2012 REMEDIAL ACTION ANNUAL EFFECTIVENESS REPORT

ALCOA (POINT COMFORT) / LAVACA BAY SUPERFUND SITE

Prepared for:

ALCOA INC.
State Highway 35
Point Comfort, Texas 77978

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2012 Remedial Action Annual Effectiveness Report

Alcoa (Point Comfort) / Lavaca Bay Superfund Site

March 31, 2013

ALCOA

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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 2012 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."*

The status of these recommendations and follow-up actions are summarized below or are discussed in the indicated sections of this report:

1. Remedial plan for the north end of Dredge Island (Marsh 14 removal):
    a. The 5-Year Review Response Action Plan was approved by EPA on August 14, 2012.
    b. The Quarterly Report No. 20 (dated January 10, 2013) included the following: *First Five Year Review Action Items - EPA verbally approved on December 12, 2012 a schedule to perform dredging in the Marsh 14 area during the spring of 2013 to take advantage of higher water conditions.* Performing the removal action during the normally low tides of winter would have required over-excavation to provide adequate water depth for access by the dredging equipment, and thus would have inefficiently consumed of part of the limited disposal capacity remaining on Dredge Island.
2. Statistical Design of Marsh Sampling Plan: Section 3.3.1.
3. Evaluation of Smaller Sediment Core Interval: Sections 2.3 and 3.3.1

4. Dredge Island Stabilization Project Issues: All maintenance issues identified for the Dredge Island Stabilization Project were addressed during a maintenance event conducted in 2011, as described in the 2011 RAAER (Alcoa, 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 2012 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 for 2012 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).

In accordance with the recommendations of the USEPA First 5-Year Review (Section 1.3), the marsh sediment sample depth was changed from 0-5 cm to 0-2 cm. To help assess the relationship between marsh sediment concentrations and nearby open-water sediment concentrations, open-water sediment samples collected in 2012 included both 0-5 cm and 0-2 cm depth intervals. Each of the 0-2 cm sediment samples were tested for mercury (Hg), methyl mercury (MeHg) and total organic carbon (TOC). The 0-5 cm sample depth interval for open-water sediment samples was retained to allow comparison with historical data sets.

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 provide the statistical power needed to meet the 95% confidence limit. 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	0*
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 2012 samples are provided in Appendix A. Due to natural changes in the footprint of the marsh areas, some sample locations are no longer in marshes, but sediment samples were collected to ensure uniformity of the data set through time. Marsh 14 will be removed by dredging and therefore was not sampled as part of the 2012 monitoring event.

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 northern part of the Closed Area of Lavaca Bay. As discussed further in Section 3.3, the average mercury concentration of the Marsh 19 sediment samples is above 0.25 mg/Kg.

Marsh 14 will be dredged and removed during the spring of 2013. Marsh 14 was not sampled as part of the 2012 monitoring program in anticipation of the impending marsh removal.

Based on review of the 2007 supplemental data presented in the Amended 2007 RAAER (Alcoa, 2008b), measurements of MeHg and total organic carbon TOC were added to 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 sediment 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.

Several Dredge Island maintenance issues were identified in the First Five Year Review Report. These issues were addressed during a maintenance event conducted in 2011, as described in the 2011 RAAER

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 evaluation of potentiometric surfaces created from water-level data collected from pumping and observation wells located at the CAPA. 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 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

3.3.1 Remedial Objectives

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). All of the northern open water sediment locations were sampled in the 2012 monitoring event. Additionally, both the 0-2 cm and 0-5 cm depth intervals were sampled at each open water sediment location.

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. 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 (Figure 3.3-1) using surficial sediment mercury data available for the 1996 to 2012, 2004 to 2012, and 2006 to 2012 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.

Evaluation 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. The average $t_{1/2}$ value for the Lavaca Bay sediment recovery stations measured in the RIFS is 7 years (Alcoa, 2000).

The following table lists empirical sediment recovery rates for a series of 4-year intervals to assess whether, on a "moving window" basis, empirical recovery rates are similar over time, or increasing or decreasing. The empirical sediment recovery rate for the total period of record for the largest number of resampled sediment stations (2004 to 2012) is also shown for comparison purposes.

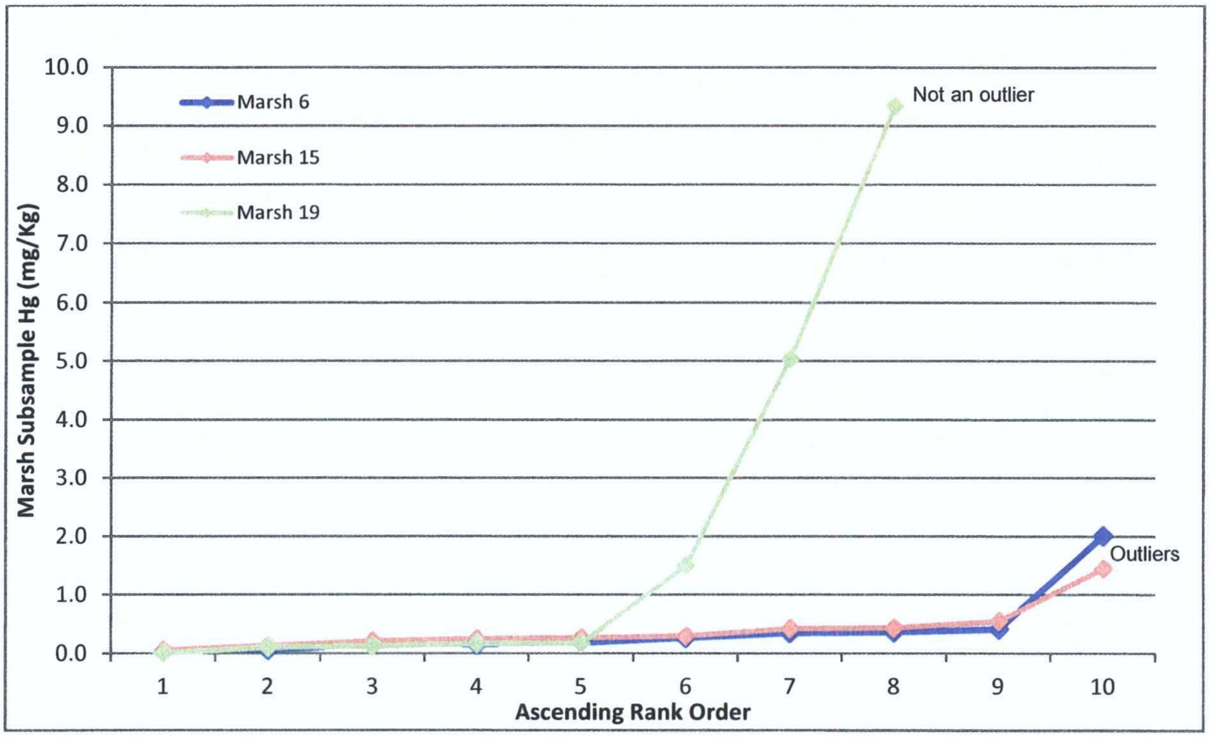
Empirical Sediment Recovery Half-Lives (years)

Time Period	Mean	Minimum	Maximum	No. of Samples
2004-2008	11	4	29	26
2006-2010	10	2	49	47
2008-2012	15	2	196	55
2004-2012	12	5	31	33

The mean recovery half-life for each of the 4-year time periods is similar, possibly within the precision of the estimation method, suggesting that the rate of recovery has not increased or decreased notably since 2004. All of the empirical sediment recovery half-lives are somewhat less that the recovery rate predicted in the RIFS for Lavaca Bay (7 years), which suggests that the actual sediment recovery rate is slower than predicted.

The 2012 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 marshes that have met the remedial objective of less than 0.25 mg/Kg in two consecutive 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. The highest concentration of mercury was in the subsamples collected from Marshes 6, 15 and 19. In the 2012 marsh dataset there are two 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 Dixon Q-test shows that the highest sub-samples from Marshes 6 and 15 are outliers at the .99 confidence interval. However, the high sub-sample of Marsh 19 is not an outlier. This is because of the other high sub-samples (1.50 and 5.04 mg/kg) preclude the highest subsample (9.34 mg/kg) from being detected as an outlier, even at a .90 confidence interval. Without the outliers, the average mercury concentrations of the Marshes 6 and 15 are 0.21 and 0.28 mg/Kg, respectively. The average of the 2012 Marsh 19 samples is 2.05 mg/Kg, and thus remains above the remedial objective for the second consecutive year.

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 for Marshes 6 and 15 excluding the outlier samples.

Marshes 1, 2, 3, 11 and 19 have met the remedial objective for marshes (although the average mercury concentration in Marsh 19 has exceeded the remedial objective, and is discussed further below). The average mercury concentration for Marshes 6 and 15 are below the remedial objective concentration of 0.25 mg/Kg for the first time and show a third year of steady decline. The average concentrations of total mercury measured in the remaining marshes continued to exceed the remedial action objective of 0.25 mg/Kg.

The rank order graph of individual subsamples for Marsh 19 shown above suggests there may be two subpopulations of mercury in Marsh 19. The high subpopulation may be indicative of an eroding source of elevated sediment as discussed further in Section 3.3.2.

3.3.2 Fate and Transport of Mercury in Sediment

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 low TOC-normalized MeHg concentrations were associated with low juvenile blue crab mercury concentrations. Therefore, MeHg and TOC have been measured in Closed Area marsh sediment monitoring locations since 2007 and in open water sediment monitoring locations beginning in 2012. The 2012 data are presented in Appendix A, and Figure 3.3-3. Direct comparison between the 2012 data and the historic marsh 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 in Closed Area Marshes are generally higher than the range of 2007 measurements, and encompass and exceed the range of TOC concentrations observed in Open Area marshes in 2007. Thus the Closed Area TOC measurements collected in 2007 appear anomalous relative to Closed Area TOC measurements from subsequent years.

The post-2007 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 2012 MeHg measurements are higher than the other post-2007 data, which may reflect the change to a shallower sample depth interval in 2011 and 2012, 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. These trends suggest that evaluations of TOC normalized MeHg concentrations in marsh samples may aid the understanding of uptake of mercury to the food web in the Closed Area.

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 or 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, 2011, and 2012 marsh sediment sampling events are shown on the cumulative probability graph in Figure 3.3-4. Comparison of the lines suggests that the concentration range of the low sub-population has decreased slightly since 2011. The high sub-population appears to have decreased slightly in concentration between 2008 to 2011, but increased in 2012. The increase is due to two very high Hg sub-sample concentrations in Marsh 19. 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 2012 subpopulations of sediment data are plotted in Figure 3.3-5 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 Marsh 19 on the northwestern corner of Dredge Island. Marsh 14 was not sampled in 2012 as discussed previously. Prior sediment data in the vicinity of Marsh 14 plotted in the subpopulation of elevated mercury, suggesting that Marsh 14 is an ongoing source. The blue dots in the vicinity of Marsh 19 may suggest the presence of localized areas of erosion of sediment with elevated mercury. Further monitoring will be required to test this hypothesis.

In 2012, the open water sediment samples and the marsh samples were collected at the same sample interval (0-2 cm) and tested for the same constituents (Hg, MeHg, TOC and thus TOC normalized MeHg). Cumulative probability plots containing both open water sediment and marsh sediment concentrations for Hg, MeHg, and TOC normalized Hg are presented in Figure 3.3-6. Maps showing the geographic distributions of the various sub-populations of each parameter are presented in Figure 3.3-7, Figure 3.3-8, and Figure 3.3-9. The geographic distribution of Hg shown in Figure 3.3-7 is similar to maps of previous years. The highest Hg concentrations are near the north end of Dredge Island, and across the channel near Mainland Shoreline No. 3. The geographic distribution of MeHg (Figure 3.3-8), shows that the highest sub-population samples are near the channel in the general area where open water sediment samples with elevated mercury were also collected. However, samples representing the middle sub-population of MeHg are distributed across the study area, as well as the lowest sub-population of MeHg. The concentration of MeHg in marsh sediment samples is not well-correlated with Hg concentrations (Figure 3.3-10), so the dissimilar spatial trends in Figures 3.3-7 and 3.3-8 are expected.

The TOC normalized MeHg cumulative probability plot (Figure 3.3-6) was divided into 4 sub-populations so that the geographic distribution of those sub-populations would show the data with greater resolution (Figure 3.3-9). The highest sub-population of the TOC normalized MeHg sediment data are shown in red in Figure 3.3-9, and occur primarily in Marsh 1, a few open-water samples near the Causeway, and at isolated locations around, and to the east of, Dredge Island. The dominance of high TOC normalized MeHg sediment concentrations in Marsh 1 appears to result from the low TOC values, relative to other monitored Closed Area marshes. The MeHg concentrations in Marsh 1 are not elevated relative to other Closed Area marshes. Existing data do not explain why the TOC values of Marsh 1 are lower than TOC values in other Closed Area marshes. Further evaluation of these apparent relationships might provide additional insight into uptake of MeHg into biota, as the mercury content of juvenile blue crab and red drum are also frequently elevated in the vicinity of Marsh 1.

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 2012 Closed Area data set is higher than the mean values measured in 2008, 2009 and 2010, but lower than 2011. The mean concentration of mercury in red drum sampled in the Closed Area in 2012 was 1.057 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 2012 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 ~0.5 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. These areas that contain the high sub-population of red drum visually correlate to the distribution of the highest sub-population of TOC normalized MeHg in Figure 3.3-9. The intermediate and low subpopulations of red drum collected in 2012 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 2012 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.

3.4.1.2 Quantitative Review of Red Drum Trends

The following statistical analyses were conducted to quantitatively evaluate the 2012 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
  - o 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.
  - o If necessary, discuss deviations from the statistical test assumptions
  - o For years that $[Hg_{Closed}] > [Hg_{Open}]$, the post-hoc power analysis will not inform the decision making.
  - o 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 2012 monitoring event, 30 from the Closed Area and 30 from the Open Area. Details of the 2012 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 3.4-5a 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 3.4-5a 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 3.4-5b 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 2012 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.

In order to show changes in JBC over time box plots similar to those for red drum, as described in Section 3.4.1.1 were created (Figure 3.4-6). These box and whisker plots show the change in concentrations of Hg in JBC over time for both the Closed Area and the Open Area. The 2012 data shows that the JBC Hg concentrations are continuing a 3 year period of decline which began in 2010.

The juvenile blue crab sampling program was expanded for 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. 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. There was a small strength of association between the concentration of MeHg in marsh sediment and juvenile blue crab concentration. The best correlation was between the concentrations of TOC normalized MeHg in sediment and mercury in juvenile blue crab. The results reaffirmed 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.

A cumulative probability analysis of juvenile blue crab mercury data is presented in Figure 3.4-7. Using methodology similar to previous years, three subpopulations are again identified in the 2012 data: low (less than 0.12 mg/Kg), intermediate (between 0.12 mg/Kg and 0.20 mg/Kg) and high (greater than 0.20 mg/Kg). Also in 2012 the observed threshold between low and intermediate subpopulations was reduced from 0.18 mg/Kg to 0.12 mg/Kg and the threshold for the high sub-population was reduced from 0.30 mg/Kg to 0.20 mg/Kg. Geographic distributions of low, medium and high subpopulations of juvenile blue crabs measured in 2012 are illustrated in Figure 3.4-8. In general, the juvenile blue crabs from the high subpopulation are found primarily in the area east of Dredge Island and Marsh 1 to the north, as has been observed in prior years. The locations of the highest blue crab sub-population correspond highly to the areas of the highest TOC normalized MeHg sup-population in sediment.

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 3.4-9. 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 3.4-9 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 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. The average concentration of mercury in the Closed Area red drum samples and the average juvenile blue crab concentration decreased slightly for 2012. This divergence in trends may reflect the change in the abundance and distribution of red drum prey items 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 2012 (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.

3.5 Dredge Island Inspections

Dredge Island inspections were conducted quarterly throughout 2012. The inspection records are provided in Appendix C. The inspections indicate that the island is in stable condition 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 but no repairs are required at this time

3.6 CAPA Soil Cap Inspections

Quarterly inspections were conducted during 2012 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 2012 as required by the RDRs/OMMPs. Inspections records are contained in Appendix E.

The major conclusions of the 2012 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 2012 RAAER, Alcoa is not aware of any activity on these permit applications.

Excelerate Energy® L.P. has announced plans to develop the first US floating liquefaction facility at Point Comfort. The Lavaca Bay LNG project will be located on Port of Calhoun County property, south of the Alcoa facility. The Excelerate facility will interconnect to the region's existing pipeline system in order to obtain natural gas and liquefy it onboard the vessel. The LNG will then be loaded onto tankers for export. The Point Comfort location being developed by Excelerate Energy has previously received FERC approval as an LNG import facility, which should facilitate the permitting process. Construction of the facility will require widening and deepening of the ship channel, and dredging of a turning basin. Alcoa is in dialogue with Excelerate representatives responsible for preparing a Dredge Material Management Plan. The dialogue concerns the availability of historical sediment chemistry data, and implementation of the project in a manner consistent with the Adaptive Sediment Management Framework contained in the approved Feasibility Study for the Site.

4.0 CONCLUSIONS

4.1 Comparisons to Performance Standards

Monitoring data collected in 2012 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.
- The mean recovery half-life for open water sediment has been calculated for three 4-year time periods since 2004, and the recovery rates are similar (between 11 and 15 years) suggesting that the rate of recovery has not increased or decreased notably since 2004. The average empirical sediment half-life for the period 2004 to 2012 is 12 years. As previously reported, the empirical sediment recovery half-lives are somewhat slower than the recovery rate predicted in the RIFS for Lavaca Bay (7 years).
- Mercury concentrations in Marshes 1, 2, 3, 11 and 19 have met the remedial objective for marshes (although the average 2012 mercury concentration in Marsh 19 exceeds the remedial objective). The average mercury concentration for Marshes 6 and 15 are below the remedial objective concentration of 0.25 mg/Kg for the first time and show a third year of steady decline. The average concentrations of total mercury measured in the remaining marshes continued to exceed the remedial objective of 0.25 mg/Kg. Recent data from Marsh 19 suggests the presence of two subpopulations of mercury, and the higher subpopulation may be indicative of a localized source of erosion of sediment containing elevated mercury.
- The highest concentrations of TOC normalized MeHg measured in sediment occur primarily in Marsh 1, a few open-water samples near the Causeway, and at isolated locations around, and to the east of, Dredge Island. These are also the areas where samples of juvenile blue crab and red drum often contain elevated mercury. Further evaluation of these apparent relationships might provide additional insight into uptake of MeHg into biota.
- The mean concentration of mercury in red drum sampled in the Closed Area in 2012 was 1.06 mg/Kg and higher than the mean values measured in 2008, 2009 and 2010, but lower than 2011. The mean concentration of mercury measured in red drum from the Open Area during 2012 is slightly higher than the 2010 and 2009 mean values, but equal to the 2008 value. 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 2012 red drum samples from the Closed Area remain statistically elevated relative to the concentrations of red drum samples collected from the Open Area.
- 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.
- The 2012 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 2012.
- Inspections of the Witco Area in 2012 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 2012 will be continued in 2013 (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 2013 marsh, juvenile blue crab and red drum monitoring events using the same sampling design as deployed in 2012, except where modifications may be required by the Marsh 14 remediation program planned for 2013.

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). Further assessment of conditions in Marsh 19 is recommended.

Overall, a significant amount of sediment recovery has occurred since the RI sampling was performed in 1996. However, the observed rate of sediment recovery is somewhat slower than predicted in the RIFS. This may be due to release of sediment from Marsh 14, and thus the removal of Marsh 14 is planned.

