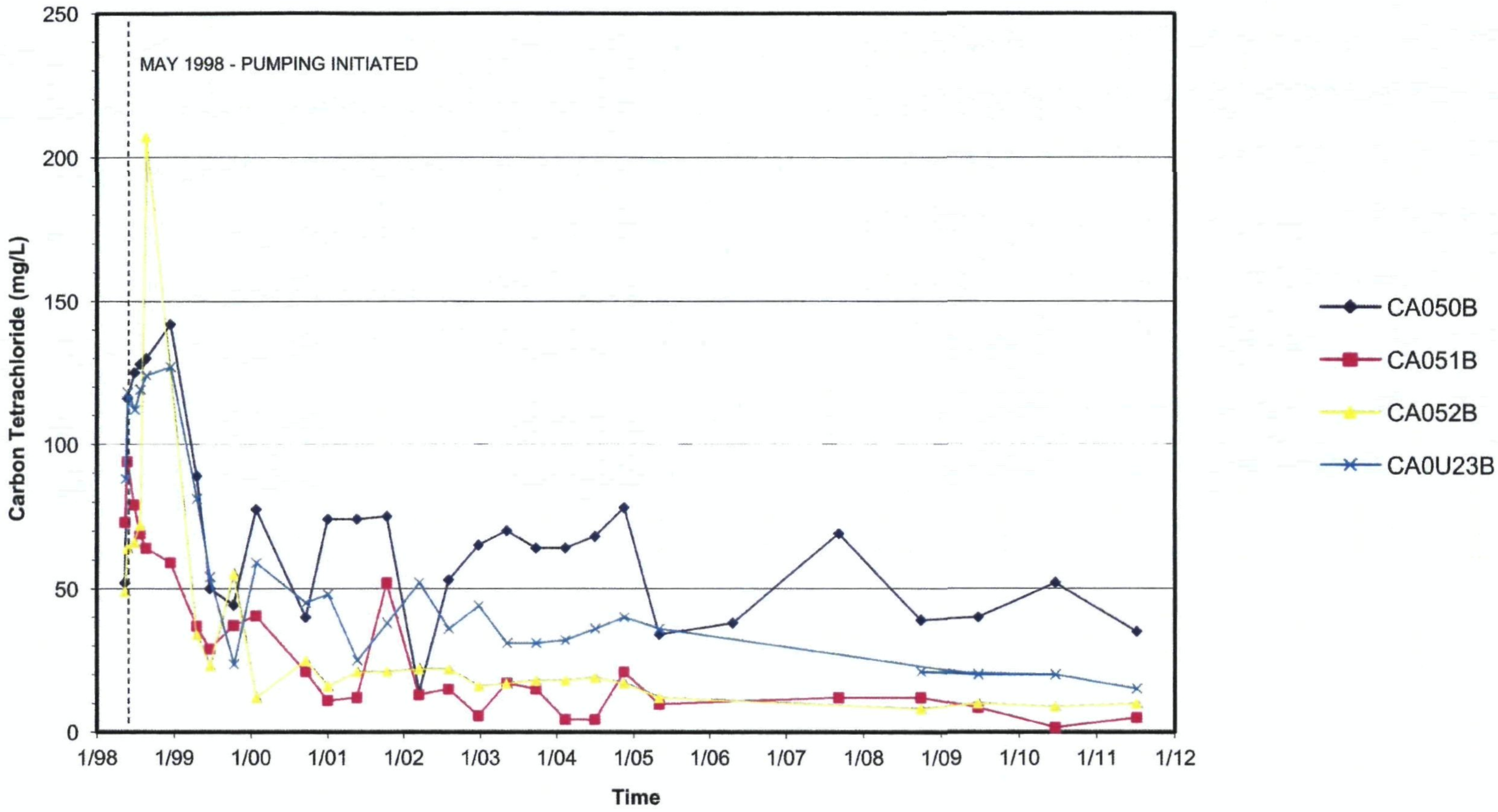


ALCOA

FIGURE 3.1-5
RECOVERY WELLS,
MERCURY CONCENTRATIONS vs. TIME

PROJECT: 3240	DATE: MARCH, 2012	
REV:	BY: AJD	CHECKED: MKW

ALCOA
Point Comfort Operations

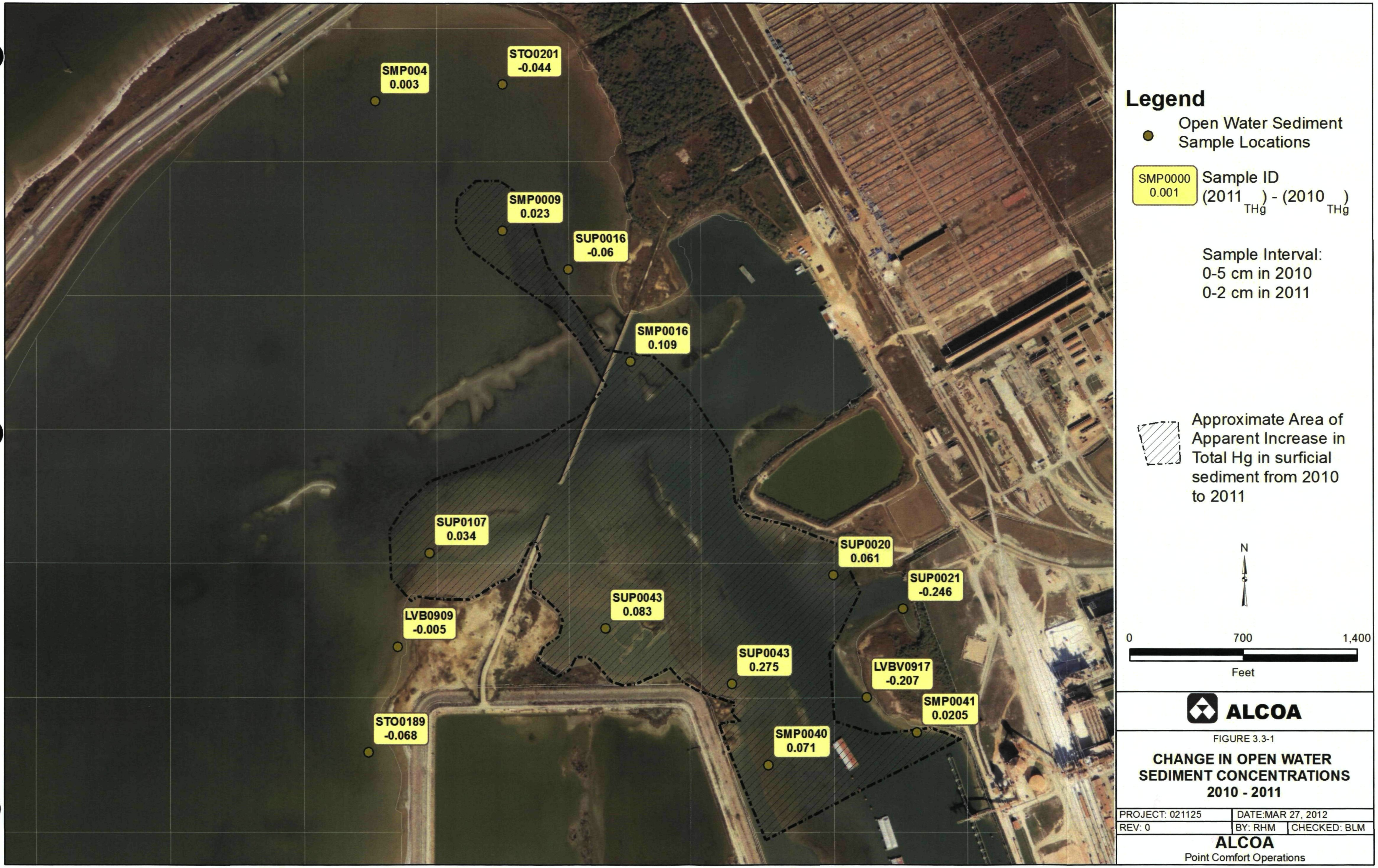


ALCOA

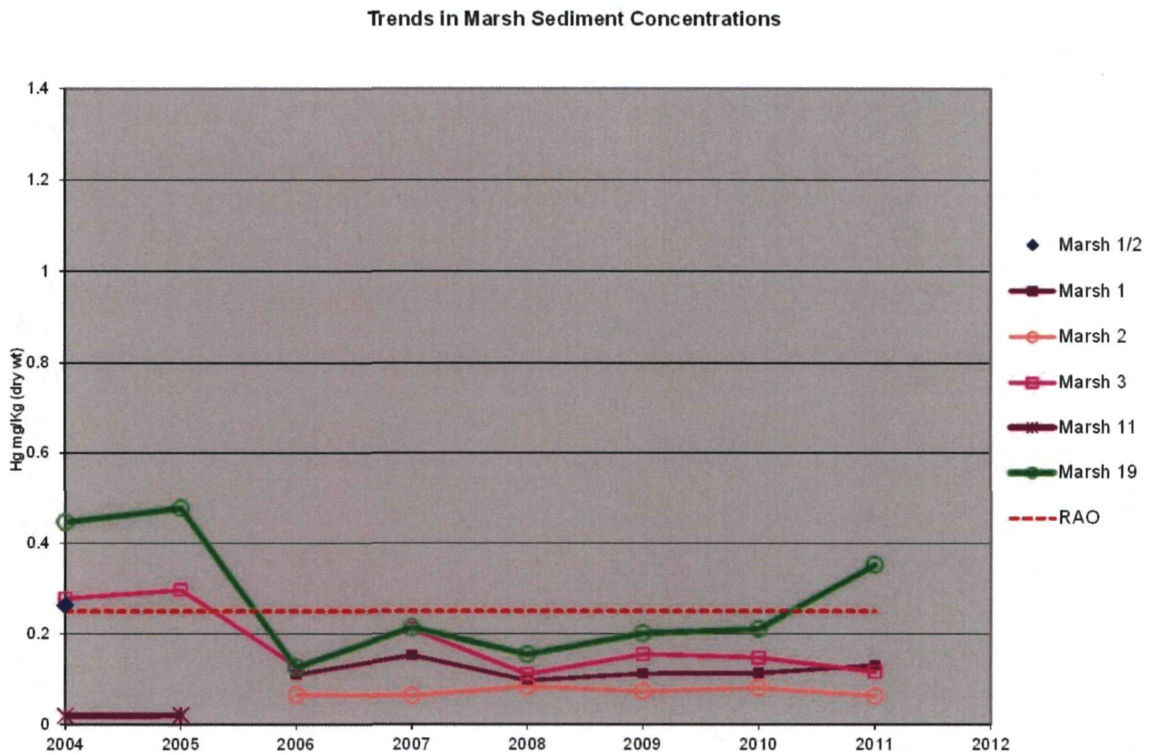
FIGURE 3.1-6
RECOVERY WELLS,
CARBON TETRACHLORIDE
CONCENTRATIONS vs. TIME

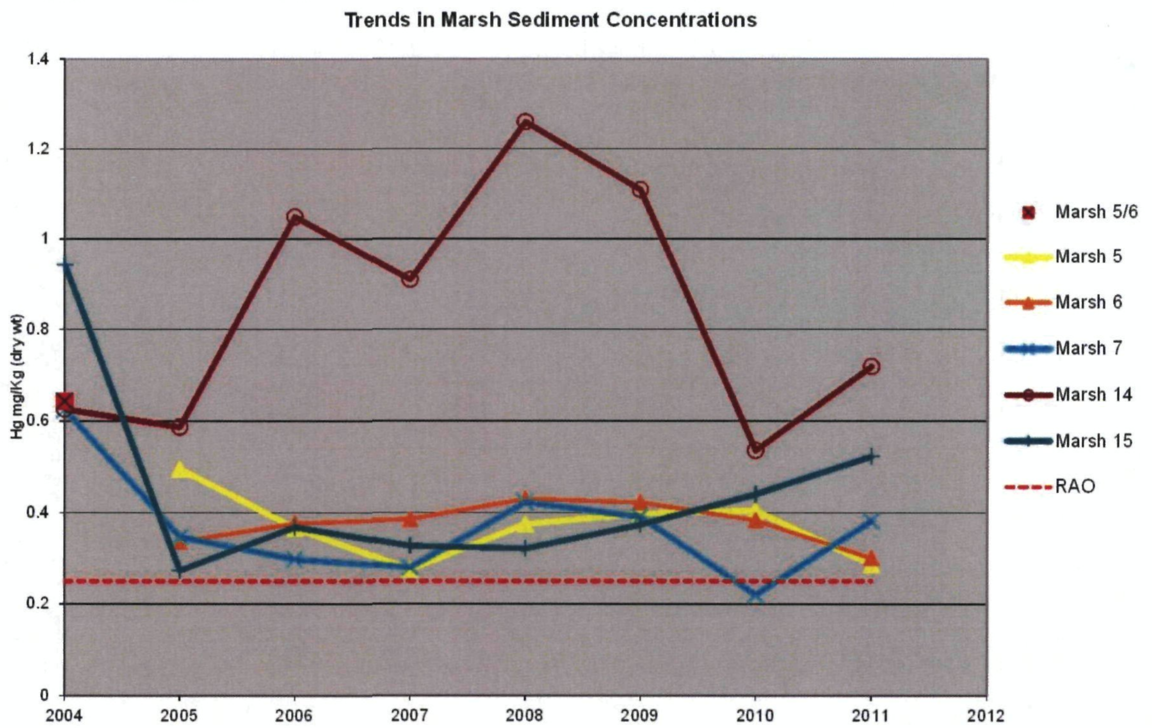
PROJECT: 3240	DATE: MARCH, 2012	
REV:	BY: AJD	CHECKED: MKW

ALCOA
Point Comfort Operations



SMP004
0.003
STO0201
-0.044
SMP0009
0.023
SUP0016
-0.06
SMP0016
0.109
SUP0107
0.034
SUP0020
0.061
SUP0021
-0.246
SUP0043
0.083
LVB0909
-0.005
SUP0043
0.275
LVBV0917
-0.207
SMP0041
0.0205
STO0189
-0.068
SMP0040
0.071
Legend
Open Water Sediment Sample Locations
SMP0000
0.001
Sample ID
(2011 THg) - (2010 THg)
Sample Interval:
0-5 cm in 2010
0-2 cm in 2011
Approximate Area of Apparent Increase in Total Hg in surficial sediment from 2010 to 2011
N
0
700
1,400
Feet
ALCOA
FIGURE 3.3-1
CHANGE IN OPEN WATER SEDIMENT CONCENTRATIONS 2010 - 2011
PROJECT: 021125
DATE:MAR 27, 2012
REV: 0
BY: RHM
CHECKED: BLM
ALCOA
Point Comfort Operations





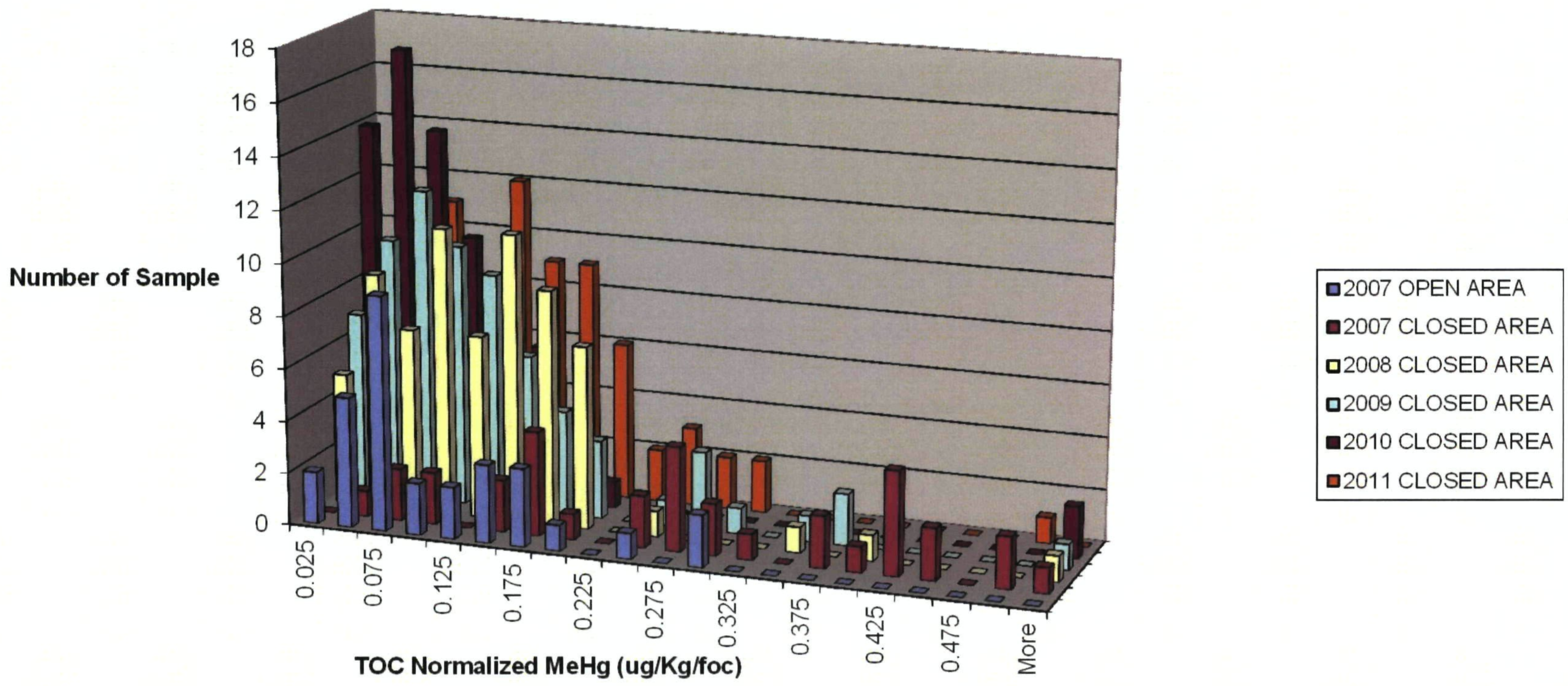
ALCOA

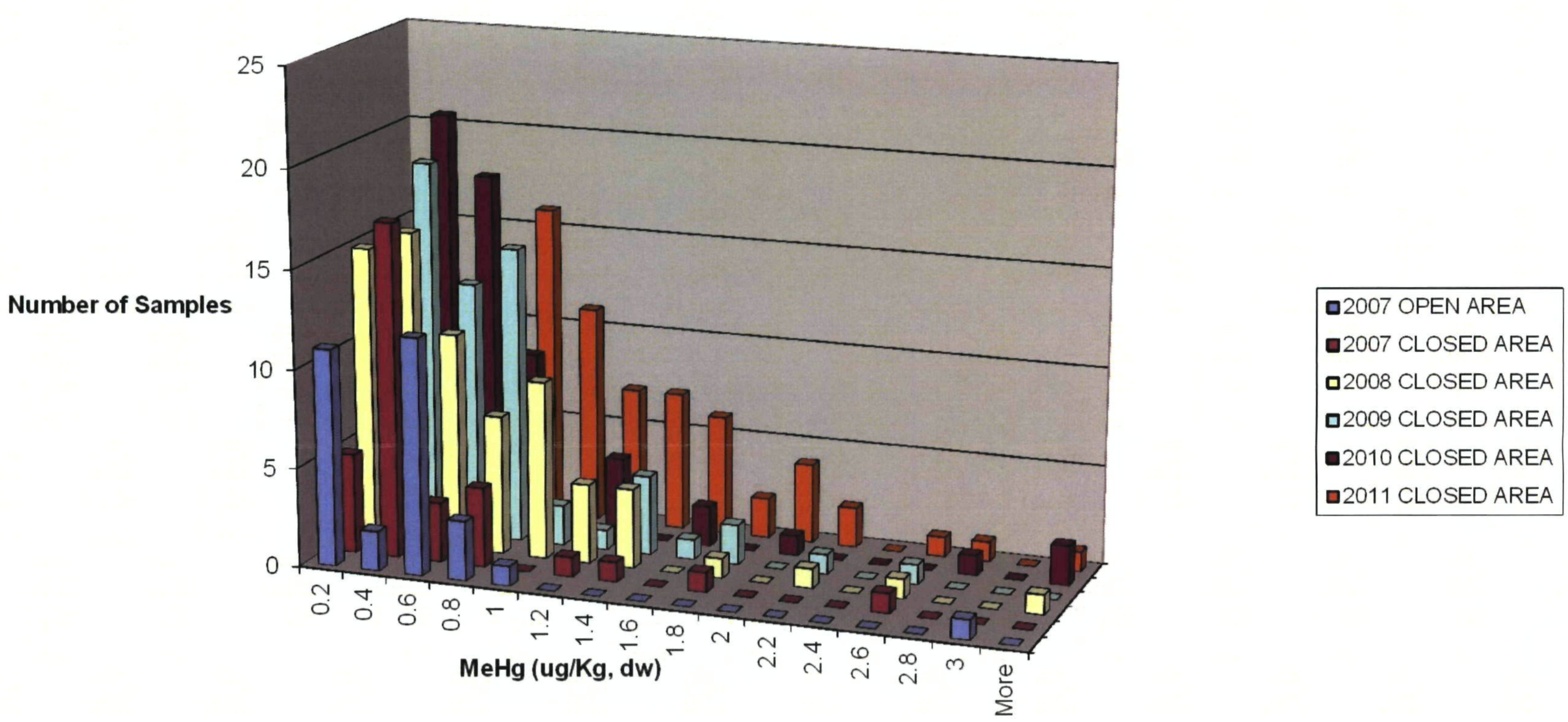
FIGURE 3.3-2

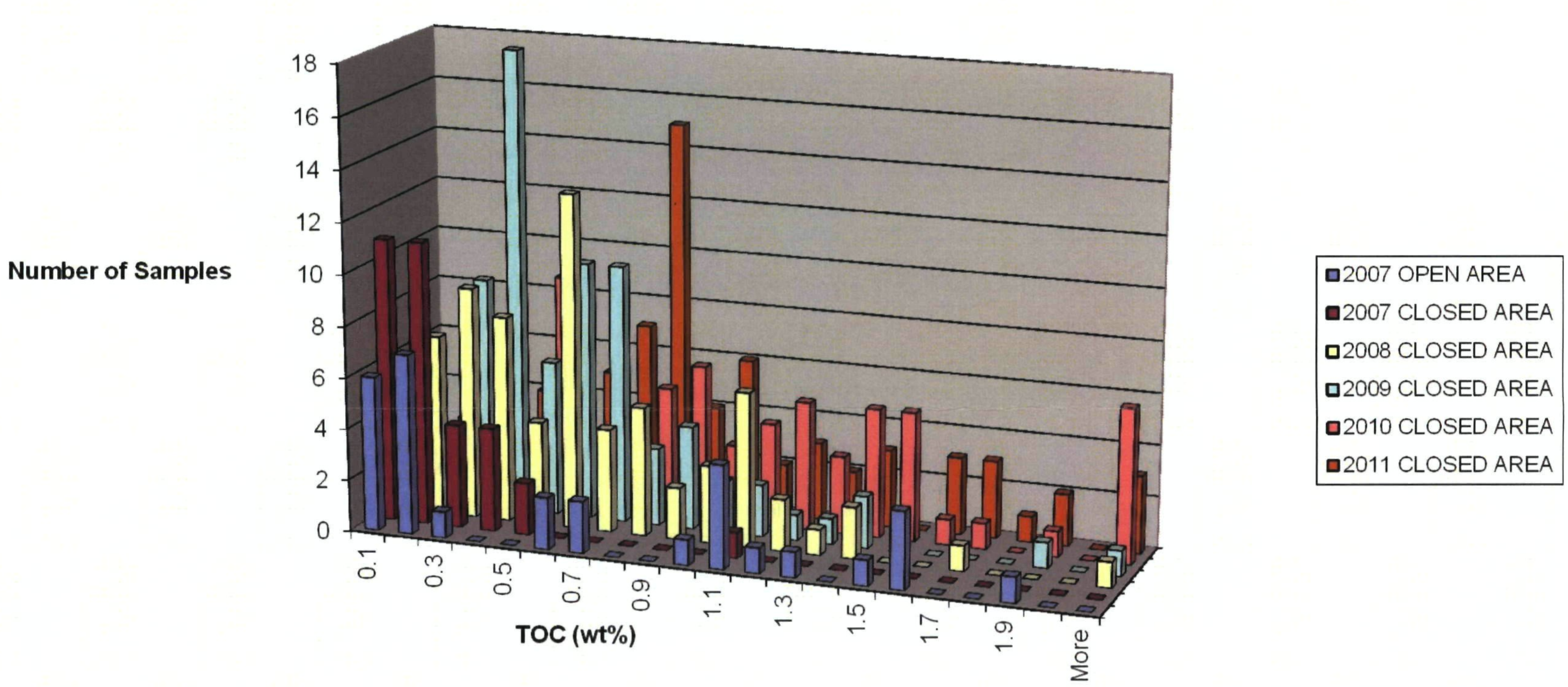
TRENDS IN MARSH SEDIMENT CONCENTRATIONS

PROJECT:	DATE: JAN 11, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations







Note: 2011 Data were collected at a 0-2 cm depth range, while all previous year were collected at a 0-5 cm range.

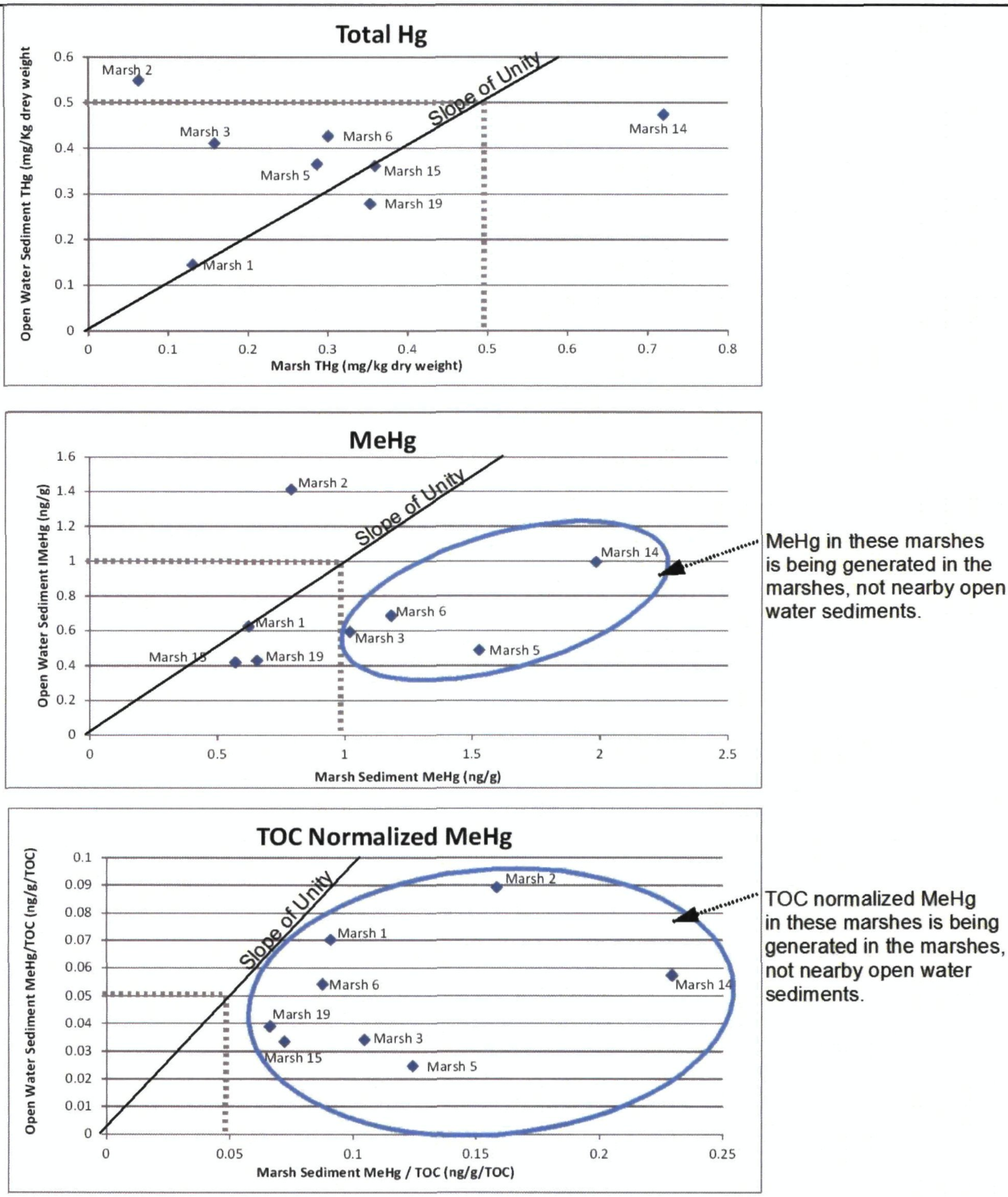
ALCOA

FIGURE 3.3-3

CLOSED AREA MARSH SEDIMENT METHYL MERCURY CONCENTRATIONS

PROJECT:	DATE: JAN 27, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations



Note: Basic Data in Appendix A

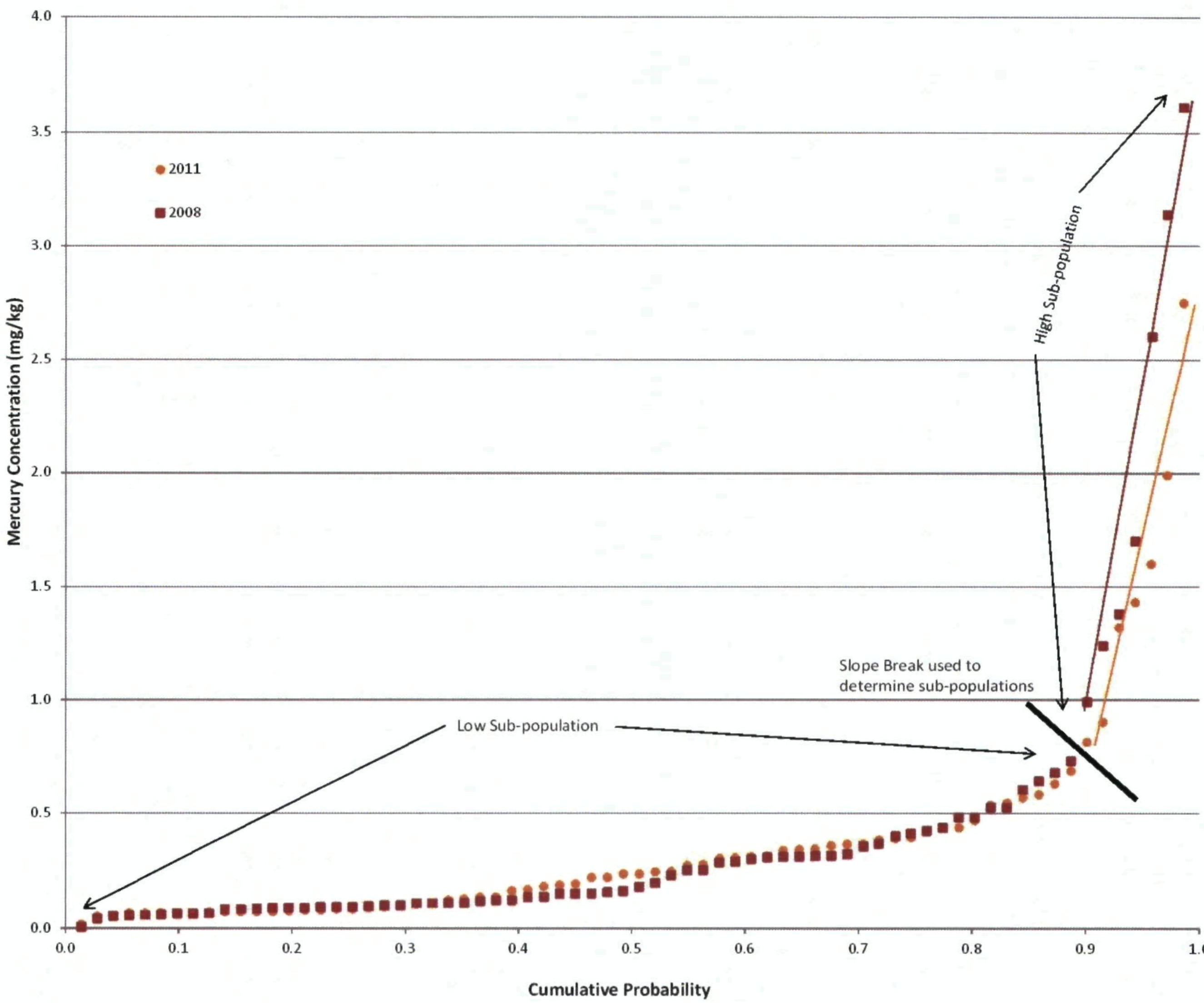
ALCOA

FIGURE 3.3-4

RELATIONSHIP OF MARSH SEDIMENT CONCENTRATIONS TO NEARBY OPEN WATER SEDIMENT CONCENTRATIONS

PROJECT: 021125	DATE: MAR 27, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations



ALCOA

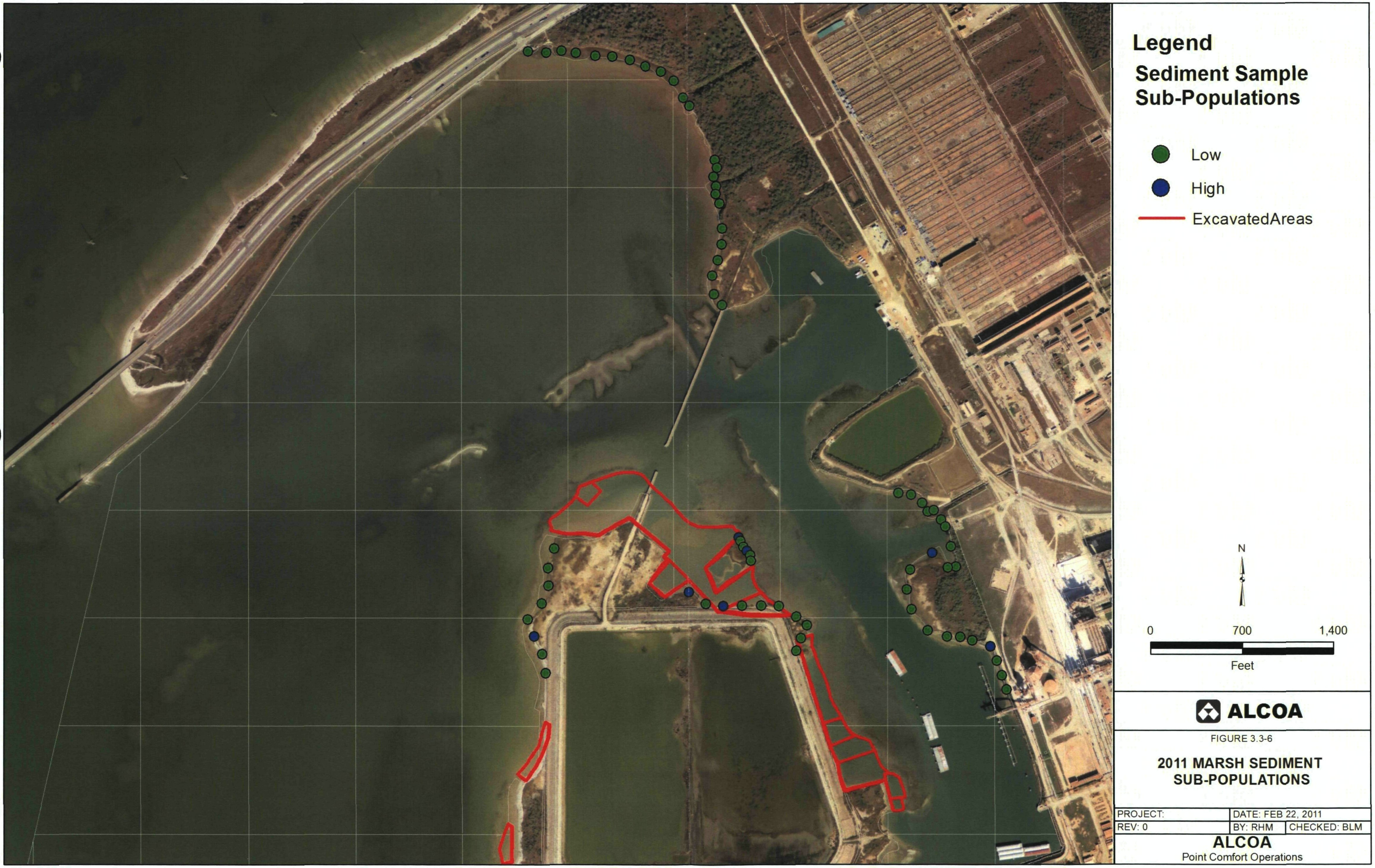
FIGURE 3.3-5

CUMULATIVE PROBABILITY GRAPH OF 2008 AND 2011 MARSH SEDIMENT CONCENTRATIONS

PROJECT: 021125	DATE: JAN 11, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

Point Comfort Operations



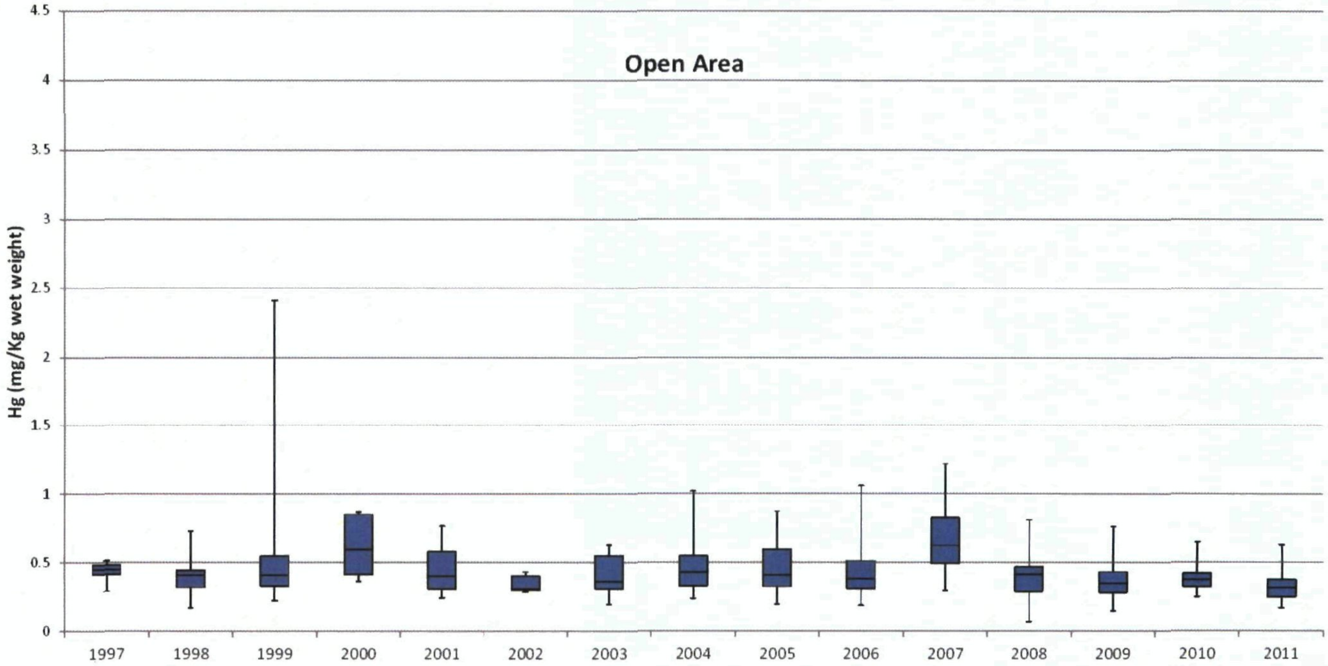
ALCOA

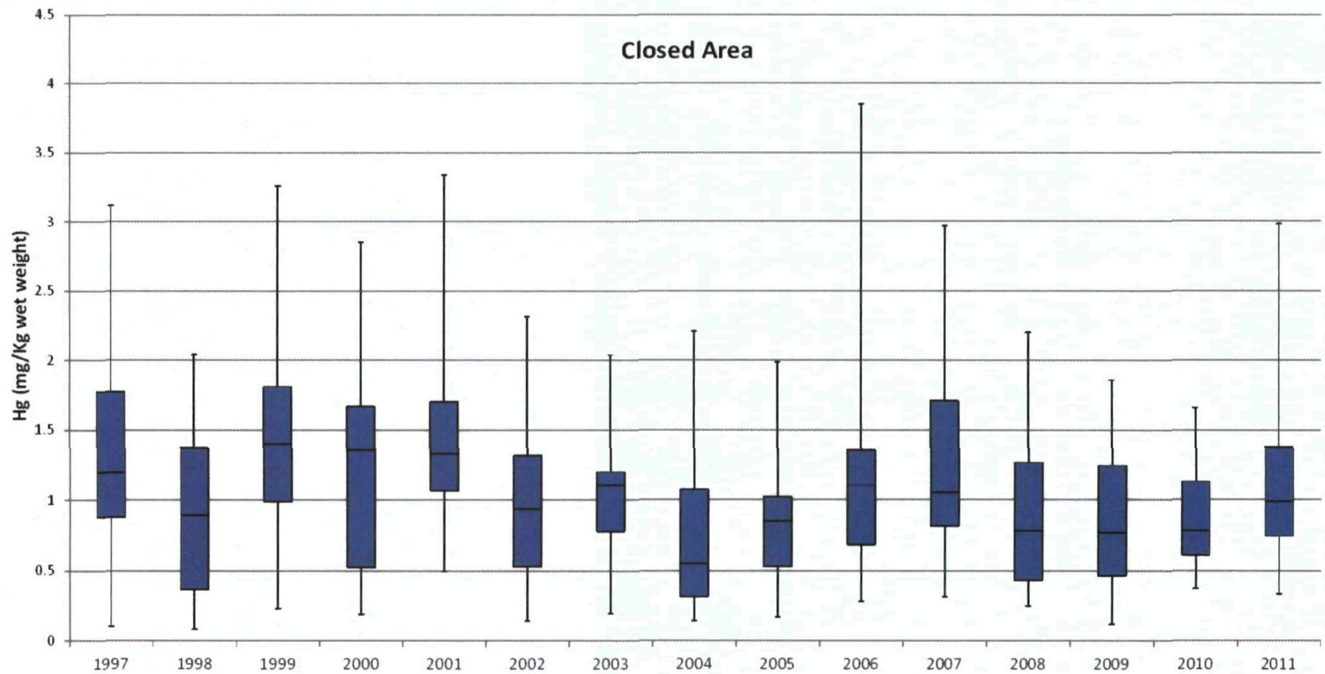
FIGURE 3.3-6

2011 MARSH SEDIMENT SUB-POPULATIONS

PROJECT:	DATE: FEB 22, 2011
REV: 0	BY: RHM CHECKED: BLM

ALCOA
Point Comfort Operations





ALCOA

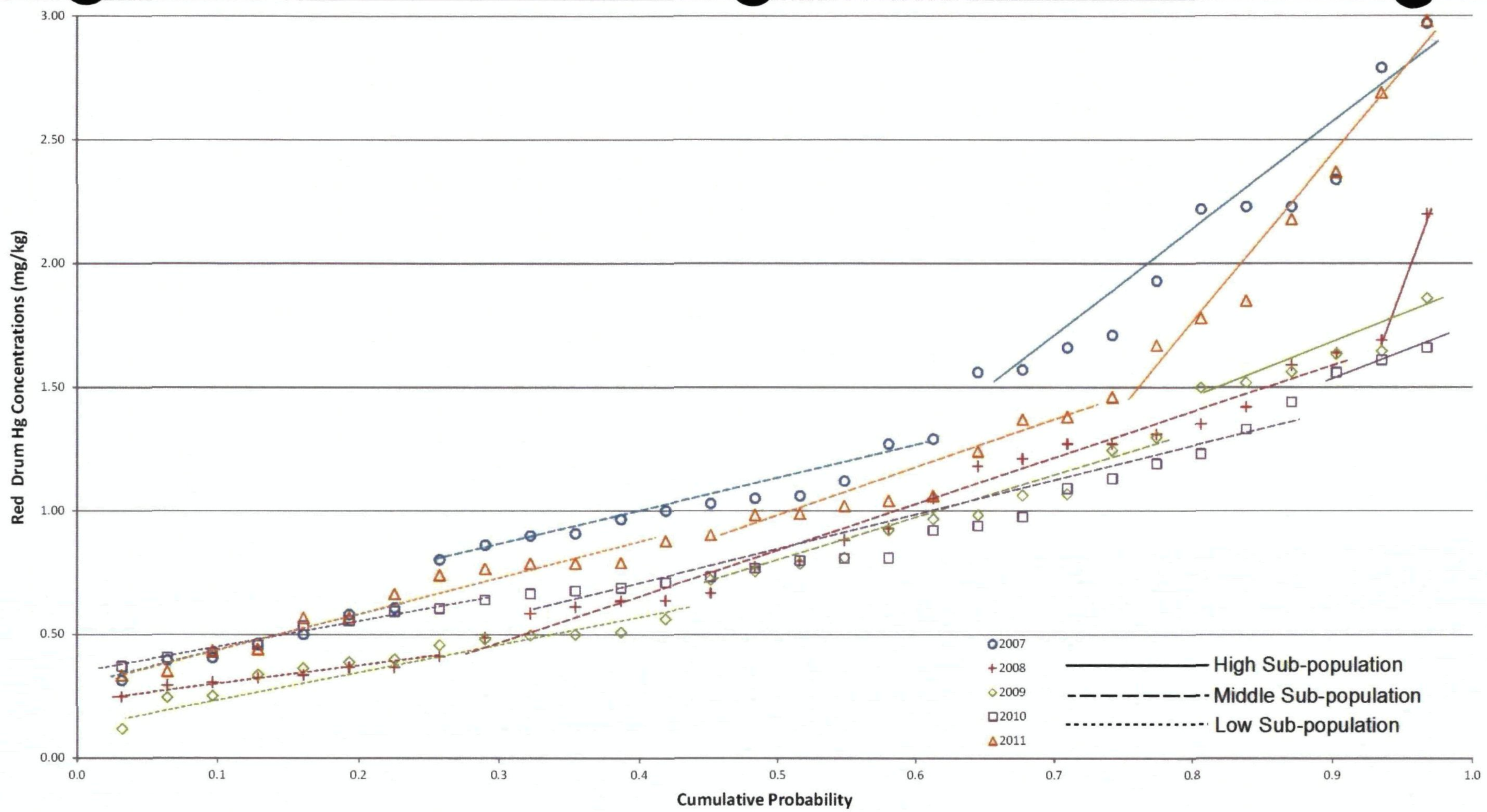
FIGURE 3.4-1

TRENDS IN RED DRUM MERCURY CONCENTRATIONS

PROJECT:	DATE: JAN 11, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

Point Comfort Operations



ALCOA

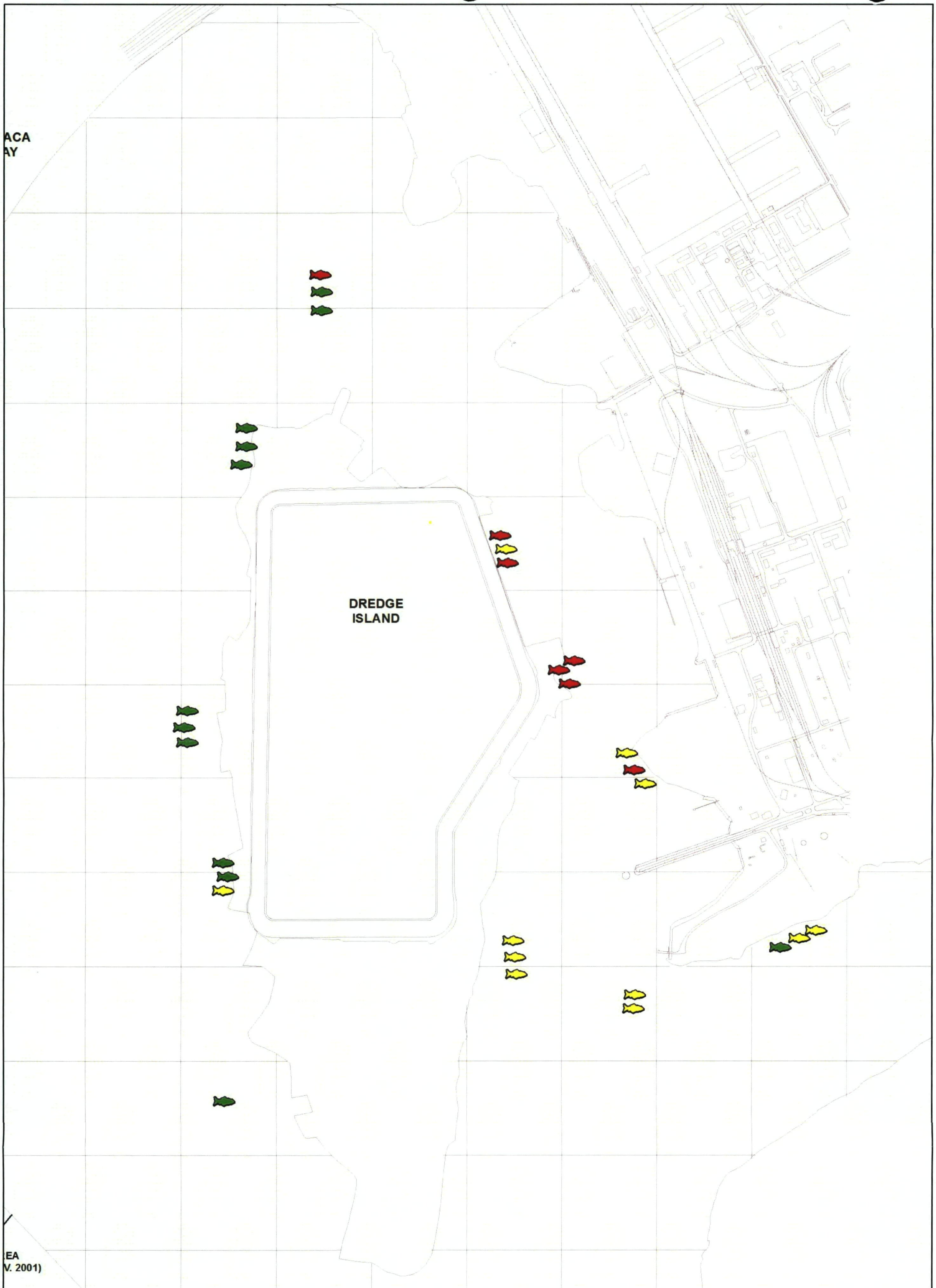
FIGURE 3.4-2

CUMULATIVE PROBABILITY GRAPH OF 2007-2010 RED DRUM MERCURY CONCENTRATIONS

PROJECT:	DATE: JAN 11, 2012
REV: 0	BY: RHM / CHECKED: BLM

ALCOA

Point Comfort Operations



Legend

Total Hg wet weight (mg/Kg)

- <0.8
- 0.8 - 1.5
- >1.5

ALCOA

FIGURE 3.4-3

GEOGRAPHIC DISTRIBUTION OF 2011 RED DRUM SUBPOPULATIONS

PROJECT: 021125	DATE: JAN 06, 2011
REV: 0	BY: RHM / CHECKED: BLM

ALCOA

Point Comfort Opreations

Fig. 3.4-4 Trends in Northern and Southern Closed Area Red Drum Mercury Concentrations

ALCOA

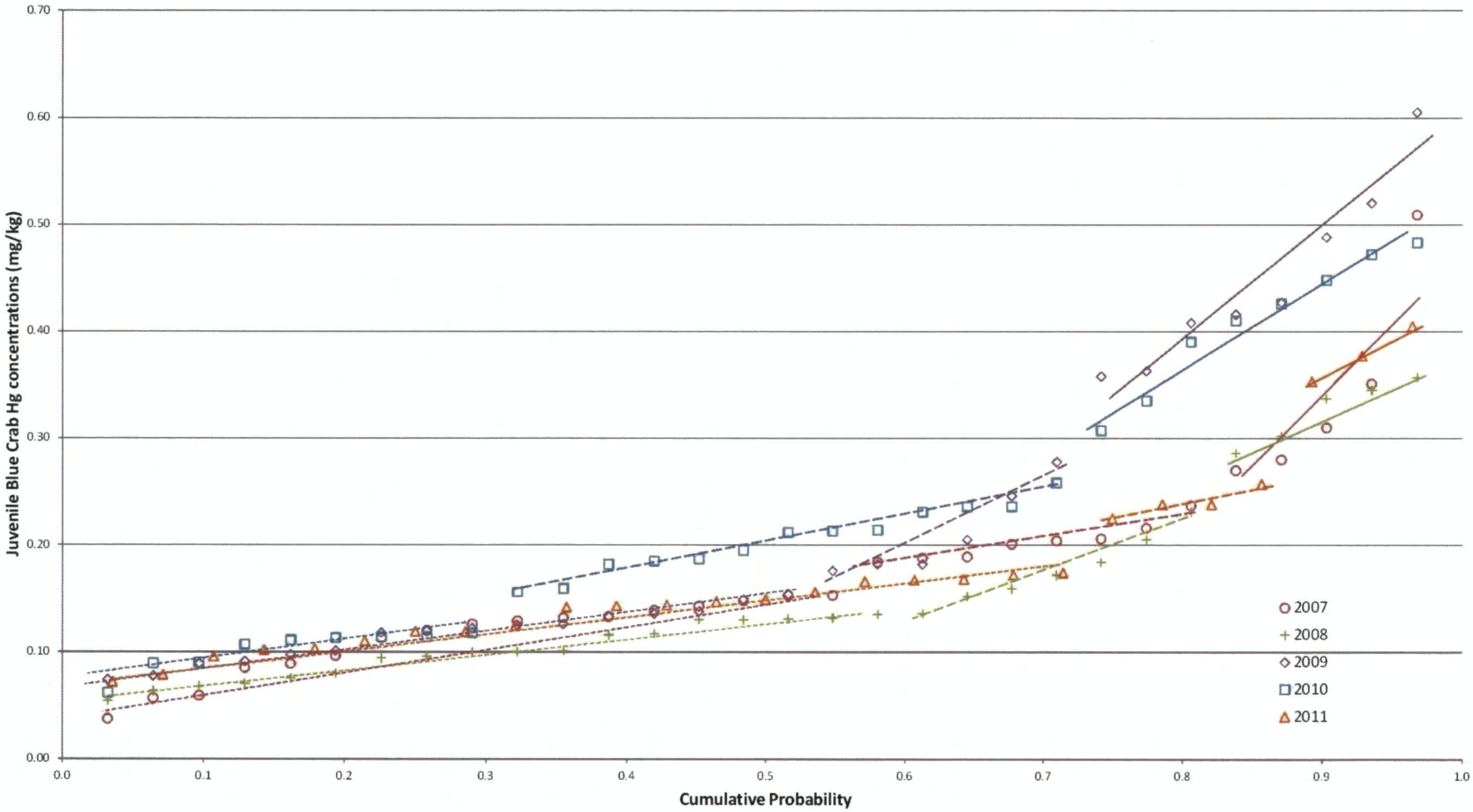
FIGURE 3.4-4

TRENDS IN NORTHERN AND SOUTHERN CLOSED AREA RED DRUM MERCURY CONCENTRATIONS

PROJECT:	DATE: JAN 11, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

Point Comfort Operations



High Sub-population
Middle Sub-population
Low Sub-population

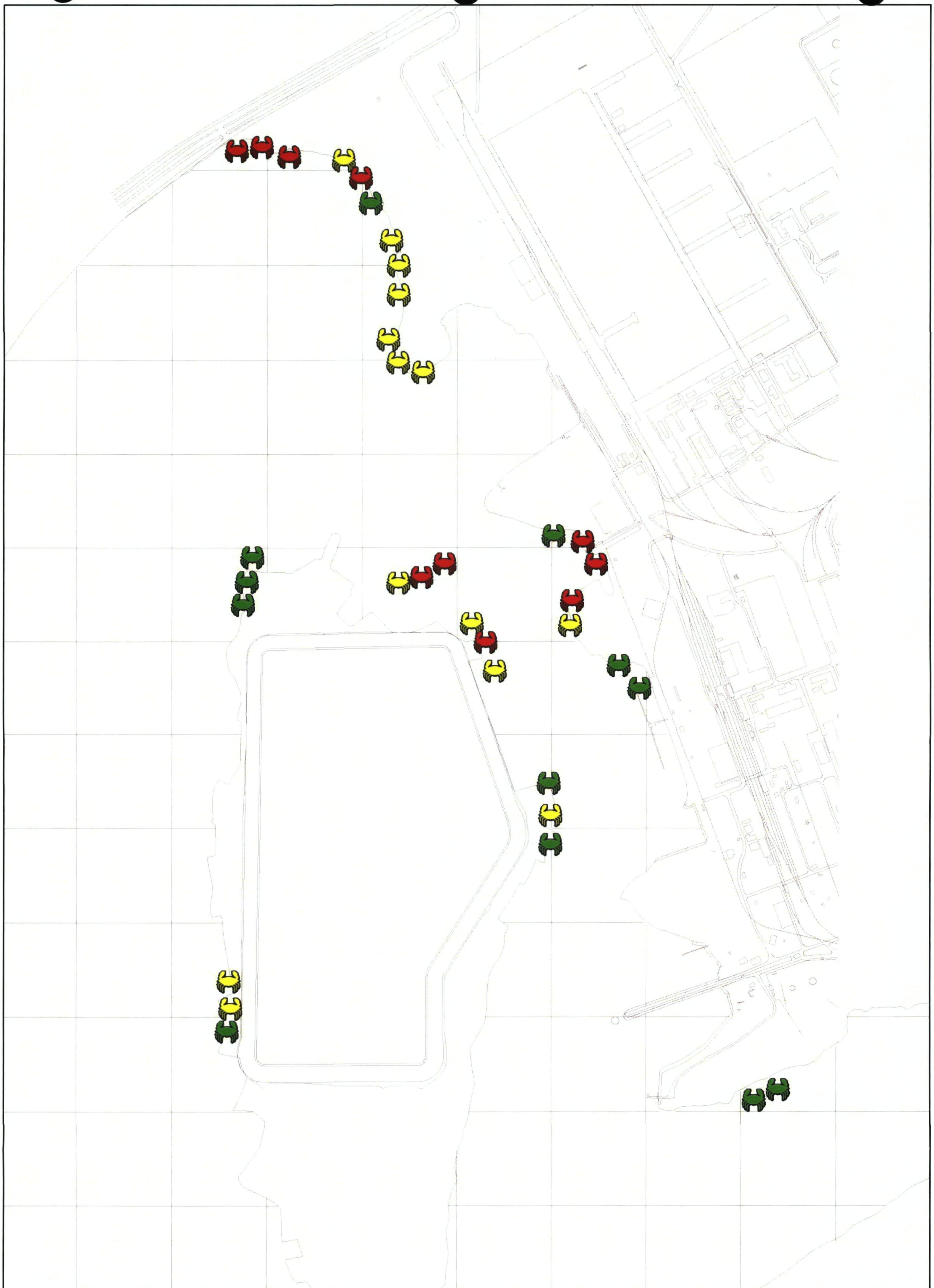
ALCOA

FIGURE 3.4-5

CUMULATIVE PROBABILITY GRAPH OF 2007-2011 JUVENILE BLUE CRAB MERCURY CONCENTRATIONS

PROJECT:	DATE: JAN11, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations



Legend

Total Hg Wet Weight (mg/Kg)

- <0.15
- 0.15 - 0.30
- >0.30

N

0 800 1,600

Feet

ALCOA

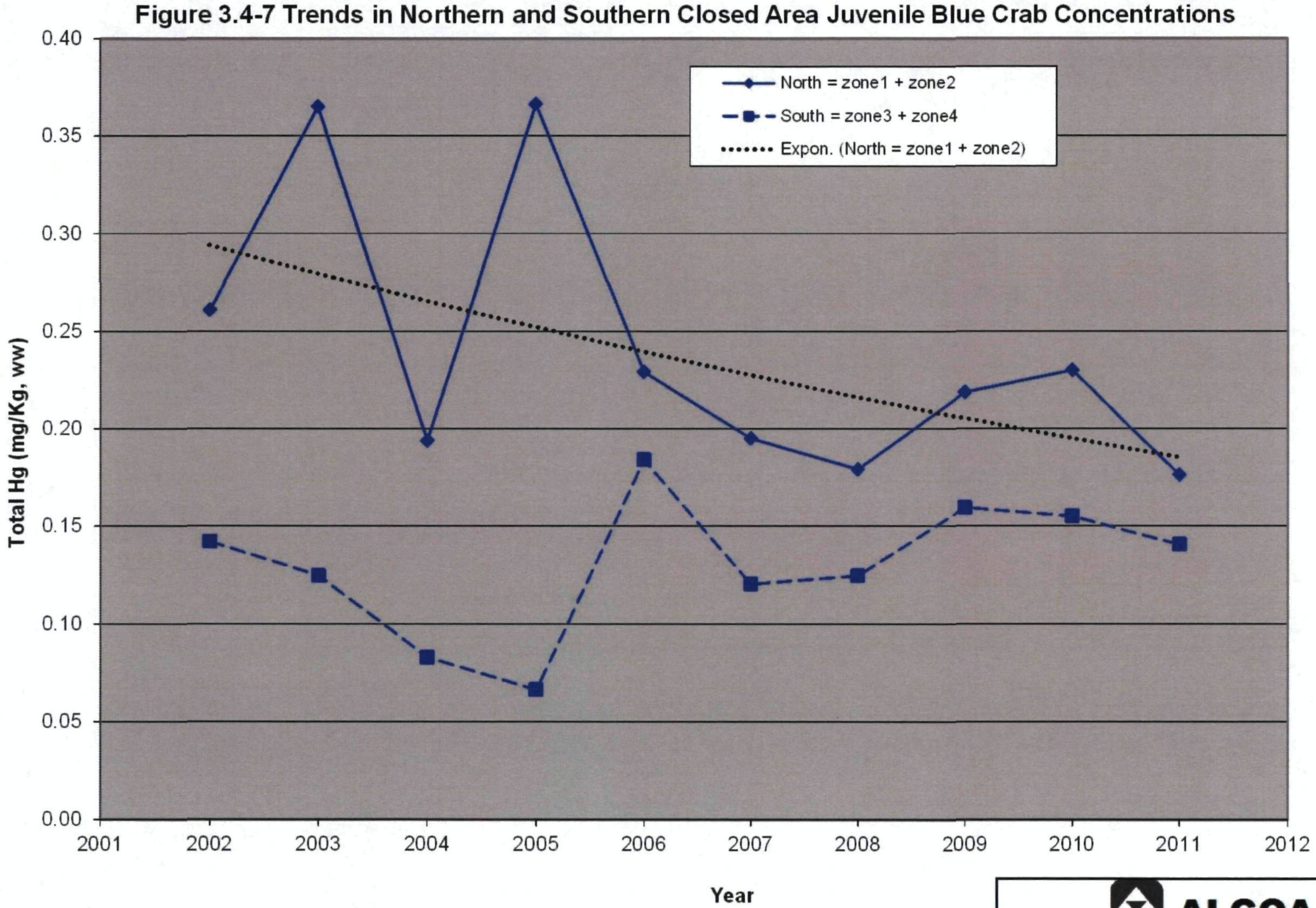
FIGURE 3.4-6

GEOGRAPHIC DISTRIBUTION OF 2011 JUVENILE BLUE CRAB SUBPOPULATIONS

PROJECT: 021125	DATE: JAN 11, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