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

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] 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[6]			0.164			NA		6.0 - 9.0	
ST-C[7]	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	

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[6]			0.164			NA		6.0 - 9.0	
	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	
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		0.000425	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		6.86	
	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	

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			0.326			NA[6]			0.164			NA		6.0 - 9.0	
ST-B Continued	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	
	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		0.0004			0.007			0.005		<	0.005		<	0.001		<	0.001		7.20	
	1/17/01		0.0004			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	

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[6]			0.164			NA		6.0 - 9.0	
ST-A Continued	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	
	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		0.14		<	0.001		<	0.001		<	0.005		<	0.001		<	0.001		7.03	
	5/20/02	<	0.0002		<	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			
	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			
	10/15/02	<	0.00020			0.002			0.006		<	0.005		<	0.001		<	0.001			
	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	

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[6]			0.164			NA		6.0 - 9.0	
ST-B Continued	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	
	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	<	0.0002			0.011			0.009		<	0.005		<	0.001		<	0.001		6.89	
	9/17/03	<	0.0002			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	

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[6]			0.164			NA		6.0 - 9.0	
ST-A Continued	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	
	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	

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

SAMPLE TAP	DATE	ANALYTICAL RESULTS (mg/L)[1,3]																		pH	COMMENTS
		MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE				
		Q[2]	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[6]			0.164			NA		6.0 - 9.0	
ST-B Continued	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	
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	

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[6]			0.164			NA		6.0 - 9.0	
ST-C Continued	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	
	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	

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[6]			0.164			NA		6.0 - 9.0	
ST-A Continued	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	
	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			
	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	Stripper blower/motor replaced
	9/8/08		0.00038			0.057			0.005		<	0.002		<	0.0002		<	0.00032		6.74	

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[6]			0.164			NA		6.0 - 9.0	
ST-A Continued	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	
	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	
	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	

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[6]			0.164			NA		6.0 - 9.0	
ST-C Continued	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	Carbon change out
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	
	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			0.0061			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	Carbon change out 9/10/10
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	
	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	

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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[6]			0.164			NA			6.0 - 9.0	
ST-C Continued	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	
	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		0.00195		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	
	1/5/12	J	0.000113		U	0.0018		J	0.0012		U	0.0013		U	0.0017		U	0.0011			7.02	
	1/12/12	J	0.000097		U	0.0018		J	0.0010		U	0.0013		U	0.0017		U	0.0011			6.90	
	1/17/12	J	0.000150		U	0.0018		J	0.0016		U	0.0013		U	0.0017		U	0.0011			7.39	
	1/23/12	J	0.000094		U	0.0018		J	0.0015		U	0.0013		U	0.0017		U	0.0011			7.20	
	2/1/12	J	0.000138		U	0.0018		J	0.0022		U	0.0013		U	0.0017		U	0.0011			7.48	
	2/6/12	J	0.000063			0.0400		J	0.0150		U	0.0013		U	0.0017		U	0.0011			8.66	
	2/15/12	J	0.000180			0.0240		J	0.0049		U	0.0013		U	0.0017		U	0.0011			7.41	
	2/22/12	J	0.000169			0.0390			0.0063		U	0.0013		U	0.0017		U	0.0011			7.65	
	2/27/12	J	0.000152			0.0540			0.0068		U	0.0013		U	0.0017		U	0.0011			7.14	
ST-A	3/9/12	U	0.000042		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011			7.20	Carbon Changeout 3/8/12

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[6]			0.164			NA		6.0 - 9.0	
ST-A Continued	3/12/12	U	0.000042		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.30	
	3/23/12	U	0.000042		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.41	
	3/28/12	U	0.000042		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		7.32	
	4/4/12	U	0.000042		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		6.82	
	4/12/12	U	0.000042		U	0.0018		U	0.0010		U	0.0013		U	0.0017		U	0.0011		6.69	
ST-B	4/17/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.74	Carbon Changeout 4/16/12
	4/25/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.96	
	5/2/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.68	
	5/10/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.79	
	5/18/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.68	
	5/25/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.64	
	5/31/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.26	
	6/6/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.23	
	6/11/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.62	
	6/18/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.71	
	6/27/12	U	0.000042		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.54	
	7/2/12	J	0.000059		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		6.64	
	7/13/12	J	0.000048		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.62	
	7/20/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.46	
	7/24/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.62	
	8/2/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.53	
	8/10/12	See Note 8 below			U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.43	
	8/15/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.43	
	8/23/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.28	
	8/29/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		7.27	
	9/7/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		7.27	
	9/13/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		7.88	
	9/21/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.36	
	9/28/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.72	
	10/3/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.35	
	10/10/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.05	
	10/18/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.16	
	10/26/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.21	
	11/2/12	J	0.000056		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.15	
	11/8/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.46	
	11/15/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.67	
	11/19/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.51	
	11/29/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		7.33	
	12/6/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		7.00	
	12/13/12	J	0.000052		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.59	
	12/19/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.14	
	12/28/12	U	0.000042		U	0.001		U	0.001		U	0.001		U	0.001		U	0.001		6.18	

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) NA - Non Applicable
7) ST - Sample tap; sample tap either (A, B, or C) depends on arrangement of carbon canisters, which changes after each carbon change out.
8) Metals sample container apparently not received by laboratory.

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

SAMPLE	DATE	ANALYTICAL RESULTS (mg/L)[1,2] MERCURY			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE			COMMENTS
		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
	9/28/12		0.394			25.0			0.34		U	0.025		J	0.08		U	0.025		pH: 7.00
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
	9/28/12		0.0204			9.8			0.36		U	0.010		J	0.019		U	0.010		pH: 6.71
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			68			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	4/28/99		0.25			34			1.4		<	0.1			0.4			0.02	J	
Continued	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			0.3		U	0.032		J	0.079		U	0.028		pH: 6.83
	9/28/12		0.00503			8.7			0.24		U	0.020		J	0.070		U	0.020		pH: 6.89
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			36			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			0.9		U	0.032			0.31		J	0.031		pH: 6.77
	9/28/12		0.085			14.0			0.77		U	0.025			0.25		J	0.029		pH: 6.86

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			CARBON TETRACHLORIDE			CHLOROFORM			METHYLENE CHLORIDE			TETRACHLOROETHENE			TRICHLOROETHENE			COMMENTS
		Q[3]	RESULT	FLAG[4]	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	Q	RESULT	FLAG	
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		Blower and motor replaced 9/4/08
	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
	3/23/12		0.142		U	0.0018		U	0.001		U	0.0013		U	0.0017		U	0.0011		pH: 7.89
	9/28/12		0.117		J	0.0011		U	0.001		U	0.001		U	0.001		U	0.001		pH: 6.91

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.
B - Indicates that a value for an inorganic analysis is an estimate. It is used when a compound is determined to be 12/31/08 but at a concentration less than the quantitation limit of the method, for data prior to 2/24/06.
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.
4) Flag
B - Indicates that an analyte is 12/31/08 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**

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)
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	49,780	243,810
	July	65,080	47,690	60,780	44,380	217,930
	August	67,980	79,900	61,700	45,780	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**
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**

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)
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**
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**
2012	January	62,760	58,550	77,300	55,730	254,340
	February	116,490	115,930	130,622	87,250	450,292
	March	55,560	54,010	62,618	40,490	212,678
	April	86,230	88,490	85,780	62,650	323,150
	May	127,780	127,410	117,720	80,910	453,820
	June	98,460	69,470	97,250	53,250	318,430
	July	103,630	123,240	118,450	71,570	416,890
	August	120,300	137,100	142,630	61,240	461,270
	September	91,690	97,780	61,210	55,010	305,690
	October	91,890	87,080	124,050	66,130	369,150
	November	124,220	106,210	125,230	65,740	421,400
	December	116,910	85,380	116,720	45,790	364,800
	TOTAL	**1,195,920**	**1,150,650**	**1,259,580**	**745,760**	**4,351,910**
	CUMULATIVE TOTAL, ALL WELLS					**50,152,560**

NOTE:
1) gal - gallons

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)
1998	June	94,940	4.2	3.33	120,650	0.88	0.89	44,346	0.30	0.11	59,007	2.5	1.23	5.56
	July	94,464	4	3.15	143,035	0.76	0.91	46,670	0.32	0.12	103,993	2.4	2.08	6.27
	August	82,659	3.3	2.28	123,384	0.61	0.63	0	0.24	0.00	86,436	2.4	1.73	4.64
	September	52,560	3.4	1.49	168,124	0.54	0.76	27,020	0.27	0.06	13,602	2.8	0.32	2.63
	October	148,429	3.4	4.21	106,740	0.54	0.48	0	0.27	0.00	45,082	2.8	1.05	5.75
	November	84,170	3.4	2.39	70,057	0.54	0.32	0	0.27	0.00	90,008	2.8	2.10	4.81
	December	134,556	3.4	3.82	143,925	0.54	0.65	0	0.27	0.00	140,915	2.8	3.29	7.76
	TOTAL	**691,778**		**20.67**	**875,915**		**4.62**	**118,036**		**0.30**	**539,043**		**11.81**	**37.40**
1999	January	56,244	2.2	1.03	58,568	0.36	0.18	38,400	0.27	0.09	57,835	1.4	0.68	1.97
	February	43,480	2.2	0.80	41,230	0.36	0.12	14,454	0.27	0.03	66,873	1.4	0.78	1.74
	March	32,402	2.2	0.59	52,900	0.36	0.16	17,521	0.27	0.04	57,332	1.4	0.67	1.46
	April	86,908	2.2	1.60	73,850	0.36	0.22	25,635	0.27	0.06	89,265	1.4	1.04	2.92
	May	52,110	1.8	0.78	43,020	0.37	0.13	30,810	0.25	0.06	53,470	1.2	0.54	1.52
	June	51,070	1.8	0.77	50,110	0.37	0.15	32,000	0.25	0.07	52,310	1.2	0.52	1.51
	July	94,520	1.7	1.34	137,330	0.33	0.38	70,210	0.09	0.05	98,850	1.2	0.99	2.76
	August	60,300	1.7	0.86	91,700	0.33	0.25	62,790	0.09	0.05	63,870	1.2	0.64	1.79
	September	54,440	1.7	0.77	84,460	0.33	0.23	55,250	0.09	0.04	61,830	1.2	0.62	1.67
	October	59,750	1.7	0.85	118,130	0.33	0.33	65,400	0.09	0.05	82,860	1.2	0.83	2.05
	November	61,620	1.52	0.78	84,320	0.342	0.24	63,950	0.87	0.46	67,910	0.0887	0.05	1.54
	December	33,170	1.52	0.42	41,080	0.342	0.12	38,180	0.87	0.28	37,680	0.0887	0.03	0.84
	TOTAL	**686,014**		**10.59**	**876,698**		**2.51**	**514,600**		**1.28**	**790,085**		**7.39**	**21.77**
	CUMULATIVE TOTAL	***1,377,792***		***31.26***	***1,752,613***		***7.14***	***632,636***		***1.58***	***1,329,128***		***19.20***	***59.17***
2000	January	63,290	1.52	0.80	84,390	0.342	0.24	71,800	0.87	0.52	77,950	0.0887	0.06	1.62
	February	77,580	1.46	0.95	96,090	0.312	0.25	84,360	0.0472	0.03	79,630	0.705	0.47	1.70
	March	79,810	1.46	0.97	101,600	0.312	0.26	81,090	0.0472	0.03	70,760	0.705	0.42	1.69
	April	58,820	1.46	0.72	75,800	0.312	0.20	63,660	0.0472	0.03	56,470	0.705	0.33	1.27
	May	90,340	1.46	1.10	67,330	0.312	0.18	76,340	0.0472	0.03	74,720	0.705	0.44	1.75
	June	94,060	1.46	1.15	111,140	0.312	0.29	73,990	0.0472	0.03	83,730	0.705	0.49	1.96
	July	88,230	1.46	1.08	65,640	0.312	0.17	46,950	0.0472	0.02	67,490	0.705	0.40	1.66
	August	60,300	1.46	0.73	91,700	0.312	0.24	62,790	0.0472	0.02	63,870	0.705	0.38	1.37
	September	37,980	1.46	0.46	84,460	0.312	0.22	55,250	0.0472	0.02	61,830	0.705	0.36	1.07
	October	103,210	0.44	0.38	67,430	0.201	0.11	77,250	0.044	0.03	96,270	0.78	0.63	1.15
	November	102,960	0.44	0.38	71,210	0.201	0.12	91,510	0.044	0.03	93,480	0.78	0.61	1.14
	December	90,830	0.44	0.33	2,450	0.201	0.00	76,480	0.044	0.03	41,210	0.78	0.27	0.63
	TOTAL	**947,410**		**9.05**	**919,240**		**2.28**	**861,470**		**0.83**	**867,410**		**4.85**	**17.00**
	CUMULATIVE TOTAL	***2,325,202***		***40.30***	***2,671,853***		***9.42***	***1,494,106***		***2.40***	***2,196,538***		***24.05***	***76.17***
2001	January	106,250	1.08	0.96	57,650	0.37	0.18	83,430	0.06	0.04	88,310	0.044	0.03	1.21
	February	65,070	1.08	0.59	29,070	0.37	0.09	75,050	0.06	0.04	100,330	0.044	0.04	0.75
	March	69,460	1.08	0.63	62,430	0.37	0.19	65,310	0.06	0.03	86,790	0.044	0.03	0.88
	April	71,520	1.08	0.64	57,640	0.37	0.18	52,830	0.06	0.03	63,090	0.044	0.02	0.87
	May	120,620	1.08	1.09	79,750	0.37	0.25	81,700	0.06	0.04	52,480	0.044	0.02	1.39
	June	61,820	0.94	0.48	56,160	0.16	0.07	89,260	0.031	0.02	47,550	0.5	0.20	0.78
	July	52,500	0.94	0.41	61,180	0.16	0.08	74,640	0.031	0.02	66,440	0.5	0.28	0.79
	August	69,270	0.94	0.54	72,300	0.16	0.10	118,580	0.031	0.03	81,120	0.5	0.34	1.01
	September	44,410	0.94	0.35	49,250	0.16	0.07	77,680	0.031	0.02	77,570	0.5	0.32	0.76
	October	107,030	0.94	0.84	33,520	0.16	0.04	66,620	0.031	0.02	47,870	0.5	0.20	1.10
	November	59,710	0.78	0.39	16,210	0.56	0.08	53,650	0.036	0.02	48,180	0.41	0.16	0.65
	December	81,500	0.78	0.53	81,500	0.56	0.38	71,100	0.036	0.02	60,800	0.41	0.21	1.14
	TOTAL	**909,160**		**7.45**	**656,660**		**1.71**	**909,850**		**0.33**	**820,530**		**1.85**	**11.34**
	CUMULATIVE TOTAL	***3,234,362***		***47.75***	***3,328,513***		***11.13***	***2,403,956***		***2.73***	***3,017,068***		***25.90***	***87.51***
2002	January	98,390	0.78	0.64	36,800	0.56	0.17	95,520	0.036	0.03	61,250	0.41	0.21	1.05
	February	74,600	0.78	0.49	28,450	0.56	0.13	72,020	0.036	0.02	52,110	0.41	0.18	0.82
	March	42,770	0.78	0.28	58,080	0.56	0.27	55,110	0.036	0.02	54,960	0.41	0.19	0.75
	April	84,520	0.45	0.32	85,820	0.045	0.03	75,770	0.024	0.02	82,670	0.22	0.15	0.52
	May	50,210	0.45	0.19	49,080	0.045	0.02	68,130	0.024	0.01	70,820	0.22	0.13	0.35
	June	83,990	0.45	0.32	77,020	0.045	0.03	64,090	0.024	0.01	73,860	0.22	0.14	0.49
	July	103,700	0.45	0.39	91,110	0.045	0.03	123,550	0.024	0.02	89,760	0.22	0.16	0.61
	August	79,220	0.69	0.46	75,700	0.072	0.05	80,840	0.025	0.02	73,170	0.45	0.27	0.79
	September	68,450	0.69	0.39	67,680	0.072	0.04	65,470	0.025	0.01	57,150	0.45	0.21	0.66
	October	83,260	0.69	0.48	83,700	0.072	0.05	83,860	0.025	0.02	86,470	0.45	0.32	0.87
	November	47,870	0.69	0.28	49,790	0.072	0.03	71,700	0.025	0.01	70,480	0.45	0.26	0.59
	December	83,500	0.69	0.48	74,330	0.072	0.04	67,720	0.025	0.01	82,790	0.45	0.31	0.85
	TOTAL	**900,480**		**4.70**	**777,560**		**0.90**	**923,780**		**0.21**	**855,490**		**2.55**	**8.36**
	CUMULATIVE TOTAL	***4,134,842***		***52.45***	***4,106,073***		***12.03***	***3,327,736***		***2.94***	***3,872,558***		***28.45***	***95.87***

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

YEAR	MONTH	CA050B CUMULATIVE FLOW	CA050B MERCURY		CA051B CUMULATIVE FLOW	CA051B MERCURY		CA052B CUMULATIVE FLOW	CA052B MERCURY		CA0U23B CUMULATIVE FLOW	CA0U23B MERCURY		MERCURY REMOVED, ALL WELLS
		(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	0.067	0.03	51,490	0.025	0.01	73,880	0.49	0.30	0.84
	February	49,680	0.7	0.29	48,730	0.067	0.03	52,040	0.025	0.01	23,230	0.49	0.09	0.42
	March	110,080	0.7	0.64	110,650	0.067	0.06	62,330	0.025	0.01	75,600	0.49	0.31	1.03
	April	83,350	0.7	0.49	64,460	0.067	0.04	73,230	0.025	0.02	60	0.49	0.00	0.54
	May	56,140	0.7	0.33	67,810	0.067	0.04	66,560	0.025	0.01	36,000	0.49	0.15	0.53
	June	80,680	0.87	0.59	89,200	0.101	0.08	62,490	0.025	0.01	35,640	0.23	0.07	0.74
	July	91,660	0.87	0.67	93,820	0.101	0.08	96,350	0.025	0.02	39,310	0.23	0.08	0.84
	August	64,540	0.87	0.47	77,480	0.101	0.07	94,940	0.025	0.02	29,610	0.23	0.06	0.61
	September	94,950	0.87	0.69	104,220	0.101	0.09	127,540	0.025	0.03	49,560	0.23	0.10	0.90
	October	36,780	0.79	0.24	83,190	0.096	0.07	100,920	0.023	0.02	68,590	0.26	0.15	0.48
	November	231,100	0.79	1.52	38,770	0.096	0.03	88,930	0.023	0.02	58,910	0.26	0.13	1.70
	December	110,190	0.79	0.73	27,090	0.096	0.02	108,400	0.023	0.02	24,090	0.26	0.05	0.82
	TOTAL	**1,093,650**		**7.14**	**863,480**		**0.62**	**985,220**		**0.20**	**514,480**		**1.48**	**9.45**
	CUMULATIVE TOTAL	***5,228,492***		***59.60***	***4,969,553***		***12.65***	***4,312,956***		***3.14***	***4,387,038***		***29.93***	***105.32***
2004	January	129,290	0.79	0.85	55,140	0.096	0.04	128,330	0.023	0.02	4,280	0.26	0.01	0.93
	February	97,630	0.79	0.64	59,860	0.096	0.05	58,300	0.023	0.01	35,060	0.26	0.08	0.78
	March	118,330	0.41	0.40	82,990	0.049	0.03	104,600	0.025	0.02	80,830	0.27	0.18	0.64
	April	76,220	0.41	0.26	51,410	0.049	0.02	52,430	0.025	0.01	61,080	0.27	0.14	0.43
	May	46,090	0.41	0.16	57,900	0.049	0.02	43,250	0.025	0.01	44,740	0.27	0.10	0.29
	June	66,830	0.41	0.23	62,810	0.049	0.03	64,390	0.025	0.01	49,780	0.27	0.11	0.38
	July	65,080	0.71	0.39	47,690	0.04	0.02	60,780	0.018	0.01	44,380	0.3	0.11	0.52
	August	67,980	0.71	0.40	79,900	0.04	0.03	61,700	0.018	0.01	45,780	0.3	0.11	0.55
	September	16,150	0.71	0.10	98,950	0.04	0.03	71,040	0.018	0.01	51,720	0.3	0.13	0.27
	October	15,930	0.71	0.09	42,940	0.04	0.01	69,920	0.018	0.01	50,340	0.3	0.13	0.25
	November	103,390	0.71	0.61	93,870	0.04	0.03	93,770	0.018	0.01	54,780	0.3	0.14	0.80
	December	64,540	0.96	0.52	77,000	0.15	0.10	76,890	0.02	0.01	56,320	0.31	0.15	0.77
	TOTAL	**867,460**		**4.66**	**810,460**		**0.41**	**885,400**		**0.16**	**579,090**		**1.38**	**6.61**
	CUMULATIVE TOTAL	***6,095,952***		***64.25***	***5,780,013***		***13.07***	***5,198,356***		***3.30***	***4,966,128***		***31.31***	***111.93***
2005	January	78,750	0.96	0.63	35,700	0.15	0.04	65,760	0.02	0.01	47,560	0.31	0.12	0.81
	February	103,650	0.96	0.83	88,410	0.15	0.11	92,250	0.02	0.02	65,270	0.31	0.17	1.13
	March	95,120	0.96	0.76	47,260	0.15	0.06	78,380	0.02	0.01	51,580	0.31	0.13	0.97
	April	96,680	0.96	0.77	51,890	0.15	0.06	81,280	0.02	0.01	51,610	0.31	0.13	0.99
	May	103,370	0.813	0.70	102,640	0.116	0.10	89,680	0.0197	0.01	38,940	0.259	0.08	0.90
	June	95,330	0.813	0.65	11,800	0.116	0.01	29,580	0.0197	0.00	16,830	0.259	0.04	0.70
	July	64,660	0.813	0.44	54,670	0.116	0.05	56,790	0.0197	0.01	18,940	0.259	0.04	0.54
	August	74,190	0.813	0.50	68,130	0.116	0.07	64,470	0.0197	0.01	22,380	0.259	0.05	0.63
	September	73,810	0.813	0.50	75,280	0.116	0.07	63,620	0.0197	0.01	38,040	0.259	0.08	0.67
	October	84,450	0.813	0.57	20,350	0.116	0.02	73,040	0.0197	0.01	52,010	0.259	0.11	0.72
	November	125,440	0.813	0.85	18,950	0.116	0.02	99,370	0.0197	0.02	38,910	0.259	0.08	0.97
	December	94,040	0.813	0.64	62,280	0.116	0.06	53,740	0.0197	0.01	16,780	0.259	0.04	0.74
	TOTAL	**1,089,490**		**7.85**	**637,360**		**0.68**	**847,960**		**0.14**	**458,850**		**1.08**	**9.76**
	CUMULATIVE TOTAL	***7,185,442***		***72.11***	***6,417,373***		***13.75***	***6,046,316***		***3.44***	***5,424,978***		***32.39***	***121.68***
2006	January	91,090	0.813	0.62	65,510	0.116	0.06	62,440	0.0197	0.01	67,880	0.259	0.15	0.84
	February	99,040	0.813	0.67	69,830	0.116	0.07	180	0.0197	0.00	24,420	0.259	0.05	0.79
	March	82,410	0.813	0.56	69,150	0.116	0.07	40,220	0.0197	0.01	50,430	0.259	0.11	0.74
	April	107,470	0.813	0.73	96,190	0.116	0.09	105,340	0.0197	0.02	43,880	0.259	0.09	0.93
	May	130,240	0.59	0.64	79,280	0.081	0.05	127,530	0.016	0.02	73,690	0.14	0.09	0.80
	June	95,670	0.59	0.47	96,640	0.081	0.07	102,141	0.016	0.01	57,010	0.14	0.07	0.62
	July	114,830	0.59	0.57	110,010	0.081	0.07	131,199	0.016	0.02	67,870	0.14	0.08	0.74
	August	86,450	0.59	0.43	83,190	0.081	0.06	108,970	0.016	0.01	57,850	0.14	0.07	0.56
	September	5,190	0.59	0.03	113,640	0.081	0.08	146,870	0.016	0.02	74,010	0.14	0.09	0.21
	October	0	0.59	0.00	95,820	0.081	0.06	99,390	0.016	0.01	16,770	0.14	0.02	0.10
	November	36,240	0.59	0.18	93,710	0.081	0.06	68,760	0.016	0.01	43,920	0.14	0.05	0.30
	December	93,760	0.59	0.46	66,030	0.081	0.04	48,040	0.016	0.01	27,460	0.14	0.03	0.54
	TOTAL	**942,390**		**5.35**	**1,039,000**		**0.79**	**1,041,080**		**0.15**	**605,190**		**0.89**	**7.18**
	CUMULATIVE TOTAL	***8,127,832***		***77.45***	***7,456,373***		***14.54***	***7,087,396***		***3.58***	***6,030,168***		***33.28***	***128.86***