Point Comfort Opreations



ALCOA

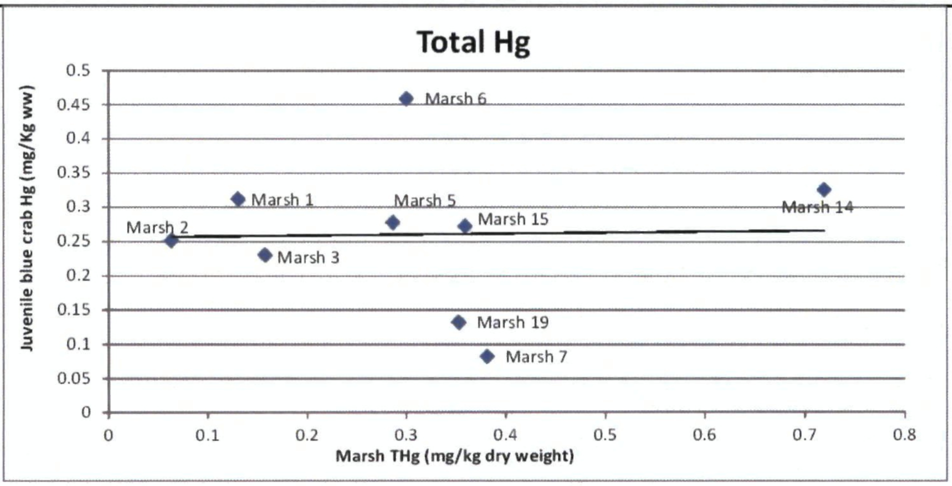
FIGURE 3.4-7

TRENDS IN NORTHERN AND SOUTHERN CLOSED AREA JUVENILE BLUE CRAB MERCURY CONCENTRATIONS

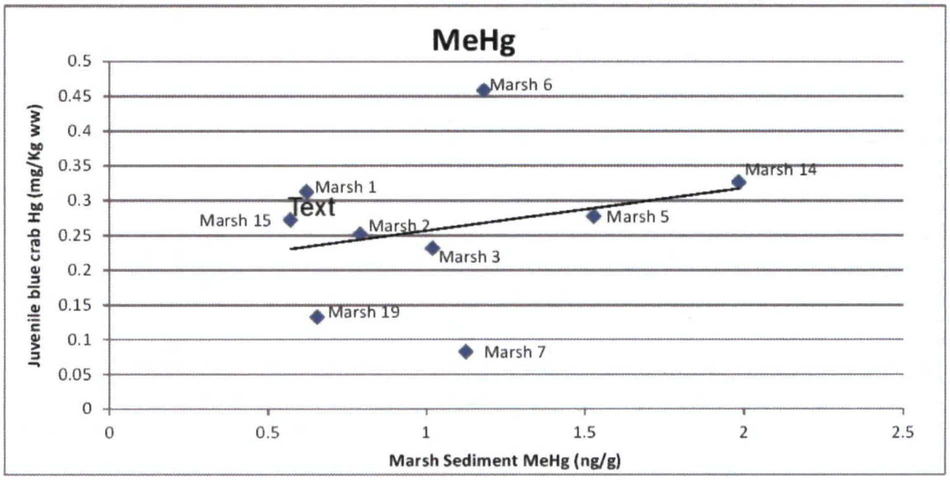
PROJECT:	DATE: JAN 11, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

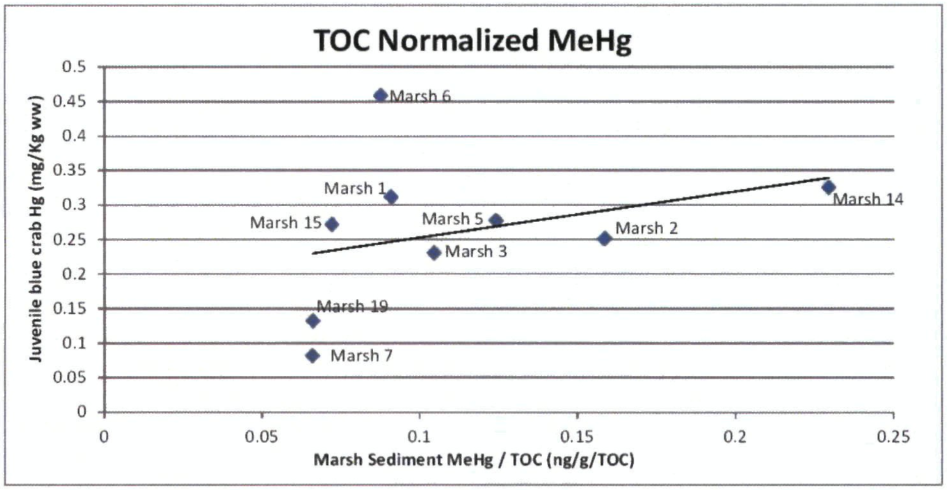
Point Comfort Operations



Pearson product-moment correlation coefficient: R = 0.026



Pearson product-moment correlation coefficient: R =0.263



Pearson product-moment correlation coefficient: R = 0.328

Note: Basic Data in Appendix A and B

ALCOA

FIGURE 3.4-8

RELATIONSHIP OF MARSH SEDIMENT CONCENTRATIONS TO JUVENILE BLUE CRAB MERCURY CONCENTRATIONS

PROJECT: 021125	DATE: MAR 27, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations

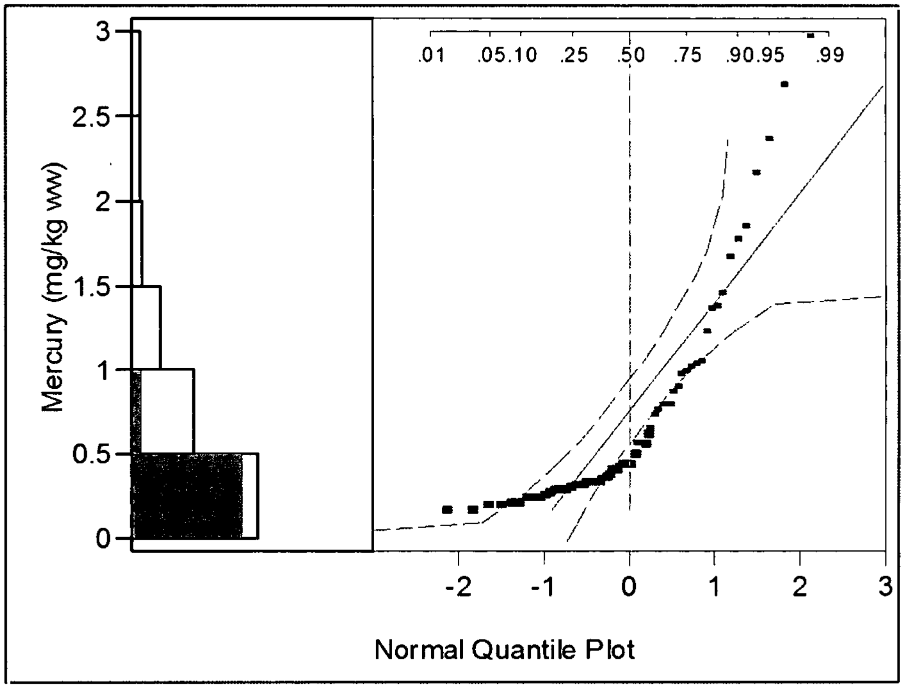


Fig. 3.4-9a Statistical Distribution of Red Drum Tissue Mercury Data – Untransformed Data

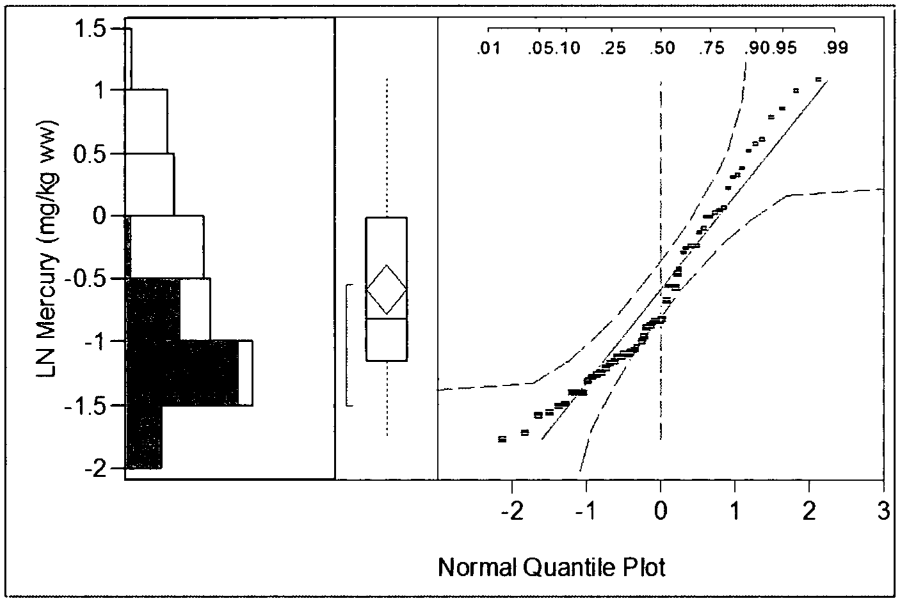


Fig. 3.4-9b Statistical Distribution of Red Drum Tissue Mercury Data – LN Transformed Data

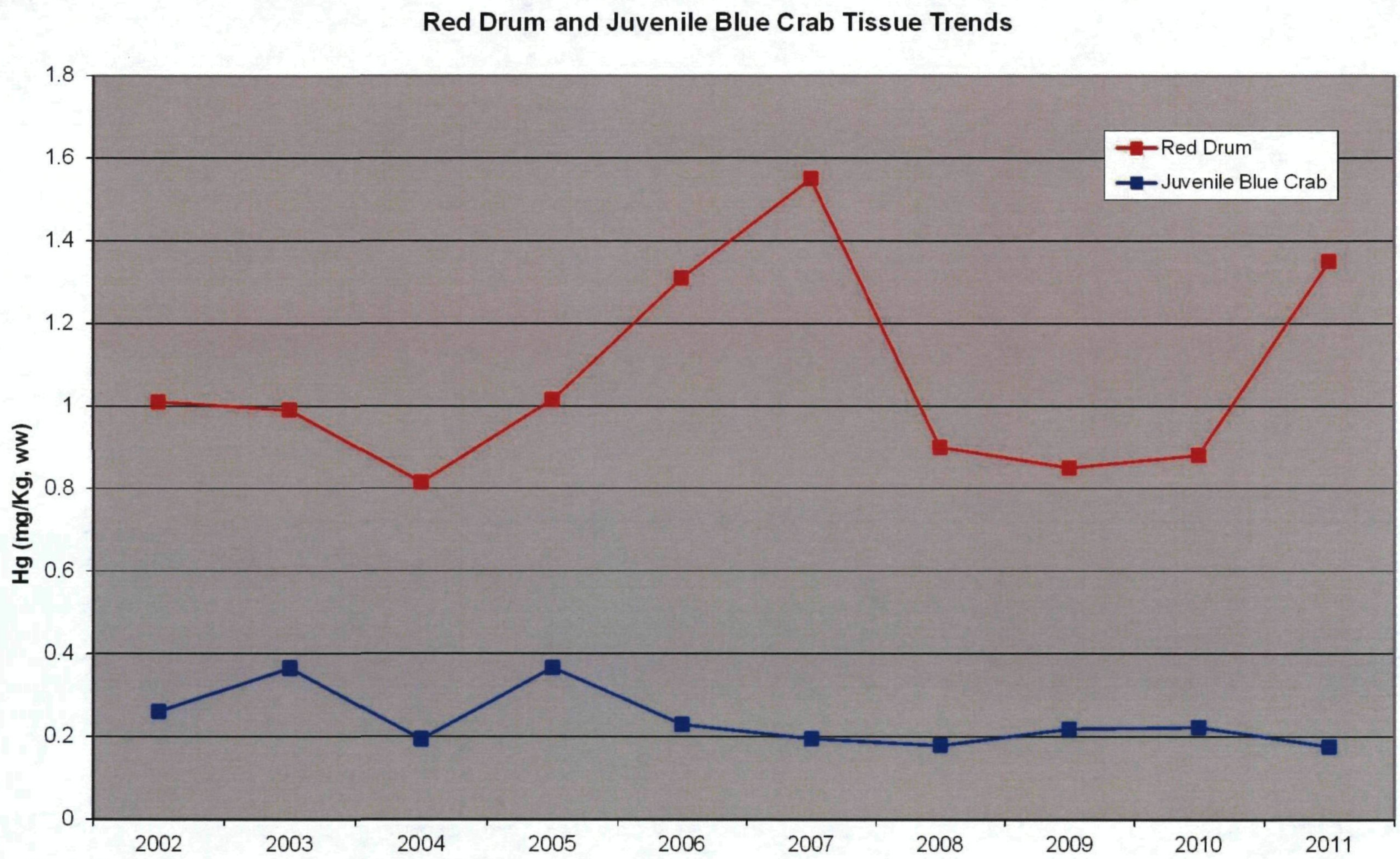
ALCOA

FIGURE 3.4-9

STATISTICAL DISTRIBUTION OF RED DRUM TISSUE MERCURY DATA

PROJECT:	DATE: JAN 11, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations



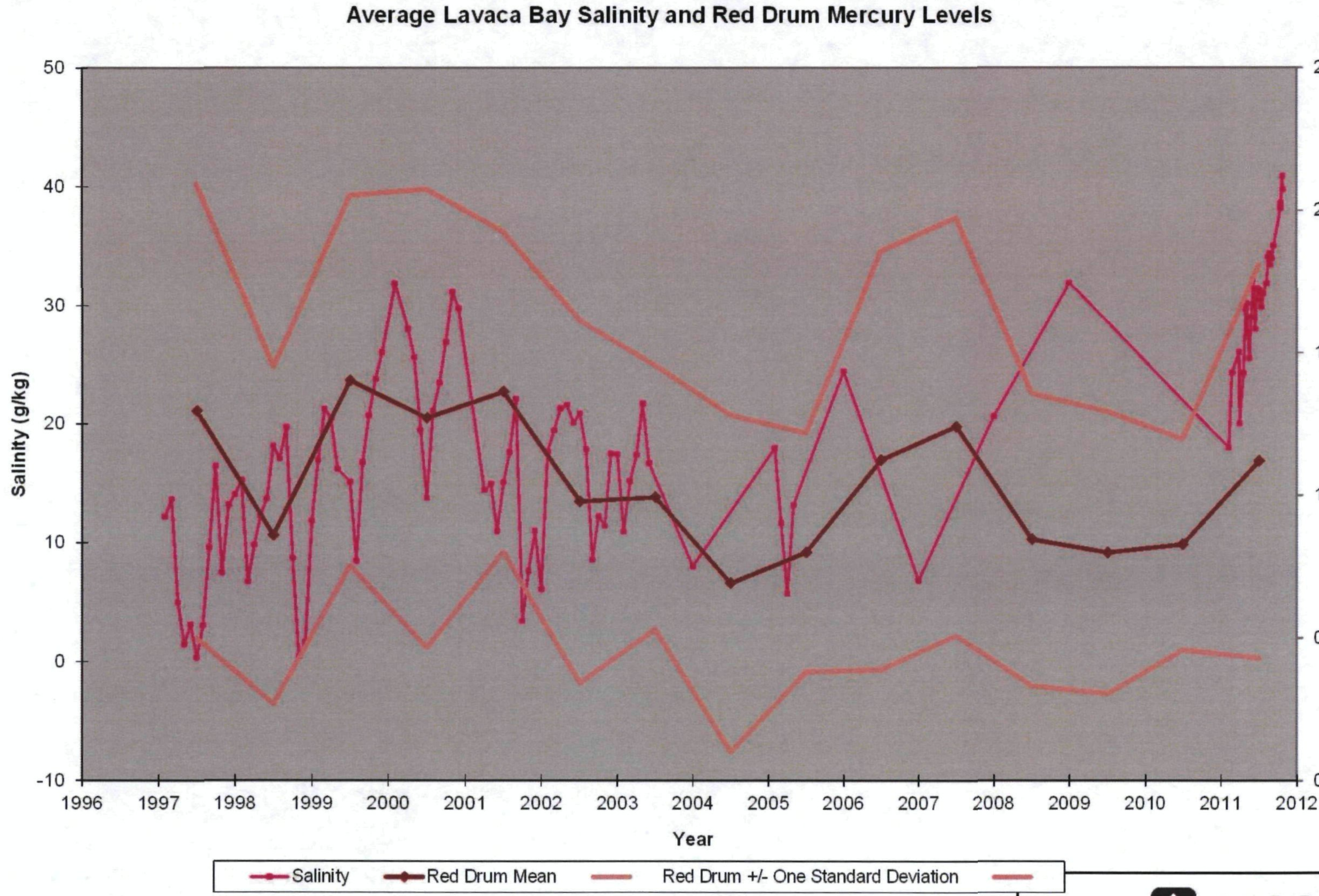
ALCOA

FIGURE 3.4-10

RED DRUM AND JUVENILE BLUE CRAB TISSUE TRENDS IN THE NORTHERN PART OF THE CLOSED AREA

PROJECT:	DATE: JAN 11, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations



ALCOA

FIGURE 3.4-11

RELATIONSHIP OF LAVACA BAY SALINITY AND RED DRUM MERCURY LEVELS

PROJECT:	DATE: JAN 27, 2012	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations

APPENDIX A

LAVACA BAY ANNUAL SEDIMENT MONITORING REPORT 2011

LAVACA BAY ANNUAL SEDIMENT MONITORING REPORT 2011

DRAFT

Alcoa Point Comfort Operations
Lavaca Bay Superfund Site

February 2012

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

The approved remedial action plan for the Alcoa/Lavaca Bay Superfund Site focuses on eliminating ongoing sources of mercury to the bay, reducing surface sediment concentrations of mercury and poly aromatic hydrocarbons, and ultimately reducing mercury concentrations in fish tissue. A key factor in the Lavaca Bay remedy is the reduction in sediment mercury concentrations through targeted sediment removal efforts, capping, enhanced natural recovery, and/or natural recovery. In accordance with the provisions of the Lavaca Bay Sediment Remediation and Long-Term Monitoring Plan Operations, Maintenance, and Monitoring Plan (OMMP, Appendix – to the Consent Decree, March 2005), surface sediment within open water and marshes of the Closed Area adjacent to the Point Comfort Facility will be sampled and analyzed annually for total mercury to document the effectiveness of the remedial action plan.

The Consent Decree requires that the marsh sediment monitoring program be performed until all designated marshes have met the remedial action objective (RAO) for marsh sediment. An average total mercury concentration is calculated for each marsh and compared to the marsh sediment RAO. Sediment monitoring will continue in each marsh until the mean mercury concentration in the marsh is less than the RAO.

The RAO for marsh sediments has been met in Marshes 1, 2, 3, 11, and 19. Pursuant to the Consent Decree, annual monitoring of sediments in Marsh 11 was discontinued in 2007. Alcoa has elected to continue annual monitoring of sediment at Marshes 1, 2, 3, and 19 on a voluntary basis as part of their on-going effort to better understand trends in tissue concentrations in the Closed Area of Lavaca Bay.

The Consent Decree requires that the open water sediment monitoring program be performed until a mean mercury concentration of less than 0.5 mg/kg dry weight is measured in the Closed Area in two consecutive years. As documented in the 2005 RAAER (Alcoa 2007), this occurred in 2004 and 2005 when the average concentrations of 0.293 ppm and 0.276 ppm, respectively, were measured in open water surface sediment samples from the Closed Area. Thus the performance objective of the open water sediment monitoring program established in the Consent Decree has been met. However, Alcoa has elected to continue annual monitoring of the northern half of the open water sediment sampling grid on a voluntary basis as part of their on-going effort to better understand trends in tissue concentrations in the Closed Area of Lavaca Bay.

1.1 PURPOSE AND SCOPE

In accordance with the sediment monitoring OMMP, 70 stations located in the 9 remaining marshes were sampled during the 2011 monitoring event. The OMMP requires that marsh sediment samples be analyzed for Total Mercury, at a minimum. In 2011, marsh sediment samples were analyzed for Total Mercury (Hg), Methyl Mercury (MeHg), and Total Organic Carbon (TOC). The voluntary open water sediment monitoring program in 2011 consisted of surface sediment sampling at the 15 stations shown in Figure 1. Open water samples were analyzed for Total Mercury, Methyl Mercury, and Total Organic Carbon.

This document presents a summary of sampling and analytical methods and the results of the 2011 annual sediment monitoring study. A detailed description of the methods and procedures for this study are presented in the OMMP.

1.2 SITE DESCRIPTION

Alcoa Point Comfort Operations is located in Calhoun County, Texas, adjacent to Lavaca Bay. The area in the bay adjacent to the Alcoa Plant is associated with elevated mercury concentrations in fish tissue and is closed to the taking of finfish and shellfish for consumption by order of the Texas Department of Health. This area is referred to as the Closed Area. The Remedial Investigation identified the Closed Area as an area where open water and marsh sediment contains elevated mercury concentrations. The study area and sampling strategy for the open water sediment samples and marsh sediment samples within the closed area are documented in the OMMP.

2.0 METHODS

Sediment samples for the 2011 annual sediment monitoring study were collected and processed by Benchmark Ecological Services, Inc. (Benchmark). Samples collected for total mercury and total organic carbon were analyzed by ALS Laboratory Group (ALS) in Houston, Texas. Samples collected for methyl-mercury were analyzed by Battelle Marine Sciences Laboratory (Battelle) in Sequim, Washington. Open water samples were analyzed for Total Mercury by ALS. Marsh samples were split, and half of each sample was analyzed for Total Mercury and TOC by ALS, and half was analyzed for Methyl Mercury by Battelle. Marsh samples were collected on 8, 9 and 13 of December 2011, and Open Water Samples were collected on 25 of October 2011. Validation and evaluation of the analytical results was conducted by Environmental Chemistry Services, Inc. in Houston, Texas.

2.1 SAMPLE STATIONS

Sample stations were located using coordinates provided by Alcoa. The coordinates were entered into a sub-meter Global Positioning System (GPS), and the GPS was used to position personnel over the sample station. Actual coordinates for the final sample station locations were recorded using the sub-meter GPS and are listed in Table 1 (open water stations) and Table 2 (marsh stations). Open water sediment sample station locations are shown in Figure 1, and marsh sediment stations are shown in Figures 2a, 2b, and 2c.

2.2 SAMPLE COLLECTION

Open water sediment samples were collected using an Ekman grab sampler. On board the sample vessel, a sub-sample (0-2 cm depth) was collected from an undisturbed portion of the Ekman sample using a ruler and a clean disposable plastic spoon. Sediment was placed in a 16 ounce pre-cleaned sample jar provided by the analytical laboratory. When the 16 ounce sample jar was approximately ¾ full, the plastic spoon was used to mix the sediment and the homogenized sediment was split into two sub-samples. One sub-sample was placed in a pre-cleaned 8 ounce jar provided by ALS Laboratory and was designated for Total Mercury and TOC analysis. The second sub-sample placed in a pre-cleaned 8 ounce jar provided by Battelle and was designated for Methyl Mercury analysis. New, clean sample jars and spoons were used for each sample.

Marsh sediment samples were collected directly from the sediment surface using pre-cleaned 6 inch long and 3 inch diameter polycarbonate core tubes. At each station, the core tube was inserted into the sediment to a depth greater than 2 cm. Sediment around the outer edge of the core was removed, a hand (wearing a nitrile glove) was inserted along the outside of the core tube, and under the bottom of the core tube. The core was removed from the sediment and an extruder was used to push the surface of the sediment to the top of the core. A ruler and black marker were used to identify the top 2 cm of sediment on the outside of the core tube. A clean plastic spoon was used to excavate the top 2 cm of sediment and place it into a pre-cleaned 16 ounce jar provided by the analytical laboratory. The core was reinserted into the sediment, and the process was repeated until a sufficient volume of sediment was placed in the 16 ounce jar (approximately ¾ full). A plastic spoon was used to mix the sediment, and the homogenized sediment was split into two sub-samples. One sub-sample was placed in a pre-cleaned 8 ounce jar provided by ALS Laboratory and was designated for Total Mercury and TOC analysis. The second sub-sample was placed in a pre-cleaned 8 ounce jar provided by Battelle and was designated for Methyl Mercury analysis. New clean core tubes, sample jars, and spoons were used for each sample.

Sample containers were labeled with the sample ID, station ID, collection date, time, and intended analysis and were put in re-sealable plastic bags, bubble wrapped, and immediately placed in an insulated chest for storage and transport. Samples designated for Total Mercury and TOC analysis were placed on wet ice in an insulated chest. Samples designated for Methyl Mercury analysis were placed on dry ice in a separate insulated chest. Sediment samples designated for Total Mercury and TOC analyses were hand delivered to the ALS Laboratory in Houston for analysis. Samples designated for Methyl Mercury analysis were delivered via overnight shipping to the Battelle Marine Sciences Laboratory.

Sample station coordinates, sample IDs, sample collection dates, and sediment descriptions for the open water stations were recorded on a field data form at the time of sample collection and are listed in Table 1. Sample station IDs, sample IDs, and sample collection dates for the marsh stations were recorded on a field data form at the time of sample collection and are listed in Table 2. A Chain of Custody form was completed for all samples collected.

Table 1 - 2011 Open Water Sediment Stations, Sample IDs, Field Data, and Results

Station ID	Easting[1]	Northing[1]	Sample ID	Date	Time	Water Depth[2] (ft)	Total Hg (mg/kg)[3] dry wt	Total Hg SQL[4] (mg/kg)	Total Hg Flags	Methyl Hg (ng/g)[3] dry wt	Methyl Hg % M	Methyl Hg Flags	TOC % M	TOC[3] (wt%)
SMP004	2746192.12	13433674.25	SMP-SE-16300	10/25/2011	10:24	3.0	0.177	0.00041		0.564	34.1%		31.1%	0.804
STO0201	2746959.51	13433789.36	SMP-SE-16301	10/25/2011	10:41	2.8	0.271	0.00049		0.679	41.3%		40.1%	0.969
SMP0009	2746959.89	13432890.74	SMP-SE-16302	10/25/2011	10:52	3.5	0.549	0.00061		1.41	52.9%		53.8%	1.58
SUP0016	2747363.39	13432658.05	SMP-SE-16303	10/25/2011	11:02	3.2	0.404	0.00064		1.03	54.7%		53.8%	1.72
STO0189	2746115.11	13429696.00	SMP-SE-16304	10/25/2011	11:30	2.7	0.329	0.00040		0.258	28.2%		29.3%	0.740
LVB0909	2746301.77	13430358.57	SMP-SE-16305	10/25/2011	11:45	1.7	0.185	0.00038		0.226	25.8%		26.3%	0.706
SUP0107	2746508.14	13430922.76	SMP-SE-16306	10/25/2011	11:57	1.8	0.322	0.00053		0.795	39.6%		44.4%	1.59
SMP0016	2747740.78	13432107.24	SMP-SE-16307	10/25/2011	12:18	4.0	0.418	0.00075		1.08	59.8%		60.7%	1.73
SUP0020	2748994.17	13430789.36	SMP-SE-16308	10/25/2011	12:30	2.9	0.365	0.00060		0.487	49.2%		51.2%	1.97
SUP0021	2749443.57	13430569.82	SMP-SE-16309	10/25/2011	12:48	3.1	0.924	0.00055		1.35	51.5%		49.5%	1.19
LVB0917	2749204.39	13430031.85	SMP-SE-16310	10/25/2011	12:56	2.7	0.267	0.00041		0.397	36.4%		30.0%	1.26
SMP0041	2749519.33	13429822.09	SMP-SE-16311	10/25/2011	13:09	4.0	0.0895	0.00042		0.307	30.3%		32.6%	1.73
SMP0040	2748604.39	13429634.76	SMP-SE-16312	10/25/2011	13:26	2.1	0.319	0.00041		0.299	29.1%		28.6%	1.03
SUP0043	2748391.00	13430129.89	SMP-SE-16313	10/25/2011	13:34	2.3	0.464	0.00043		0.534	35.6%		32.1%	1.41
SUP0053	2747607.02	13430470.64	SMP-SE-16314	10/25/2011	13:54	2.1	0.474	0.00065		0.994	56.5%		55.7%	1.73

[1]Coordinates reported in NAD 1983 StatePlane Texas South Central, Feet
[2] Water Depths are not calibrated to tidal level
[3]Results reported as dry weight
[4]SQL - Sample Quantitation Limit

Table 2 - 2011 Marsh Sediment Stations, Sample IDs, Field Data, and Results

Habitat	Station ID	Easting[1]	Northing[1]	Sample ID	Date	Water Depth (in)[2]	Total Hg (mg/kg)[3] dry wt	Total Hg SQL[4] (mg/kg)	Total Hg Flags	Methyl Hg % M	Methyl Hg (ng/g)[3] dry wt	MeHg Flags	TOC % M	TOC (wt%)[3]
Marsh 1	Marsh-1-1R	2746249.55	13434357.53	SMP-SE-16315	12/8/2011	0.00	0.0820	0.00039		27.4%	0.419		28.8%	0.712
	Marsh-1-2R	2746388.26	13434347.64	SMP-SE-16316	12/8/2011	0.00	0.0812	0.00039		29.5%	0.238		25.7%	0.364
	Marsh-1-3R	2746509.25	13434360.37	SMP-SE-16317	12/8/2011	0.00	0.0768	0.00038		30.8%	0.538		26.7%	0.495
	Marsh-1-4R	2746620.68	13434346.13	SMP-SE-16318	12/8/2011	0.00	0.0680	0.00037		22.5%	0.400		22.9%	0.293
	Marsh-1-5R	2746771.04	13434322.11	SMP-SE-16319	12/8/2011	0.00	0.0727	0.00039		30.7%	0.490		27.9%	0.384
	Marsh-1-6R	2746900.77	13434315.15	SMP-SE-16320	12/8/2011	0.00	0.0739	0.00039		31.0%	0.529		30.7%	0.368
	Marsh-1-7R	2747035.10	13434290.25	SMP-SE-16321	12/8/2011	0.00	0.0664	0.00036		26.5%	0.224		23.9%	0.247
	Marsh-1-8R	2747155.71	13434240.68	SMP-SE-16322	12/8/2011	0.00	0.0730	0.00040		29.5%	0.545		30.1%	0.521
	Marsh-1-9R	2747278.65	13434200.26	SMP-SE-16323	12/8/2011	0.00	0.0958	0.00039		29.1%	0.439		27.5%	0.406
	Marsh-1-10R	2747377.28	13434131.52	SMP-SE-16324	12/8/2011	0.00	0.123	0.00039		29.1%	1.05		28.6%	0.673
	Marsh-1-11R	2747448.84	13434004.75	SMP-SE-16325	12/8/2011	0.00	0.438	0.00041		33.1%	1.25		31.8%	0.722
	Marsh-1-12R	2747496.42	13433942.70	SMP-SE-16326	12/8/2011	0.00	0.316	0.00040		25.9%	1.34		28.2%	0.755
							0.1306				**0.622**			**0.495**
Marsh 2	Marsh-2-1R	2747694.47	13433529.63	SMP-SE-16327	12/8/2011	0.00	0.0161	0.00041		26.9%	0.362		28.0%	0.406
	Marsh-2-2R	2747709.62	13433469.52	SMP-SE-16328	12/8/2011	0.00	0.0857	0.00045		37.2%	1.01		35.5%	0.624
	Marsh-2-3R	2747682.61	13433399.49	SMP-SE-16329	12/8/2011	0.00	0.0652	0.00040		26.7%	0.623		28.1%	0.465
	Marsh-2-4R	2747703.38	13433330.24	SMP-SE-16330	12/8/2011	0.00	0.0713	0.00040		28.2%	0.992		30.5%	0.622
	Marsh-2-5R	2747699.87	13433268.62	SMP-SE-16331	12/8/2011	0.00	0.0902	0.00044		37.2%	1.05		34.6%	0.512
	Marsh-2-6R	2747730.33	13433198.31	SMP-SE-16332	12/8/2011	0.00	0.0522	0.00040		26.2%	0.707		29.9%	0.350
							0.0635				**0.791**			**0.497**
Marsh 3	Marsh-3-1R	2747750.72	13433008.98	SMP-SE-16333	12/8/2011	0.00	0.107	0.00042		34.1%	1.97		33.1%	0.942
	Marsh-3-2R	2747745.97	13432887.77	SMP-SE-16334	12/8/2011	0.00	0.136	0.00041		32.9%	1.11		30.1%	0.701
	Marsh-3-3R	2747715.50	13432766.72	SMP-SE-16335	12/8/2011	0.00	0.128	0.00046		32.7%	0.730		36.4%	0.845
	Marsh-3-4R	2747673.23	13432645.74	SMP-SE-16336	12/8/2011	0.00	0.0724	0.00039		24.2%	0.261		25.2%	0.757
	Marsh-3-5R	2747687.18	13432507.08	SMP-SE-16337	12/8/2011	0.00	0.366	0.00039		26.9%	0.458		28.5%	0.832
	Marsh-3-6R	2747749.22	13432423.28	SMP-SE-16338	12/8/2011	0.00	0.137	0.00035		29.0%	1.59		22.1%	1.88
							0.1577				**1.020**			**0.993**

Table 2 - 2011 Marsh Sediment Stations, Sample IDs, Field Data, and Results

Habitat	Station ID	Easting[1]	Northing[1]	Sample ID	Date	Water Depth (in)[2]	Total Hg (mg/kg)[3] dry wt	Total Hg SQL[4] (mg/kg)	Total Hg Flags	Methyl Hg % M	Methyl Hg (ng/g)[3] dry wt	MeHg Flags	TOC % M	TOC (wt%)[3]
Marsh 5	Marsh-5-1R	2749098.64	13430988.99	SMP-SE-16369	12/13/2011	0.67	0.367	0.00046		39.2%	2.52		40.6%	1.59
	Marsh-5-2R	2749196.98	13430977.59	SMP-SE-16370	12/13/2011	0.67	0.307	0.00038		32.1%	1.22		26.6%	2.69
	Marsh-5-3R	2749282.45	13430915.13	SMP-SE-16371	12/13/2011	0.50	0.311	0.00041		32.7%	1.58		33.0%	0.661
	Marsh-5-4R	2749325.73	13430848.28	SMP-SE-16372	12/13/2011	0.50	0.275	0.00044		35.8%	1.67		36.9%	1.25
	Marsh-5-5R	2749372.48	13430856.81	SMP-SE-16373	12/13/2011	0.25	0.345	0.00055		50.1%	1.37		49.8%	1.68
	Marsh-5-6R	2749428.11	13430786.84	SMP-SE-16374	12/13/2011	0.17	0.112	0.00040		32.3%	0.805		32.1%	0.920
							0.2862				**1.528**			**1.465**
Marsh 6	Marsh-6-1R	2749459.49	13430732.03	SMP-SE-16375	12/13/2011	0.08	0.0649	0.00039		26.1%	0.414		25.7%	1.02
	Marsh-6-2R	2749503.00	13430581.93	SMP-SE-16376	12/13/2011	0.08	0.470	0.00044		36.5%	0.961		36.7%	2.41
	Marsh-6-3R	2749538.97	13430428.37	SMP-SE-16377	12/13/2011	0.67	0.435	0.00062		55.2%	1.20		53.8%	1.57
	Marsh-6-4R	2749476.23	13430422.39	SMP-SE-16378	12/13/2011	0.17	0.360	0.00061		53.4%	2.25		54.1%	1.65
	Marsh-6-5R	2749360.10	13430534.38	SMP-SE-16379	12/13/2011	0.17	1.430	0.0011		44.7%	2.88		48.1%	1.05
	Marsh-6-6R	2749188.13	13430405.87	SMP-SE-16380	12/13/2011	0.25	0.184	0.00050		37.6%	0.476		42.5%	0.776
	Marsh-6-7R	2749162.18	13430254.02	SMP-SE-16381	12/13/2011	0.25	0.248	0.00052		35.3%	0.806		43.6%	0.941
	Marsh-6-8R	2749197.73	13430104.75	SMP-SE-16382	12/13/2011	0.33	0.343	0.00042		31.2%	0.421		30.8%	0.899
	Marsh-6-9R	2749324.18	13429942.60	SMP-SE-16383	12/13/2011	0.33	0.545	0.00043		31.4%	1.80		32.8%	2.30
	Marsh-6-10R	2749470.62	13429896.25	SMP-SE-16384	12/13/2011	0.33	0.0519	0.00044		34.4%	0.603		34.5%	1.68
							0.4132				**1.181**			**1.430**
Marsh 7	Marsh-7-1R	2749571.92	13429894.48	SMP-SE-16353	12/9/2011	0.17	0.0861	0.00042		36.1%	1.90		34.0%	1.45
	Marsh-7-2R	2749663.71	13429867.38	SMP-SE-16354	12/9/2011	0.00	0.396	0.00034		19.9%	0.606		19.5%	2.72
	Marsh-7-3R	2749802.01	13429822.53	SMP-SE-16355	12/9/2011	0.00	0.815	0.00035		18.9%	0.977		16.1%	4.00
	Marsh-7-4R	2749851.04	13429713.11	SMP-SE-16356	12/9/2011	0.00	0.169	0.00034		17.0%	0.338		16.2%	2.86
	Marsh-7-5R	2749891.36	13429601.89	SMP-SE-16357	12/9/2011	0.00	0.239	0.00038		27.5%	1.26		26.8%	1.54
	Marsh-7-6R	2749925.12	13429494.13	SMP-SE-16358	12/9/2011	0.00	0.583	0.00035		22.5%	1.67		20.3%	1.34
							0.3814				**1.125**			**2.318**

Table 2 - 2011 Marsh Sediment Stations, Sample IDs, Field Data, and Results

Habitat	Station ID	Easting[1]	Northing[1]	Sample ID	Date	Water Depth (in)[2]	Total Hg			Methyl Hg			TOC	
							(mg/kg)[3] dry wt	SQL[4] (mg/kg)	Total Hg Flags	% M	(ng/g)[3] dry wt	MeHg Flags	% M	TOC (wt%)[3]
Marsh 14	Marsh-14-1R	2747875.22	13430652.53	SMP-SE-16347	12/9/2011	0.50	1.320	0.00093		38.6%	3.40		36.9%	1.39
	Marsh-14-2R	2747887.39	13430625.15	SMP-SE-16348	12/9/2011	0.33	0.247	0.00042		32.6%	1.15		31.7%	0.575
	Marsh-14-3R	2747911.13	13430580.14	SMP-SE-16349	12/9/2011	0.33	0.423	0.00043		34.4%	1.73		32.9%	0.652
	Marsh-14-4R	2747935.26	13430548.56	SMP-SE-16352	12/9/2011	0.17	1.600	0.00087		34.9%	4.13		33.7%	0.906
	Marsh-14-5R	2747963.73	13430517.04	SMP-SE-16350	12/9/2011	0.17	0.536	0.00042		31.8%	1.02		30.8%	0.774
	Marsh-14-6R	2747964.68	13430474.07	SMP-SE-16351	12/9/2011	0.33	0.190	0.00046		33.6%	0.474		36.4%	0.601
							0.7193				**1.984**			**0.816**
Marsh 15	Marsh-15-1R	2747487.26	13430236.14	SMP-SE-16359	12/13/2011	0.33	1.990	0.0021		30.4%	0.931		33.0%	0.848
	Marsh-15-2R	2747619.04	13430145.19	SMP-SE-16360	12/13/2011	0.33	0.392	0.00038		27.9%	0.693		26.9%	0.571
	Marsh-15-3R	2747753.30	13430130.72	SMP-SE-16361	12/13/2011	0.17	0.902	0.00042		30.4%	0.458		33.7%	1.56
	Marsh-15-4R	2747897.90	13430133.02	SMP-SE-16362	12/13/2011	0.25	0.279	0.00041		28.0%	0.287		30.0%	1.77
	Marsh-15-5R	2748045.03	13430135.23	SMP-SE-16363	12/13/2011	0.42	0.222	0.00050		44.9%	0.707		44.2%	1.40
	Marsh-15-6R	2748177.77	13430131.02	SMP-SE-16364	12/13/2011	0.25	0.196	0.00035		25.5%	0.438		22.1%	0.643
	Marsh-15-7R	2748312.45	13430048.82	SMP-SE-16365	12/13/2011	0.50	0.384	0.00038		29.5%	0.409		28.9%	0.562
	Marsh-15-8R	2748395.69	13429984.08	SMP-SE-16366	12/13/2011	0.50	0.687	0.00041		27.9%	0.725		31.0%	0.939
	Marsh-15-9R	2748349.70	13429884.92	SMP-SE-16367	12/13/2011	0.50	0.0679	0.00039		31.5%	0.673		26.1%	0.458
	Marsh-15-10R	2748313.63	13429789.69	SMP-SE-16368	12/13/2011	0.00	0.0988	0.00039		26.9%	0.385		27.5%	1.30
							0.5219				**0.571**			**1.005**

Table 2 - 2011 Marsh Sediment Stations, Sample IDs, Field Data, and Results

Habitat	Station ID	Easting[1]	Northing[1]	Sample ID	Date	Water Depth (in)[2]	Total Hg (mg/kg)[3] dry wt	Total Hg SQL[4] (mg/kg)	Total Hg Flags	Methyl Hg % M	Methyl Hg (ng/g)[3] dry wt	MeHg Flags	TOC % M	TOC (wt%)[3]
Marsh 19	Marsh-19-1R	2746376.47	13429622.41	SMP-SE-16346	12/8/2011	0.08	0.223	0.00043		37.5%	0.513		31.5%	1.14
	Marsh-19-2R	2746351.66	13429766.54	SMP-SE-16345	12/8/2011	0.00	0.339	0.00044		36.4%	0.650		34.4%	1.39
	Marsh-19-3R	2746289.42	13429902.12	SMP-SE-16344	12/8/2011	0.00	2.750	0.0042		36.7%	0.326		34.4%	1.18
	Marsh-19-4R	2746237.99	13430028.49	SMP-SE-16343	12/8/2011	0.00	0.164	0.00039		28.5%	0.295		29.1%	1.82
	Marsh-19-5R	2746345.99	13430149.36	SMP-SE-16342	12/8/2011	0.00	0.239	0.00040		32.7%	0.524		30.2%	0.908
	Marsh-19-6R	2746399.23	13430285.08	SMP-SE-16341	12/8/2011	0.08	0.630	0.00061		50.2%	1.32		54.5%	1.18
	Marsh-19-7R	2746397.12	13430419.34	SMP-SE-16340	12/8/2011	0.08	0.305	0.00040		33.6%	0.859		28.6%	0.713
	Marsh-19-8R	2746445.62	13430565.76	SMP-SE-16339	12/8/2011	0.08	0.569	0.00039		31.3%	0.751		27.5%	0.727
							0.6524				**0.655**			**1.132**

[1]Coordinates reported in NAD 1983 StatePlane Texas South Central, Feet
[2] Water Depths are not calibrated to tidal level
[3]Results reported as dry weight
[4]SQL - Sample Quantitation Limit

3.0 ANALYTICAL RESULTS

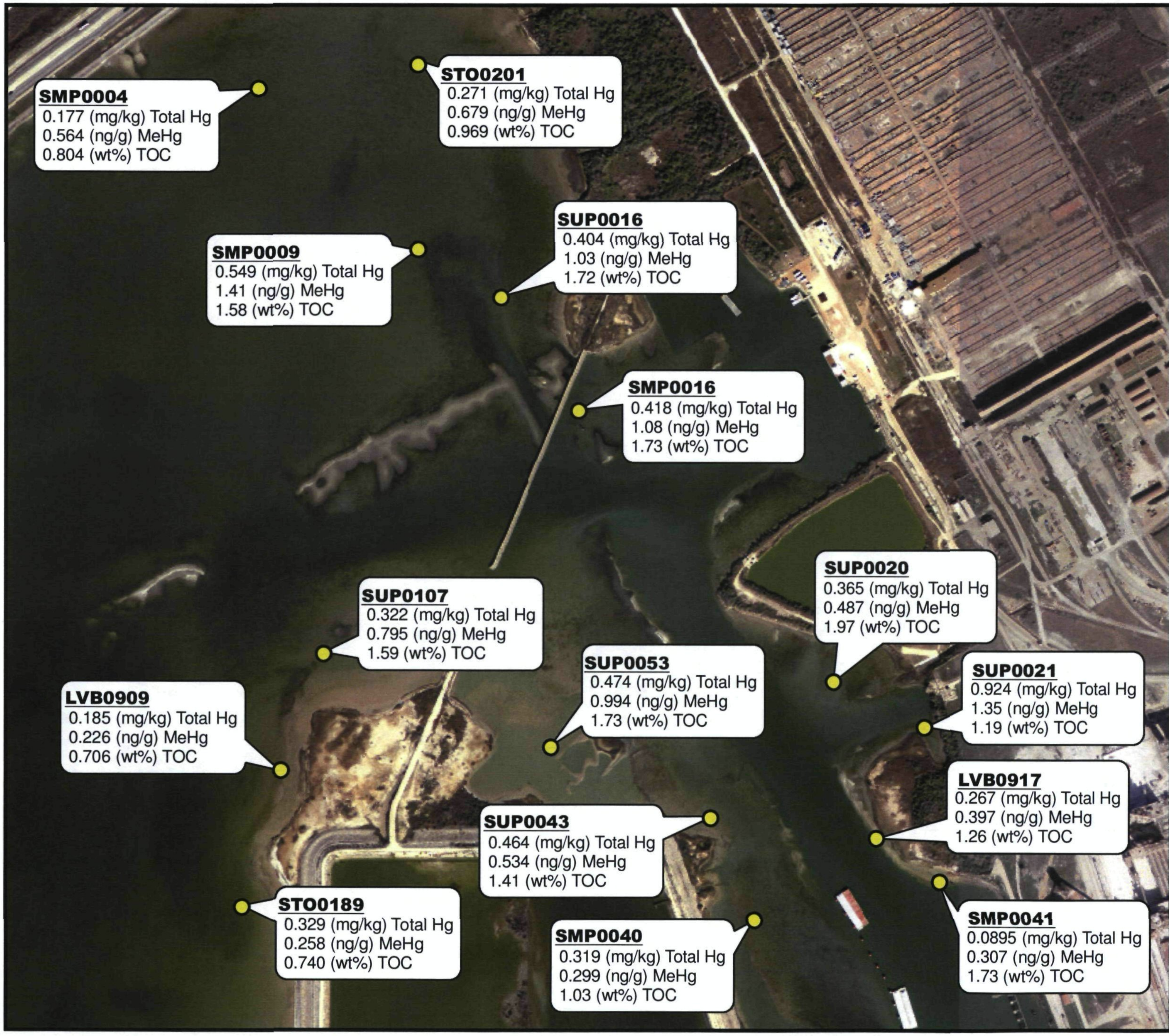
Marsh and open water sediment samples were analyzed for Total Mercury (Method 7471A) and percent moisture by ALS in Houston, Texas. Total mercury results were reported in µg/kg as dry weight and were converted to mg/kg as dry weight. Marsh Sediment samples were also analyzed for Total Organic Carbon (SW 9060) by ALS in Houston, Texas, and Methyl Mercury (EPA 1630 (draft) using preparation outlined in Bloom et. al. 1997[1]) by Battelle Marine Sciences Laboratory. Total Organic Carbon results were reported in percent sample weight. Benchmark received all final data packets from ALS Laboratory on 9 January 2012. Data validation and evaluation was completed by Environmental Chemistry Services on 1 February 2012. Methyl mercury results were reported in ng/kg as dry weight. Benchmark received the final data packet from Battelle Marine Sciences Laboratory on 27 January 2011. Data validation and evaluation was completed by Environmental Chemistry Services 1 February 2012.

Open water sediment station numbers, sample IDs, analytical results and percent moisture are listed for each sample in Table 1. Marsh sediment station numbers, sample identification numbers, and analytical results are listed in Table 2. The analytical results for the individual samples from each marsh were mathematically averaged in this report to produce the average mercury concentration for each marsh as required by the OMMP. Marsh sediment analytical results are shown in the Figures as listed in Table 3. Open water analytical results are shown in Figure 1.

Analytical results for sediment samples were validated according to the Standard Operating Procedure Data Validation (Appendix E) in the Quality Assurance Project Plan Alcoa (Point Comfort)/Lavaca Bay Superfund Site (22 August 2005). All analytical results were validated and may be included in the data used to evaluate the effectiveness of the approved remedy and to meet monitoring requirements specified in the Consent Decree.

Table 3 – Figures Showing Marsh Sediment Results

Marsh ID	Analyte	Figure ID
Marshes 1, 2, and 3	Total Hg	Figure 2a
Marshes 5, 6, and 7	Total Hg	Figure 2b
Marshes 14, 15, and 19	Total Hg	Figure 2c
Marshes 1, 2, and 3	Methyl Hg	Figure 3a
Marshes 5, 6, and 7	Methyl Hg	Figure 3b
Marshes 14, 15, and 19	Methyl Hg	Figure 3c
Marshes 1, 2, and 3	TOC	Figure 4a
Marshes 5, 6, and 7	TOC	Figure 4b
Marshes 14, 15, and 19	TOC	Figure 4c



N

0 250 500 1,000 Feet

Legend

Open Water Sample Station Locations
(0-2 cm Depth Interval Total Hg, MeHg, and TOC)

DRAFT

Notes

2009 DOQQ
NAD 1983 UTM
Zone 14 North Meters

Annual Sediment Monitoring Study Fall 2011

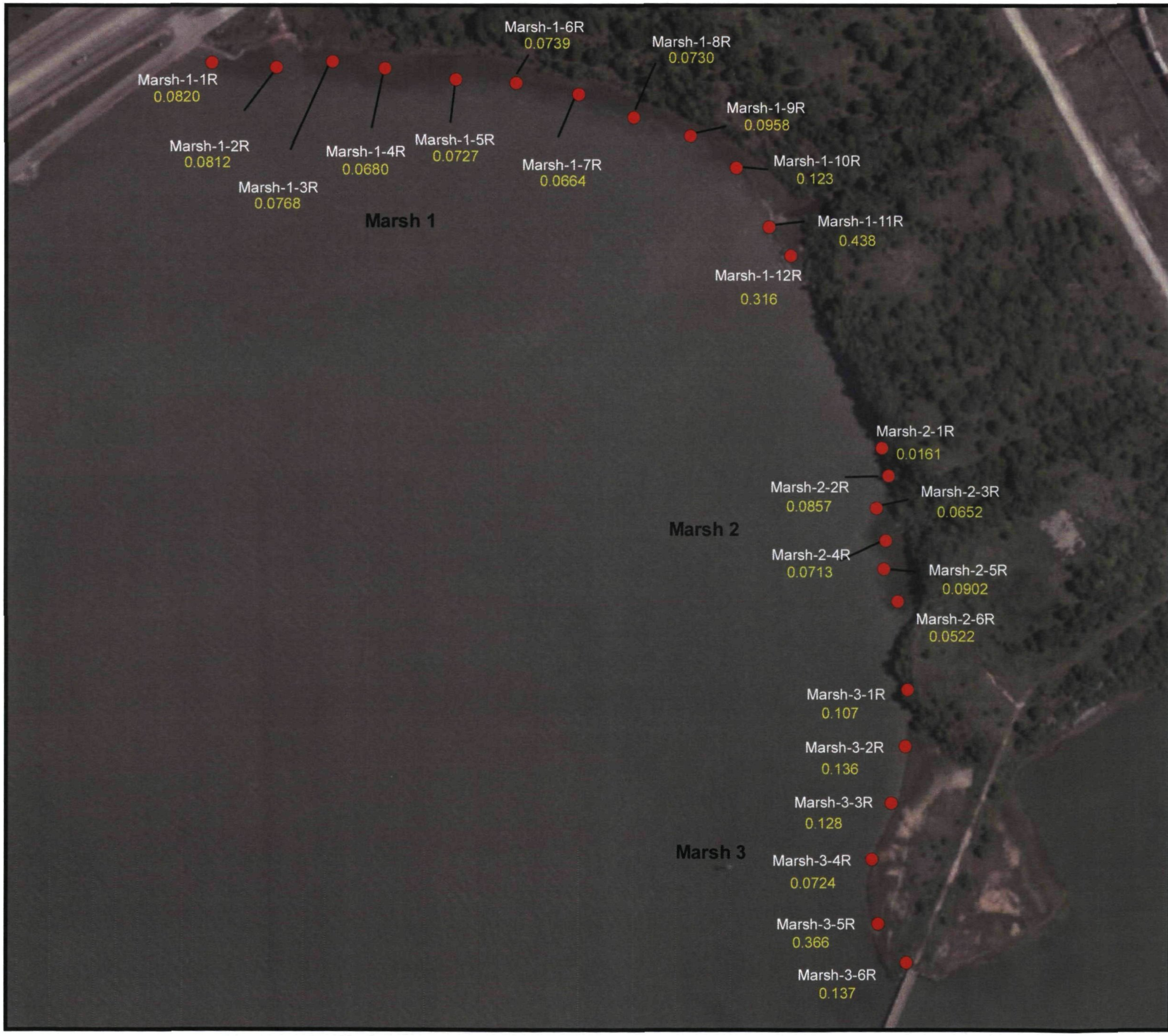
Open Water Total Hg, MeHg, and TOC Results

Alcoa Point Comfort Operations

Project:98003-061
Date: 01/24/12

Figure 1

M:\98003\061\arc\Openwater_Hg_MeHg.mxd



N

0 100 200 400 Feet

Legend

- Marsh Sample Station
- Marsh Sample Station ID
- Marsh Total Hg Result (mg/kg- dry weight)
  (0-2 cm Depth Interval)

DRAFT

Notes

2009 DOQQ
NAD 1983 UTM
Zone 14 North Meters

Annual Sediment Monitoring Study Fall 2011

Marsh Sample Stations 1, 2 and 3 and Total Hg Results

Alcoa Point Comfort Operations

Project: 98003-061
Date: 01/05/2012

Figure 2a

M:\98003\061\arc\Hg\marsh_10_stations123_Hg_fin.mxd

Legend

- Marsh Sample Station
- Marsh Sample Station ID
- Marsh Total Hg Result (mg/kg- dry weight)

(0-2 cm Depth Interval)

DRAFT

Notes

2009 DOQQ
NAD 1983 UTM
Zone 14 North Meters

Annual Sediment Monitoring Study Fall 2011

Marsh Sample Stations 5, 6 and 7 and Total Hg Results

Alcoa Point Comfort Operations

Project: 98003-061
Date: 01/05/2012

Figure 2b

M:\98003\061\arc\Hg\marsh_11_stations567_Hg_fin.mxd

Legend

- Marsh Sample Station
- Marsh Sample Station ID
- Marsh Total Hg Result (mg/kg- dry weight)

(0-2 cm Depth Interval)

DRAFT

Notes

2009 DOQQ
NAD 1983 UTM
Zone 14 North Meters

Annual Sediment Monitoring Study Fall 2011

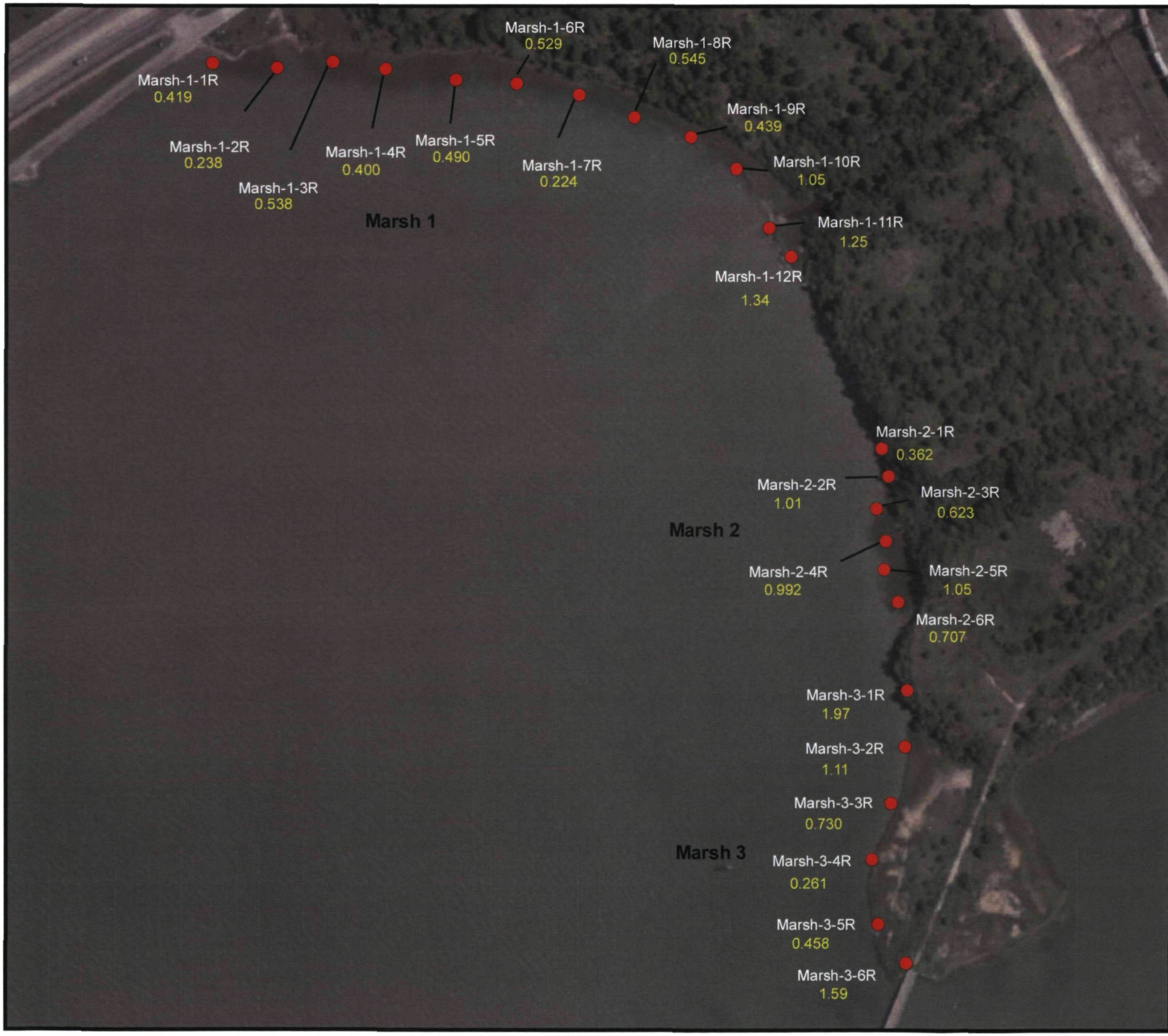
Marsh Sample Stations 14, 15 and 19 and Total Hg Results

Alcoa Point Comfort Operations

Project: 98003-061
Date: 01/05/2012

Figure 2c

M:\98003\061\arc\Hg\marsh_11_stations141519_Hg_fin.mxd



N

0 100 200 400 Feet

Legend

- Marsh Sample Station
- ## Marsh Sample Station ID
- ## Marsh Methyl Hg Result (ng/g- dry weight)

(0-2 cm Depth Interval)

DRAFT

Notes

2009 DOQQ
NAD 1983 UTM
Zone 14 North Meters

Annual Sediment Monitoring Study Fall 2011

Marsh Sample Stations 1, 2 and 3 and Methyl Hg Results

Alcoa Point Comfort Operations

Project: 98003-061
Date: 01/24/2012

Figure 3a

M:\98003\061\arc\Hg\marsh_11_stations123_MeHg.mxd

N

0 75 150 300 Feet

Legend

- Marsh Sample Station
- ## Marsh Sample Station ID
- ## Marsh Methyl Hg Result (ng/g- dry weight)

(0-2 cm Depth Interval)

DRAFT

Notes

2009 DOQQ
NAD 1983 UTM
Zone 14 North Meters

Annual Sediment Monitoring Study Fall 2011

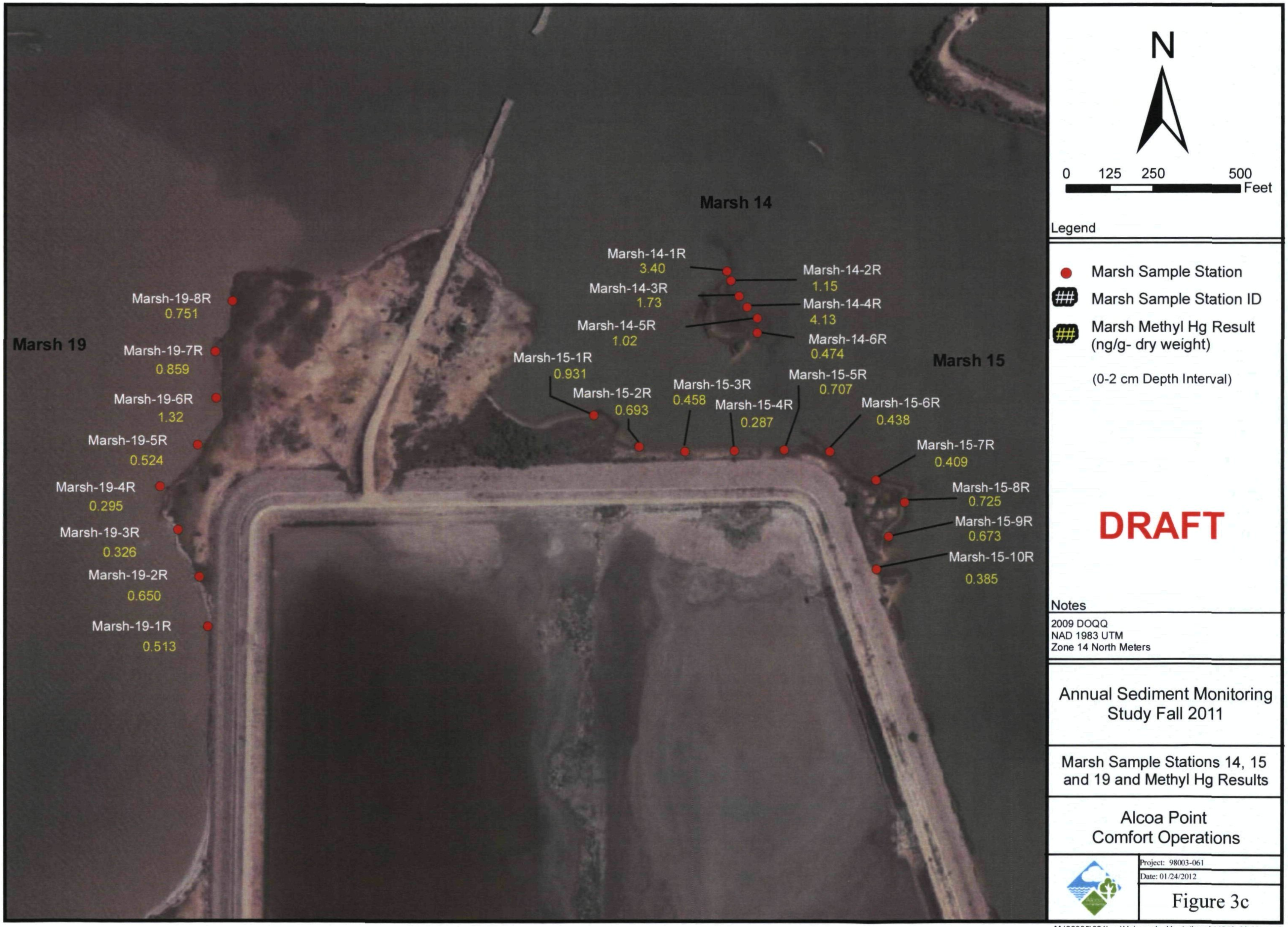
Marsh Sample Stations 5, 6 and 7 and Methyl Hg Results

Alcoa Point Comfort Operations

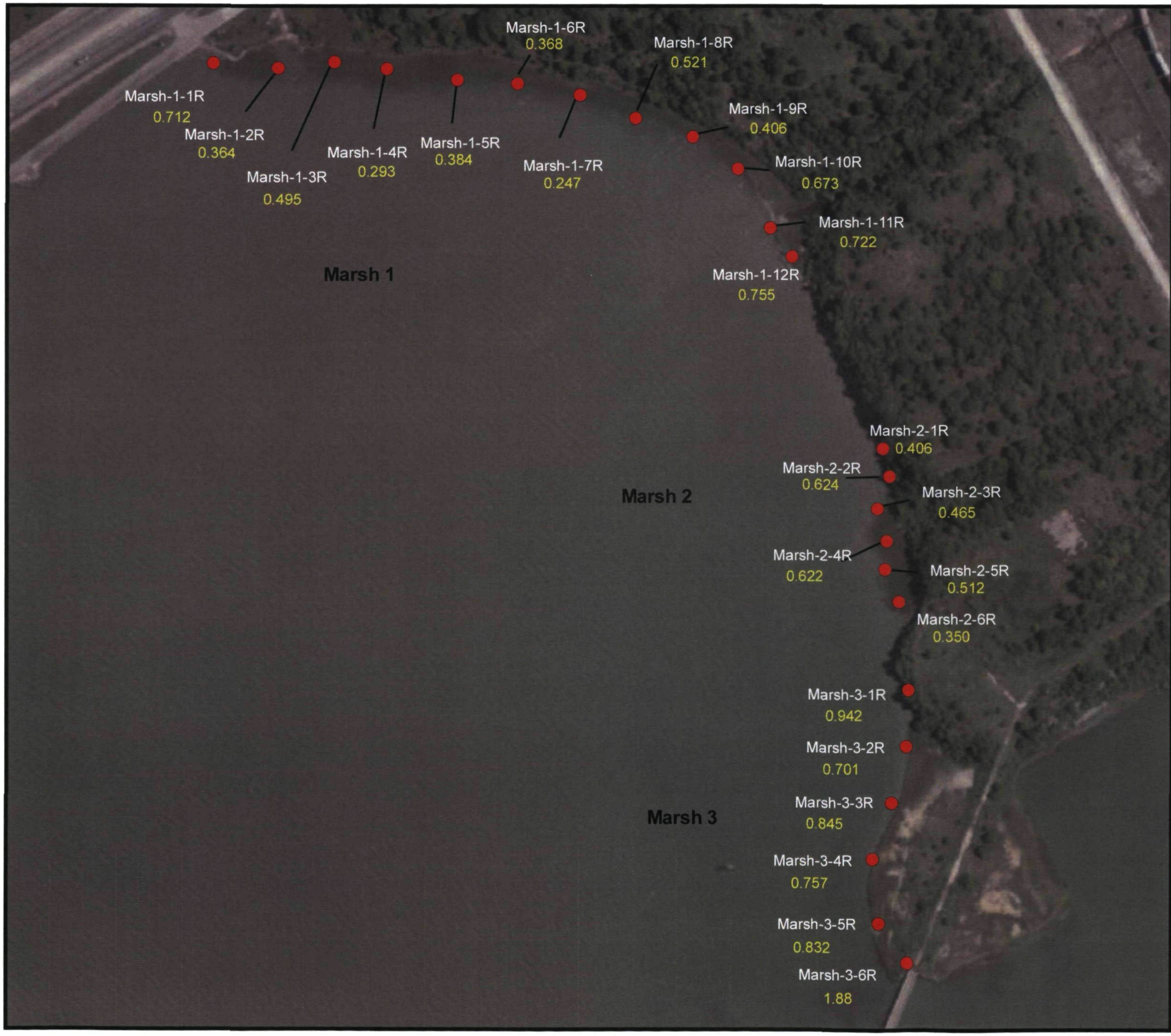
Project: 98003-061
Date: 01/24/2012

Figure 3b

M:\98003\061\arc\Hg\marsh_11_stations567_MeHg.mxd



M:\98003\061\arc\Hg\marsh_11_stations141519_MeHg.mxd



N

0 100 200 400 Feet

Legend

- Marsh Sample Station
- Marsh Sample Station ID
- Marsh TOC Result (%-dry weight)