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	0.081	0.05	0	0.016	0.00	59,320	0.14	0.07	0.40
	February	47,980	0.59	0.24	68,410	0.081	0.05	33,980	0.016	0.00	28,040	0.14	0.03	0.32
	March	41,510	0.59	0.20	41,310	0.081	0.03	34,260	0.016	0.00	33,140	0.14	0.04	0.28
	April	56,420	0.59	0.28	67,350	0.081	0.05	57,220	0.016	0.01	51,730	0.14	0.06	0.39
	May	57,130	0.59	0.28	55,440	0.081	0.04	56,500	0.016	0.01	28,740	0.14	0.03	0.36
	June	76,370	0.59	0.38	79,230	0.081	0.05	68,240	0.016	0.01	45,520	0.14	0.05	0.49
	July	86,610	0.59	0.43	70,410	0.081	0.05	43,660	0.016	0.01	31,250	0.14	0.04	0.52
	August	22,350	0.59	0.11	100,910	0.081	0.07	6,030	0.016	0.00	41,540	0.14	0.05	0.23
	September	58,700	0.59	0.29	73,050	0.081	0.05	51,800	0.016	0.01	12,340	0.14	0.01	0.36
	October	81,650	1.6	1.09	115,960	0.13	0.13	88,890	0.025	0.02	18,300	0.25	0.04	1.27
	November	17,440	1.6	0.23	77,710	0.13	0.08	80,430	0.025	0.02	50	0.25	0.00	0.33
	December	39,410	1.6	0.53	83,380	0.13	0.09	101,580	0.025	0.02	30,440	0.25	0.06	0.70
	TOTAL	**641,810**		**4.33**	**906,970**		**0.73**	**622,590**		**0.10**	**380,410**		**0.49**	**5.65**
	CUMULATIVE TOTAL	***8,769,642***		***81.78***	***8,363,343***		***15.26***	***7,709,986***		***3.69***	***6,410,578***		***33.77***	***134.50***
2008	January	75,870	1.6	1.01	85,800	0.13	0.09	71,610	0.025	0.01	48,490	0.25	0.10	1.22
	February	49,440	1.6	0.66	52,010	0.13	0.06	49,930	0.025	0.01	21,670	0.25	0.05	0.77
	March	28,360	1.6	0.38	89,270	0.13	0.10	77,750	0.025	0.02	34,140	0.25	0.07	0.56
	April	115,960	1.6	1.55	111,690	0.13	0.12	123,590	0.025	0.03	54,420	0.25	0.11	1.81
	May	61,950	1.6	0.83	65,360	0.13	0.07	97,900	0.025	0.02	43,270	0.25	0.09	1.01
	June	117,100	1.6	1.56	59,990	0.13	0.07	77,420	0.025	0.02	24,440	0.25	0.05	1.70
	July	90,450	1.6	1.21	96,410	0.13	0.10	113,900	0.025	0.02	51,380	0.25	0.11	1.44
	August	89,370	1.6	1.19	94,570	0.13	0.10	86,520	0.025	0.02	57,080	0.25	0.12	1.43
	September	77,560	1.6	1.04	88,830	0.13	0.10	37,870	0.025	0.01	56,980	0.25	0.12	1.26
	October	111,200	0.54	0.50	119,510	0.065	0.06	130,040	0.014	0.02	49,750	0.14	0.06	0.64
	November	117,320	0.54	0.53	89,360	0.065	0.05	107,970	0.014	0.01	45,400	0.14	0.05	0.64
	December	118,970	0.54	0.54	99,220	0.065	0.05	109,240	0.014	0.01	44,320	0.14	0.05	0.65
	TOTAL	**1,053,550**		**10.99**	**1,052,020**		**0.97**	**1,083,740**		**0.19**	**531,340**		**0.98**	**13.14**
	CUMULATIVE TOTAL	***9,823,192***		***92.77***	***9,415,363***		***16.24***	***8,793,726***		***3.88***	***6,941,918***		***34.75***	***147.65***
2009	January	102,620	0.54	0.46	98,940	0.065	0.05	68,640	0.014	0.01	39,400	0.14	0.05	0.57
	February	89,130	0.54	0.40	133,220	0.065	0.07	88,930	0.014	0.01	42,180	0.14	0.05	0.53
	March	89,510	0.54	0.40	97,320	0.065	0.05	84,060	0.014	0.01	44,870	0.14	0.05	0.52
	April	120,620	0.54	0.54	66,890	0.065	0.04	106,260	0.014	0.01	63,360	0.14	0.07	0.67
	May	78,350	0.54	0.35	90,300	0.065	0.05	101,380	0.014	0.01	60,280	0.14	0.07	0.48
	June	80,660	0.54	0.36	77,260	0.065	0.04	88,190	0.014	0.01	45,520	0.14	0.05	0.47
	July	91,040	0.503	0.38	100,080	0.0958	0.08	98,360	0.0134	0.01	53,990	0.141	0.06	0.54
	August	75,240	0.503	0.32	72,520	0.0958	0.06	88,650	0.0134	0.01	39,080	0.141	0.05	0.43
	September	89,350	0.503	0.38	75,160	0.0958	0.06	91,560	0.0134	0.01	46,250	0.141	0.05	0.50
	October	96,500	0.503	0.41	95,480	0.0958	0.08	102,630	0.0134	0.01	49,900	0.141	0.06	0.55
	November	113,300	0.503	0.48	99,640	0.0958	0.08	111,400	0.0134	0.01	52,860	0.141	0.06	0.63
	December	105,430	0.503	0.44	124,530	0.0958	0.10	76,840	0.0134	0.01	46,590	0.141	0.05	0.61
	TOTAL	**1,131,750**		**4.92**	**1,131,340**		**0.76**	**1,106,900**		**0.13**	**584,280**		**0.69**	**6.50**
	CUMULATIVE TOTAL	***10,954,942***		***97.70***	***10,546,703***		***17.00***	***9,900,626***		***4.01***	***7,526,198***		***35.44***	***154.14***
2010	January	52,720	0.503	0.22	57,060	0.0958	0.05	56,230	0.0134	0.01	38,510	0.141	0.05	0.32
	February	83,730	0.503	0.35	89,630	0.0958	0.07	91,960	0.0134	0.01	59,560	0.141	0.07	0.50
	March	65,750	0.503	0.28	84,780	0.0958	0.07	103,060	0.0134	0.01	63,970	0.141	0.08	0.43
	April	90,970	0.503	0.38	89,470	0.0958	0.07	94,390	0.0134	0.01	34,190	0.141	0.04	0.50
	May	61,190	0.503	0.26	68,940	0.0958	0.06	84,160	0.0134	0.01	55,090	0.141	0.06	0.39
	June	60,580	0.503	0.25	60,580	0.0958	0.05	81,780	0.0134	0.01	55,590	0.141	0.07	0.38
	July	87,350	0.393	0.29	93,790	0.0134	0.01	89,940	0.007	0.01	66,060	0.123	0.07	0.37
	August	75,280	0.393	0.25	80,100	0.0134	0.01	98,830	0.007	0.01	77,610	0.123	0.08	0.34
	September	78,290	0.393	0.26	68,920	0.0134	0.01	82,540	0.007	0.00	28,350	0.123	0.03	0.30
	October	70,800	0.393	0.23	62,941	0.0134	0.01	86,310	0.007	0.01	45,620	0.123	0.05	0.29
	November	84,990	0.393	0.28	93,090	0.0134	0.01	87,220	0.007	0.01	71,100	0.123	0.07	0.37
	December	80,300	0.393	0.26	74,120	0.0134	0.01	78,910	0.007	0.00	62,000	0.123	0.06	0.34
	TOTAL	**891,950**		**3.31**	**923,421**		**0.41**	**1,035,330**		**0.09**	**657,650**		**0.72**	**4.53**
	CUMULATIVE TOTAL	***11,846,892***		***101.00***	***11,470,124***		***17.41***	***10,935,956***		***4.10***	***8,183,848***		***36.16***	***158.67***

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)
2011	January	78,430	0.393	0.26	71,580	0.0134	0.01	92,590	0.007	0.01	63,870	0.123	0.07	0.34
	February	63,050	0.393	0.21	55,840	0.0134	0.01	48,380	0.007	0.00	34,460	0.123	0.04	0.25
	March	76,350	0.393	0.25	36,750	0.0134	0.00	82,880	0.007	0.00	58,020	0.123	0.06	0.32
	April	71,410	0.393	0.23	53,250	0.0134	0.01	90,600	0.007	0.01	75,830	0.123	0.08	0.32
	May	99,970	0.393	0.33	12,790	0.0134	0.0014	82,730	0.007	0.00	51,340	0.123	0.05	0.39
	June	44,800	0.393	0.15	162,810	0.0134	0.02	32,220	0.007	0.00	68,900	0.123	0.07	0.24
	July	99,970	0.404	0.34	103,510	0.0268	0.02	78,120	0.00559	0.00	64,040	0.102	0.05	0.42
	August	101,610	0.404	0.34	102,590	0.0268	0.02	75,780	0.00559	0.00	65,340	0.102	0.06	0.42
	September	98,190	0.404	0.33	95,810	0.0268	0.02	81,800	0.00559	0.00	66,250	0.102	0.06	0.41
	October	89,080	0.404	0.30	71,740	0.0268	0.02	92,250	0.00559	0.00	74,890	0.102	0.06	0.38
	November	54,220	0.404	0.18	61,580	0.0268	0.01	67,800	0.00559	0.00	46,580	0.102	0.04	0.24
	December	46,060	0.404	0.16	35,400	0.0268	0.01	53,940	0.00559	0.00	28,430	0.102	0.02	0.19
	TOTAL	**923,140**		**3.07**	**863,650**		**0.15**	**879,090**		**0.05**	**697,950**		**0.66**	**3.92**
	CUMULATIVE TOTAL	***12,770,032***		***104.08***	***12,333,774***		***17.56***	***11,815,046***		***4.14***	***8,881,798***		***36.82***	***162.59***
2012	January	62,760	0.404	0.21	58,550	0.0268	0.01	77,300	0.00559	0.00	55,730	0.102	0.05	0.28
	February	116,490	0.404	0.39	115,930	0.0268	0.03	130,622	0.00559	0.01	87,250	0.102	0.07	0.50
	March	55,560	0.404	0.19	54,010	0.0268	0.01	62,618	0.00559	0.00	40,490	0.102	0.03	0.24
	April	86,230	0.404	0.29	88,490	0.0268	0.02	85,780	0.00559	0.00	62,650	0.102	0.05	0.37
	May	127,780	0.404	0.43	127,410	0.0268	0.0285	117,720	0.00559	0.01	80,910	0.102	0.07	0.53
	June	98,460	0.404	0.33	69,470	0.0268	0.02	97,250	0.00559	0.00	53,250	0.102	0.05	0.40
	July	103,630	0.404	0.35	123,240	0.0268	0.03	118,450	0.00559	0.01	71,570	0.102	0.06	0.44
	August	120,300	0.404	0.41	137,100	0.0268	0.03	142,630	0.00559	0.01	61,240	0.102	0.05	0.50
	September	91,690	0.394	0.30	97,780	0.0204	0.02	61,210	0.00503	0.00	55,010	0.085	0.04	0.36
	October	91,890	0.394	0.30	87,080	0.0204	0.01	124,050	0.00503	0.01	66,130	0.085	0.05	0.37
	November	124,220	0.394	0.41	106,210	0.0204	0.02	125,230	0.00503	0.01	65,740	0.085	0.05	0.48
	December	116,910	0.394	0.38	85,380	0.0204	0.01	116,720	0.00503	0.00	45,790	0.085	0.03	0.44
	TOTAL	**1,195,920**		**4.00**	**1,150,650**		**0.24**	**1,259,580**		**0.06**	**745,760**		**0.60**	**4.89**
	CUMULATIVE TOTAL	***13,965,952***		***108.07***	***13,484,424***		***17.80***	***13,074,626***		***4.20***	***9,627,558***		***37.42***	***167.49***

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

TABLE 3.3-1

SUMMARY OF MARSH SEDIMENT MERCURY CONCENTRATIONS

MARSH	2004	2005	2006	2007	2008	2009	2010	2011	2012
Marsh 1/2	0.263	0.495							
Marsh 1			0.111	0.153	0.097	0.112	0.113	0.1306	0.0937
Marsh 2			0.066	0.064	0.084	0.073	0.081	0.0635	0.0622
Marsh 3	0.279	0.298	0.129	0.211	0.111	0.155	0.148	0.1161	0.1323
Marsh 5	0.644	0.495	0.367	0.275	0.375	0.399	0.405	0.2862	0.2002
Marsh 6	N.A.	0.337	0.377	0.386	0.430	0.422	0.384	0.3002	0.3980
Marsh 7	0.625	0.347	0.297	0.279	0.422	0.391	0.219	0.3814	0.3075
Marsh 11	0.019	0.0205	N.A.	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	0.4033
Marsh 19	0.447	0.478	0.126	0.214	0.1545	0.201	0.210	0.353	2.0549

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 green if goal is met)
5. Text highlighted in red if outliers were removed. (details in text)
6. N.A. – not analyzed
7. 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 1997-2012

	Closed Area		*Open Area*	
Red Drum Sampling Event	**Number of Samples**	**Mean Hg (mg/Kg ww)**	**Number of Samples**	**Mean Hg (mg/Kg ww)**
4Q 1997	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	0.40
2009 Annual	30	0.85	30	0.38
2010 Annual	30	0.88	30	0.38
2011 Annual	30	1.17	30	0.33
2012 Annual	30	1.06	30	0.40
Juvenille Blue Crab Sampling Event	**Number of Samples**	**Mean Hg (mg/Kg ww)**	**Number of Samples**	**Mean Hg (mg/Kg ww)**
4Q 1997	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	0.17	30	0.06
2012 Annual	30	0.14	30	0.06

TABLE 3.4-2

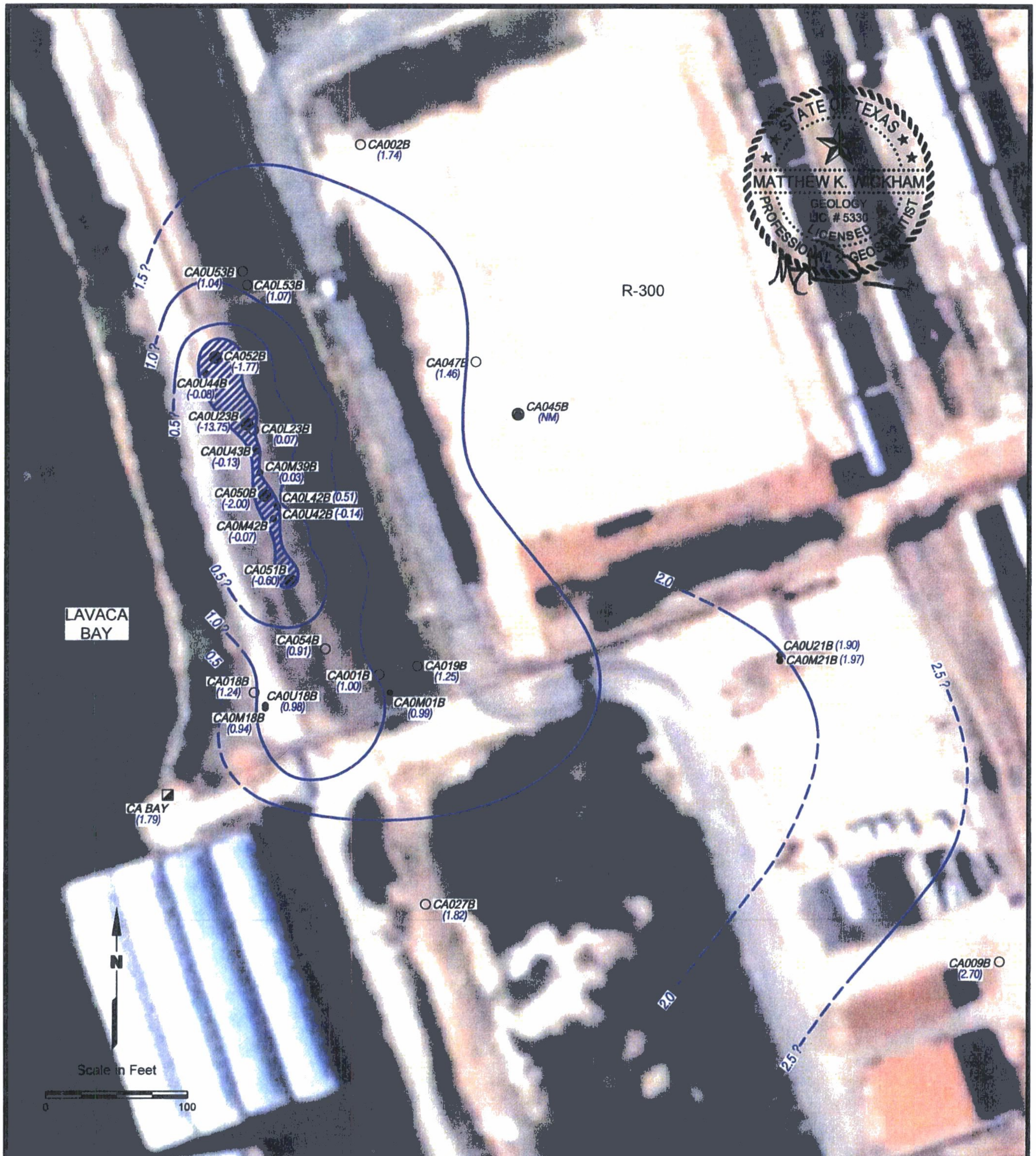
SUMMARY OF 2012 RED DRUM TISSUE MERCURY RESULTS

Area	Sample Size	Mean Hg (mg/kg ww)[1]	Standard Deviation
CLOSED	30	1.06	0.466
OPEN	30	0.40	0.114

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 west of CAPA (CA Bay).