(0-2 cm Depth Interval)

DRAFT

Notes

2009 DOQQ
NAD 1983 UTM
Zone 14 North Meters

Annual Sediment Monitoring Study Fall 2011

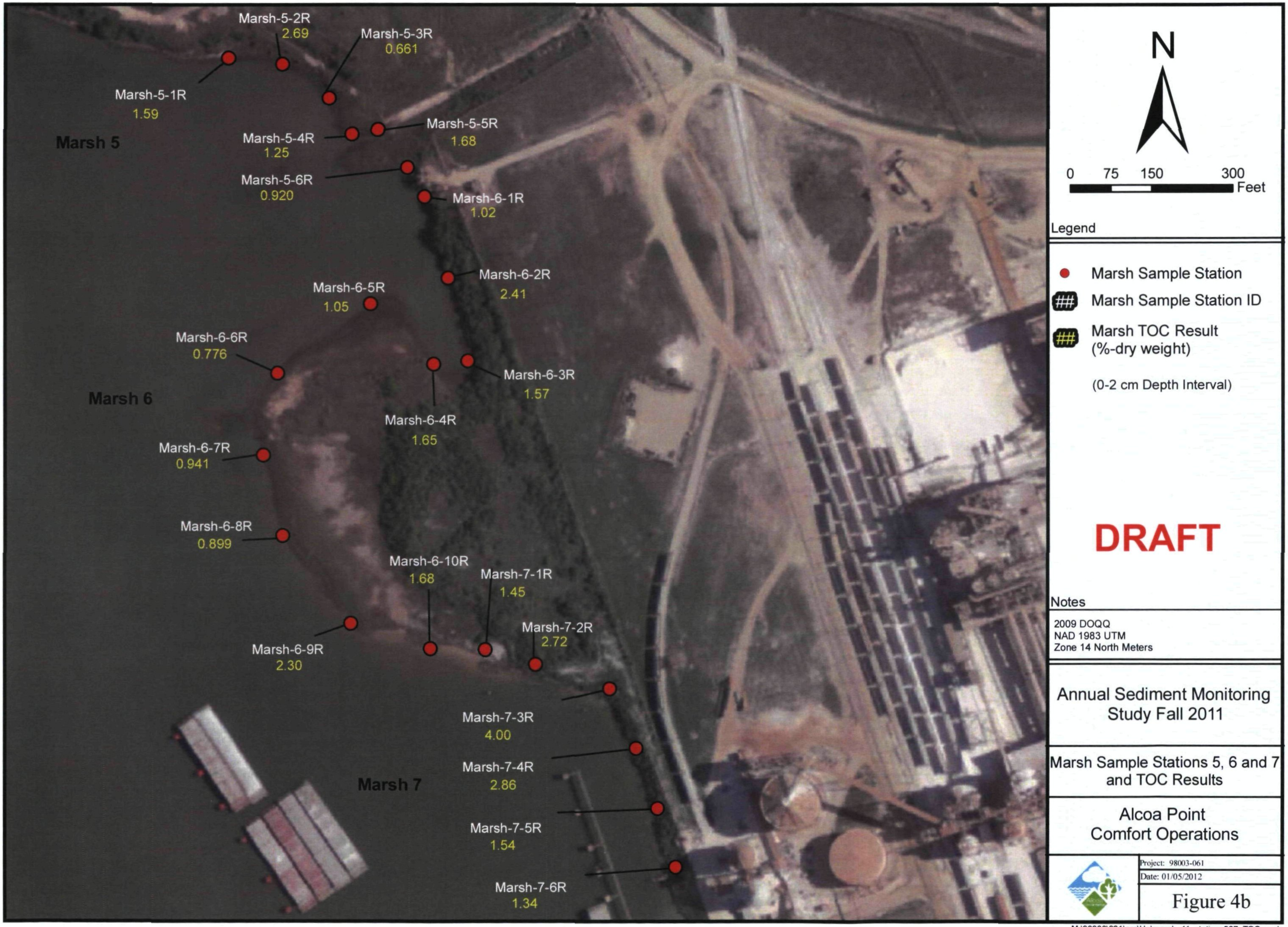
Marsh Sample Stations 1, 2 and 3 and TOC Results

Alcoa Point Comfort Operations

Project: 98003-061
Date: 01/05/2012

Figure 4a

M:\98003\061\arc\Hg\marsh_11_stations123_TOC.mxd



M:\98003\061\arc\Hg\marsh_11_stations567_TOC.mxd

N

0 125 250 500
Feet

Legend

- Marsh Sample Station
- ## Marsh Sample Station ID
- ## Marsh TOC Result (%-dry weight)

(0-2 cm Depth Interval)

DRAFT

Notes

2009 DOQQ
NAD 1983 UTM
Zone 14 North Meters

Annual Sediment Monitoring Study Fall 2011

Marsh Sample Stations 14, 15 and 19 and TOC Results

Alcoa Point Comfort Operations

Project: 98003-061
Date: 01/05/2012

Figure 4c

M:\98003\061\arc\TOC\marsh_11_stations141519_TOC.mxd

APPENDIX B

LAVACA BAY FINFISH AND SHELLFISH MONITORING REPORT 2011

LAVACA BAY FINFISH AND SHELLFISH MONITORING REPORT 2011

DRAFT

Alcoa Point Comfort Operations
Lavaca Bay Superfund Site

February 2012

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

A key factor in the success of the Lavaca Bay Remedy is the reduction in tissue mercury concentrations through targeted source control efforts, sediment removal efforts, capping, enhanced natural recovery, and/or natural recovery. The Consent Decree (March 2005) for the Lavaca Bay Superfund Site requires annual monitoring of finfish and shellfish for total mercury.

1.1 PURPOSE AND SCOPE

The objective of the program is to monitor the recovery of mercury levels in finfish and shellfish. The monitoring data collected under this program are used to assess the effectiveness of remedial actions implemented at the Site. This document presents a summary of sampling and analytical methods and the results of the 2011 monitoring study. A detailed description of the methods and procedures for this study are presented in the Lavaca Bay Finfish and Shellfish Operations, Maintenance, and Monitoring Plan (OMMP, Appendix I of the Consent Decree March 2005).

1.2 SITE DESCRIPTION

The Alcoa Point Comfort Operations Plant is located in Calhoun County, Texas, adjacent to Lavaca Bay. An area in the bay adjacent to the Alcoa Plant is associated with elevated mercury concentrations in fish tissue and is closed to the taking of finfish and blue crabs for consumption by order of the Texas Department of Health. This area is referred to as the "Closed Area" and is delineated in the figures contained in this report. The monitoring area specified in the OMMP includes both the Closed Area and designated areas outside the Closed Area (termed the "Adjacent Area" or the "Open Area").

2.0 METHODS

Red drum and juvenile blue crab tissue samples for the 2011 Finfish and Blue Crab Monitoring Study were collected and processed by Benchmark Ecological Services, Inc., and analyzed by Battelle Marine Sciences Laboratory (Battelle) in Sequim, Washington. Samples were collected between 24 September 2011 and 5 January 2012. Validation and evaluation of the analytical results were conducted by Environmental Chemistry Services, Inc., in Houston, Texas.

2.1 SAMPLE STATIONS

A total of 30 red drum samples were collected from 11 stations inside the Closed Area (Figure 1), and 30 samples were collected from 10 stations outside the Closed Area (Adjacent Area) (Figure 2). A total of 51 juvenile blue crab composite samples were collected from 17 stations inside the Closed Area. Thirty of the 51 juvenile blue crab composite samples were collected from historical monitoring stations (Figure 3), and 21 juvenile blue crab composite samples were collected from additional sample stations (Figure 5). The additional juvenile blue crab composite samples were collected to further evaluate specific marshes within the Closed Area. Thirty composite samples were collected from 12 stations outside the Closed Area (Adjacent Area) (Figure 4).

As described in the OMMP (p. 3-3), the objectives for selecting sample stations are to achieve equal geographic representation of the four quadrants (or zones) within the Closed Area. As also stated in the OMMP (p. 3-3), netting success will be variable and stations from which samples are collected and the number of samples per station will vary. The actual numbers of stations sampled for red drum and juvenile blue crab during the 2011 monitoring event are shown for each of the four Closed Area zones in Figures 1 and 3, respectively. Table 1 shows the number of red drum and juvenile blue crab samples collected per zone (the additional juvenile blue crab samples are not included in Table 1).

Table 1 – Number of Red Drum and Juvenile Blue Crab Samples Analyzed per Zone

Zone	Red Drum Samples	Juvenile Blue Crab Samples
Zone 1	9	3
Zone 2	9	15
Zone 3	4	3
Zone 4	8	9

The distribution of red drum samples ranged from 4 samples in Zone 3 to 9 samples in Zones 1 and 2. The number of juvenile blue crab samples ranged from 3 samples in Zones 1 and 3 (3 samples per zone), to 15 samples in Zone 2. The uneven distribution of samples among the zones was due to the uneven distribution of suitable habitat within the Zones.

The primary objective for the placement of both Adjacent Area and Closed Area monitoring stations was to achieve uniform distribution of stations within the sampling areas. The goal was to establish stations that would provide a geographically uniform distribution of samples (OMMP, p. 3-3). The general goal for both sampling areas was to collect approximately the same number of samples from 10 to 15 stations, distributed evenly over the sampling area. Whenever possible, red drum and juvenile blue crab samples were collected from the same stations. Adjacent Area red drum samples were collected from 10 stations and Adjacent Area juvenile blue crabs were collected from 12 stations, shown in Figures 2 and 4 respectively.

The 7 additional juvenile blue crab sample stations located in the Closed Area were sampled to provide additional data that may be used in evaluating potential future remediation activities.

N

0 1,500 3,000 Feet

Legend

- Closed Red Drum Stations
- Total Hg (ug/g)
- Zone Boundaries
- Closed Area

DRAFT

Notes

2009 0.5m DOQQ (Point Comfort)
Calhoun County, Texas

Fall 2011 Annual
Finfish and Shellfish
Monitoring Study

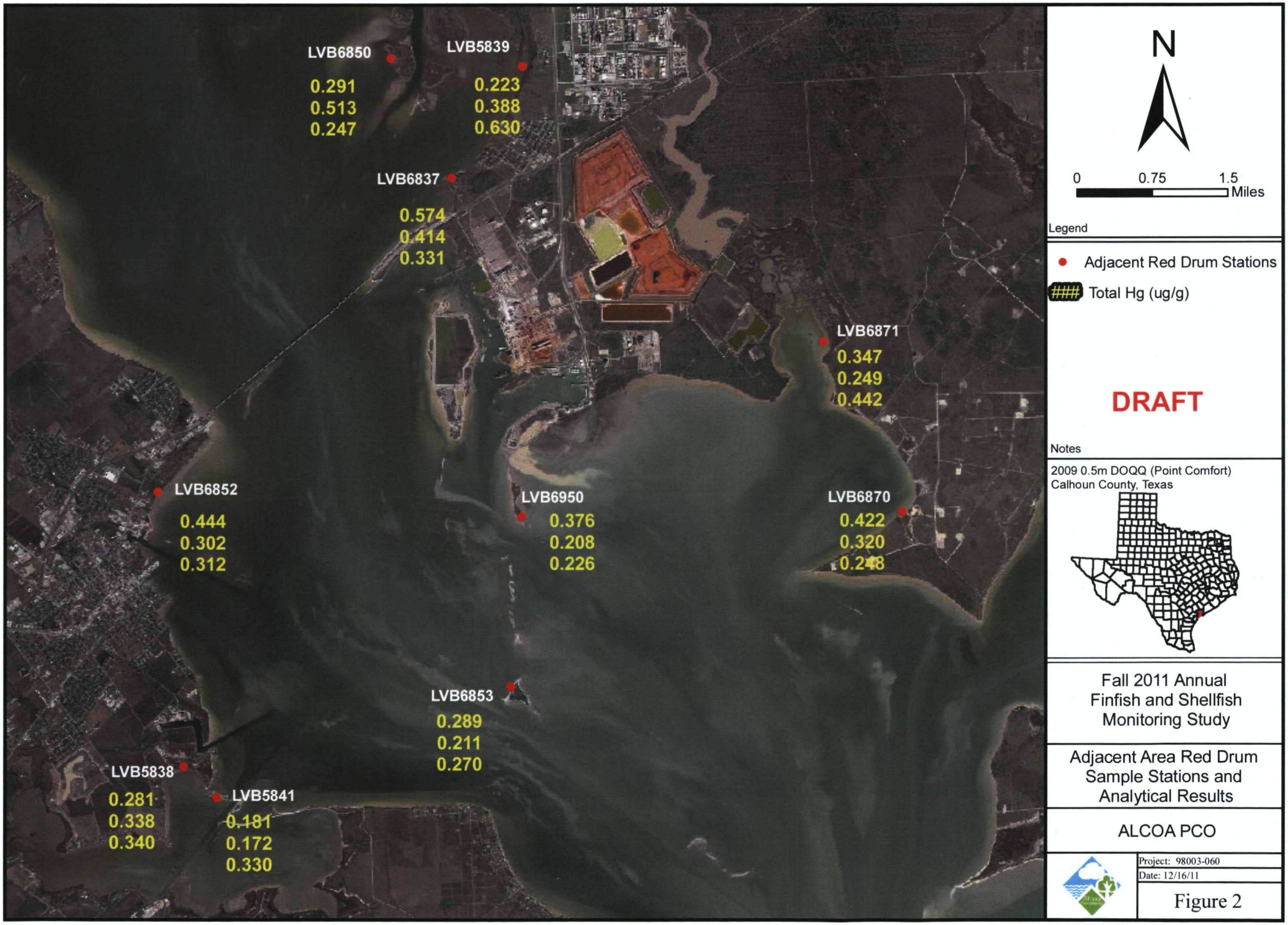
Closed Area Red Drum
Sample Stations and
Analytical Results

ALCOA PCO

Project: 98003-060
Date: 12/16/11

Figure 1

M:\\98003\060\arc\11_RedDrum\cls_rd_11.mxd



M:\\98003\060\arc\11_RedDrum\adj_rd_11.mxd

N

0 1,500 3,000 Feet

Legend

- Juvenile Blue Crab Stations
- #### Total Hg (ug/g)
- Zone Boundaries
- Closed Area

DRAFT

Notes

2009 0.5m DOQQ (Point Comfort)
Calhoun County, Texas

Fall 2011 Annual
Finfish and Shellfish
Monitoring Study

Closed Area Juvenile Blue
Crab Sample Stations and
Analytical Results

ALCOA PCO

Project: 98003-060
Date: 01/09/12

Figure 3

M:\\98003\060\arc\11_crab\cls_blcrab_11.mxd

N

0 1 2 Miles

Legend

Juvenile Blue Crab Stations

Total Hg (ug/g)

DRAFT

Notes

2009 0.5m DOQQ (Point Comfort)
Calhoun County, Texas

Fall 2011 Annual
Finfish and Shellfish
Monitoring Study

Adjacent Area Juvenile Blue
Crab Sample Stations and
Analytical Results

ALCOA PCO

Project: 98003-060
Date: 01/09/12

Figure 4

M:\\98003\060\arc\011_crab\adj_blcrab_11.mxd

N

0 750 1,500 Feet

Legend

- Juvenile Blue Crab Stations
- ### Total Hg (ug/g)
- Zone Boundaries

DRAFT

Notes

2009 0.5m DOQQ (Point Comfort)
Calhoun County, Texas

Fall 2011 Annual Finfish and Shellfish Monitoring Study

Closed Area Juvenile Blue Crab Additional Sample Stations and Analytical Results

ALCOA PCO

Project: 98003-060
Date: 01/09/12

Figure 5

M:\\98003\060\arc\11_crab\cls_blcrab_marsh_11.mxd

2.2 SAMPLE COLLECTION

2.2.1 Red Drum

Red drum were collected from the Closed Area and Adjacent Areas between 10 October 2011 and 17 November 2011. In the Closed Area, 30 red drum tissue samples were collected from the 11 sample stations shown on Figure 1. In the Adjacent Areas, 30 red drum tissue samples were collected from the 10 sample stations shown on Figure 2. Sampling was conducted from a 20-foot aluminum boat. A Global Positioning System (GPS) was used to determine the positions of all sample stations.

Red drum specimens were collected using hook and line and gill nets (6 ft x 150 ft) with 5-inch stretch mesh. Multiple nets (1-3) were set at each sample station in the evening, and the nets were allowed to fish over night. The nets were retrieved the following morning, and the fish were removed. Gill nets were set at stations shown in Figure 1, and at one additional station (CLO6802), where no usable red drum were collected. Red drum with total lengths between 508 and 711 mm (20 to 28 inches) were removed from the gill nets, placed in plastic bags, and labeled with station identification (ID), date, and time. Labeled bags were immediately placed in an insulated box with ice for storage. Undersized and oversized red drum and specimens of other species were returned to the water.

The following information (at a minimum) was recorded on data sheets:

Station ID	Initials of field personnel	End date
Gear type	Set date	End time
Water depth	Set time	List of photo log entries

2.2.2 Juvenile Blue Crab

Juvenile blue crabs were collected from the Closed Area and Adjacent Area between 24 September 2011 and 5 January 2012. In the Closed Area, 30 blue crab tissue samples were collected from 10 historical monitoring stations (Figure 3) and 7 additional sample stations (Figure 5). In the Adjacent Area, 30 blue crab tissue samples were collected from 12 sample stations (Figure 4). Sampling was conducted from a 20-foot aluminum boat. A Global Positioning System was used to determine the positions of all sample stations.

Juvenile blue crabs were collected using barrel type minnow traps baited with commercial crab bait (Gulf menhaden, Mullet, and Sardines). Traps were checked every 24 to 72 hours. Crabs were removed from the traps, inspected, and sorted by size in a clean sorting tray. Injured, dead, undersized, and oversized crabs were returned to the water. Crabs that were between 25-75 mm in width were retained. Width is the distance between the tips of the primary lateral spines. Crabs collected in the field were placed in Ziploc bags labeled with station ID, date, and collection time. Labeled bags were immediately placed in an insulated chest with ice. Data sheets were used to record the same sample site information listed above for finfish samples.

2.3 SAMPLE PROCESSING

2.3.1 Red Drum

Red drum samples were processed within 24 hours of collection in the Alcoa Clean Lab (located at the Alcoa Point Comfort Facility) and remained on ice until processing was complete. Fish were weighed, measured, scaled, and rinsed with deionized (DI) water. Data were recorded on tissue processing data sheets and are listed in Table 2 (Closed Area specimens) and Table 3 (Adjacent Area specimens). After scaling, fish were placed in clean plastic bags and returned to cold storage until all fish were scaled.

In the clean lab, the fish were again rinsed with DI water and placed on pre-cleaned Teflon cutting boards. The right filet (with skin) was removed with pre-cleaned hexane rinsed stainless steel fillet knives. The filets were cut into small cubes, mixed, and weighed (in grams). A 50-100g sub-sample was removed, weighed, and placed in a pre-cleaned sample container supplied by the analytical laboratory. Filet weights and sample weights were recorded on sample processing data sheets and are listed in Tables 2 and 3 for Closed Area and Adjacent Area specimens, respectively. Sample jars were labeled with sample station ID, sample number, species, collection date, time, and initials of processing personnel.

The sample and container were placed in two sealed Ziploc bags and stored at 4 ±2 degrees Celsius. A Chain of Custody form was completed for all samples collected.

In addition to the tissue processing, a gut content evaluation was conducted on 43 of the 60 Red Drum samples. The evaluation of gut content included identifying the species found in the gut of each fish (when possible) and recording gut content weight. Photographs were taken of the gut contents. Gut content evaluation data is included in Attachment A.

2.3.2 Juvenile Blue Crab

Blue crabs were processed within 24 hours of collection in the Alcoa Clean Lab (located at the Alcoa Point Comfort Facility) and remained on ice or in a refrigerator until processing was complete. In the laboratory, crabs were rinsed with DI water and sorted by size on pre-cleaned Teflon cutting boards. Individual blue crabs were measured, weighed, and placed in sample containers. Each sample was a composite of 5 crabs measuring 25 to 75 mm in width. Individual crab weights and total sample weights were recorded on sample processing data sheets. Data associated with Closed Area monitoring and Adjacent Area specimens are listed in Tables 4 and 5 respectively. The additional Closed Area juvenile blue crab data is listed in Table 6. Sample containers were labeled with the station ID, sample ID, collection date, and time; and were placed in two re-sealable plastic bags and placed in a secure refrigerator in the Clean Lab. Samples were shipped overnight to Battelle for analysis.

3.0 ANALYTICAL RESULTS

Red drum and juvenile blue crab samples were analyzed for total mercury and percent moisture by Battelle. Total mercury results were reported in µg/g as wet weight. Benchmark received the final data packet from the analytical laboratory 26 January 2012, and Analytical QA/QC was completed by Environmental Chemistry Services on 31 January 2012. Copies of the analytical data packets are included in Attachment B. Analytical results for red drum collected from the Closed Area are presented in Table 2, and the results for red drum from the Adjacent Area are presented in Table 3. Analytical results for juvenile blue crabs collected from the Closed Area monitoring stations are presented in Table 4; results for juvenile blue crabs from the Adjacent Areas are presented in Table 5. and, the additional Closed Area juvenile blue crab analytical results are presented in Table 6.

Analytical results for both red drum and juvenile blue crab samples were validated according to the Standard Operating Procedure Data Validation (Appendix E) in the Quality Assurance Project Plan Alcoa (Point Comfort)/Lavaca Bay Superfund Site (August 22, 2005). All analytical results were validated and may be included in the data used to evaluate the effectiveness of the approved remedy and to meet monitoring requirements specified in the Consent Decree.

Table 2 - Closed Area Red Drum Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Total Length (mm)	Standard Length (mm)	Total Weight (g)	Tissue Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)	Flag
CLO5900	B12b-TF-15120	10/11/2011	12:40	591	498	1810	141.7	80.1	80.4	2.98	
CLO5900	B12b-TF-15121	10/11/2011	12:40	589	495	1740	171.7	85.5	80.5	2.18	
CLO5900	B12b-TF-15122	10/12/2011	10:18	554	455	1400	177.6	82.7	81.3	2.69	
LVB5513	B12b-TF-15123	10/11/2011	11:47	544	460	1440	157.7	83.7	80.8	0.878	
LVB5513	B12b-TF-15124	10/11/2011	11:47	512	419	1180	122.3	83.5	80.1	1.37	
LVB5513	B12b-TF-15125	10/11/2011	11:47	585	495	2210	238.9	81.9	79.3	1.67	
LVB5504	B12b-TF-15126	10/13/2011	9:03	509	416	1190	117.7	79.4	77.9	1.85	
CLO5818	B12b-TF-15127	10/13/2011	9:23	579	480	1620	120.8	80.0	78.8	1.46	
CLO5817	B12b-TF-15128	10/13/2011	10:32	626	524	2500	247.3	87.7	79.1	0.988	
CLO5818	B12b-TF-15129	10/20/2011	9:42	518	420	1160	88.6	62.5	77.6	1.02	
CLO5804	B12b-TF-15130	10/20/2011	9:20	515	420	1240	137.9	82.2	79.5	1.78	
CLO5804	B12b-TF-15131	10/20/2011	9:20	633	525	2620	286.9	83.9	79.1	0.788	
CLO5814	B12b-TF-15132	10/19/2011	14:29	562	468	1780	230.2	89.4	80.8	0.902	
CLO5814	B12b-TF-15133	10/20/2011	9:58	600	495	2270	277.7	89.6	79.3	0.568	
LVB5504	B12b-TF-15134	10/21/2011	9:28	665	553	2970	310.2	90.8	79.5	2.37	
LVB5504	B12b-TF-15135	10/21/2011	9:28	564	465	1670	173.7	83.7	79.3	1.24	
CLO5803	B12b-TF-15136	10/21/2011	9:07	615	505	2490	283.8	87.0	77.6	0.664	
CLO5803	B12b-TF-15137	10/21/2011	9:07	642	535	2960	359.5	88.4	78.9	0.766	
CLO5803	B12b-TF-15138	10/21/2011	9:07	689	575	3350	366.3	90.6	78.9	0.434	
CLO1414	B12b-TF-15139	10/21/2011	8:42	630	520	2780	339.2	95.3	79.9	0.440	
CLO1414	B12b-TF-15140	10/21/2011	8:42	652	541	3230	360.3	84.5	78.8	0.569	
CLO1414	B12b-TF-15141	10/21/2011	8:42	684	568	3530	425.6	79.2	78.6	0.788	
CLO5815	B12b-TF-15161	10/31/2011	17:17	545	447	2070	246.8	82.9	77.5	0.983	
CLO5815	B12b-TF-15162	11/1/2011	8:49	708	595	3660	449.0	82.6	78.0	0.352	
CLO5815	B12b-TF-15163	11/1/2011	8:49	620	515	2680	319.8	94.9	77.8	0.740	
LVB5518	B12b-TF-15164	10/31/2011	16:27	626	528	2660	285.5	87.7	79.6	0.334	
CLO5814	B12b-TF-15165	11/2/2011	9:58	590	495	2420	294.5	87.0	78.5	1.06	
CLO5804	B12b-TF-15173	11/8/2011	9:05	625	535	3310	441.6	95.1	76.4	0.789	
CLO5818	B12b-TF-15174	11/10/2011	11:52	564	468	2060	258.3	80.0	78.1	1.04	
CLO5817	B12b-TF-15178	11/14/2011	15:10	510	421	1620	187.6	86.2	77.5	1.38	
Average Values				**595**	**495**	**2254**	**254.0**	**84.9**	**79.0**	**1.17**	

Table 3 - Adjacent Area Red Drum Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Total Length (mm)	Standard Length (mm)	Total Weight (g)	Tissue Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)	Flag
LVB6852	B12b-TF-15142	10/20/2011	14:21	601	493	2350	294.0	89.8	78.6	0.444	
LVB6870	B12b-TF-15143	10/25/2011	9:30	660	551	3250	409.9	92.3	77.7	0.422	
LVB6870	B12b-TF-15144	10/25/2011	9:30	625	515	3060	362.7	92.7	77.9	0.320	
LVB6870	B12b-TF-15145	10/25/2011	9:30	609	501	2620	324.6	82.8	74.6	0.248	
LVB5838	B12b-TF-15146	10/25/2011	8:14	661	558	2990	388.1	79.6	77.7	0.281	
LVB5838	B12b-TF-15147	10/25/2011	8:14	640	538	2940	341.6	88.1	78.3	0.338	
LVB5838	B12b-TF-15148	10/25/2011	8:14	606	497	2250	301.5	86.7	79.3	0.340	
LVB6853	B12b-TF-15149	10/25/2011	8:43	615	510	2780	390.4	86.9	76.4	0.289	
LVB6853	B12b-TF-15150	10/25/2011	8:43	510	409	1380	159.2	86.2	77.4	0.211	
LVB5839	B12b-TF-15151	10/26/2011	9:35	690	575	3340	408.8	83.4	78.1	0.223	
LVB5839	B12b-TF-15152	10/26/2011	9:35	586	498	2130	279.5	92.7	78.1	0.388	
LVB5839	B12b-TF-15153	10/26/2011	9:35	662	541	2490	273.9	88.2	81.4	0.630	
LVB6850	B12b-TF-15154	10/26/2011	9:06	649	540	2450	300.2	88.4	78.2	0.291	
LVB6850	B12b-TF-15155	10/26/2011	9:06	510	415	1160	131.0	90.5	77.8	0.513	
LVB6837	B12b-TF-15156	10/26/2011	8:38	595	494	2480	295.1	86.7	78.2	0.574	
LVB6837	B12b-TF-15157	10/26/2011	8:38	555	464	1690	207.6	88.3	78.8	0.414	
LVB6837	B12b-TF-15158	10/27/2011	17:18	585	493	1930	263.4	89.7	78.3	0.331	
LVB6950	B12b-TF-15159	10/31/2011	18:01	590	489	2220	238.9	79.6	79.0	0.376	
LVB6950	B12b-TF-15160	10/31/2011	18:01	634	528	3180	404.4	81.6	75.8	0.208	
LVB6871	B12b-TF-15166	11/1/2011	18:40	519	428	1400	190.1	80.3	77.7	0.347	j[1]
LVB6871	B12b-TF-15167	11/1/2011	18:40	534	439	1620	228.7	87.2	76.6	0.249	j
LVB6871	B12b-TF-15168	11/2/2011	9:08	635	520	2840	320.8	97.2	78.8	0.442	j
LVB6853	B12b-TF-15169	11/2/2011	8:32	710	598	4530	528.3	90.2	75.6	0.270	j
LVB6852	B12b-TF-15170	11/3/2011	17:24	686	570	4070	468.0	84.8	77.6	0.302	j
LVB6950	B12b-TF-15171	11/4/2011	9:22	574	480	2240	295.6	91.4	76.9	0.226	j
LVB6850	B12b-TF-15172	11/7/2011	17:47	631	525	2620	372.3	84.0	78.5	0.247	
LVB6852	B12b-TF-15175	11/10/2011	17:25	651	545	2730	304.2	84.7	78.6	0.312	
LVB5841	B12b-TF-15176	11/14/2011	18:00	534	436	1610	238.0	82.7	78.6	0.181	
LVB5841	B12b-TF-15177	11/14/2011	18:00	525	430	1700	226.2	84.4	78.3	0.172	
LVB5841	B12b-TF-15179	11/17/2011	9:55	521	436	1480	164.5	84.7	76.5	0.330	
Average Values				**603**	**501**	**2451**	**303.7**	**86.9**	**77.8**	**0.331**	

[1]j - Samples were analyzed one to four days beyond the preparation holding time.