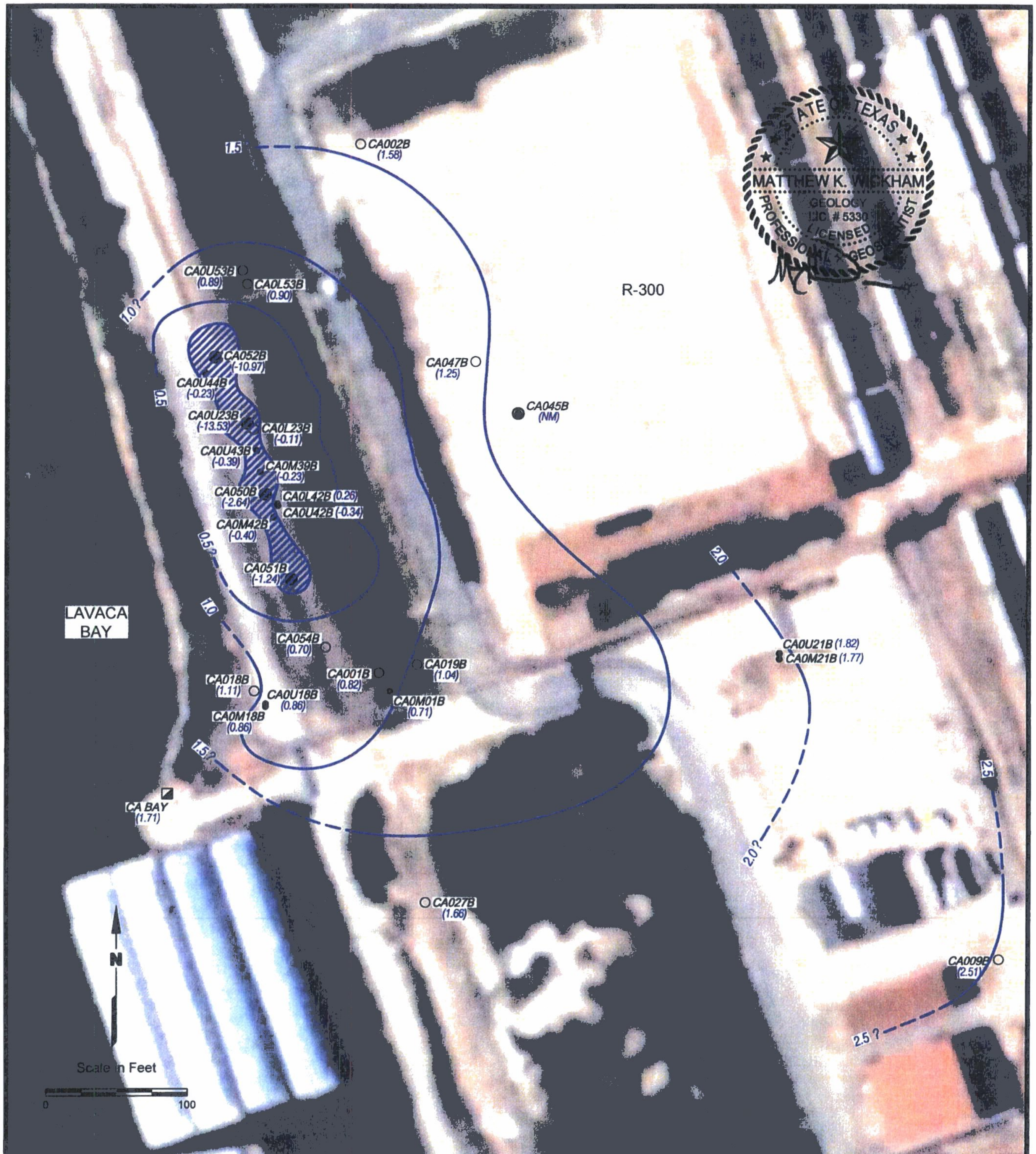
SOURCE:
Aerial image from Lanmon Aerial Photography Inc, dated 9/20/12.

ALCOA

FIGURE 3.1-1
POTENTIOMETRIC SURFACE OF ZONE B GROUNDWATER (3/23/2012)

PROJECT: 3268	DATE: MARCH, 2013	
REV:	BY: AJD	CHECKED: MKW

ALCOA
Point Comfort Operations



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 west of CAPA (CA Bay).

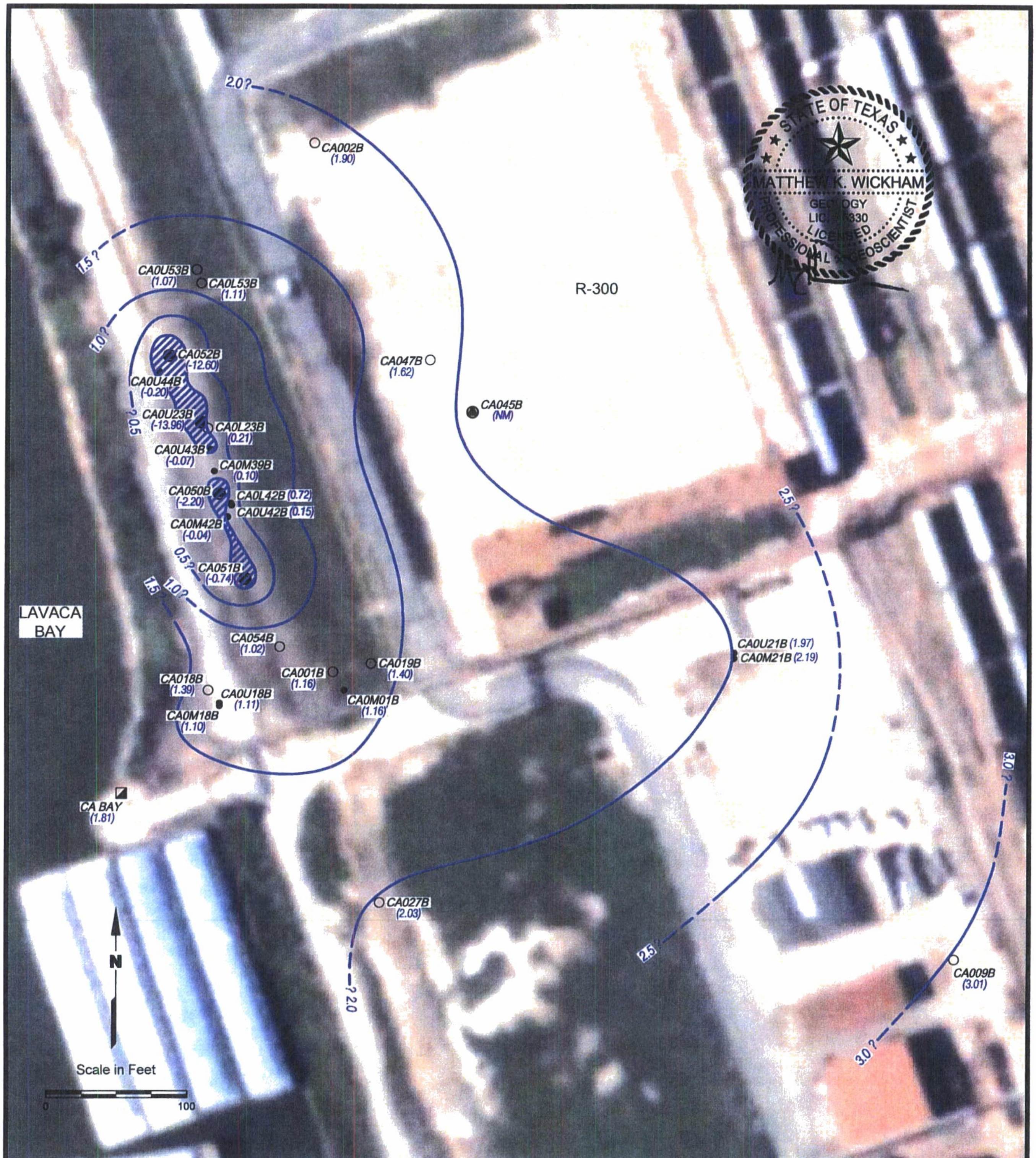
SOURCE:
Aerial image from Lanmon Aerial Photography Inc, dated 9/20/12.

ALCOA

FIGURE 3.1-2
POTENTIOMETRIC SURFACE OF ZONE B GROUNDWATER (6/11/2012)

PROJECT: 3268	DATE: MARCH, 2013	
REV:	BY: AJD	CHECKED: MKW

ALCOA
Point Comfort Operations



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 west of CAPA (CA Bay).

SOURCE:
Aerial image from Lanmon Aerial Photography Inc, dated 9/20/12.

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FIGURE 3.1-3
POTENTIOMETRIC SURFACE OF ZONE B GROUNDWATER (9/20/2012)

PROJECT: 3268	DATE: MARCH, 2013	
REV:	BY: AJD	CHECKED: MKW

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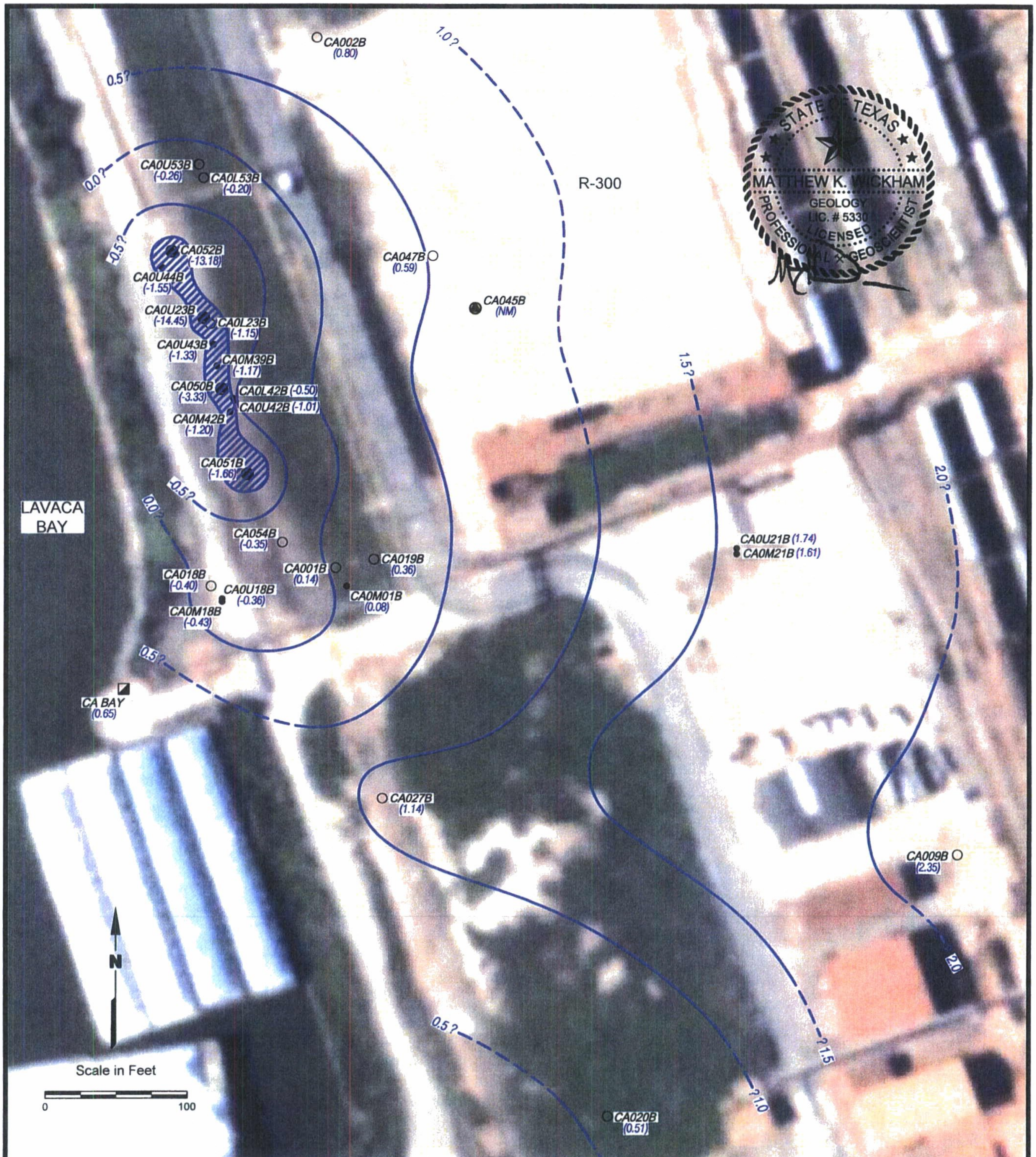

EXPLANATION

CA018B	Well Designation
○	Monitoring Well
•	Piezometer
◉	Recovery Well
◪	Tidal Gauge
—1.5—	Estimated Potentiometric Surface Contour (Ft) C.I. = 0.5 Ft
(hatched)	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 west of CAPA (CA Bay).

SOURCE:
Aerial image from Lanmon Aerial Photography Inc, dated 9/20/12.

STATE OF TEXAS
MATTHEW K. WICKHAM
GEOLOGY
LIC. # 5330
LICENSED
PROFESSIONAL GEOSCIENTIST

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FIGURE 3.1-4
POTENTIOMETRIC SURFACE OF ZONE B GROUNDWATER (12/20/2012)

PROJECT: 3268	DATE: MARCH, 2013	
REV:	BY: AJD	CHECKED: MKW

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FIGURE 3.1-5
CAPA GROUNDWATER TREATMENT SYSTEM
Recovery Wells - Analytical Results
Mercury (Hg) vs. Time

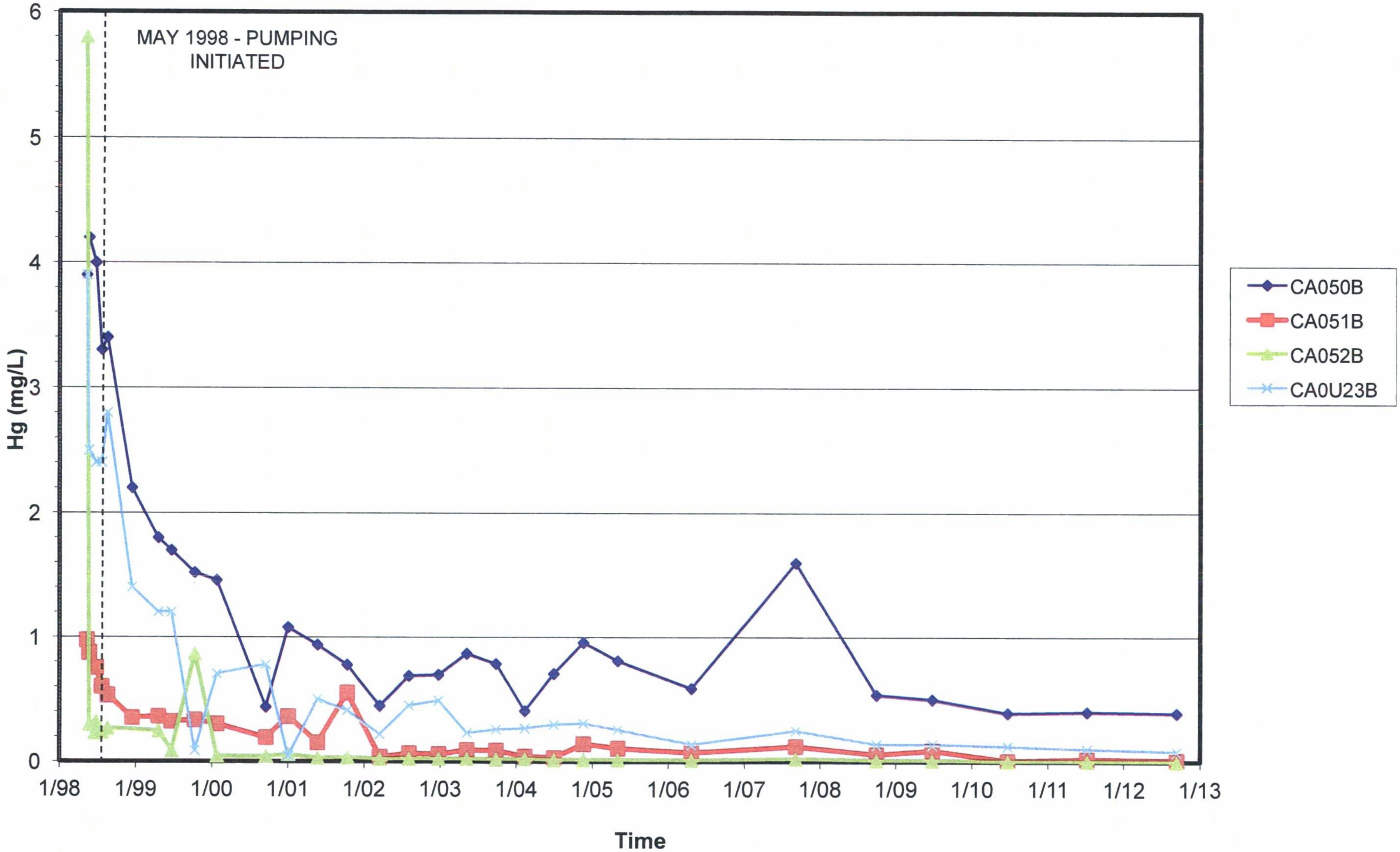
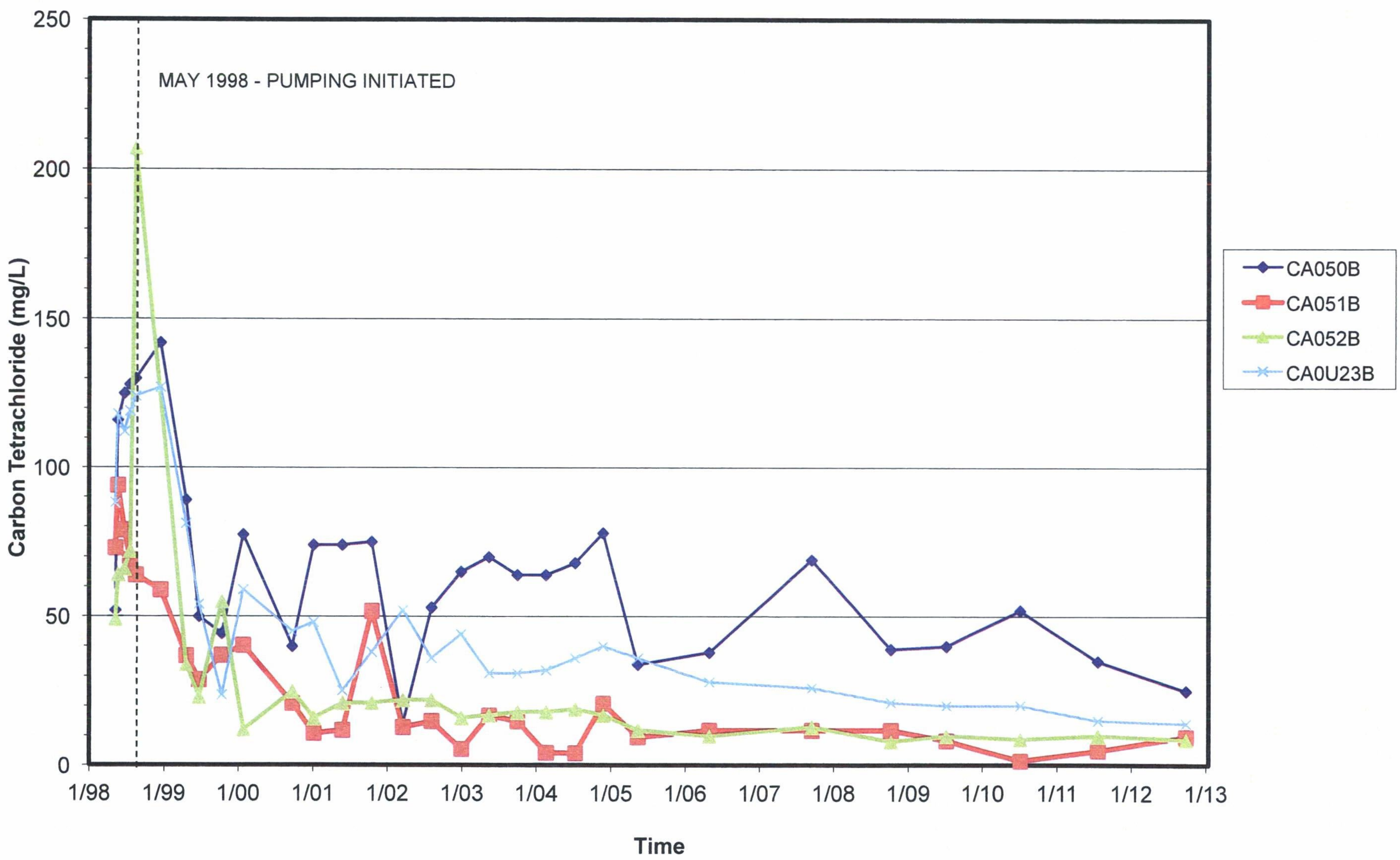
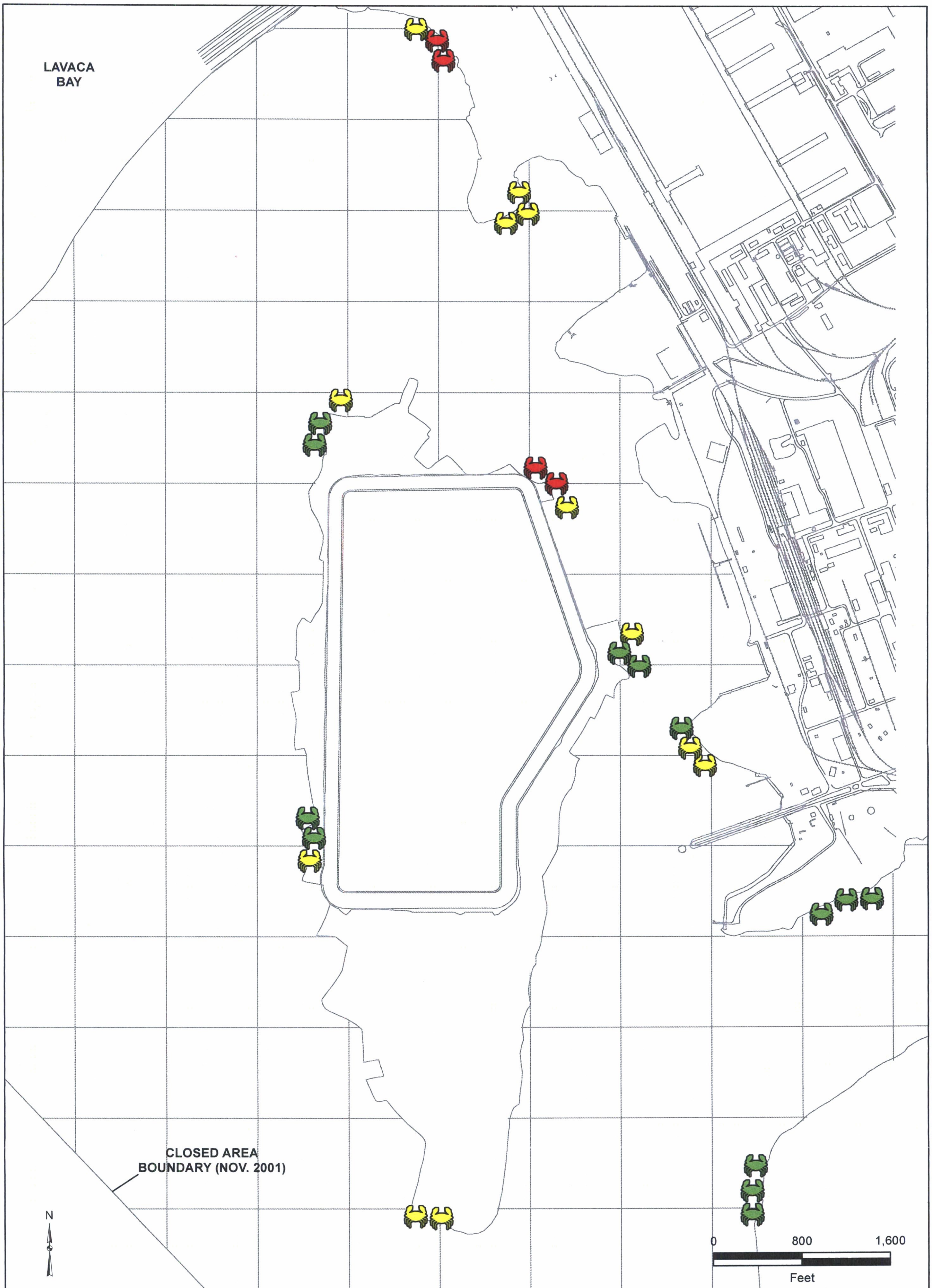