Table 4 - Closed Area Juvenile Blue Crab Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
CLO5815	B12b-TS-15622	9/26/2011	14:30		34.8	3.4	21.3	65.1%	0.174
					37.6	3.9			
					29.6	1.6			
					35.2	3.9			
					49.6	8.5			
LVB5517	B12b-TS-15654	9/26/2011	14:17		27.8	1.7	13.0	63.5%	0.166
					29.7	2.1			
					27.3	1.4			
					39.0	4.7			
					33.3	3.1			
CLO5814	B12b-TS-15656	9/26/2011	13:54		58.4	16.0	30.0	70.0%	0.0786
					44.0	8.0			
					30.2	2.1			
					25.7	1.6			
					28.9	2.5			
CLO5803	B12b-TS-15627	9/26/2011	11:56		72.6	23.3	30.9	65.4%	0.142
					35.5	3.4			
					25.8	1.5			
					25.0	1.3			
					25.1	1.3			
CLO5802	B12b-TS-15625	9/26/2011	11:33		69.6	23.2	66.6	63.1%	0.405
					73.8	22.2			
					64.2	19.0			
					29.1	2.1			
					25.8	1.5			
LVB5517	B12b-TS-15624	9/26/2011	14:17		56.8	12.8	29.8	63.0%	0.167
					41.5	6.1			
					40.8	5.2			
					34.2	3.2			
					28.9	2.5			
CLO5815	B12b-TS-15623	9/26/2011	14:30		33.0	2.7	14.1	66.2%	0.119
					33.5	2.6			
					40.3	4.4			
					31.7	2.7			
					30.9	1.8			
CLO5802	B12b-TS-15648	9/26/2011	11:33		27.8	1.7	25.5	64.2%	0.147
					53.4	9.5			
					31.6	2.6			
					28.0	2.1			
					50.4	9.9			
CLO5815	B12b-TS-15638	9/26/2011	14:30		30.2	2.2	14.5	62.4%	0.172
					25.1	1.4			
					28.8	2.2			
					27.7	1.9			
					44.1	7.0			

Table 4 - Closed Area Juvenile Blue Crab Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
LVB5504	B12b-TS-15644	9/26/2011	12:53		64.8	15.0	35.1	68.6%	0.353
					27.2	1.7			
					55.4	12.0			
					28.4	1.8			
					37.4	4.7			
CLO5900	B12b-TS-15657	9/27/2011	15:57		29.0	1.7	9.5	66.3%	0.103
					34.1	3.1			
					29.1	1.9			
					26.8	1.5			
					30.6	1.4			
CLO5802	B12b-TS-15649	9/28/2011	9:50		66.8	22.8	67.2	67.0%	0.257
					68.0	12.1			
					73.2	21.1			
					44.9	7.4			
					38.1	4.6			
CLO5803	B12b-TS-15646	9/28/2011	10:11		27.9	1.9	17.5	68.0%	0.144
					31.2	2.2			
					37.7	4.1			
					38.0	4.6			
					41.2	4.8			
LVB5504	B12b-TS-15659	9/30/2011	9:29		62.2	14.8	33.4	66.7%	0.238
					54.6	9.9			
					35.2	4.2			
					33.3	2.9			
					27.1	1.9			
LVB5508	B12b-TS-15678	10/10/2011	14:38		28.2	2.7	11.0	66.6%	0.238
					27.8	2.0			
					30.4	3.1			
					25.2	1.2			
					30.5	2.5			
CLO5814	B12b-TS-15680	10/10/2011	15:57		48.4	5.3	18.4	74.8%	0.0720
					45.5	6.2			
					25.8	1.4			
					30.8	2.3			
					33.4	3.4			
CLO5900	B12b-TS-15672	10/10/2011	15:26		59.5	3.2	12.9	68.7%	0.102
					32.5	2.6			
					30.8	2.6			
					36.6	3.5			
					26.5	1.8			
CLO5900	B12b-TS-15679	10/12/2011	9:56		43.7	6.7	13.3	69.7%	0.156
					27.1	1.9			
					27.3	1.6			
					29.6	2.2			
					29.2	1.8			

Table 4 - Closed Area Juvenile Blue Crab Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
CLO6802	B12b-TS-15676	10/12/2011	10:43		27.6	1.8	15.1	64.6%	0.0956
					25.6	1.5			
					48.6	7.5			
					26.9	1.5			
					34.7	2.9			
CLO5814	B12b-TS-15690	10/14/2011	9:54		43.5	6.7	56.6	64.8%	0.143
					51.4	10.7			
					64.2	21.3			
					56.0	14.0			
					38.5	4.3			
CLO6802	B12b-TS-15689	10/14/2011	10:04		26.3	1.1	38.8	70.5%	0.125
					47.2	5.3			
					73.2	27.1			
					31.4	2.9			
					32.1	2.5			
LVB5508	B12b-TS-15685	10/14/2011	8:51		31.8	2.6	21.7	65.0%	0.377
					27.5	2.1			
					37.8	4.3			
					33.1	3.2			
					53.0	9.6			
LVB5504	B12b-TS-15684	10/17/2011	13:57		64.1	17.9	31.4	62.7%	0.225
					40.0	5.1			
					32.5	3.4			
					31.2	2.5			
					31.8	2.6			
CLO6802	B12b-TS-15691	10/17/2011	15:20		28.2	0.8	22.4	59.7%	0.119
					27.6	1.9			
					64.9	15.7			
					27.3	1.5			
					33.0	2.4			
LVB5517	B12b-TS-15655	9/30/2011	10:36		39.8	5.0	22.9	65.6%	0.168
					48.0	6.9			
					41.9	6.4			
					31.7	2.7			
					28.2	2.1			
LVB5508	B12b-TS-15660	9/28/2011	10:35		65.0	15.7	25.3	64.6%	0.149
					42.7	6.6			
					26.2	1.4			
					25.2	0.7			
					25.4	0.8			
CLO5803	B12b-TS-15662	9/28/2011	10:11		58.8	13.3	36.3	71.0%	0.110
					58.9	13.5			
					25.7	1.3			
					42.4	5.4			
					34.5	3.1			

Table 4 - Closed Area Juvenile Blue Crab Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
LVB5513	B12b-TS-15697	12/13/2011	13:25		44.9	7.2	21.0	64.9%	0.199
					47.7	8.2			
					27.1	1.5			
					31.5	2.4			
					28.9	1.9			
LVB5513	B12b-TS-15699	12/16/2011	11:03		27.4	1.6	14.8	70.3%	0.109
					30.8	2.2			
					41.6	4.9			
					30.5	2.2			
					38.4	4.0			
LVB5513	B12b-TS-15700	12/16/2011	11:03		37.5	3.8	17.1	75.5%	0.0878
					38.9	4.2			
					35.0	3.7			
					35.7	3.1			
					30.7	2.4			
Average Values					**38.1**	**5.3**	**26.2**	**66.6%**	**0.171**

Table 5 - Adjacent Area Juvenile Blue Crab Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
LVB6853	B12b-TS-15653	9/26/2011	15:46		60.3	15.3	47.7	66.4%	0.0780
					25.2	1.5			
					74.8	24.9			
					34.3	2.6			
					41.0	3.9			
LVB5839	B12b-TS-15664	9/26/2011	10:40		37.0	4.2	13.7	65.3%	0.0500
					26.0	1.0			
					25.1	1.4			
					32.7	2.8			
					37.5	4.3			
LVB6880	B12b-TS-15633	9/26/2011	9:57		58.6	16.8	33.6	64.1%	0.104
					50.3	10.0			
					38.3	3.2			
					29.9	2.1			
					27.0	1.7			
LVB6880	B12b-TS-15632	9/26/2011	9:57		61.5	15.7	39.7	64.7%	0.0700
					60.1	15.6			
					36.4	4.4			
					30.8	1.7			
					29.6	1.7			
LVB6837	B12b-TS-15630	9/26/2011	10:56		34.7	3.6	13.0	67.1%	0.0516
					30.4	2.9			
					30.5	2.6			
					28.2	2.1			
					27.3	2.0			
LVB6837	B12b-TS-15629	9/26/2011	10:56		35.0	3.7	12.5	60.3%	0.0746
					34.4	3.0			
					28.9	1.9			
					25.0	1.8			
					25.7	2.2			
LVB6837	B12b-TS-15628	9/26/2011	10:56		60.2	15.4	42.1	66.3%	0.0702
					62.5	16.6			
					35.9	5.3			
					31.7	3.0			
					27.6	2.4			
LVB6880	B12b-TS-15650	9/26/2011	9:57		43.7	7.8	26.1	67.8%	0.0531
					37.6	4.6			
					36.9	4.0			
					25.8	1.9			
					46.3	7.3			
LVB6871	B12b-TS-15639	9/26/2011	15:03		25.5	1.4	32.9	72.6%	0.0456
					43.4	4.9			
					60.0	16.3			
					44.7	7.0			
					46.9	3.5			

Table 5 - Adjacent Area Juvenile Blue Crab Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
LVB6852	B12b-TS-15637	9/26/2011	16:39		40.2	6.1	21.1	61.3%	0.0875
					31.1	2.2			
					26.0	1.3			
					25.0	1.3			
					51.0	10.4			
LVB5838	B12b-TS-15651	9/28/2011	14:01		54.0	12.8	29.3	64.4%	0.0653
					46.2	8.5			
					36.7	4.2			
					27.2	2.1			
					26.6	1.8			
LVB5839	B12b-TS-15666	9/30/2011	8:23		25.9	1.3	6.9	63.7%	0.0346
					26.6	1.5			
					25.7	1.5			
					26.4	1.2			
					25.0	1.0			
LVB5839	B12b-TS-15665	9/30/2011	8:23		32.6	2.6	16.0	65.4%	0.0403
					41.6	5.1			
					30.4	2.3			
					33.4	3.0			
					34.3	3.0			
LVB6871	B12b-TS-15658	9/30/2011	10:54		32.3	2.4	8.9	66.7%	0.0397
					26.2	1.5			
					28.0	1.5			
					27.7	1.3			
					32.3	2.5			
LVB5838	B12b-TS-15652	9/30/2011	11:50		56.8	12.6	31.5	70.5%	0.0390
					48.2	10.7			
					33.8	4.0			
					30.8	2.3			
					31.1	2.3			
LVB6871	B12b-TS-15668	10/10/2011	16:39		29.8	2.3	9.6	71.9%	0.0272
					29.1	2.3			
					28.5	1.7			
					26.8	1.8			
					27.3	1.5			
LVB5838	B12b-TS-15667	10/10/2011	18:22		43.0	7.6	28.4	73.2%	0.0346
					36.1	2.9			
					28.0	2.0			
					29.8	2.1			
					59.8	14.2			
LVB6853	B12b-TS-15671	10/10/2011	17:35		67.5	17.5	41.7	73.4%	0.0303
					50.8	7.2			
					64.3	15.2			
					27.6	1.1			
					27.3	1.0			
LVB6853	B12b-TS-15670	10/10/2011	17:35		69.5	21.4	35.5	77.0%	0.0382
					42.5	4.1			
					37.5	4.0			
					27.1	1.2			
					45.6	5.3			

Table 5 - Adjacent Area Juvenile Blue Crab Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
LVB6870	B12b-TS-15673	10/10/2011	17:08		55.1	10.5	36.8	67.0%	0.0723
					65.0	19.2			
					32.3	2.2			
					33.6	3.0			
					27.6	1.9			
LVB6850	B12b-TS-15675	10/12/2011	8:50		44.6	7.1	18.7	69.3%	0.0436
					39.2	5.1			
					33.3	3.1			
					28.4	2.2			
					27.2	1.7			
LVB6850	B12b-TS-15681	10/12/2011	8:50		33.9	3.1	34.1	65.0%	0.0615
					60.8	17.4			
					45.0	6.2			
					35.6	4.0			
					33.3	3.7			
LVB6852	B12b-TS-15677	10/12/2011	8:30		32.5	2.0	14.4	63.3%	0.0873
					42.3	6.1			
					28.7	2.2			
					25.8	0.9			
					36.8	3.2			
LVB6870	B12b-TS-15682	10/14/2011	10:37		33.9	3.7	18.3	67.4%	0.0613
					27.3	2.1			
					30.3	2.3			
					26.4	1.6			
					53.9	8.9			
LVB6852	B12b-TS-15687	10/14/2011	8:05		43.6	5.3	18.0	71.9%	0.0766
					29.1	2.2			
					45.3	5.4			
					28.3	2.0			
					32.2	3.0			
LVB6850	B12b-TS-15686	10/17/2011	13:23		35.3	3.6	26.8	65.8%	0.0564
					40.7	3.8			
					48.4	7.3			
					42.1	5.1			
					42.5	7.1			
LVB6870	B12b-TS-15683	10/17/2011	16:02		25.2	1.4	11.9	66.2%	0.0550
					25.4	1.4			
					27.7	1.9			
					27.1	1.9			
					44.6	5.4			
LVB6950	B12b-TS-15692	10/17/2011	15:37		30.2	2.9	14.4	66.5%	0.0939
					29.6	1.8			
					40.2	5.1			
					32.5	2.4			
					32.4	2.3			

Table 5 - Adjacent Area Juvenile Blue Crab Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
LVB6977	B12b-TS-15701	1/3/2012	11:01		47.1	7.6	26.8	66.4%	0.0506
					55.6	13.1			
					27.9	1.7			
					33.0	2.6			
					27.2	1.8			
LVB6975	B12b-TS-15702	1/5/2012	12:26		32.2	2.8	56.6	72.5%	0.0486
					75.0	29.9			
					56.4	12.5			
					55.3	12.3			
					26.0	1.0			
Average Values					**37.5**	**5.2**	**25.6**	**67.4%**	**0.0580**

Table 6 - Closed Area Juvenile Blue Crab Additional Marsh Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
Marsh-2-4R	B12b-TS-15635	9/26/2011	11:47		67.9	24.2	60.9	67.4%	0.264
					56.3	14.6			
					58.9	13.9			
					39.3	5.8			
					33.2	3.0			
Marsh-2-4R	B12b-TS-15634	9/26/2011	11:47		61.4	17.0	46.8	63.6%	0.297
					55.9	11.8			
					44.6	7.6			
					42.0	6.5			
					34.6	4.1			
Marsh-1-3R	B12b-TS-15631	9/26/2011	11:21		61.4	16.8	44.7	65.0%	0.310
					58.7	13.7			
					45.6	8.2			
					38.4	4.9			
					26.6	1.5			
Marsh-14-2R	B12b-TS-15626	9/26/2011	12:43		56.1	16.4	31.8	63.9%	0.432
					45.5	8.6			
					36.2	3.3			
					32.8	2.7			
					25.1	1.1			
Marsh-2-4R	B12b-TS-15647	9/26/2011	11:47		71.9	24.5	50.7	63.4%	0.193
					45.6	9.9			
					46.8	7.7			
					37.0	4.1			
					37.5	4.9			
Marsh-3-5R	B12b-TS-15645	9/26/2011	12:09		57.6	14.5	32.1	66.3%	0.270
					44.7	9.0			
					38.0	4.1			
					26.3	1.7			
					32.7	3.2			
Marsh-14-2R	B12b-TS-15642	9/26/2011	12:43		50.1	10.1	31.9	74.8%	0.304
					35.0	3.1			
					31.8	3.3			
					54.2	11.9			
					34.5	3.7			
Marsh-6-6R	B12b-TS-15641	9/26/2011	13:14		68.8	29.0	93.4	61.4%	0.972
					68.9	31.4			
					66.8	29.3			
					27.1	1.8			
					32.8	4.4			
Marsh-5-3R	B12b-TS-15640	9/26/2011	13:03		61.6	14.1	49.2	64.7%	0.313
					33.3	3.0			
					57.7	18.4			
					27.2	1.7			
					49.9	12.4			

Table 6 - Closed Area Juvenile Blue Crab Additional Marsh Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
Marsh-1-3R	B12b-TS-15636	9/26/2011	11:21		26.5	1.8	14.4	66.8%	0.331
					40.1	4.7			
					27.4	1.6			
					37.7	3.9			
					31.1	2.3			
Marsh-1-3R	B12b-TS-15663	9/28/2011	9:39		36.4	3.6	35.2	63.7%	0.420
					39.6	4.6			
					65.1	23.6			
					26.5	1.8			
					28.0	1.8			
Marsh-3-5R	B12b-TS-15661	9/28/2011	10:24		63.5	15.0	50.2	68.7%	0.249
					42.7	7.4			
					30.5	2.3			
					58.5	16.6			
					44.6	9.6			
Marsh-14-2R	B12b-TS-15643	9/28/2011	10:45		30.4	2.5	20.7	67.7%	0.241
					43.5	5.4			
					43.2	3.9			
					37.1	4.5			
					38.4	4.2			
Marsh-7-2R	B12b-TS-15669	10/10/2011	15:18		27.6	1.4	11.9	69.0%	0.0796
					32.7	2.7			
					25.7	1.0			
					25.9	1.6			
					41.2	5.0			
Marsh-3-5R	B12b-TS-15674	10/10/2011	14:22		39.3	4.0	11.7	68.2%	0.173
					26.5	1.7			
					25.8	1.9			
					28.3	2.3			
					29.5	2.0			
Marsh-7-2R	B12b-TS-15688	10/14/2011	9:23		37.6	3.6	47.7	66.4%	0.112
					68.5	17.1			
					65.3	18.5			
					36.9	4.1			
					41.4	4.5			
Marsh-5-3R	B12b-TS-15694	10/17/2011	14:06		25.0	1.1	23.1	76.3%	0.0907
					28.5	2.0			
					26.1	1.9			
					30.6	2.7			
					64.3	15.4			
Marsh-6-6R	B12b-TS-15693	10/17/2011	14:20		26.7	1.2	21.9	71.2%	0.207
					38.0	4.7			
					31.3	3.0			
					26.0	1.4			
					56.5	11.4			

Table 6 - Closed Area Juvenile Blue Crab Additional Marsh Sample Stations, Sample IDs, Processing Data, and Analytical Results

Station ID	Sample ID	Date	Time	Flag	Width (mm)	Crab Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
Marsh-5-3R	B12b-TS-15695	10/24/2011	12:59		26.1	1.5	42.4	64.9%	0.428
					37.8	4.3			
					70.4	27.2			
					41.4	5.6			
					37.1	3.5			
Marsh-6-6R	B12b-TS-15696	12/13/2011	13:00		38.9	4.2	15.2	69.6%	0.197
					39.4	4.1			
					27.9	1.8			
					33.0	2.6			
					30.7	2.7			
Marsh-7-2R	B12b-TS-15698	12/13/2011	13:38		27.2	1.5	8.9	83.1%	0.0552
					34.5	2.8			
					25.1	1.0			
					27.9	1.3			
					32.0	2.3			
Average Values					**40.8**	**7.1**	**35.5**	**67.9%**	**0.283**

Attachment A

Red Drum Gut Content Survey

Alcoa conducted a Red Drum Gut Content Survey to better understand the eating habits of Red Drum in the Lavaca Bay System. The Red Drum Gut Content Survey was initiated in the middle of the Fall 2011 Red Drum Tissue Monitoring Study on 20 October 2011. Alcoa conducted the Gut Survey on 43 of the 60 Red Drum processed during the study (21 Red Drum from the Closed Area and 22 Red Drum from the Adjacent Area). At a minimum, Alcoa removed the contents from the gut, identified the contents (when possible), and assigned percentages by weight of prey species in each red drum surveyed. In addition, Alcoa recorded the weight of gut content by species, and photographs were taken of gut content removed from the majority of the red drum surveyed.

The percentage of each prey species in the gut (by weight) and the total weight of gut contents for each fish are listed in Tables 1 and 2. The data were used to determine which prey species were most abundant (by weight) in the guts of processed red drum. The percentage of each prey item in the guts of all Closed Area red drum combined are shown in Figure 1, and the analogous data for Adjacent Area red drum are shown in Figure 2. The prey item that was most abundant in the guts of the Closed Area red drum was gizzard shad (38.6 % of gut contents by weight), and the prey item that was most abundant in the guts of the Adjacent Area red drum was striped mullet (47.4% of gut contents by weight). Example gut content photographs are included and a complete set of photographs are saved on the attached CD.

Environmental conditions in Lavaca Bay during 2011 could probably be considered atypical. Due to the drought that hit the Lavaca Bay water shed during most of 2011, bay salinities were unusually high. The average salinity in Lavaca Bay for 2011 (as measured by TPWD) was 30 ppt. The average salinity in Lavaca Bay for 2010 was 16 ppt, for 2009 it was 25 ppt, and for 2008 it was 23 ppt. The higher salinities observed in 2011 probably had an impact on the abundance and availability of preferred red drum prey species.

During the fall of 2011, Lavaca Bay was impacted by a "Red Tide". Based on the lines of dead organisms that washed up on Lavaca Bay shorelines, it appears that finfish and shellfish species in the sampling areas were killed or incapacitated by the blooms. In spite of the conditions in the bay, legal sized red drum were available for collection and sampling effort was not significantly increased. Poor water quality caused by the Red Tide probably impacted the availability of red drum prey species which had an impact on the results of this study. Since this is the first year that gut content data have been collected, there are no data for comparison. The collection of comparable data in the future will provide an opportunity to better interpret these data.

Table 1 - Closed Area Red Drum Gut Contents

Station ID	Sample ID	Gut Content: Species	Percent	Gut Content Weight (g)	Total Weight (g)
CLO5818	B12b-TF-15129	Juvenile Blue Crab	100%	NR[1]	NR
CLO5804	B12b-TF-15130	Crab Appendages	30%	NR	NR
		Unidentified Digested Fish	70%	NR	
CLO5804	B12b-TF-15131	Unidentified Digested Fish	10%	NR	NR
		Gizzard Shad	90%	NR	
CLO5814	B12b-TF-15132	White Shrimp	40%	NR	NR
		Artificial Fishing Lure	60%	NR	
CLO5814	B12b-TF-15133	Gizzard Shad	100%	NR	NR
LVB5504	B12b-TF-15134	Stone Crab	1%	1.6	240.2
		Gizzard Shad	99%	238.6	
LVB5504	B12b-TF-15135	Unidentified Digested Fish	100%	8.8	8.8
CLO5803	B12b-TF-15136	Striped Mullet	44%	102.7	232.3
		Gizzard Shad	56%	129.6	
CLO5803	B12b-TF-15137	Gizzard Shad	100%	266.7	266.7
CLO5803	B12b-TF-15138	Stone Crab	2%	3.6	235.2
		Unidentified Digested Fish	31%	72.4	
		Gizzard Shad	67%	159.2	
CLO1414	B12b-TF-15139	Sand Eel	9%	23.1	254.2
		Blue Crab	13%	32.7	
		Gizzard Shad	78%	198.4	
CLO1414	B12b-TF-15140	Sand Eel	18%	57.1	317.1
		Gizzard Shad	82%	260.0	
CLO1414	B12b-TF-15141	Gizzard Shad	100%	142.0	142.0
CLO5815	B12b-TF-15161	Gut Empty	NA[2]	NA	NA
CLO5815	B12b-TF-15162	Striped Mullet	100%	240.4	240.4
CLO5815	B12b-TF-15163	Unidentified Digested Fish	100%	17.5	17.5
LVB5518	B12b-TF-15164	Blue Crab	2%	1.9	108.3
		Tongue Fish	2%	1.9	
		Striped Mullet	96%	104.5	
CLO5814	B12b-TF-15165	Pinfish	43%	103.6	241.3
		Sand Eel	57%	137.7	
CLO5804	B12b-TF-15173	Striped Mullet	100%	193.8	193.8
CLO5818	B12b-TF-15174	Sand Eel	100%	214.2	214.2
CLO5817	B12b-TF-15178	Striped Mullet	100%	35.4	35.4

[1]NR - Not Recorded

[2]NA - Gut cavity was empty

Table 2 - Adjacent Area Red Drum Gut Contents

Station ID	Sample ID	Gut Content			Total Weight (g)
		Species	Percent	Gut Content Weight (g)	
LVB6853	B12b-TF-15150	Unidentified Digested Fish	100%	1.3	1.3
LVB6837	B12b-TF-15158	Unidentified Digested Fish	100%	2.9	2.9
LVB6850	B12b-TF-15154	Unidentified Digested Fish	100%	3.3	3.3
LVB6853	B12b-TF-15169	Striped Mullet	100%	3.8	3.8
LVB5839	B12b-TF-15153	Sand Eel	100%	4.3	4.3
LVB6850	B12b-TF-15172	Mud Shrimp	100%	5.5	5.5
LVB5841	B12b-TF-15179	Blue Crab	100%	5.6	5.6
LVB5838	B12b-TF-15148	Unidentified Digested Fish	100%	12.7	12.7
LVB5838	B12b-TF-15146	Unidentified Digested Fish	100%	20.4	20.4
LVB5841	B12b-TF-15177	Striped Mullet	100%	25.1	25.1
LVB6852	B12b-TF-15142	Stone Crab	100%	30.1	30.1
LVB5838	B12b-TF-15147	Unidentified Digested Fish	100%	37.9	37.9
LVB6853	B12b-TF-15149	Striped Mullet	100%	50.0	50.0
LVB6852	B12b-TF-15175	Striped Mullet	100%	85.1	85.1
LVB5839	B12b-TF-15152	Sand Eel	1%	0.2	87.9
		Blue Crab	19%	17.7	
		Skillet Fish	80%	70.0	
LVB6870	B12b-TF-15143	Striped Mullet	100%	89.0	89
LVB6852	B12b-TF-15170	Sand Eel	34%	38.3	112.7
		Striped Mullet	66%	74.4	
LVB6871	B12b-TF-15168	Striped Mullet	100%	132.0	132.0
LVB6870	B12b-TF-15145	Striped Mullet	100%	160.7	160.7
LVB6950	B12b-TF-15160	Striped Mullet	100%	194.7	194.7
LVB6950	B12b-TF-15159	Striped Mullet	100%	217.4	217.4
LVB6870	B12b-TF-15144	Pinfish	8%	20.3	251.2
		Sand Eel	16%	39.7	
		Striped Mullet	76%	191.2	

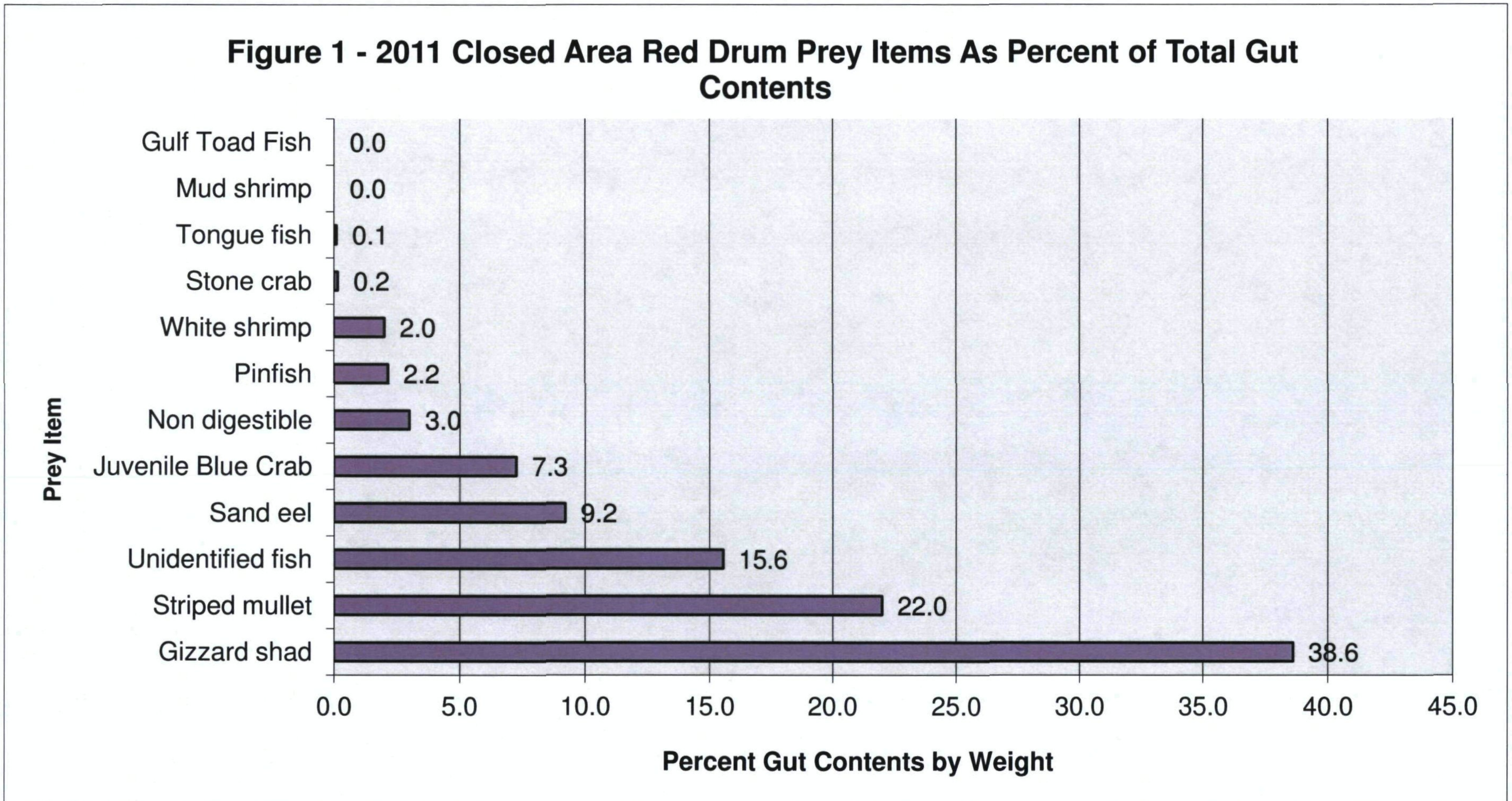


Figure 1 - 2011 Closed Area Red Drum Prey Items As Percent of Total Gut Contents
Prey Item
Gulf Toad Fish
Mud shrimp
Tongue fish
Stone crab
White shrimp
Pinfish
Non digestible
Juvenile Blue Crab
Sand eel
Unidentified fish
Striped mullet
Gizzard shad
0.0
0.0
0.1
0.2
2.0
2.2
3.0
7.3
9.2
15.6
22.0
38.6
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
Percent Gut Contents by Weight

Figure 2 - 2011 Adjacent Area Red Drum Prey Items as Percent of Total Gut Contents

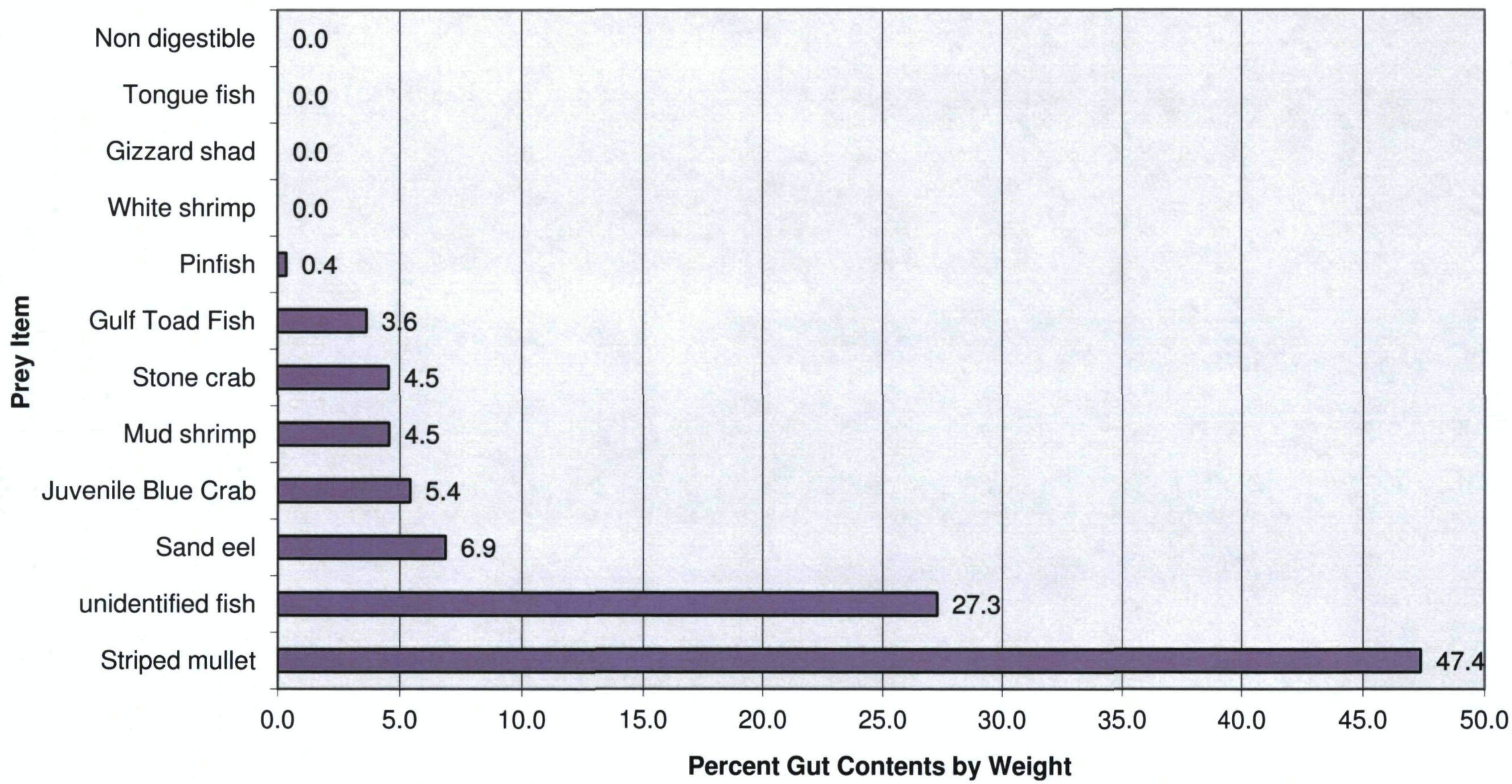


Photo ID 1892 (CLO5803) Gizzard Shad

Photo ID 1878 (CLO5814) Non Digestible

Photo ID 1879 (LVB6852) Stone Crab

Photo ID 1889 (CLO5803) Striped Mullet

Photo ID 1891 (CLO5803) Gizzard Shad

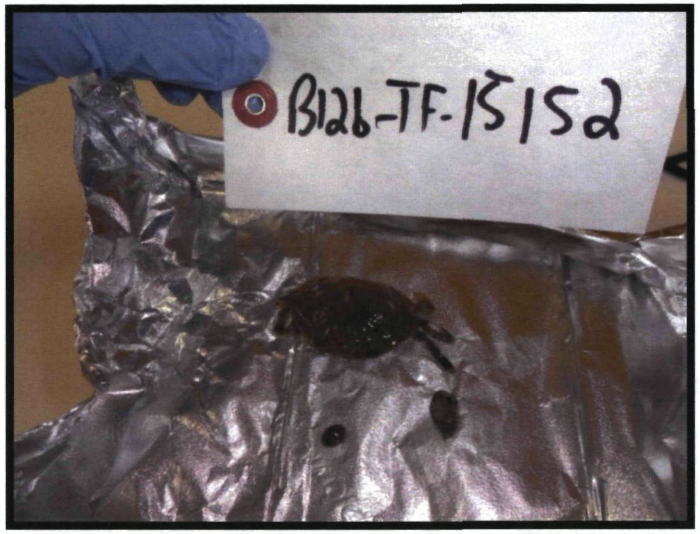


Photo ID 1907 (LVB5839) Blue Crab

Photo ID 1901 (LVB6880) Sand Eels

Photo ID 1904 (LVB6870) Striped Mullet

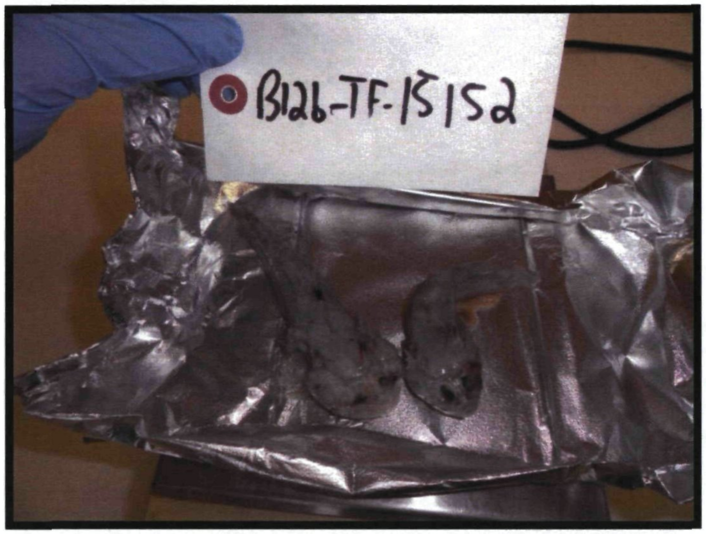


Photo ID 1906 (LVB5839) Gulf Toad Fish

Photo ID 1916 (CLO5815) Striped Mullet

Photo ID 1912 (LVB6950) Striped Mullet

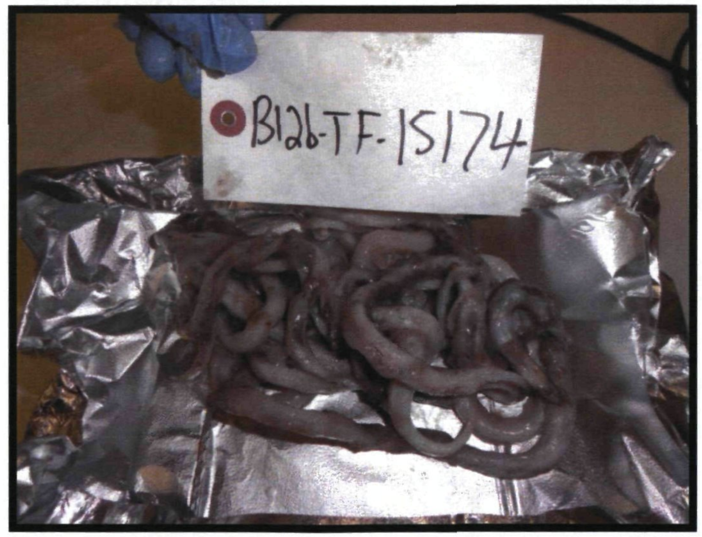


Photo ID 1926 (CLO5818) Sand Eels

APPENDIX C

DREDGE ISLAND INSPECTION RECORDS 2011

DREDGE ISLAND INSPECTION RECORD

Inspector's Name: Kevin Dworsky **Weather:** Partly Cloudy, Breezy **Temperature:** 78° F **KBD accompanied by Brett Soutar of Benchmark Ecological Services Inc. during inspection.**	**Date:** 3/25/11 (1Q11) **Time Begin:** 1000 **Time End:** 1145 **Inspector's Signature:**

SPECIFIC ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS OBSERVED		COMMENTS OR CORRECTIVE ACTION(S) IMPLEMENTED AND DATES
		NORMAL	ABNORMAL	
General Dredge Island	Erosion Deterioration Settling/Ponding Uplift Washouts Rodent Holes Vegetation	X X X X X X ☐	☐ ☐ ☐ ☐ ☐ ☐ X	Minor erosion on north entrance ramp. All original vehicular signs and some of the reflectors on Island are damaged. New signs have been placed in a few locations during recent maintenance on the island. Thick vegetation on roads, interior dikes, Outer Dikes, and on toes of the exterior dikes. Hard to inspect the dikes and ramp thoroughly due to the vegetation. Large trees/bushes are forming on the roads and armor. Action will need to be taken in the future to remove all unwanted vegetation.
Access Bridge	Deterioration Damage Navigation Lights	☐ ☐ ☐	X X X	Conditions similar to previous reports. Bridge abutments severely eroded. Hazard signs indicating presence of water hazards appear in good condition. Detailed inspection of the bridge was not performed as part of this site visit. Bridge abutments are severely eroded.
CDF Dike	Erosion Deterioration Damage Vegetation	☐ X X ☐	X ☐ ☐ X	Moderate erosion observed on interior CDF dikes, north end, as previously noted. North-end has erosions cut on the interior slope up to approximately 24 – 30 inches in depth in areas which is still has the most significant erosion. Minor erosion on all other interior dikes in several locations. The water level has reduced since the last inspection. Minor erosion observed in areas of the exterior dike side slope where the entry ramp meets the dike. The exterior CDF dike appears to be in good condition. The CDF dike appears stable and there is no required action at this time, however, water levels in the CDF should be maintained as low as possible, and erosion rills on the dike's interior and exterior should continue to be monitored during quarterly inspections. Minor to moderate geomembrane exposed along interior dike on all sides of the dike. Action in the near future is necessary. Side slopes of ramp (both sides) generally exhibit erosion rills less than 12 inches in depth. Erosion along the crest of the ramp and along both sides of the ramp where observed to be up to 18 inches in depth and may result in eventual sloughing which could effectively reduce the crest width slightly. The geomembrane component of the water stop on the CCND dike, near the ALCOA CDF station 23+00, is exposed due to severe erosion of the overlying topsoil. Erosion in this area currently does not appear to impact the CDF dikes but should continue to be monitored during quarterly inspections.

DREDGE ISLAND INSPECTION RECORD

				Was unable to view exterior for seepage due to large amounts of vegetation. There was none noted from the dike. Vegetation and trees on the dikes has remained the same since December.
Stone Storm Protection	Erosion Settlement Stone Deterioration Stone Movement Fabric Exposure Damage	X X X X X X	□ □ □ □ □ □	No damage observed. Significant vegetation present. Vegetation has remained the same since December. The amount of trees/bushes that are pushing through the armor has remained the same. Action to remove the vegetation will be necessary.
Gravel Erosion Protection	Erosion Fabric Exposure Deterioration Damage	□ □ □ □	X X X X	Minor to moderate erosion of inside slopes along entire CDF as noted in previous inspections. The inside side slopes have several areas where the fabric has become exposed but appears to still be in good condition. The fabric does not have any noted tears in it. No immediate action is required but these areas should continue to be monitored on a regular basis. Most of the remaining sections of the dikes' inside slope exhibit minor erosion and loss of gravel protection. No immediate action is required at these locations but they should continue to be monitored.
Emergency Spillway	Obstructions Cracks in Concrete Deterioration Damage	X X X X	□ □ □ □	Generally good condition. Slight erosion and some cracks in the concrete. Slight erosion has occurred along the outer edge of the spillway.
Decant Structures	Weir Board Elevation Depth of Water Obstructions Deterioration Rust/Corrosion Damage Overflow Quality (NA) Overflow Quantity Flap Gate	X X X □ □ X □ X X	□ □ □ X X □ □ □ □	North Structure: Coated surfaces on structure exhibiting moderate rusting and pitting on handrails. Channel iron also exhibits moderate to severe corrosion. Water is 5.11' from base plate on the exterior of the structure. WL in structure is 5.23' below base plate. There is very little to no flow to the inside of the structure. . South Structure: Minor rust observed on handrails. The area around the structure is dry (7.10' below the base plate to the top of the sediment). There is very little water in the structure. Inside the structure, the water level is 17.94' below base plate. No flow.
Gravel Road	Potholes Ponding Deterioration Washouts	X X X X	□ □ □ □	Generally in good condition. Some rutting at several locations. Vegetation present over most of road. There has been some slight erosion of the sides of the road.
Water Stops	Erosion Membrane Exposed Deterioration Damage	□ □ X X	X X □ □	Severe erosion, fines accumulation, and geomembrane exposed at water stop on CCND dike as previously reported.
Reflectors Station Tags	Intact/Reflecting Intact/Legibility	X X	□ □	Some reflector posts leaning, few reflectors missing.

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

1 – North Dike viewing moderate damage

2 – North Dike viewing East

3 – North Dike, viewing West

4 – Northeast corner viewing South

5 – Northeast Decant Structure

6 – Northeast Decant Outfall

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

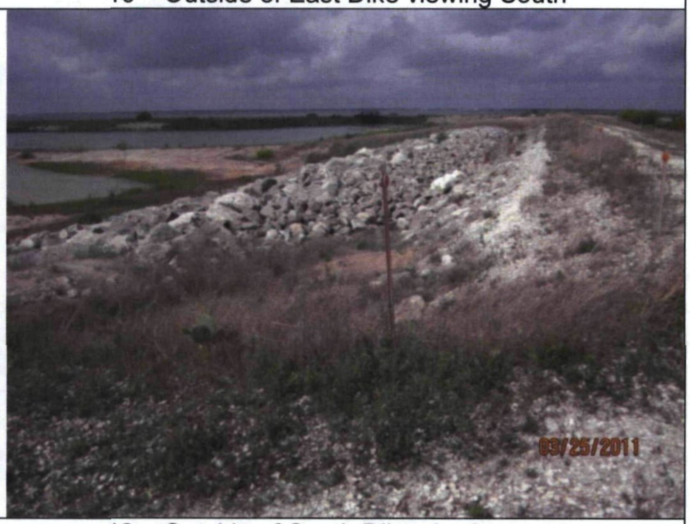
7 – Severe Rusting on Northeast Decant Structure

8 – East Outer Dike, viewing north

9 – Southeast corner viewing West

10 – Outside of East Dike viewing South

11 – Interior of South Dike viewing West



12 – Outside of South Dike viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

13 – South Dike viewing East

14 – Southwest corner viewing North

15 – West Outer Dike viewing North

16 – Southwest corner viewing Northeast

17 – Southwest Decant Outfall

18 – West Outer Dike Viewing South

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

19 – Erosion on West Interior Dike

20 – Northwest corner viewing East

21 – North Ramp

22 – North Ramp erosion

23 – Erosion along North Interior Face

24 – Erosion along Spillway

DREDGE ISLAND INSPECTION RECORD

Inspector's Name: Kevin Dworsky	**Date:** 5/20/11 (2Q11)
Weather: Partly Cloudy, Breezy	**Time Begin:** 1000
Temperature: 82° F	**Time End:** 1200
KBD accompanied by Brett Soutar of Benchmark Ecological Services Inc. during inspection.	**Inspector's Signature:**

SPECIFIC ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS OBSERVED		COMMENTS OR CORRECTIVE ACTION(S) IMPLEMENTED AND DATES
		NORMAL	ABNORMAL	
General Dredge Island	Erosion Deterioration Settling/Ponding Uplift Washouts Rodent Holes Vegetation	X X X X X X ☐	☐ ☐ ☐ ☐ ☐ ☐ X	Minor erosion on north entrance ramp. All original vehicular signs and some of the reflectors on Island are damaged. New signs have been placed in a few locations during recent maintenance on the island. Thick vegetation on roads, interior dikes, Outer Dikes, and on toes of the exterior dikes. Hard to inspect the dikes and ramp thoroughly due to the vegetation. Large trees/bushes are forming on the roads and armor. Action will need to be taken in the future to remove all unwanted vegetation.
Access Bridge	Deterioration Damage Navigation Lights	☐ ☐ ☐	X X X	Conditions similar to previous reports. Bridge abutments severely eroded. Hazard signs indicating presence of water hazards appear in good condition. Detailed inspection of the bridge was not performed as part of this site visit. Bridge abutments are severely eroded.
CDF Dike	Erosion Deterioration Damage Vegetation	☐ X X ☐	X ☐ ☐ X	Moderate erosion observed on interior CDF dikes, north end, as previously noted. North-end has erosions cut on the interior slope up to approximately 24 – 30 inches in depth in areas which is still has the most significant erosion. Minor erosion on all other interior dikes in several locations. The water level has reduced since the last inspection. Minor erosion observed in areas of the exterior dike side slope where the entry ramp meets the dike. The exterior CDF dike appears to be in good condition. The CDF dike appears stable and there is no required action at this time, however, water levels in the CDF should be maintained as low as possible, and erosion rills on the dike's interior and exterior should continue to be monitored during quarterly inspections. Minor to moderate geomembrane exposed along interior dike on all sides of the dike. Action in the near future is necessary. Side slopes of ramp (both sides) generally exhibit erosion rills less than 12 inches in depth. Erosion along the crest of the ramp and along both sides of the ramp where observed to be up to 18 inches in depth and may result in eventual sloughing which could effectively reduce the crest width slightly. The geomembrane component of the water stop on the CCND dike, near the ALCOA CDF station 23+00, is exposed due to severe erosion of the overlying topsoil. Erosion in this area currently does not appear to impact the CDF dikes but should continue to be monitored during quarterly inspections.

DREDGE ISLAND INSPECTION RECORD

				Was unable to view exterior for seepage due to large amounts of vegetation. There was none noted from the dike. Vegetation and trees on the dikes has remained the same since March.
Stone Storm Protection	Erosion Settlement Stone Deterioration Stone Movement Fabric Exposure Damage	X X X X X X	□ □ □ □ □ □	No damage observed. Significant vegetation present. Vegetation has remained the same since March. The amount of trees/bushes that are pushing through the armor has remained the same. Action to remove the vegetation will be necessary.
Gravel Erosion Protection	Erosion Fabric Exposure Deterioration Damage	□ □ □ □	X X X X	Minor to moderate erosion of inside slopes along entire CDF as noted in previous inspections. The inside side slopes have several areas where the fabric has become exposed but appears to still be in good condition. The fabric does not have any noted tears in it. No immediate action is required but these areas should continue to be monitored on a regular basis. Most of the remaining sections of the dikes' inside slope exhibit minor erosion and loss of gravel protection. No immediate action is required at these locations but they should continue to be monitored.
Emergency Spillway	Obstructions Cracks in Concrete Deterioration Damage	X X X X	□ □ □ □	Generally good condition. Slight erosion and some cracks in the concrete. Slight erosion has occurred along the outer edge of the spillway.
Decant Structures	Weir Board Elevation Depth of Water Obstructions Deterioration Rust/Corrosion Damage Overflow Quality (NA) Overflow Quantity Flap Gate	X X X □ □ X □ X X	□ □ □ X X □ □ □ □	North Structure: Coated surfaces on structure exhibiting moderate rusting and pitting on handrails. Channel iron also exhibits moderate to severe corrosion. Water is 5.18' from base plate on the exterior of the structure. WL in structure is 5.51' below base plate. There is very little to no flow to the inside of the structure. . South Structure: Minor rust observed on handrails. The area around the structure is dry (6.96' below the base plate to the top of the sediment). There is very little water in the structure. Inside the structure, the water level is 17.91' below base plate. No flow.
Gravel Road	Potholes Ponding Deterioration Washouts	X X X X	□ □ □ □	Generally in good condition. Some rutting at several locations. Vegetation present over most of road. There has been some slight erosion of the sides of the road.
Water Stops	Erosion Membrane Exposed Deterioration Damage	□ □ X X	X X □ □	Severe erosion, fines accumulation, and geomembrane exposed at water stop on CCND dike as previously reported.
Reflectors Station Tags	Intact/Reflecting Intact/Legibility	X X	□ □	Some reflector posts leaning, few reflectors missing.

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

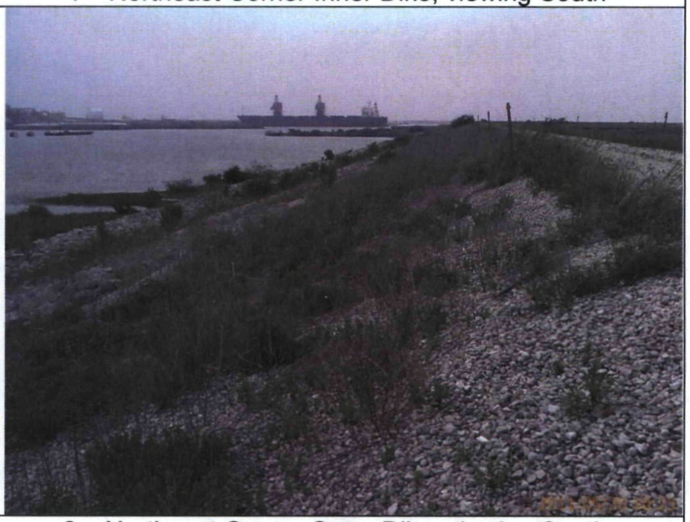
1 – North Dike viewing moderate damage

2 – North Dike, viewing East

3 – North Dike, viewing West

4 – Northeast Corner Inner Dike, viewing South

5 – Northeast Decant Structure



6 – Northeast Corner Outer Dike, viewing South

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 – Large Intrusive Vegetation on Outer Dike

8 – East Outer Dike, viewing north

9 – Southeast Corner Inner Dike, viewing West

10 –East Outer Dike, viewing South

11 – South Inner Dike, viewing West

12 – South Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

13 – South Inner Dike, viewing East

14 – Southwest Corner Inner Dike, viewing North

15 – Southwest Corner Outer Dike, viewing North

16 – Exposed Liner on South Inner Dike

17 – Southwest Decant Outfall

18 – South Decant Structure

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

19 – Erosion on West Interior Dike

20 – Northwest Corner Inner Dike, viewing East

23 – Northwest Corner Inner Dike, viewing South

24 – Spillway

21 – North Ramp

22 – Signage

DREDGE ISLAND INSPECTION RECORD

Inspector's Name: Kevin Dworsky	**Date:** 8/22/11 (3Q11)
Weather: Partly Cloudy, Breezy	**Time Begin:** 1000
Temperature: 94° F	**Time End:** 1200
KBD accompanied by Brett Soutar of Benchmark Ecological Services Inc. during inspection.	**Inspector's Signature:**

SPECIFIC ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS OBSERVED		COMMENTS OR CORRECTIVE ACTION(S) IMPLEMENTED AND DATES
		NORMAL	ABNORMAL	
General Dredge Island	Erosion Deterioration Settling/Ponding Uplift Washouts Rodent Holes Vegetation	X X X X X X ☐	☐ ☐ ☐ ☐ ☐ ☐ X	Minor erosion on north entrance ramp. Work is scheduled to fix the ramp in the next few months. All original vehicular signs and some of the reflectors on Island are damaged. New signs have been placed in a few locations during recent maintenance on the island. Thick vegetation on roads, interior dikes, Outer Dikes, and on toes of the exterior dikes. Hard to inspect the dikes and ramp thoroughly due to the vegetation. Large trees/bushes are forming on the roads and armor. Action will need to be taken in the future to remove all unwanted vegetation.
Access Bridge	Deterioration Damage Navigation Lights	☐ ☐ ☐	X X X	Conditions similar to previous reports. Bridge abutments severely eroded. Hazard signs indicating presence of water hazards appear in good condition. Detailed inspection of the bridge was not performed as part of this site visit. Bridge abutments are severely eroded.
CDF Dike	Erosion Deterioration Damage Vegetation	☐ X X ☐	X ☐ ☐ X	Moderate erosion observed on interior CDF dikes, north end, as previously noted. North-end has erosions cut on the interior slope up to approximately 24 – 30 inches in depth in areas which is still has the most significant erosion. Work is scheduled to fix the North CDF dike in the next few months. Minor erosion on all other interior dikes in several locations. The water level has reduced to nearly no water since the last inspection. Minor erosion observed in areas of the exterior dike side slope where the entry ramp meets the dike. The exterior CDF dike appears to be in good condition. The CDF dike appears stable and there is no required action at this time, however, water levels in the CDF should be maintained as low as possible, and erosion rills on the dike's interior and exterior should continue to be monitored during quarterly inspections. Minor to moderate geomembrane exposed along interior dike on all sides of the dike. Action in the near future is necessary. Side slopes of ramp (both sides) generally exhibit erosion rills less than 12 inches in depth. Erosion along the crest of the ramp and along both sides of the ramp where observed to be up to 18 inches in depth and may result in eventual sloughing which could effectively reduce the crest width slightly. Work is scheduled to fix the ramp in the next few months. The geomembrane component of the water stop on the CCND dike, near the ALCOA CDF station 23+00, is exposed due to severe erosion of the

DREDGE ISLAND INSPECTION RECORD

				overlying topsoil. Erosion in this area currently does not appear to impact the CDF dikes but should continue to be monitored during quarterly inspections. Was unable to view exterior for seepage due to large amounts of vegetation and low tidal conditions. There was none noted from the dike. Vegetation and trees on the dikes has remained the same since May.
Stone Storm Protection	Erosion Settlement Stone Deterioration Stone Movement Fabric Exposure Damage	X X X X X X	□ □ □ □ □ □	No damage observed. Significant vegetation present. Vegetation has remained the same since May. The amount of trees/bushes that are pushing through the armor has remained the same. Action to remove the vegetation will be necessary.
Gravel Erosion Protection	Erosion Fabric Exposure Deterioration Damage	□ □ □ □	X X X X	Minor to moderate erosion of inside slopes along entire CDF as noted in previous inspections. The inside side slopes have several areas where the fabric has become exposed but appears to still be in good condition. The fabric does not have any noted tears in it. No immediate action is required but these areas should continue to be monitored on a regular basis. Most of the remaining sections of the dikes' inside slope exhibit minor erosion and loss of gravel protection. No immediate action is required at these locations but they should continue to be monitored.
Emergency Spillway	Obstructions Cracks in Concrete Deterioration Damage	X X X X	□ □ □ □	Generally good condition. Slight erosion and some cracks in the concrete. Slight erosion has occurred along the outer edge of the spillway.
Decant Structures	Weir Board Elevation Depth of Water Obstructions Deterioration Rust/Corrosion Damage Overflow Quality (NA) Overflow Quantity Flap Gate	X X X □ □ X □ X X	□ □ □ X X □ □ □ □	North Structure: Coated surfaces on structure exhibiting moderate rusting and pitting on handrails. Channel iron also exhibits moderate to severe corrosion. The area around the structure is dry (5.81' below the base plate to the top of the sediment). WL in structure is 18.48' below base plate. The total depth of the structure is 24.26 below the base plate. There is very little flow to the inside of the structure. Plastic has recently been placed around the top section of the structure to prevent large amounts of water from entering the structure during a dredging event. The flap valve on the outfall is currently being repaired and recoated. The decant structure and pipes have been recently jetted out to remove all sediment that was clogging the structures. South Structure: Minor rust observed on handrails. The area around the structure is dry (7.42' below the base plate to the top of the sediment). There is very little water in the structure. Inside the structure, the water level is 17.76' below base plate. The total depth of the decant structure is 18.08'. No flow. Plastic has recently been placed around the top section of the structure to prevent large amounts of water from entering the structure during a dredging event.

DREDGE ISLAND INSPECTION RECORD

Gravel Road	Potholes Ponding Deterioration Washouts	X X X X	☐ ☐ ☐ ☐	Generally in good condition. Some rutting at several locations. Vegetation present over most of road. There has been some slight erosion of the sides of the road.
Water Stops	Erosion Membrane Exposed Deterioration Damage	☐ ☐ X X	X X ☐ ☐	Severe erosion, fines accumulation, and geomembrane exposed at water stop on CCND dike as previously reported.
Reflectors Station Tags	Intact/Reflecting Intact/Legibility	X X	☐ ☐	Some reflector posts leaning, few reflectors missing.

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

1 – North Dike viewing moderate damage

2 – North Dike, viewing East

3 – North Dike, viewing West

4 – Northeast Corner Inner Dike, viewing South

5 – Northeast Decant Structure

6 – Northeast Corner Outer Dike, viewing South

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

	
7 – Large Intrusive Vegetation on Outer Dike	8 – East Outer Dike, viewing north
	
9 – Southeast Corner Inner Dike, viewing West	10 –East Outer Dike, viewing South
	
11 – South Inner Dike, viewing West	12 – South Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

13 – South Inner Dike, viewing East

14 – Southwest Corner Inner Dike, viewing North

15 – Southwest Corner Outer Dike, viewing North

16 – Exposed Liner on South Inner Dike

17 – Southwest Decant Outfall

18 – South Decant Structure

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

19 – Northwest Corner viewing Southeast across Island

20 – Northwest Corner Inner Dike, viewing East

23 – Northwest Corner Inner Dike, viewing South

24 – Spillway Erosion

21 – North Ramp

22 – Signage

SITE INSPECTION LOG

Inspector's Name: Dan Bullock, P.E. (BBA, LLC)
Weather: Cloudy, Overcast
Temperature: Approx. 64 F

David B. Bullock
1-12-12

STATE OF TEXAS
DANIEL B. BULLOCK
82596
REGISTERED
PROFESSIONAL ENGINEER

Inspector's Signature: David B. Bullock

Inspection Date: 12-20-11
Time Begin: Approx. 10:00 a.m.
Time End: Approx. 12:15 p.m.

Sheet: 1 of 2

Specific Item to Inspect	Typical Problems Encountered	Conditions Observed		Comments or Corrective Action(s) Implemented and Dates
		Normal	Abnormal	
General Dredge Island	Erosion Deterioration Settling/Ponding Uplift Washouts Rodent Holes	☒ ☒ ☒ ☒ ☒ ☒	☐ ☐ ☐ ☐ ☐ ☐	All vehicle traffic signs need replacement/repair if island to be used for vehicular traffic – which is currently not the case.
Access Bridge	Deterioration Damage Navigation Lights	☐ ☐ ☐	☒ ☒ ☒	Conditions similar to those observed and reported in 12/19/06 inspection report. Hazard signs indicating presence of water hazards appear in generally good condition. Detailed inspection of bridge not performed as part of this site visit. Bridge abutments severely eroded.
CDF Dike	Erosion Deterioration Damage Vegetation	☒ ☒ ☒ ☒	☐ ☐ ☐ ☐	North-end CDF dike and access ramp erosion areas noted in the 2010 inspection have been repaired and appear in generally good condition, see photos. The geomembrane component of the water stop on the CCND dike, near the Alcoa CDF Station 23+00, is exposed due to severe erosion of the overlying topsoil cover material (see attached photos). Erosion in this area currently does not appear to impact the CDF dikes but should continue to be monitored during quarterly inspections.
Stone Storm Protection	Erosion Settlement Stone Deterioration Stone Movement Fabric Exposure Damage	☒ ☒ ☒ ☒ ☒ ☒	☐ ☐ ☐ ☐ ☐ ☐	No damage observed. Some vegetation growth within stone protection observed – should continue to implement weed control and periodic visual monitoring.
Gravel Erosion Protection	Erosion Fabric Exposure Deterioration Damage	☐ ☐ ☐ ☐	☒ ☒ ☒ ☒	The inside slope of dikes at the locations discussed above were recently repaired, but geotextile fabric and overlying gravel erosion protection originally constructed on the interior slope was not placed as part of the work. Most of the remaining sections (generally along the south) of dike inside slope areas exhibit minor erosion and loss of gravel protection, no immediate action is required at these locations but they should continue to be monitored.
Emergency Spillway	Obstructions Cracks in Concrete Deterioration Damage	☒ ☒ ☒ ☒	☐ ☐ ☐ ☐	Generally good condition. Some localized, surficial concrete deterioration observed.

Decant Structures	Weir Board Elevation Depth of Water Obstructions Deterioration Rust/Corrosion Damage Overflow Quality (NA) Overflow Quantity Flap Gate	☒ ☒ ☒ ☐ ☐ ☒ ☐ ☒ ☒	☐ ☐ ☐ ☒ ☒ ☐ ☐ ☐ ☐	North Structure: Severe corrosion of structural I-beam sections was observed during this limited visual inspection. The majority of structural I-beam is not visible without removal of grates and access of structure interior and was therefore not observed as part of this inspection, but may be in similar condition to the exposed I-beam sections observed. It is recommended that personnel access to this structure be restricted until a thorough structural and safety inspection of this structure can be performed by a qualified structural engineer. Repairs including replacement of grating on south side of structure, removal of loose rust from handrails and substructure and placement of new metal surface coating were completed in January and February 2008. I-beams and channel iron slots containing the stoplogs on the structure exhibits severe corrosion, per attached photos. Installation and removal of stoplogs may be difficult in areas of severe corrosion, possibly requiring use of thinner stoplogs. Repair of stoplog slots exhibiting severe corrosion is recommended. This structure should continue to be closely monitored for metal degradation during quarterly inspections. Some new timber stoplogs and HDPE plastic sheeting around the outside of the structure appear to have been installed since the December 2010 inspection. CDF surface was dry during inspection, with no on-going discharge. Inside decant structure WSEL approximately 25 feet 5 inches below top of I-Beam, corresponding to a water depth of approximately 4 inches in the bottom of the structure. No discharge operations observed at north structure location. South Structure: Minor rust observed on south decant structure hand rails. Outside decant structure was dry. Inside decant structure WSEL approximately 17 feet 7 inches below top of I-Beam, corresponding to a water depth of approximately 4 inches in the bottom of the structure. No discharge operations observed at south structure location.
Gravel Road	Potholes Ponding Deterioration Washouts	☒ ☒ ☒ ☒	☐ ☐ ☐ ☐	Generally good condition, some rutting at Station 105+00 and thin gravel surface observed at approximate Sta 65+00. Vegetation growth within gravel road – should implement weed control program and continue to monitor.
Water Stops	Erosion Membrane Exposed Deterioration Damage	☐ ☐ ☒ ☒	☒ ☒ ☐ ☐	Erosion and fines accumulation observed near water stop areas. Observed in previous inspections. Appears to be associated with CCND dikes. Geomembrane exposed on CCND dike water stop as discussed under the CDF dike inspection item above. Continue to monitor.
Reflectors Station Tags	Intact/Reflecting Intact/Legibility	☒ ☒	☐ ☐	Some reflectors and traffic signage observed to be leaning or entirely down on the ground, if island is to be used for vehicular traffic in the future (currently it is not due to no access bridge), a more detailed review of reflectors and traffic signage should be completed.

Note:
Due to recently identified safety concerns associated with walking on armor stone, this inspection was conducted without traversing the stone on exterior dike slopes. Exterior dike locations were observed via dike crest or by waterside inspection from a boat.