FIGURE 3.1-6
CAPA GROUNDWATER TREATMENT SYSTEM
Recovery Wells - Analytical Results
Carbon Tetrachloride vs. Time





Legend

Total Hg Wet Weight (mg/Kg)

- <0.12
- 0.12 - 0.20
- >0.20

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FIGURE 3.4-8

GEOGRAPHIC DISTRIBUTION OF 2012 JUVENILE BLUE CRAB SUBPOPULATIONS

PROJECT: 021467	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

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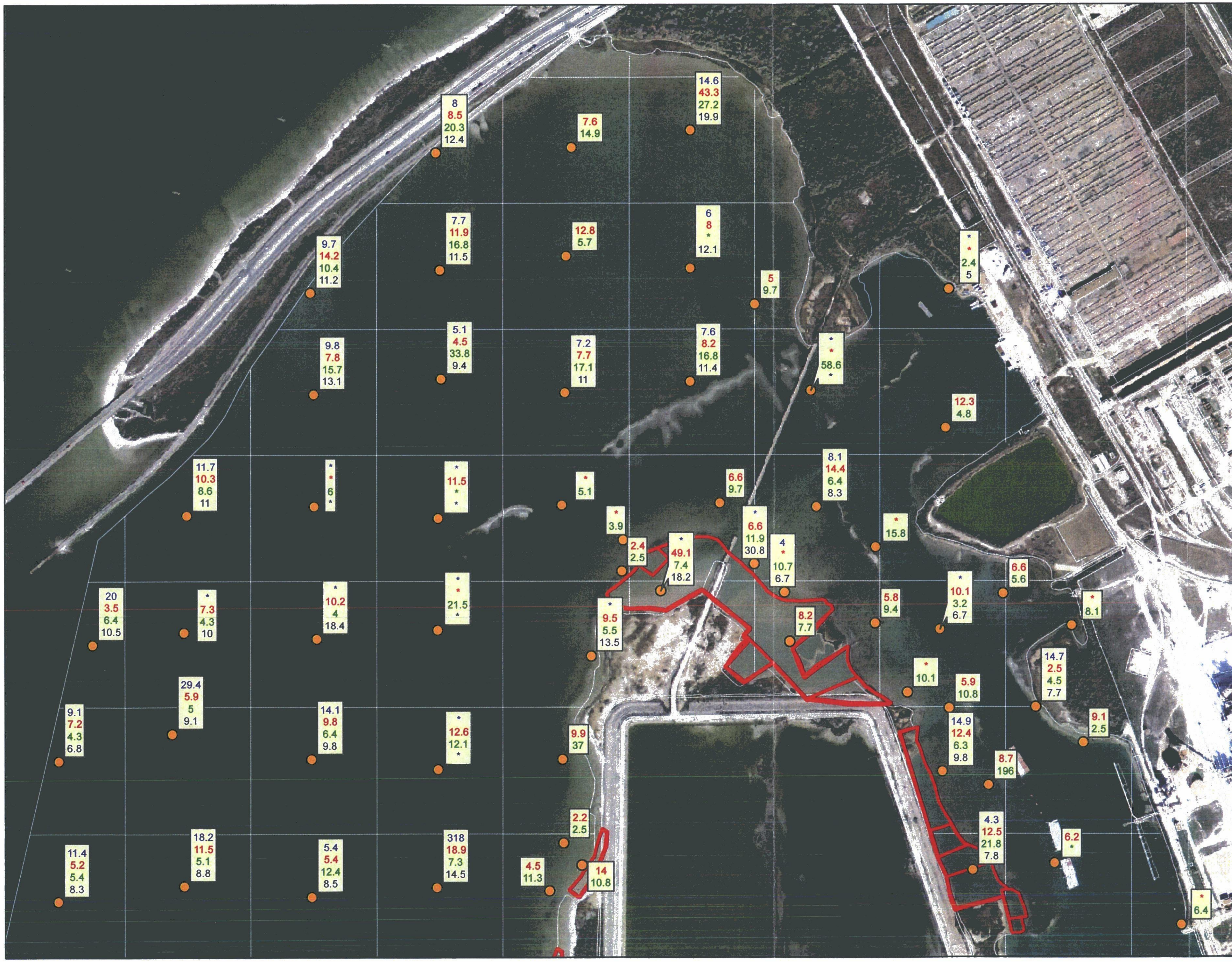

Legend

- Open Water Sediment Sample Locations
- Excavated Area

Emperical Sediment Recovery
Half-Lives (years)

8.5 2004-2008
5 2006-2010
3.7 2008-2012
2.5 2004-2012

* - denotes increase during the given time interval

N

0 700 1,400
Feet

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FIGURE 3.3-1

CHANGE IN OPEN WATER SEDIMENT CONCENTRATIONS

PROJECT: 021365	DATE:FEB, 2013	
REV: 0	BY: RHM	CHECKED: BLM

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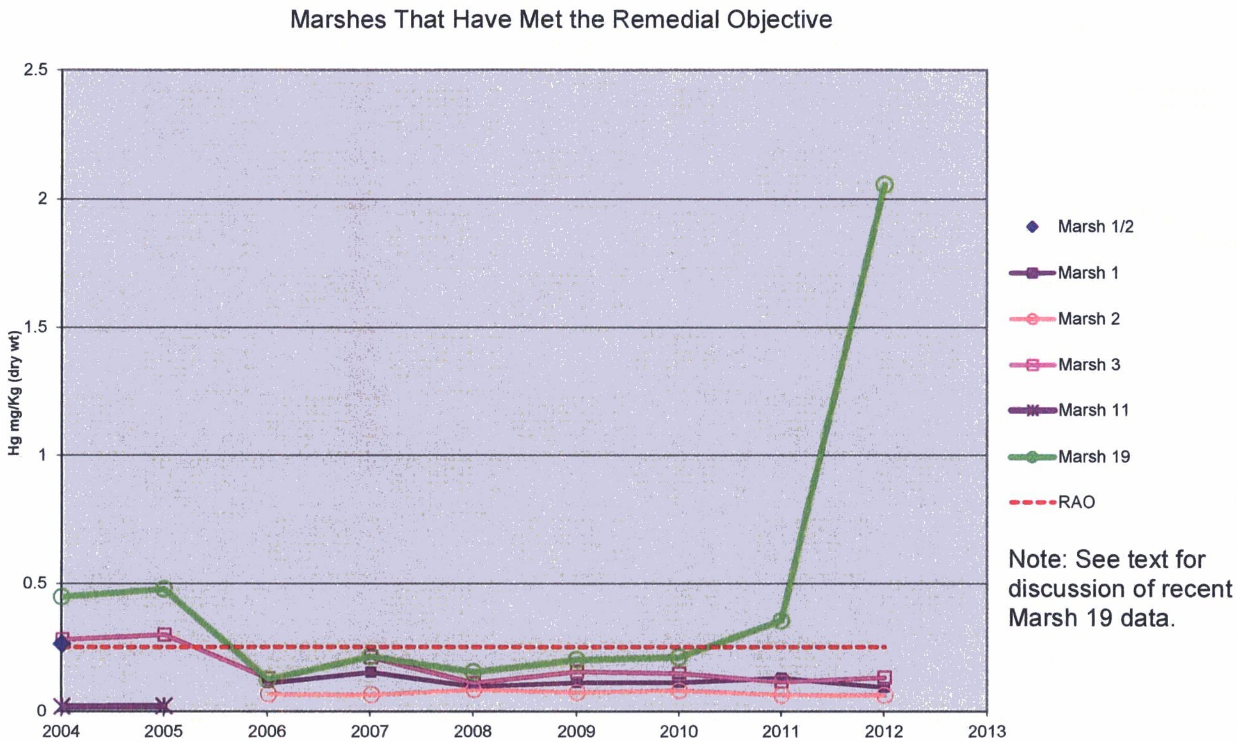
Point Comfort Operations



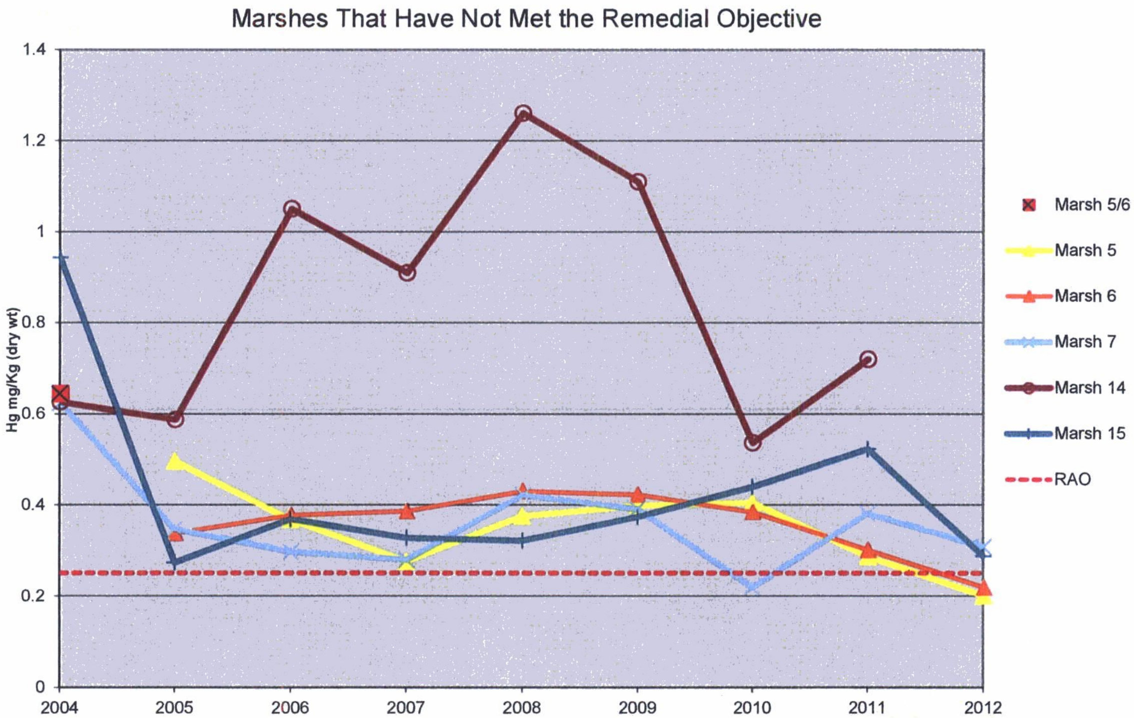


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FIGURE 3.3-2

TRENDS IN MARSH SEDIMENT CONCENTRATIONS

PROJECT:	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

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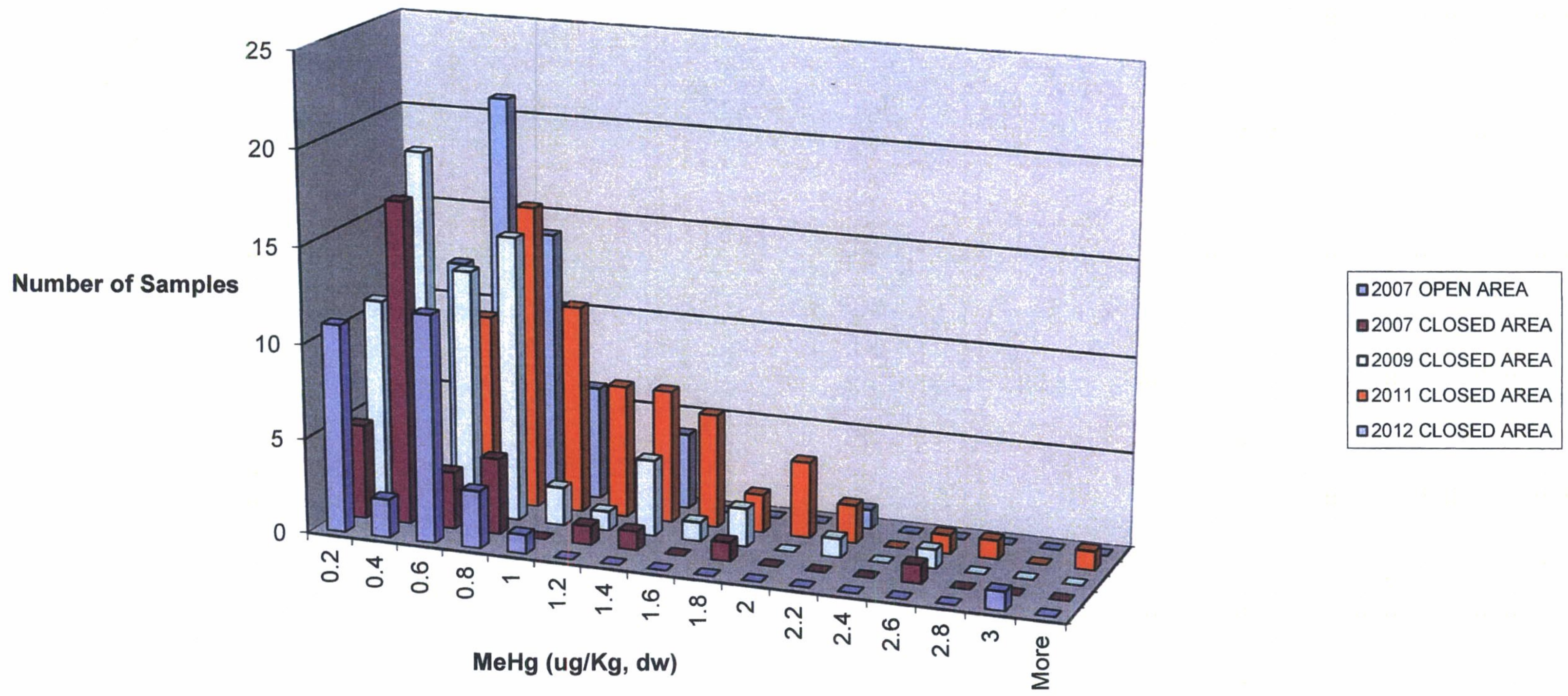

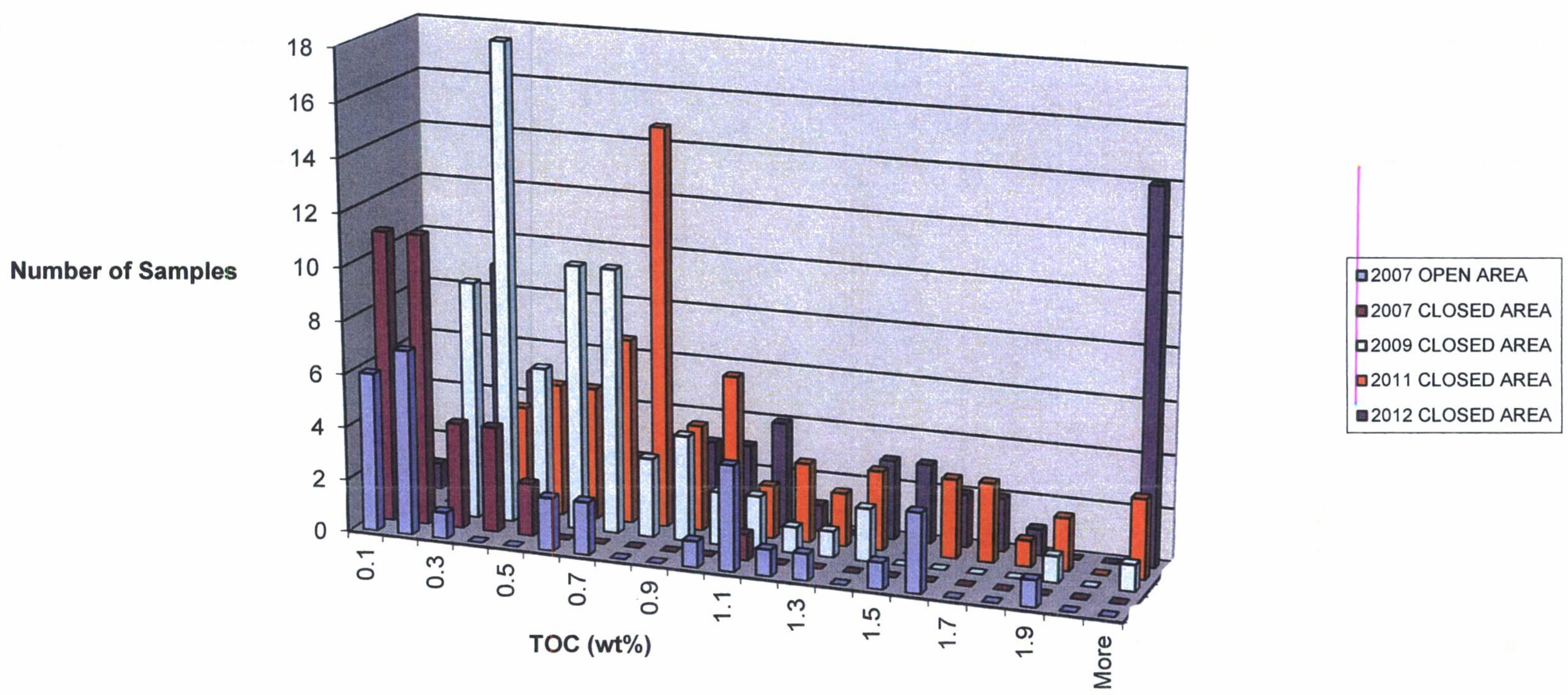

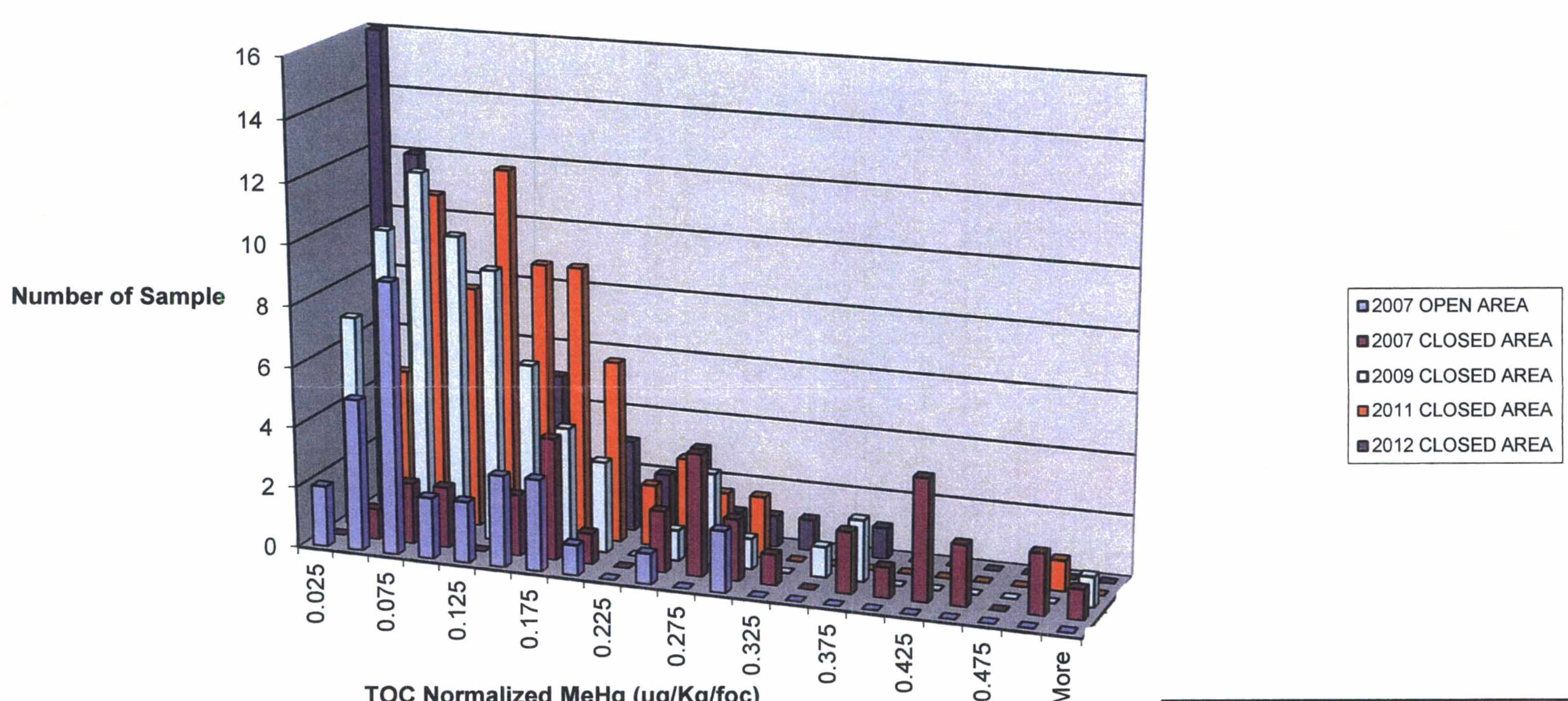

Note: 2011 and 2012 Data were collected at a 0-2 cm depth range, while all previous year were collected at a 0-5 cm range.

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FIGURE 3.3-3

CLOSED AREA MARSH SEDIMENT METHYL MERCURY CONCENTRATIONS

PROJECT: 021467	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

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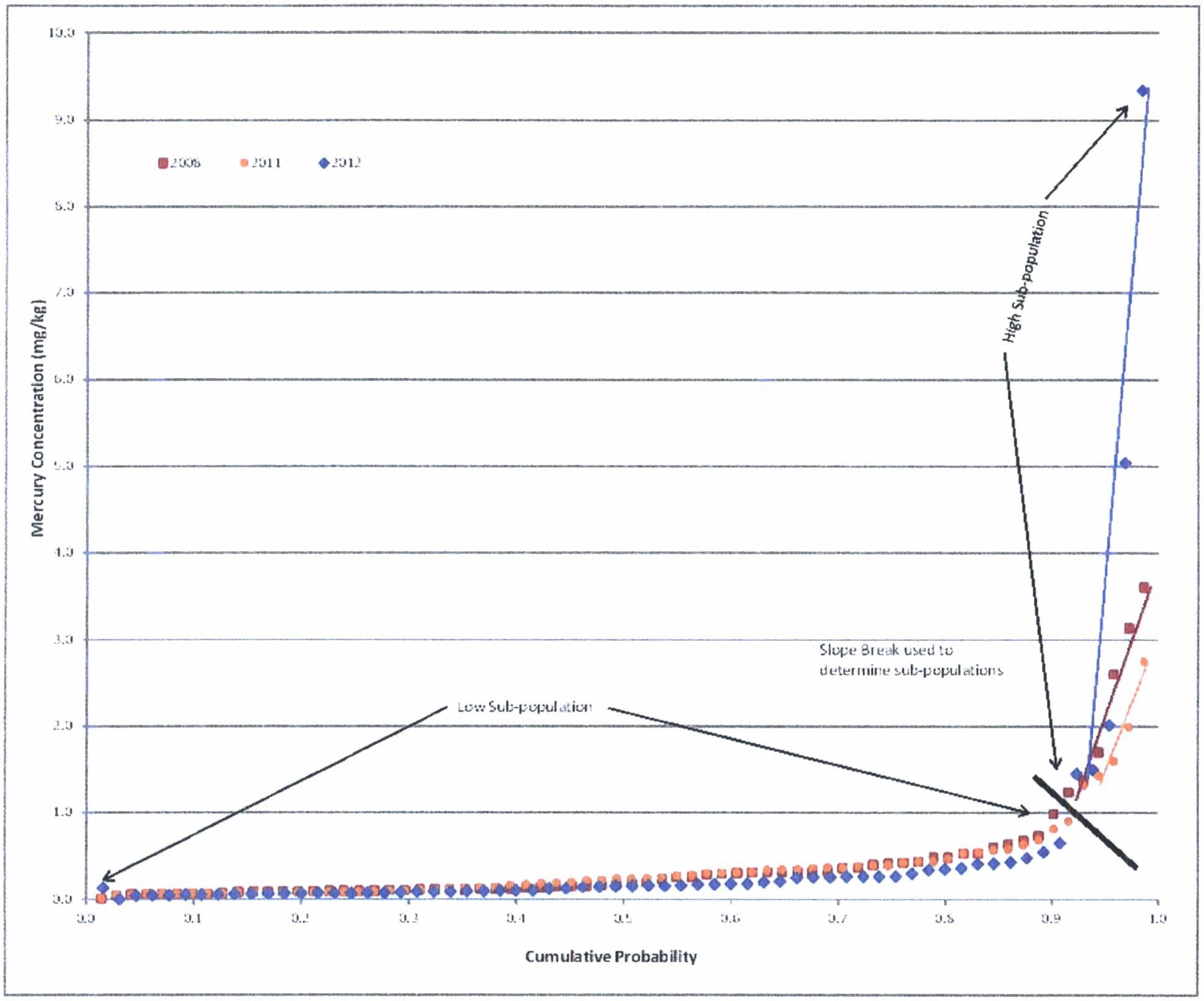

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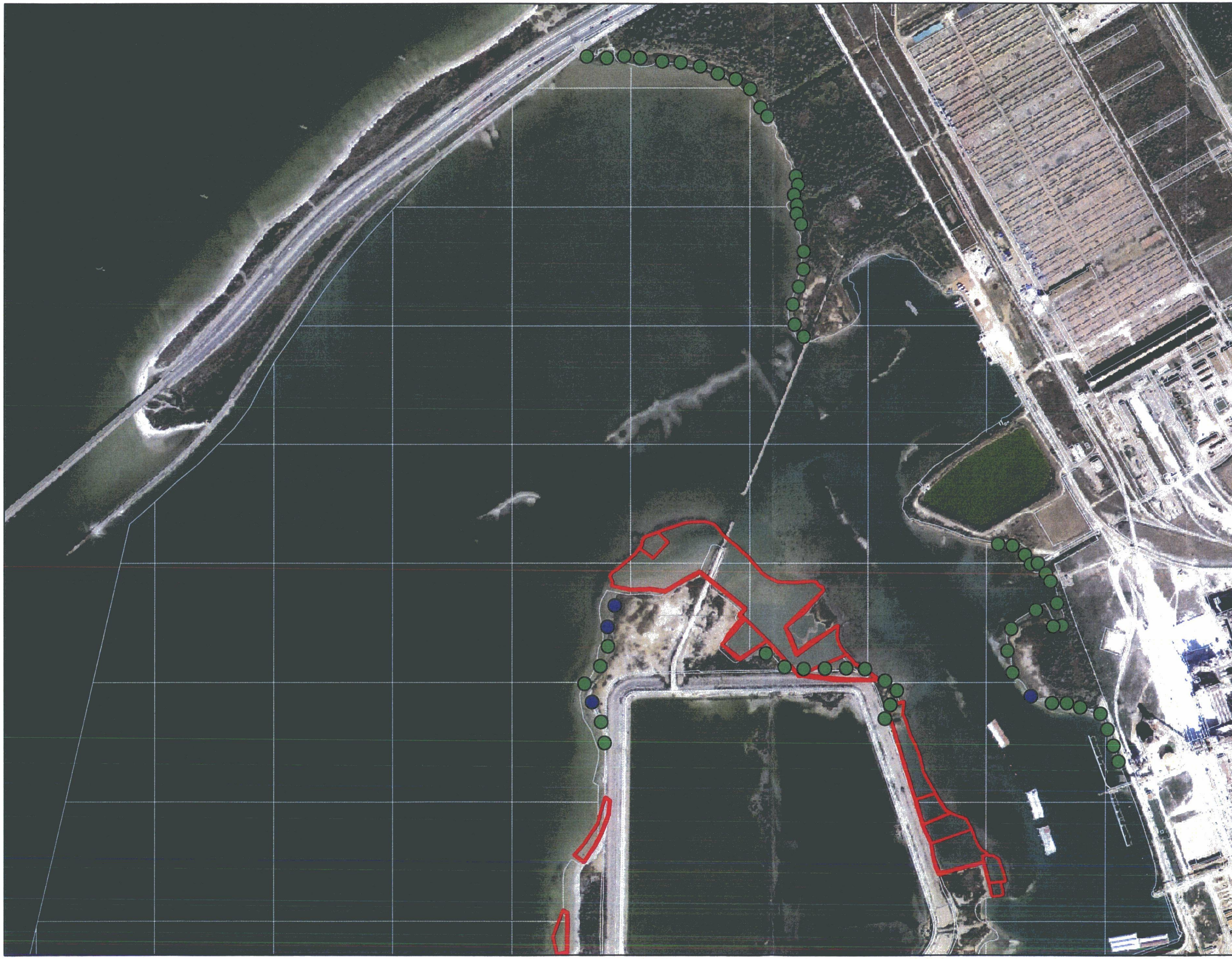
FIGURE 3.3-4

CUMULATIVE PROBABILITY GRAPH OF 2008, 2011 AND 2012 MARSH SEDIMENT CONCENTRATIONS

PROJECT: 021467	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

Point Comfort Operations



Legend

Sediment Sample Sub-Populations

- Low
- High
- ExcavatedAreas

N

0 700 1,400

Feet

ALCOA

FIGURE 3.3-5

GEOGRAPHIC DISTRIBUTION OF 2012 MARSH SEDIMENT SUB-POPULATIONS

PROJECT:	DATE: FEB 2013
REV: 0	BY: RHM CHECKED: BLM

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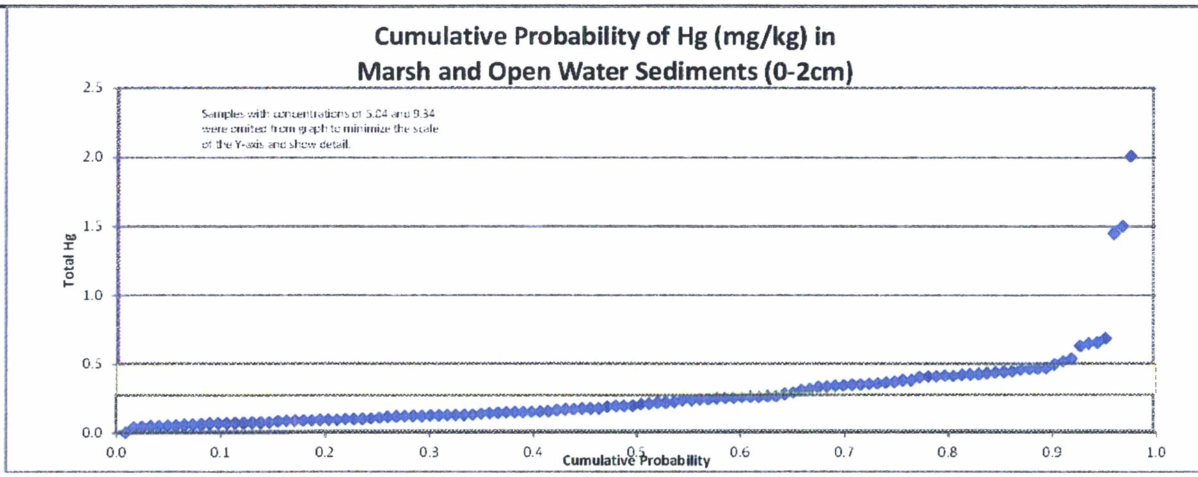
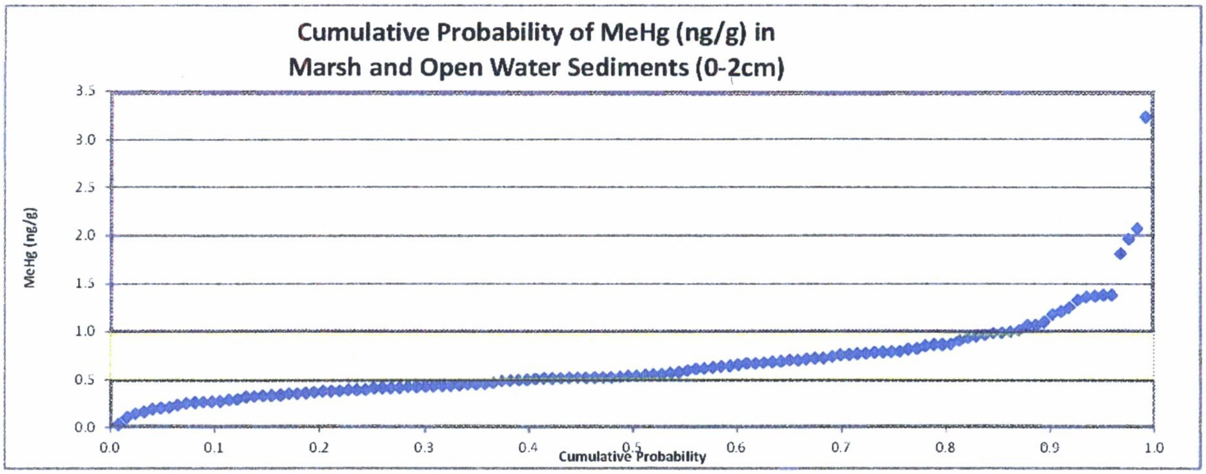
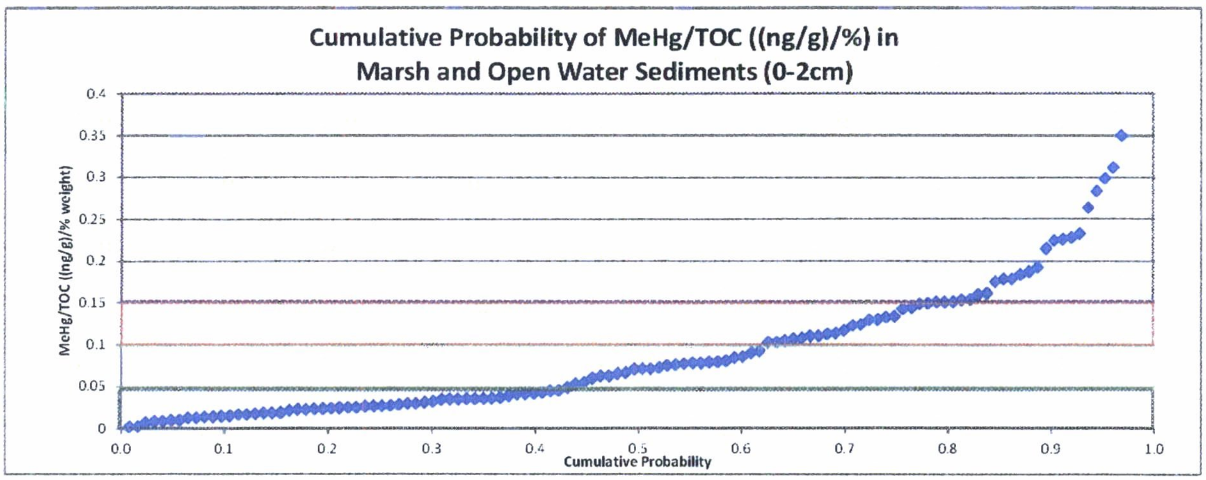
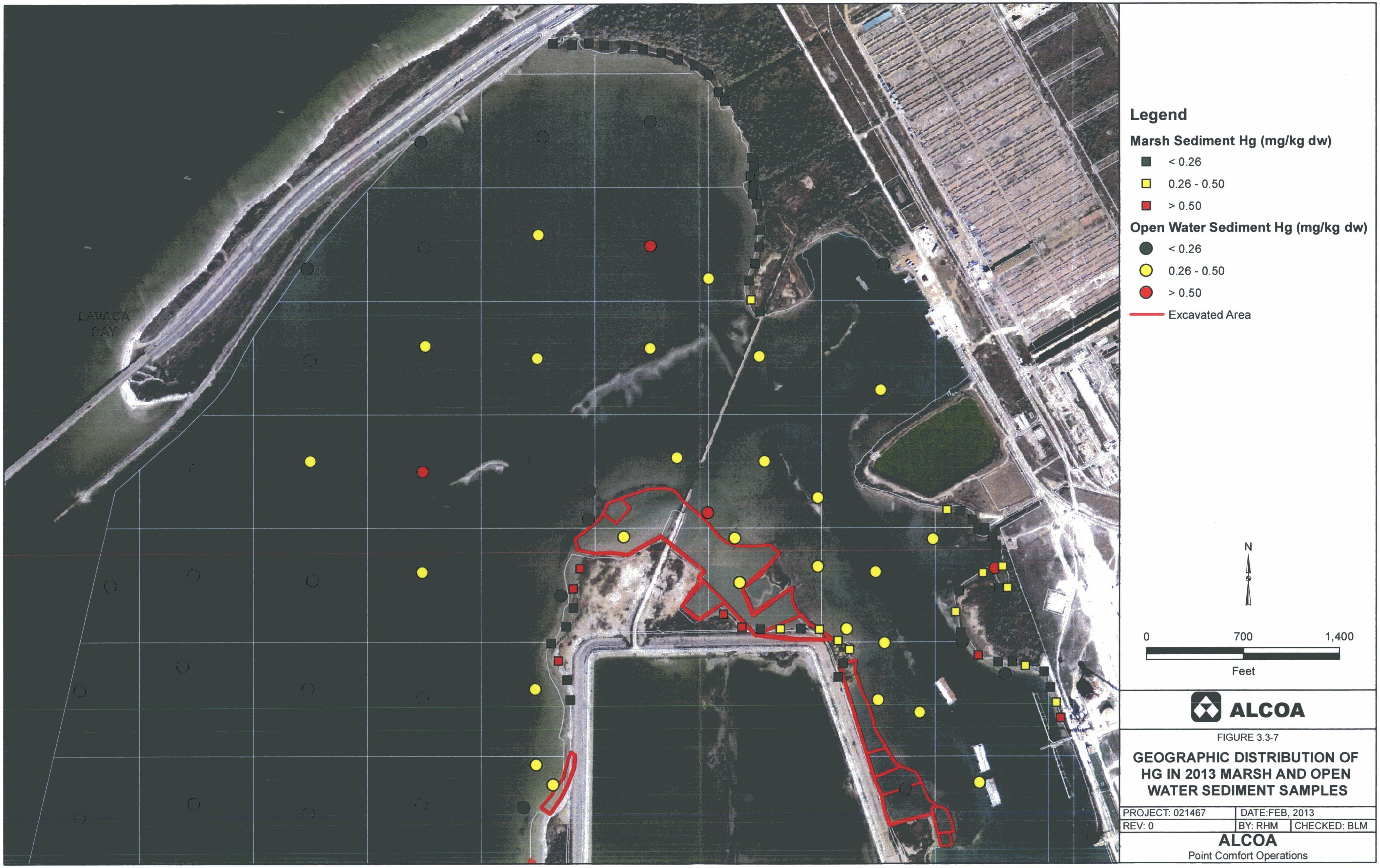






Notes: Sediment sample interval is 0-2cm for both marsh and open water samples.