FIGURE 4-3
Typical Inspection Log

12-20-2011 DI Inspection

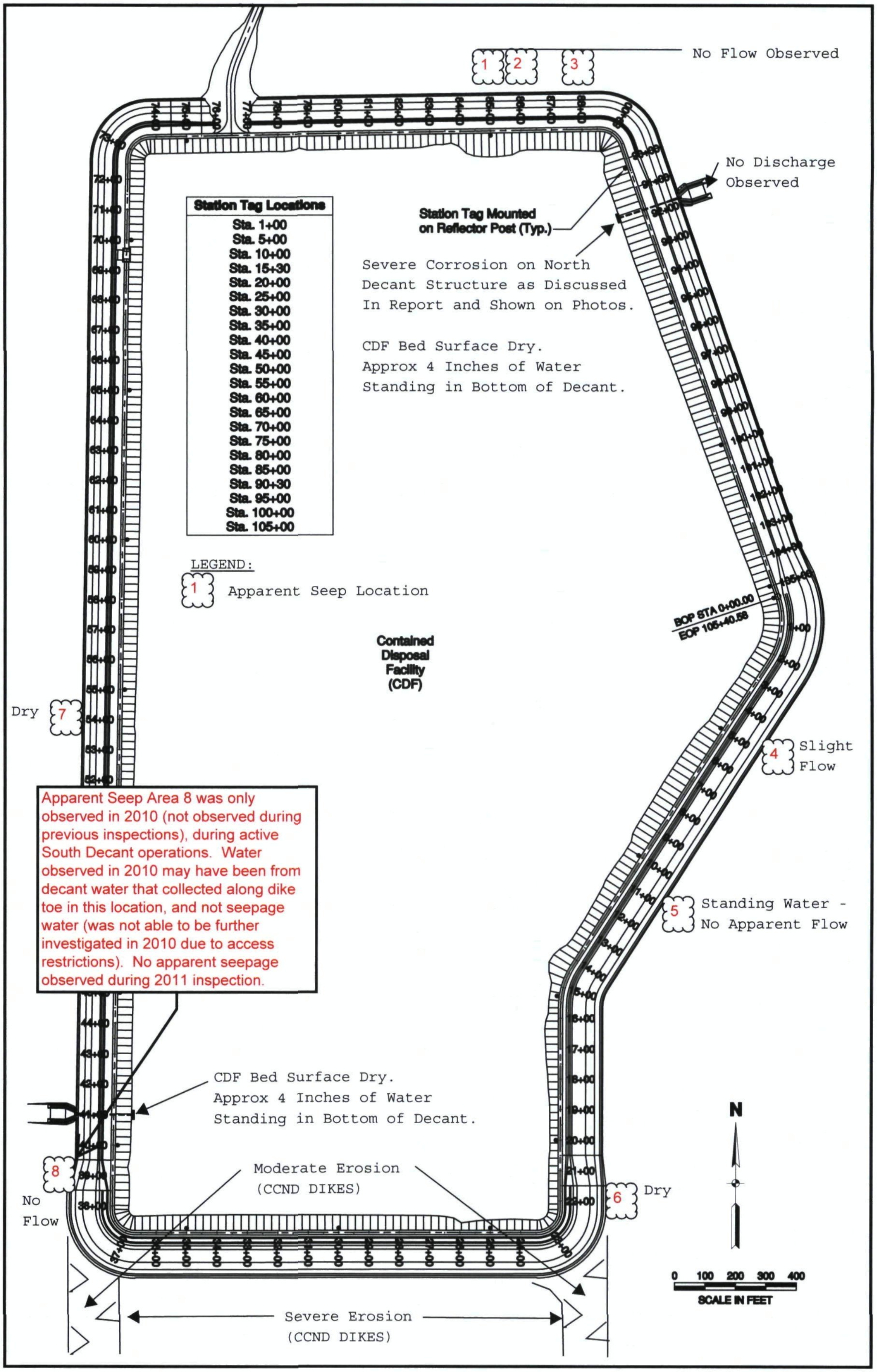


FIGURE 4-2
STATION NUMBER LOCATIONS

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/20/2011

North Entry Ramp

North Entry Ramp

CDF – NW Corner

CDF – NE Corner

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/20/2011

CDF – NW Corner Slope Repairs

CDF – NE Corner Slope Repairs

Dike Crest, North Ramp in Background

North Decant Structure

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/20/2011

North Decant Structure Corrosion

North Decant Structure Corrosion

North Decant Structure Corrosion

North Decant Structure Corrosion

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/20/2011

North Decant Structure Outfall

Dike Crest, Facing North Near Approx. Sta 102

Historic Apparent Seep No. 4

Dike Crest and Side Slope Approx Sta 14

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/20/2011

South Dike Side Slope Near Sta 24
(fines in foreground, observed during previous annual inspections and reportedly placed during dike construction activities)

CCND Severe Erosion – Exposed FML

Geotextle and Light Gravel Slope Protection – South Dike Interior

Dike Crest and South Decant Structure

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/20/2011

South Decant Structure Outfall

South Decant Structure Outfall

South Decant Structure

Dike Crest, Approx Sta 55

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/20/2011

Emergency Spillway

Emergency Spillway

West Side of NW Corner Slope Repair

Former DI Access Bridge

APPENDIX D

CAPA SOIL CAP INSPECTION RECORDS 2011

CAPA CAP INSPECTION RECORD

Date: 3/25/2011 **Time Started:** 1320 **Time Ended:** 1330

Weather Conditions: 76° F, Partly Cloudy Sky

Observations/Comments:

ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Cap	Erosion	√		
	Settling	√		
	Ponding	√		Some ponding in various locations
	Washouts	√		
	Holes	√		
	Vehicle Ruts	√		There are a few ruts from recent herbicide spraying
	Intrusive Vegetation	√		Slight vegetative growth on cap
Signage	In Place	√		
	Legible	√		
Storm Drains	Grates	√		
	Debris	√		West storm drain has vegetation covering grate.
Equipment or Wastes	Proper Storage	√		
Extraction Wells	Controllers	√		
	Boxes	√		
	Electrical	√		
	Conduit	√		
	Transfer Piping	√		
Treatment System	Equipment	√		
	Leaks	√		
	Odors	√		

Additional Comments or Observations: Cap is in good condition. Herbicide treatment is scheduled to remove current vegetation on cap.

Inspector:
Kevin Dworsky

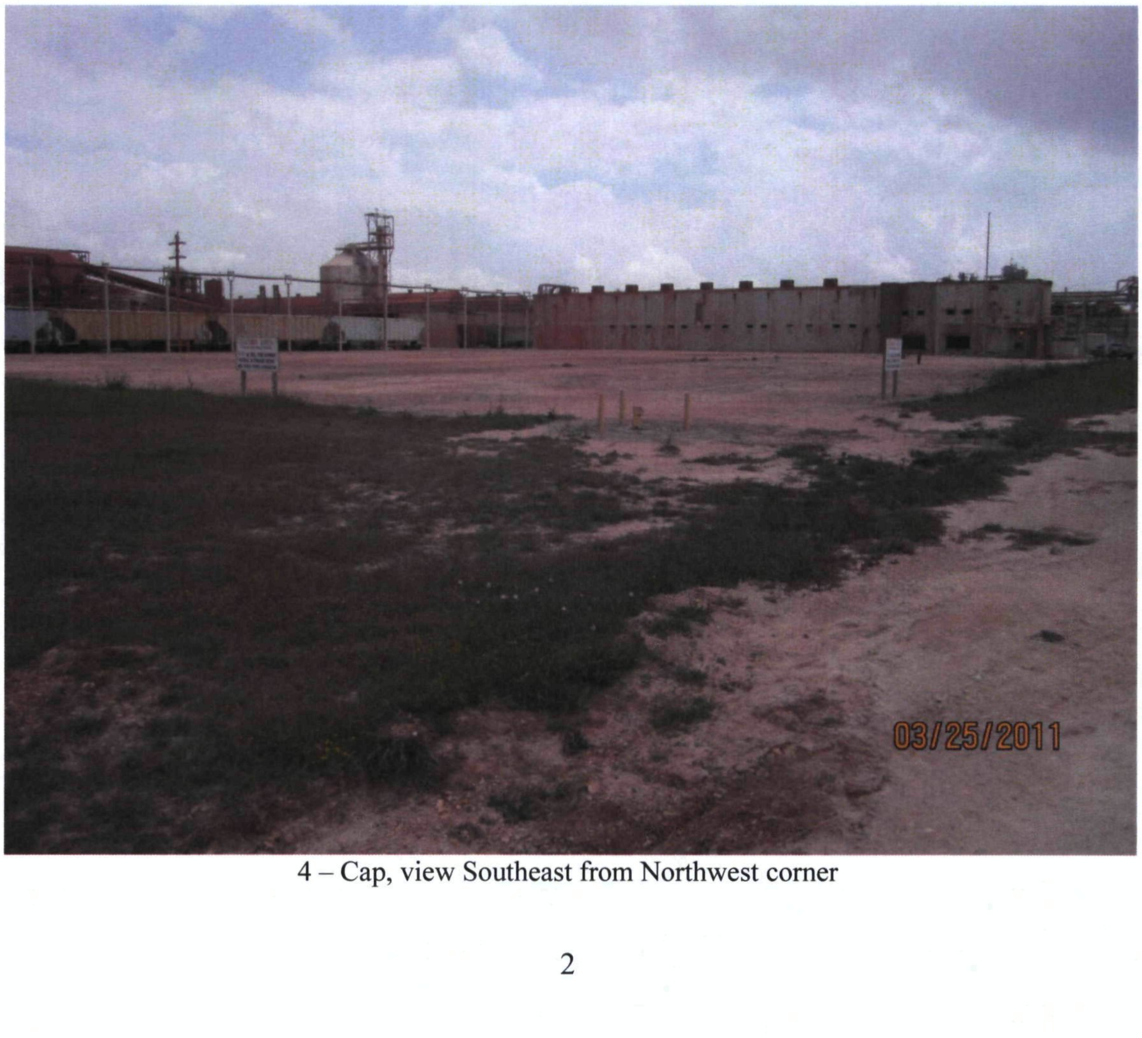
Inspectors Signature:

PASTOR, BEHLING & WHEELER, LLC
131 N. Virginia, Suite B
Port Lavaca, Texas 77979
Phone: 361-553-6443 Fax: 361-553-6449

1 - Cap, view Northeast from Southwest corner

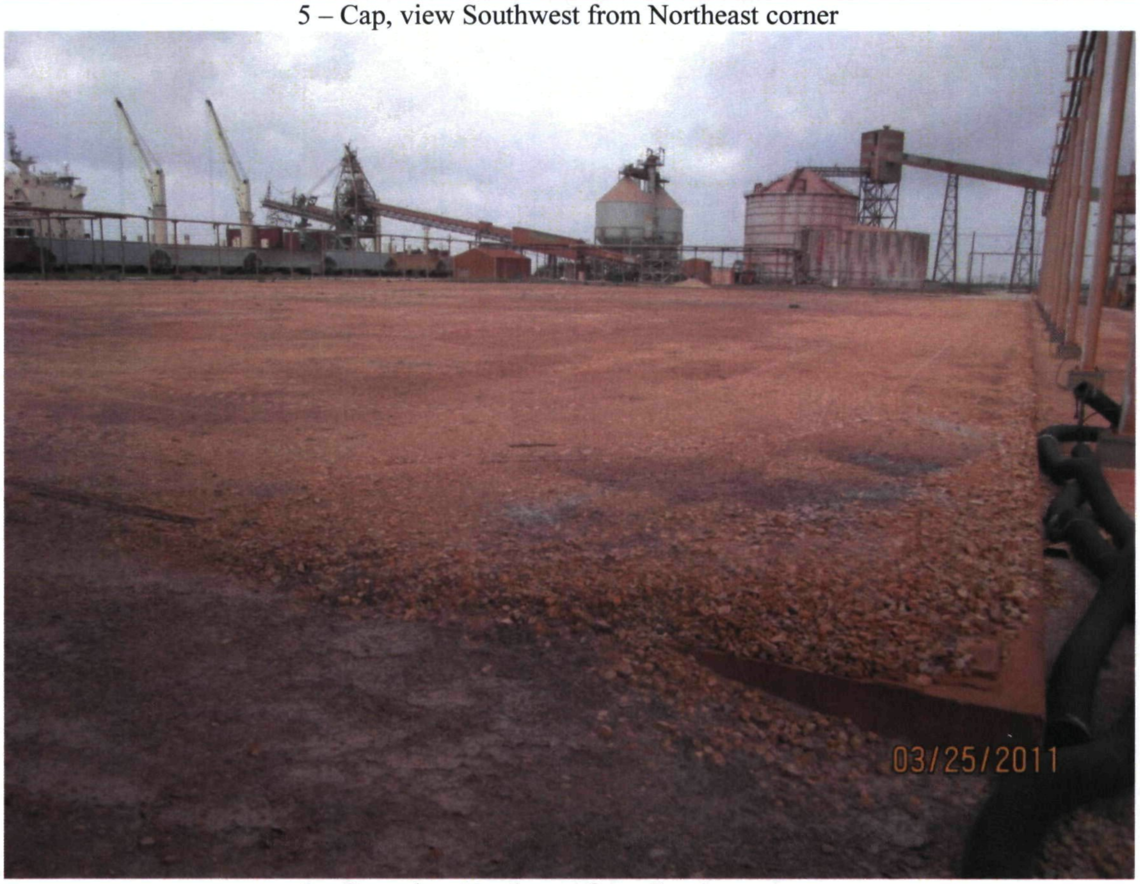
2 - Cap, storm sewer drain

3 – Cap, storm sewer drain



4 – Cap, view Southeast from Northwest corner

5 – Cap, view Southwest from Northeast corner



6 – Cap, view Northwest from Southeast corner

7 – Cap, ruts from previous herbicide

8 – Cap, current vegetation

CAPA CAP INSPECTION RECORD

Date: 5/20/2011 **Time Started:** 1245 **Time Ended:** 1300

Weather Conditions: 86° F, Clear Sky

Observations/Comments:

ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS Normal	CONDITIONS Abnormal	COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
Cap	Erosion	√		
	Settling	√		
	Ponding	√		Some ponding in various locations
	Washouts	√		
	Holes	√		
	Vehicle Ruts	√		There are a few ruts from past herbicide spraying
	Intrusive Vegetation	√		Very little vegetation on cap
Signage	In Place	√		
	Legible	√		
Storm Drains	Grates	√		
	Debris	√		
Equipment or Wastes	Proper Storage	√		
Extraction Wells	Controllers	√		
	Boxes	√		
	Electrical	√		
	Conduit	√		
	Transfer Piping	√		
Treatment System	Equipment	√		
	Leaks	√		
	Odors	√		

Additional Comments or Observations: Cap is in good condition.

Inspector:
Kevin Dworsky

Inspectors Signature:

PASTOR, BEHLING & WHEELER, LLC
131 N. Virginia, Suite B
Port Lavaca, Texas 77979
Phone: 361-553-6443 Fax: 361-553-6449

1 - Cap, view Northeast from Southwest corner

2 - Cap, storm sewer drain at R-301

3 – Cap, west storm sewer drain

4 – Cap, Northwest corner storm drain

5 – Cap, North storm drain

6 – Cap, Northeast storm drain

7 – Cap, view Southeast from Northwest corner

8 – Cap, view Southwest from Northeast corner

9 – Cap, view Northwest from Southeast corner

10 – Cap, extraction well

11 – Cap, current vegetation

CAPA CAP INSPECTION RECORD

Date: 8/22/2011 **Time Started:** 1245 **Time Ended:** 1300

Weather Conditions: 97° F, Partly Cloudy Sky

Observations/Comments:

ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Cap	Erosion	√		
	Settling	√		
	Ponding	√		Some ponding in various locations
	Washouts	√		None observed
	Holes	√		None observed
	Vehicle Ruts	√		There are a few ruts from previous herbicide treatment
	Intrusive Vegetation	√		Very little vegetation on cap
Signage	In Place	√		
	Legible	√		
Storm Drains	Grates	√		Some intrusive vegetation on grates
	Debris	√		None observed
Equipment or Wastes	Proper Storage	√		
Extraction Wells	Controllers	NA		Well is no longer in use
	Boxes	√		
	Electrical	NA		Disconnected and removed from well
	Conduit	NA		Disconnected and removed from well
	Transfer Piping	NA		Disconnected and removed from well
Treatment System	Equipment	√		Good condition
	Leaks	√		None observed
	Odors	√		None observed

Additional Comments or Observations: Cap is in good condition.

Inspector:
Kevin Dworsky

Inspectors Signature: [signature]

PASTOR, BEHLING & WHEELER, LLC
131 N. Virginia, Suite B
Port Lavaca, Texas 77979
Phone: 361-553-6443 Fax: 361-553-6449

CAPA CAP INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

1 - Cap, view Northeast from Southwest corner

2 - Cap, storm sewer drain at R-301

3 – Cap, west storm sewer drain

4 – Cap, Northwest corner storm drain

5 – Cap, North storm drain

6 – Cap, Northeast storm drain

CAPA CAP INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 – Cap, view Southeast from Northwest corner

8 – Cap, view Southwest from Northeast corner

9 – Cap, view Northwest from Southeast corner

10 – Cap, extraction well

11 – Cap, current vegetation

12 – Cap, ruts from previous herbicide treatment

CAPA CAP INSPECTION RECORD

Date: 12/20/2011 Time Started: 2:15pm Time Ended: 2:30pm

Weather Conditions: 59° F, Partly Cloudy Sky, Winds 10 mph (NNE)

Observations/Comments:

ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS Normal	CONDITIONS Abnormal	COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
Cap	Erosion	√		
	Settling	√		
	Ponding	√		Some minor ponding in various locations
	Washouts	√		None observed
	Holes	√		None observed
	Vehicle Ruts	√		There are a few ruts from previous herbicide treatment
	Intrusive Vegetation	√		Little vegetation on cap
Signage	In Place	√		
	Legible	√		
Storm Drains	Grates	√		Some intrusive vegetation on grates
	Debris	√		None observed
Equipment or Wastes	Proper Storage	√		
Extraction Wells	Controllers	NA		Well is no longer in use
	Boxes	√		
	Electrical	NA		Disconnected and removed from well
	Conduit	NA		Disconnected and removed from well
	Transfer Piping	NA		Disconnected and removed from well
Treatment System	Equipment	√		Good condition
	Leaks	√		None observed
	Odors	√		None observed

Additional Comments or Observations: Cap is in good condition.

Inspector:
Kevin Dworsky

Inspectors Signature: K Dworsky

PASTOR, BEHLING & WHEELER, LLC
620 E. Airline
Victoria, Texas 77901
Phone: 361-573-6443 Fax: 361-573-6449

CAPA CAP INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

1 - Cap, view Northeast from Southwest corner

2 - Cap, storm sewer drain at R-301

3 – Cap, west storm sewer drain

4 – Cap, Northwest corner storm drain

5 – Cap, North storm drain

6 – Cap, Northeast storm drain

CAPA CAP INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 – Cap, view Southeast from Northwest corner

8 – Cap, view Southwest from Northeast corner

9 – Cap, view Northwest from Southeast corner

10 – Cap, extraction well

11 – Cap, current vegetation

12 – Cap, ruts from previous herbicide treatment

APPENDIX E

WITCO AREA INSPECTION RECORDS 2011

WITCO AREA INSPECTION RECORD

Date: 3/25/2010 1Q11 **Time Started:** 1330 **Time Ended:** 1400

Weather Conditions: 75° F, Partly Cloudy Sky

Observations/Comments:

AREA	ITEM	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Drainage Channel	Cracks in Concrete	√		Few old cracks
	Obstructions	√		None observed
	Erosion	√		Slight erosion on east lip of concrete drainage channel
	Deterioration	√		None observed
	Washouts	√		
	Rip Rap	√		
Soil Cap (Tank Farm)	Erosion	√		Few areas of ponding on cap
	Settlement	√		
	Vegetation	√		
	Intrusive Trees	√		
	Drainage/Rip Rap	√		Moderate vegetative growth
	Animal Damage	√		None observed
	Vehicle Ruts	√		None observed
	Damage	√		None observed
Soil Cap (O/W Separator)	Erosion	√		
	Settlement	√		
	Vegetation	√		
	Damage	√		
Slope from Cap to Channel	Erosion	√		Geofabric is exposed and stretched in a few locations, overall in good condition
	Slumping	√		
	Vegetation	√		
Signage	Damage	√		
	Illegible	√		
DNAPL Collection Sump	Damage	√		WL in sump = 4.52' BMP, no DNAPL
	Other			

Additional Comments or Observations: Area in good condition.

Inspector:
Kevin Dworsky

Inspectors Signature:

PASTOR, BEHLING & WHEELER, LLC
131 N. Virginia, Suite B
Port Lavaca, Texas 77979
Phone: 361-553-6443 Fax: 361-553-6449

Northeast corner, view Southwest

Northwest corner, view Southeast

Southwest corner, view Northeast

Southeast corner of cap, view Northwest

Slope between tank farm and drainage channel/marsh

Slope between tank farm and drainage channel/marsh, view northwest

DNAPL monitoring well

Northeast Witco Cap, view South

View of rip rap damage at the end of the drainage channel

View of the end of the drainage channel, view west

View of east end of drainage channel

View of rip rap at drainage from tank farm cap showing recently sprayed vegetation

Date: 5/20/2011 2Q11		PAGE 1 of 1

Date: 5/20/2010 2Q11 | Time Started: 1300 | Time Ended: 1330

Weather Conditions: 83° F, Clear Sky

Observations/Comments:

AREA	ITEM	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Drainage Channel	Cracks in Concrete	√		Few old cracks
	Obstructions	√		None observed
	Erosion	√		Slight erosion on east lip of concrete drainage channel
	Deterioration	√		None observed
	Washouts	√		
	Rip Rap	√		
Soil Cap (Tank Farm)	Erosion	√		Few areas of ponding on cap
	Settlement	√		
	Vegetation	√		Good Vegetation
	Intrusive Trees	√		
	Drainage/Rip Rap	√		Moderate vegetative growth
	Animal Damage	√		None observed
	Vehicle Ruts	√		None observed
	Damage	√		None observed
Soil Cap (O/W Separator)	Erosion	√		
	Settlement	√		
	Vegetation	√		Good Vegetation
	Damage	√		
Slope from Cap to Channel	Erosion	√		Geofabric is exposed and stretched in a few locations, overall in good condition
	Slumping	√		
	Vegetation	√		Good Vegetation
Signage	Damage	√		
	Illegible	√		
DNAPL Collection Sump	Damage	√		WL in sump = 3.92' BMP, no DNAPL
	Other			

Additional Comments or Observations: Area in good condition.

Inspector:
Kevin Dworsky

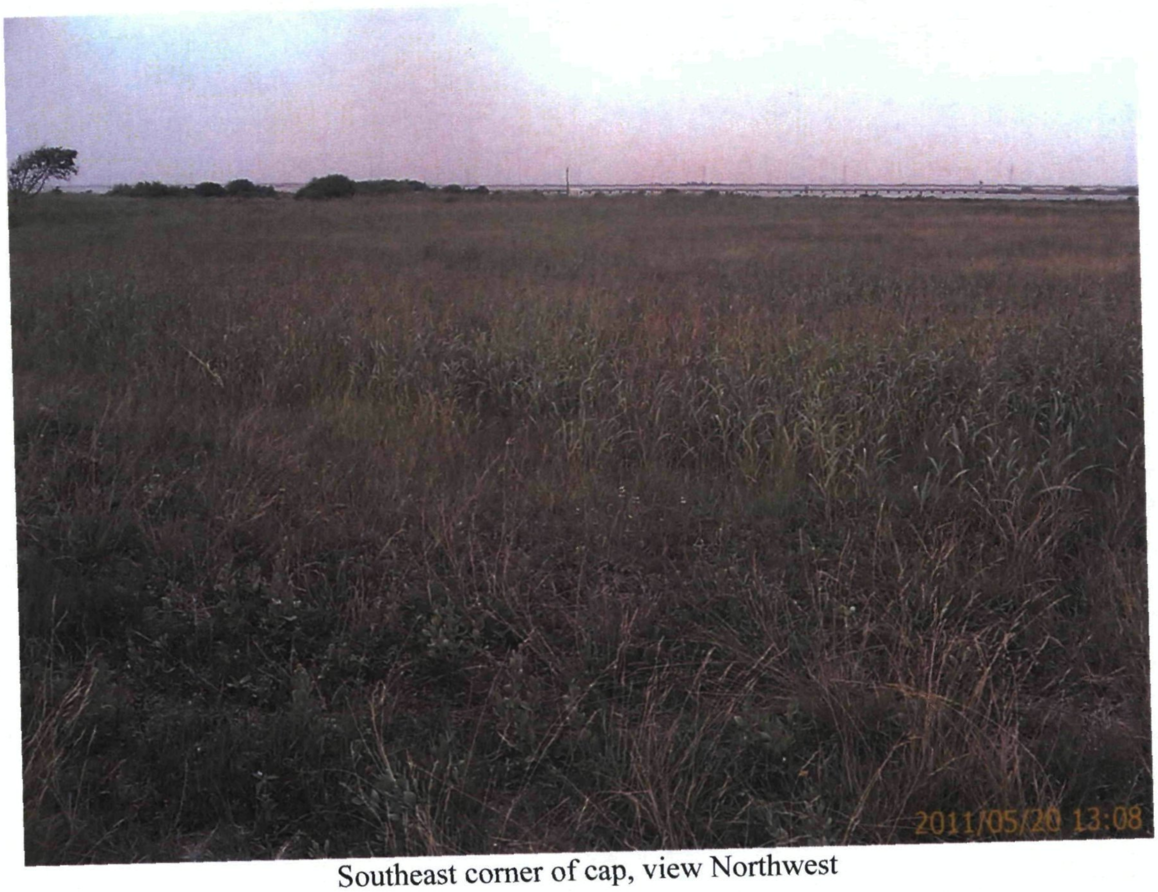
Inspectors Signature:

PASTOR, BEHLING & WHEELER, LLC
131 N. Virginia, Suite B
Port Lavaca, Texas 77979
Phone: 361-553-6443 Fax: 361-553-6449

Northeast corner, view Southwest

Northwest corner, view Southeast

Southwest corner, view Northeast



Southeast corner of cap, view Northwest

Slope between tank farm and drainage channel/marsh

Slope between tank farm and drainage channel/marsh

DNAPL monitoring well

Northeast Witco Cap, view South

View of rip rap damage at the end of the drainage channel

View of the end of the drainage channel, view west

View of east end of drainage channel


View of rip rap at drainage from tank farm cap showing recently sprayed vegetation

WITCO AREA INSPECTION RECORD

Date: 8/22/2011 3Q11 **Time Started:** 1230 **Time Ended:** 1245

Weather Conditions: 97° F, Partly Cloudy Sky

Observations/Comments:

AREA	ITEM	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Drainage Channel	Cracks in Concrete	√		Few old cracks
	Obstructions	√		None observed
	Erosion	√		Slight erosion on east lip of concrete drainage channel
	Deterioration	√		None observed
	Washouts	√		None observed
	Rip Rap	√		Some vegetation
Soil Cap (Tank Farm)	Erosion	√		Few areas of ponding on cap
	Settlement	√		
	Vegetation	√		Dry conditions - drought
	Intrusive Trees	√		None observed
	Drainage/Rip Rap	√		Moderate vegetative growth - most vegetation is stressed from drought
	Animal Damage	√		None observed
	Vehicle Ruts	√		None observed
	Damage	√		None observed
Soil Cap (O/W Separator)	Erosion	√		
	Settlement	√		
	Vegetation	√		Dry conditons - drought
	Damage	√		
Slope from Cap to Channel	Erosion	√		Geofabric is exposed and stretched in a few locations, overall in good condition
	Slumping	√		
	Vegetation	√		Dry conditions - drought
Signage	Damage	√		Good condition
	Illegible	√		Good condition
DNAPL Collection Sump	Damage	√		WL in sump = 4.51' BMP, no DNAPL, 12.78' TD
	Other			

Additional Comments or Observations: Area in good condition. Will need vegetative control for the drainage/rip rap when the area recieves significant rain.

Inspector:
Kevin Dworsky

Inspectors Signature:

PASTOR, BEHLING & WHEELER, LLC
131 N. Virginia, Suite B
Port Lavaca, Texas 77979
Phone: 361-553-6443 Fax: 361-553-6449

WITCO INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

1 - Northeast corner, view Southwest

2 - Northwest corner, view Southeast

3 - Southwest corner, view Northeast

4 - Southeast corner of cap, view Northwest

5 - Slope between tank farm and drainage channel/marsh

6 - Slope between tank farm and drainage channel/marsh

WITCO INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 - DNAPL monitoring well

8 - Northeast Witco Cap, view South

9 - View of rip rap damage at the end of the drainage channel

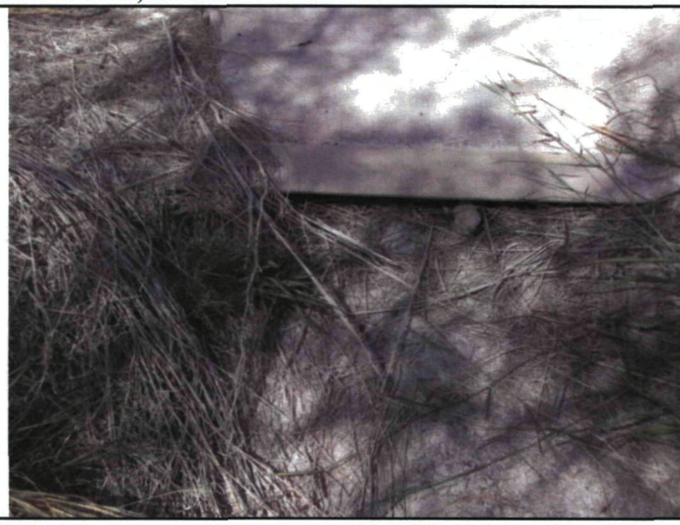
10 - View of the end of the drainage channel, view west

11 - View of east end of drainage channel

12 - View of rip rap at drainage from tank farm cap

WITCO INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

	
13 - View of rip rap at drainage from drainage channel	13 - View of erosion at lip of drainage channel

WITCO AREA INSPECTION RECORD

Date: 12/22/2011 4Q11 **Time Started:** 9:45am **Time Ended:** 10:15am

Weather Conditions: 52° F, cloudy sky, 5 mph winds (north)

Observations/Comments:

AREA	ITEM	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Drainage Channel	Cracks in Concrete	√		Few old cracks
	Obstructions	√		None observed
	Erosion	√		Slight erosion on east lip of concrete drainage channel
	Deterioration	√		None observed
	Washouts	√		None observed
	Rip Rap	√		Some vegetation
Soil Cap (Tank Farm)	Erosion	√		Few areas of ponding on cap
	Settlement	√		
	Vegetation	√		
	Intrusive Trees	√		None observed
	Drainage/Rip Rap	√		Moderate vegetative growth
	Animal Damage	√		None observed
	Vehicle Ruts	√		None observed
	Damage	√		None observed
Soil Cap (O/W Separator)	Erosion	√		
	Settlement	√		
	Vegetation	√		
	Damage	√		
Slope from Cap to Channel	Erosion	√		Geofabric is exposed and stretched in a few locations, overall in good condition
	Slumping	√		
	Vegetation	√		
Signage	Damage	√		Good condition
	Illegible	√		Good condition
DNAPL Collection Sump	Damage	√		WL in sump = 4.67' BMP, no DNAPL, 12.78' TD
	Other			

Additional Comments or Observations: Area in good condition. Will need vegetative control for the drainage/rip rap in the near future.

Inspector:
Kevin Dworsky

Inspectors Signature:

PASTOR, BEHLING & WHEELER, LLC
620 E. Airline
Victoria, Texas 77901
Phone: 361-573-6443 Fax: 361-573-6449

WITCO INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

1 - Northeast corner, view Southwest

2 - Northwest corner, view Southeast

3 - Southwest corner, view Northeast

4 - Southeast corner of cap, view Northwest

5 - Slope between tank farm and drainage channel/marsh

6 - Slope between tank farm and drainage channel/marsh

WITCO INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 - DNAPL monitoring well

8 - Northeast Witco Cap, view South

9 - View of rip rap damage at the end of the drainage channel

10 - View of the end of the drainage channel, view west

11 - View of east end of drainage channel

12 - View of rip rap at drainage from tank farm cap

WITCO INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

	
13 - View of rip rap at drainage from drainage channel	14 - View of erosion at lip of drainage channel
	
15 - View of small cracks in the drainage channel	