ALCOA	
FIGURE 3.3-6	
CUMULATIVE PROBABILITY GRAPH 2012 MARSH AND OPEN WATER SEDIMENT SAMPLES	
PROJECT:	DATE: FEB 2013
REV: 0	BY: RHM / CHECKED: BLM
ALCOA Point Comfort Operations	


LAVACA BAY
Legend
Marsh Sediment Hg (mg/kg dw)
< 0.26
0.26 - 0.50
> 0.50
Open Water Sediment Hg (mg/kg dw)
< 0.26
0.26 - 0.50
> 0.50
Excavated Area
N
0
700
1,400
Feet
ALCOA
FIGURE 3.3-7
GEOGRAPHIC DISTRIBUTION OF HG IN 2013 MARSH AND OPEN WATER SEDIMENT SAMPLES
PROJECT: 021467
DATE:FEB, 2013
REV: 0
BY: RHM
CHECKED: BLM
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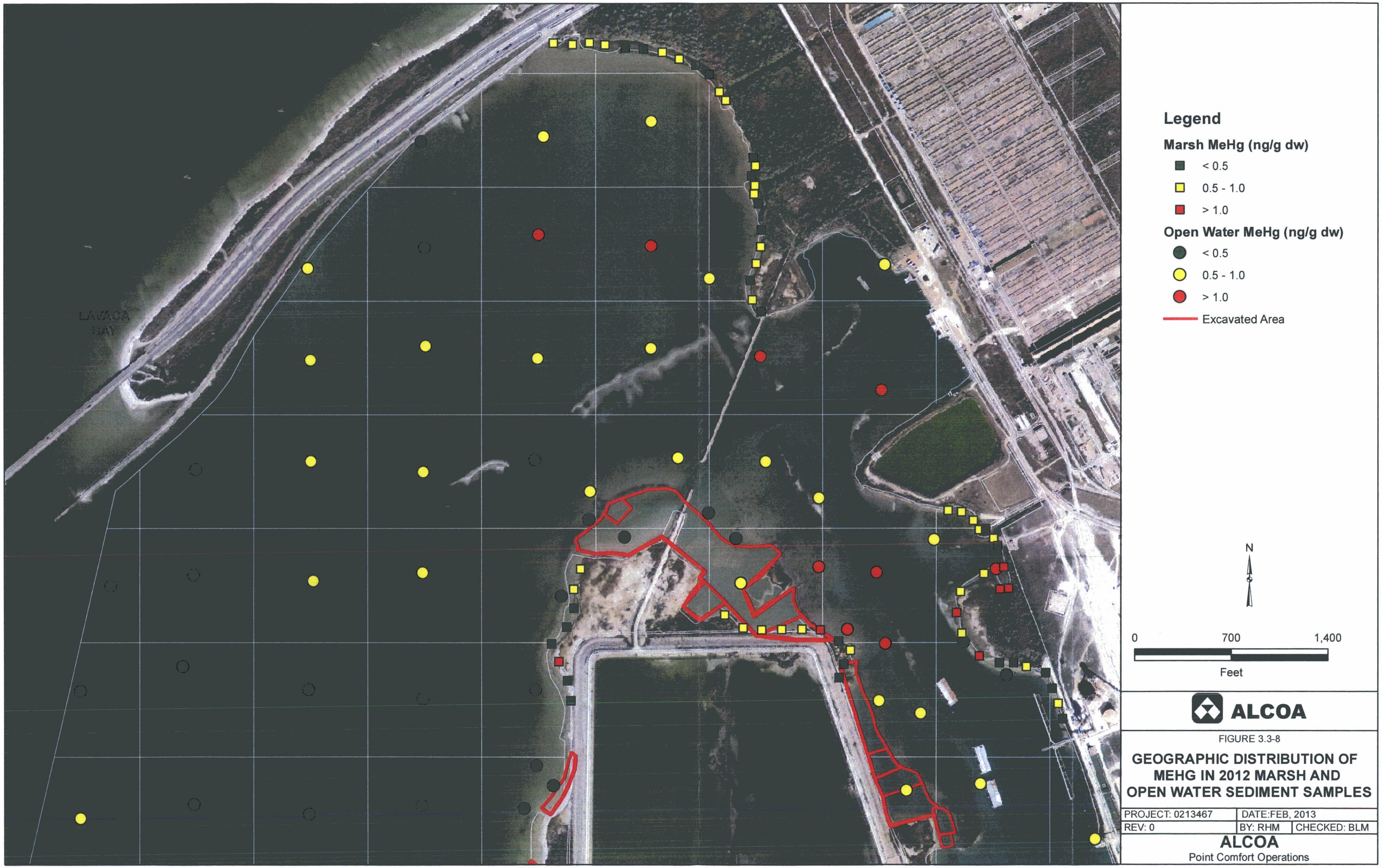

FIGURE 3.3-8

GEOGRAPHIC DISTRIBUTION OF MEHG IN 2012 MARSH AND OPEN WATER SEDIMENT SAMPLES

PROJECT: 0213467	DATE:FEB, 2013
REV: 0	BY: RHM / CHECKED: BLM

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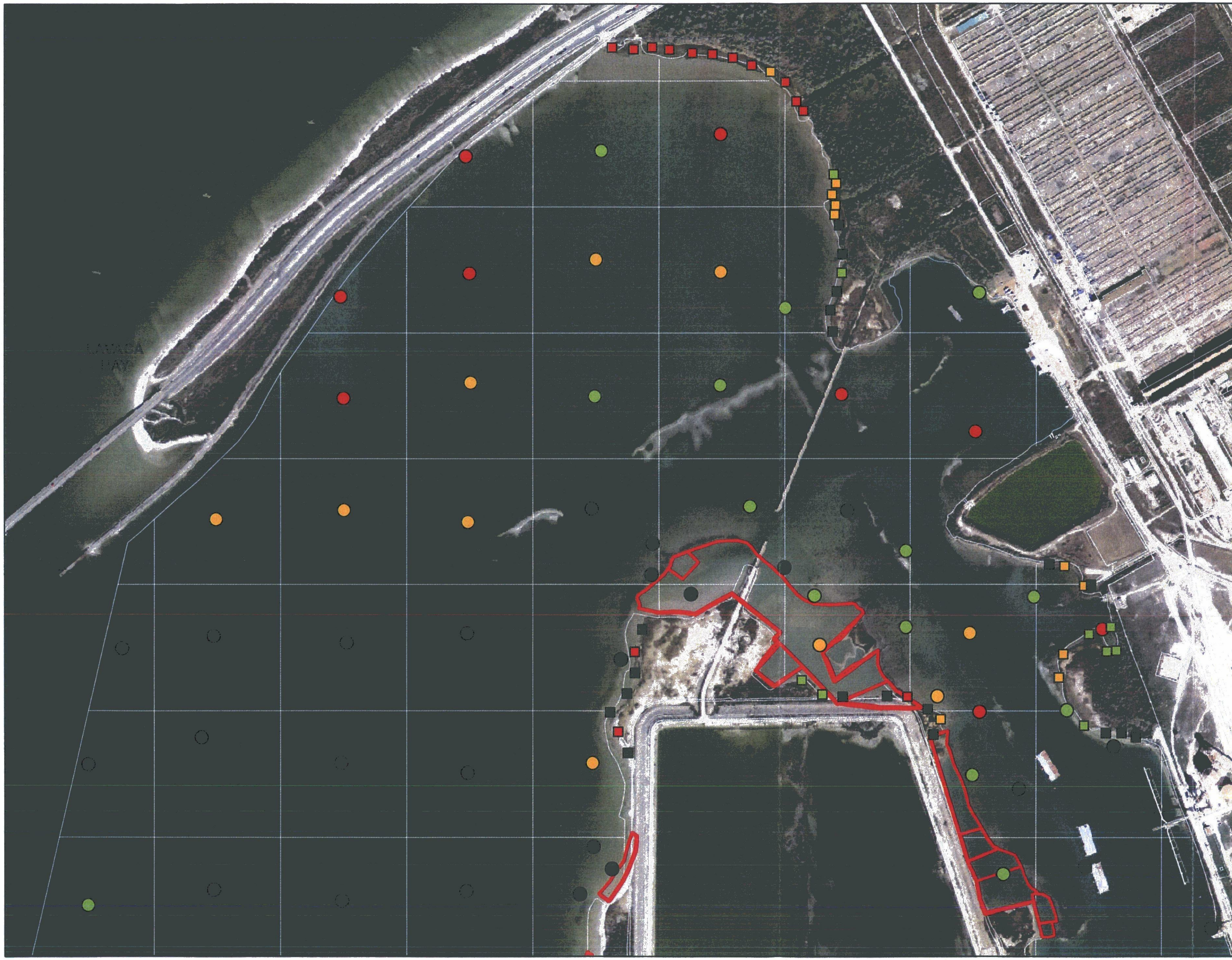

Legend

Marsh MeHg/TOC ((ng/g)/%wt dw)

- < 0.05
- 0.05 - 0.10
- 0.10 - 0.15
- > 0.15

Open Water MeHg/TOC ((ng/g)/%wt dw)

- < 0.05
- 0.05 - 0.10
- 0.10 - 0.15
- > 0.15

Excavated Area

N

0 700 1,400

Feet

ALCOA

FIGURE 3.3-9

GEOGRAPHIC DISTRIBUTION OF MEHG NORMALIZED BY TOC IN 2012 MARSH AND OPEN WATER SEDIMENT SAMPLES

PROJECT: 021365	DATE:FEB, 2013	
REV: 0	BY: RHM	CHECKED: BLM

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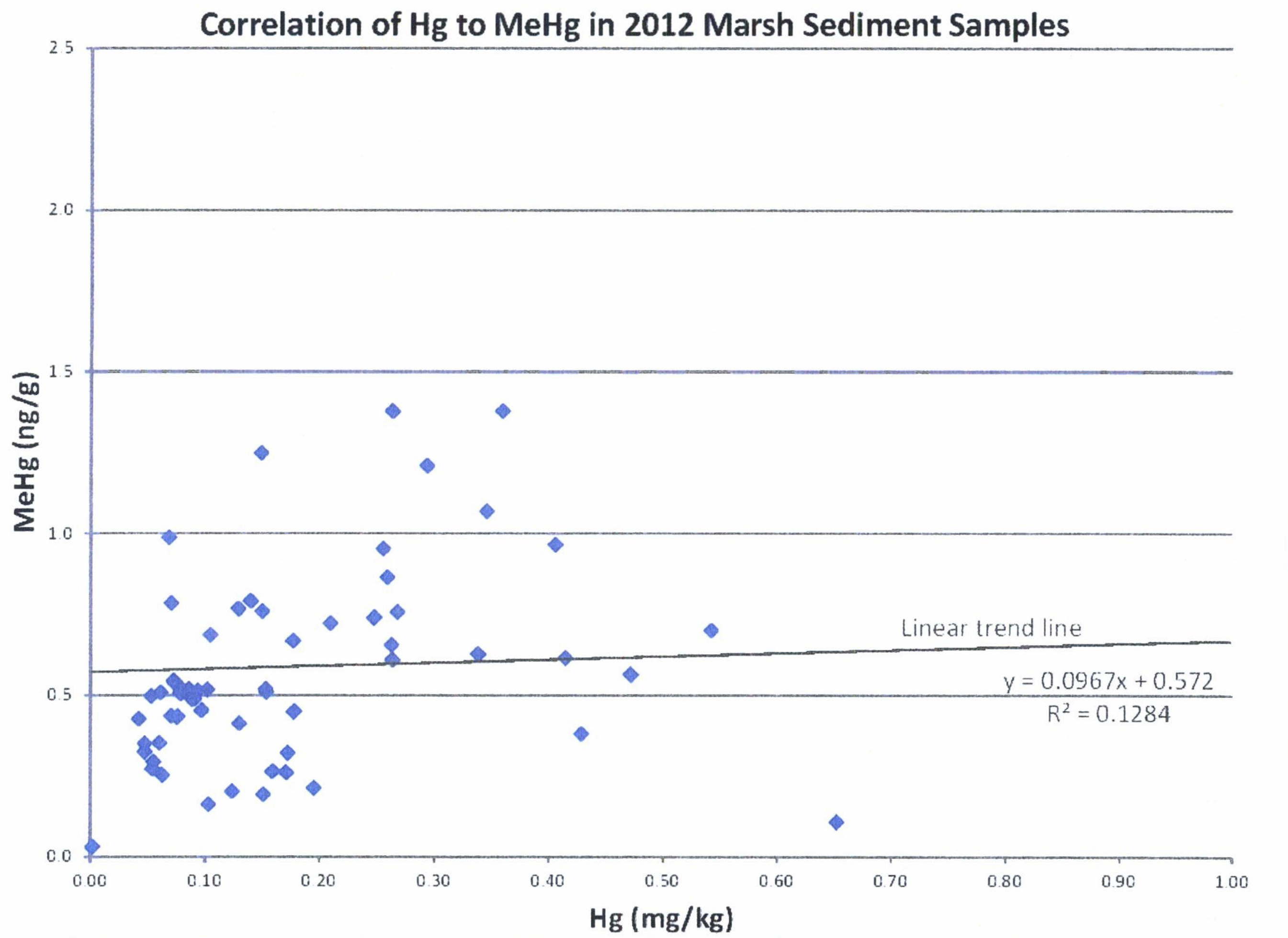
Point Comfort Operations



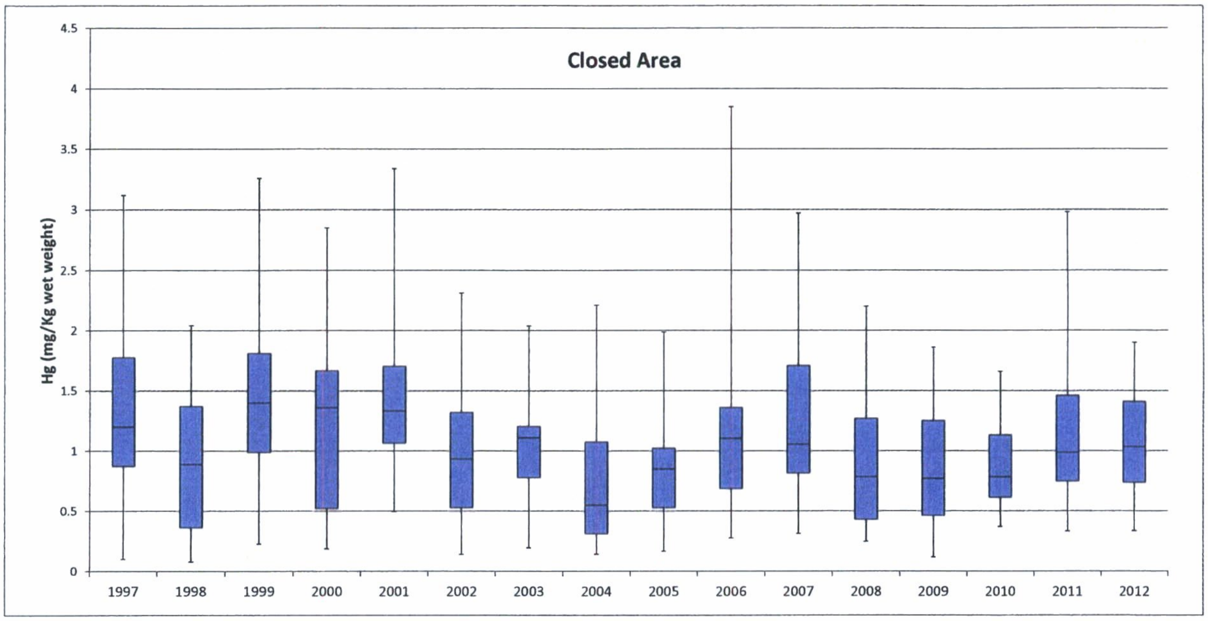
ALCOA

FIGURE 3.3-10

CORRELATION OF HG TO MEHG IN 2012 MARSH SEDIMENT SAMPLES

PROJECT: 021467	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations



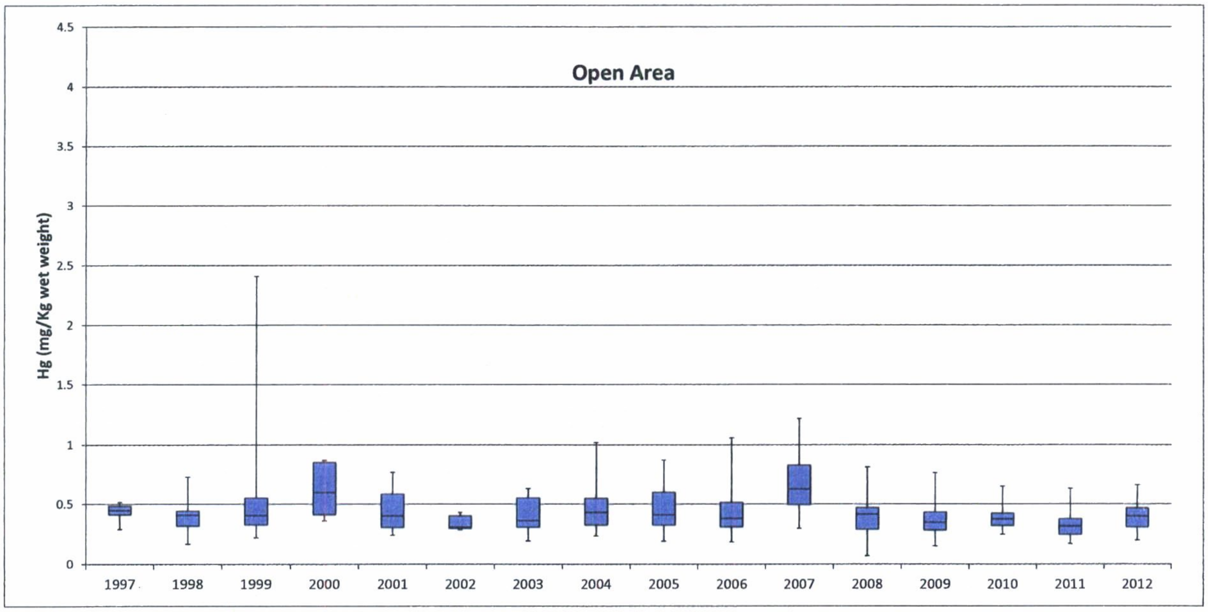


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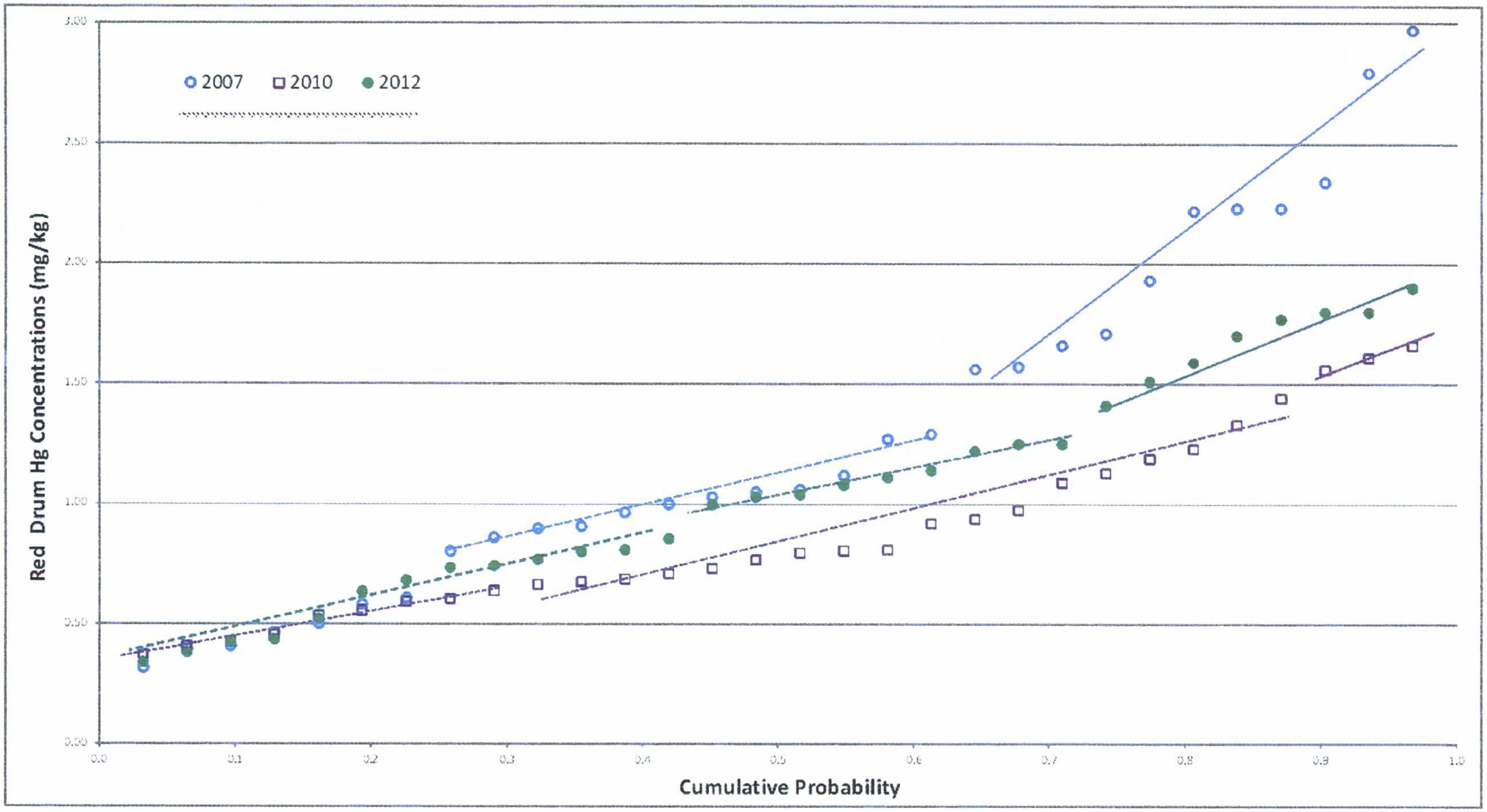
FIGURE 3.4-1

TRENDS IN RED DRUM MERCURY CONCENTRATIONS

PROJECT:	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

Point Comfort Operations



LEGEND

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

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FIGURE 3.4-2

CUMULATIVE PROBABILITY GRAPH OF 2007, 2010 AND 2012 RED DRUM MERCURY CONCENTRATIONS

PROJECT:	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

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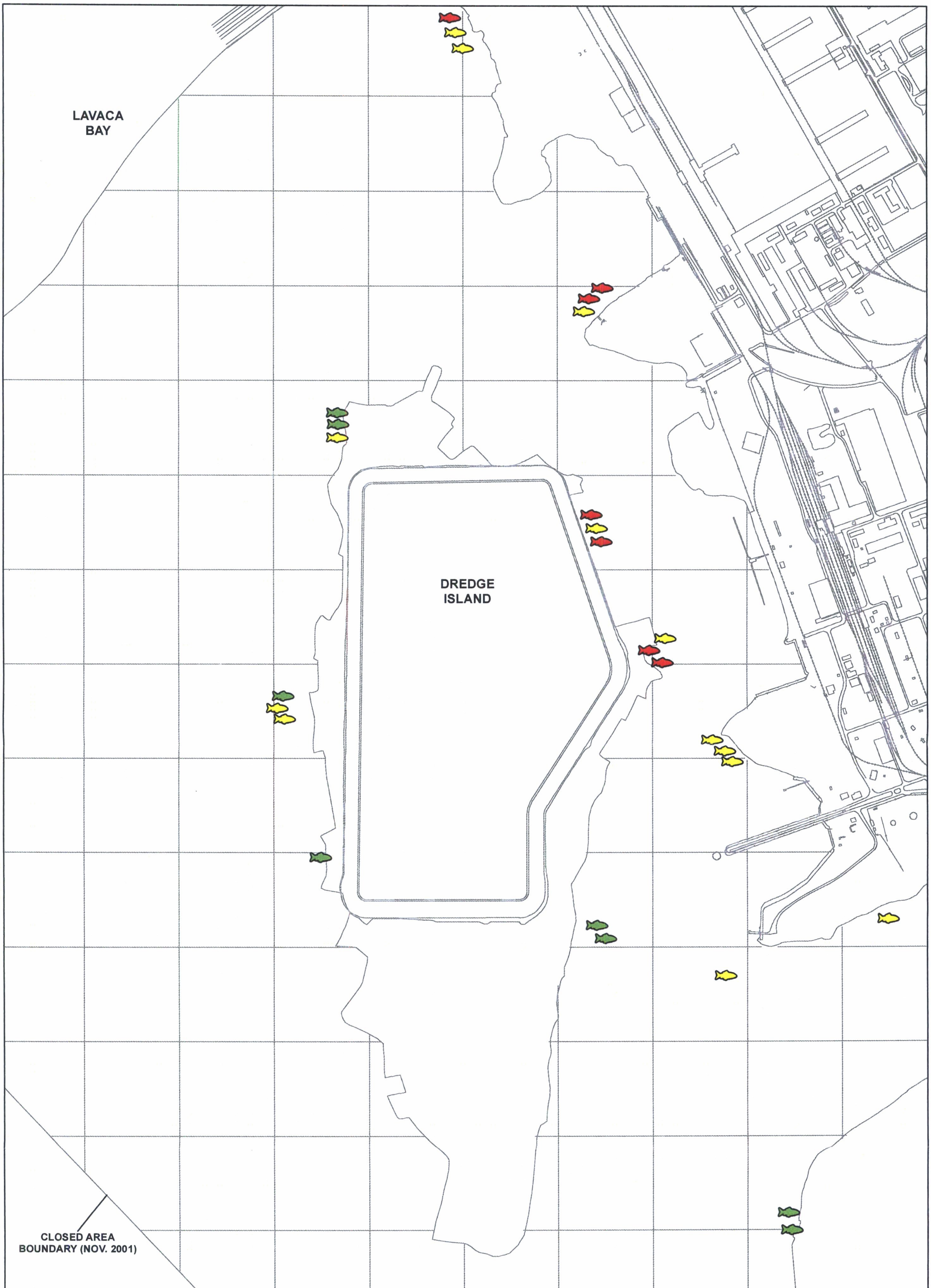
Point Comfort Operations



Legend

Total Hg wet weight (mg/Kg)

- <0.8
- 0.8 - 1.5
- >1.5

N

0 800 1,600

Feet

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FIGURE 3.4-3

GEOGRAPHIC DISTRIBUTION OF 2012 RED DRUM SUBPOPULATIONS

PROJECT: 021125	DATE: FEB 2013
REV: 0	BY: RHM / CHECKED: BLM

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Point Comfort Opreations

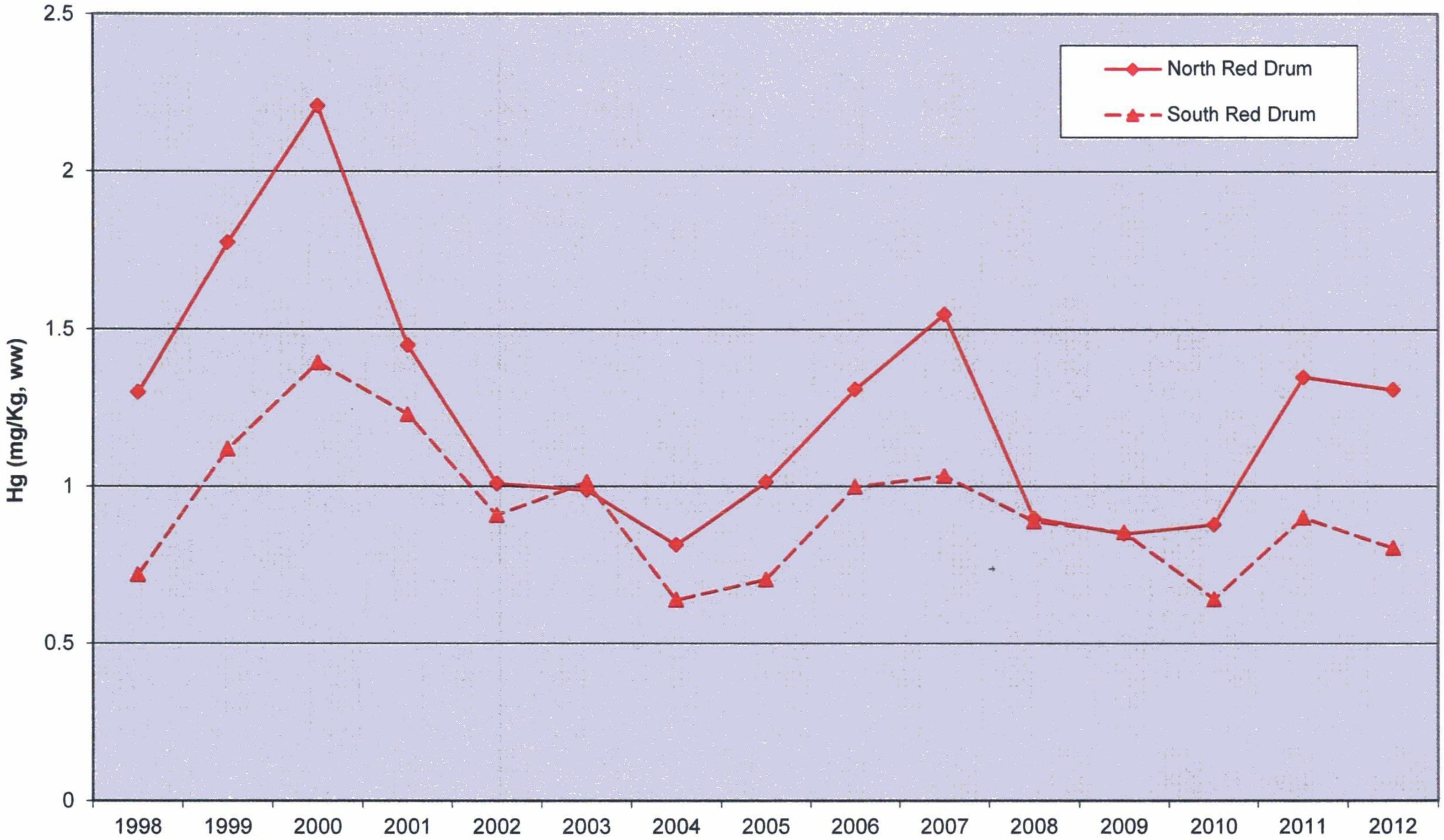

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FIGURE 3.4-4

TRENDS IN NORTHERN AND SOUTHERN CLOSED AREA RED DRUM MERCURY CONCENTRATIONS

PROJECT:	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

Point Comfort Operations

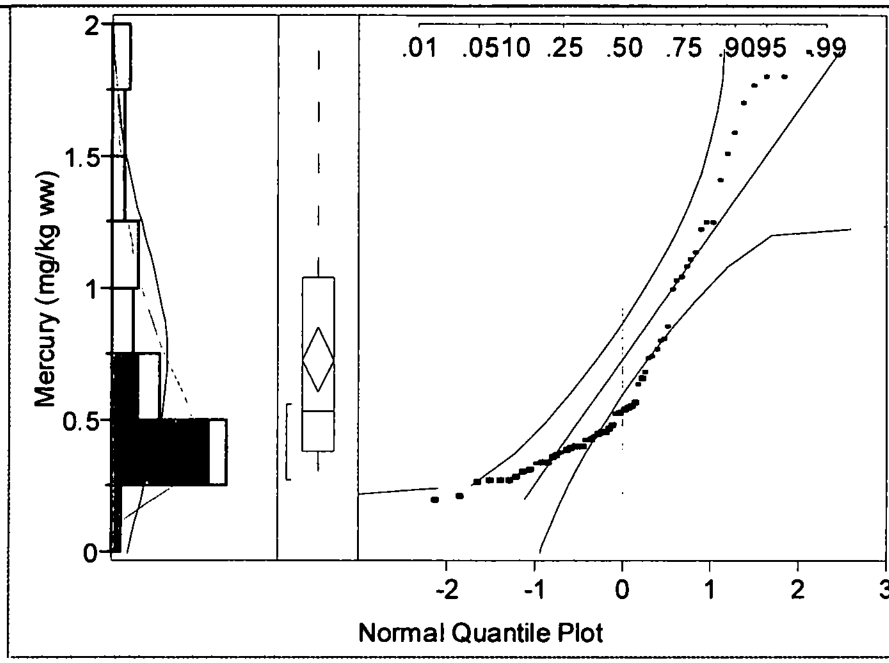


Fig. 3.4-5a Statistical Distribution of Red Drum Tissue Mercury Data – Untransformed Data

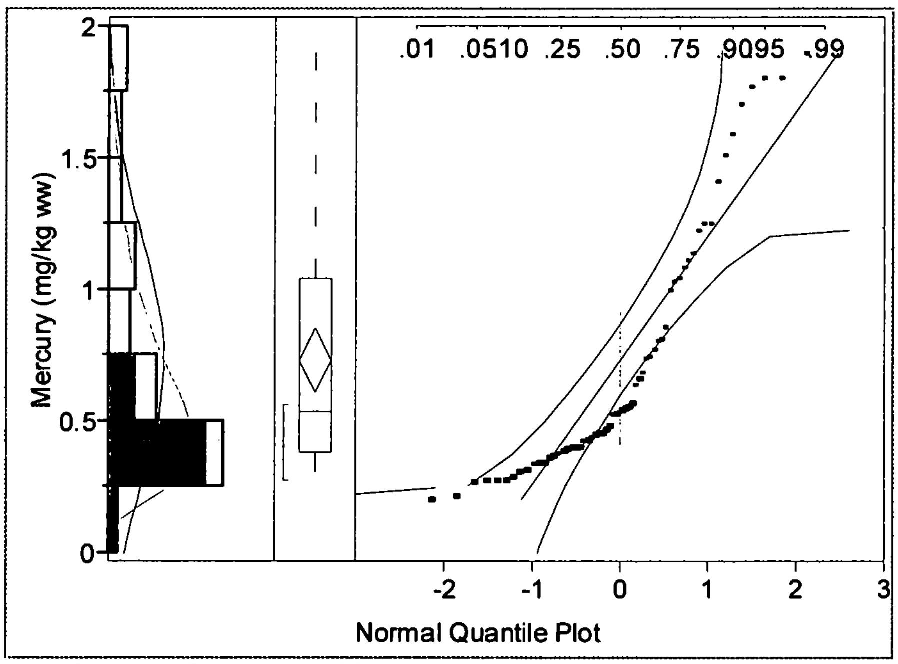


Fig. 3.4-5b Statistical Distribution of Red Drum Tissue Mercury Data – LN Transformed Data

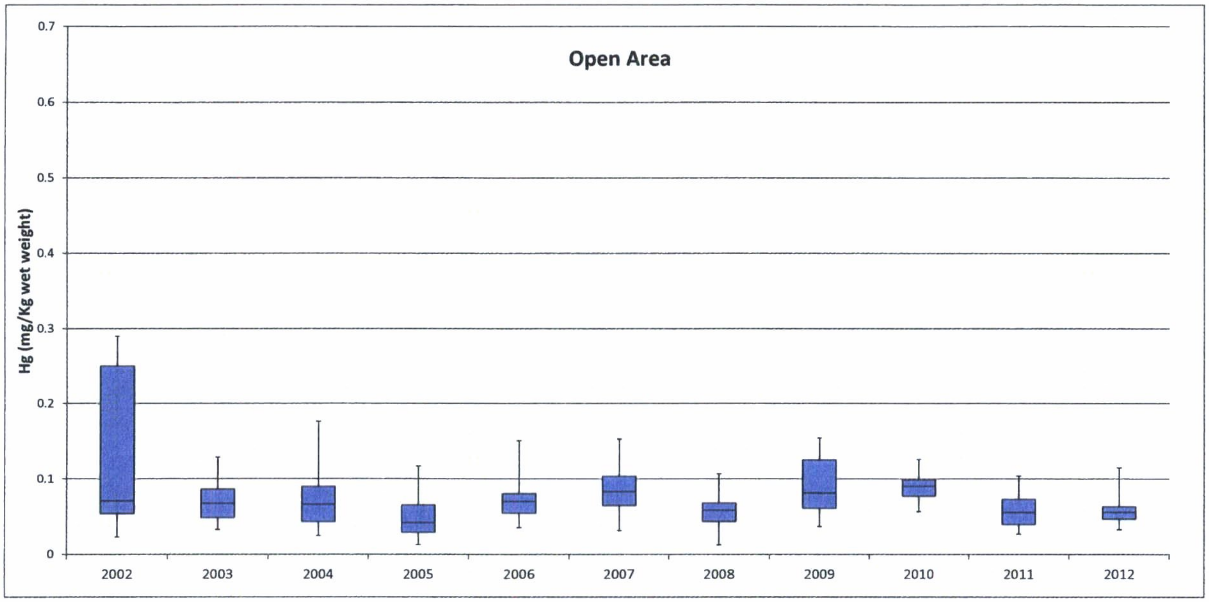
ALCOA

FIGURE 3.4-5

STATISTICAL DISTRIBUTION OF RED DRUM TISSUE MERCURY DATA

PROJECT:	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations



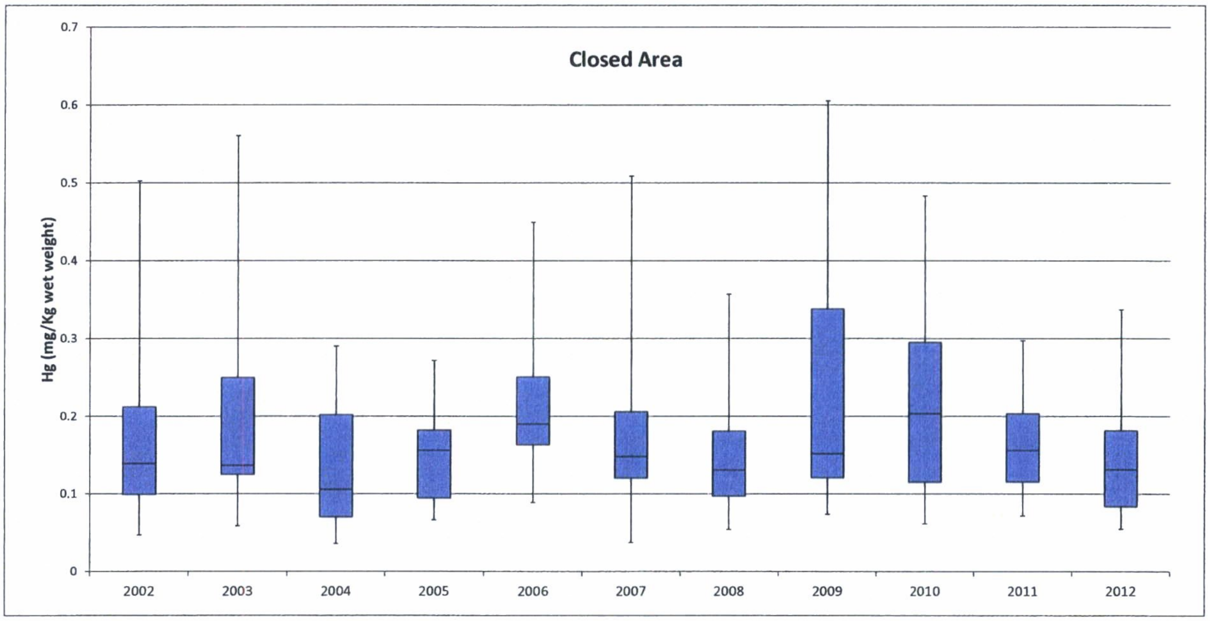


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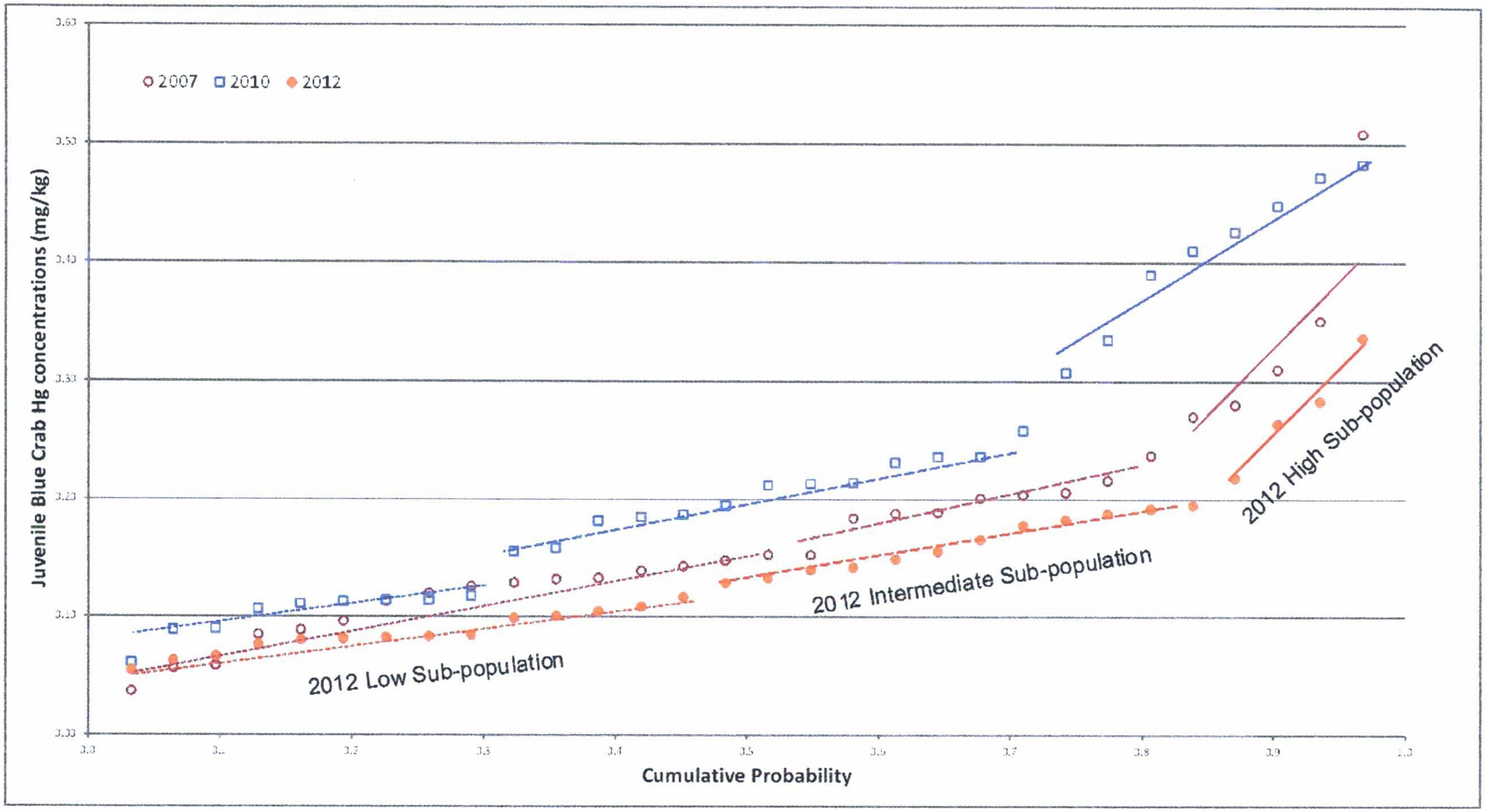
FIGURE 3.4-6

TRENDS IN JUVENILE BLUE CRAB MERCURY CONCENTRATIONS

PROJECT: 021467	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA
Point Comfort Operations



LEGEND

- High Sub-population (solid line)
- Middle Sub-population (dashed line)
- Low Sub-population (dotted line)

ALCOA

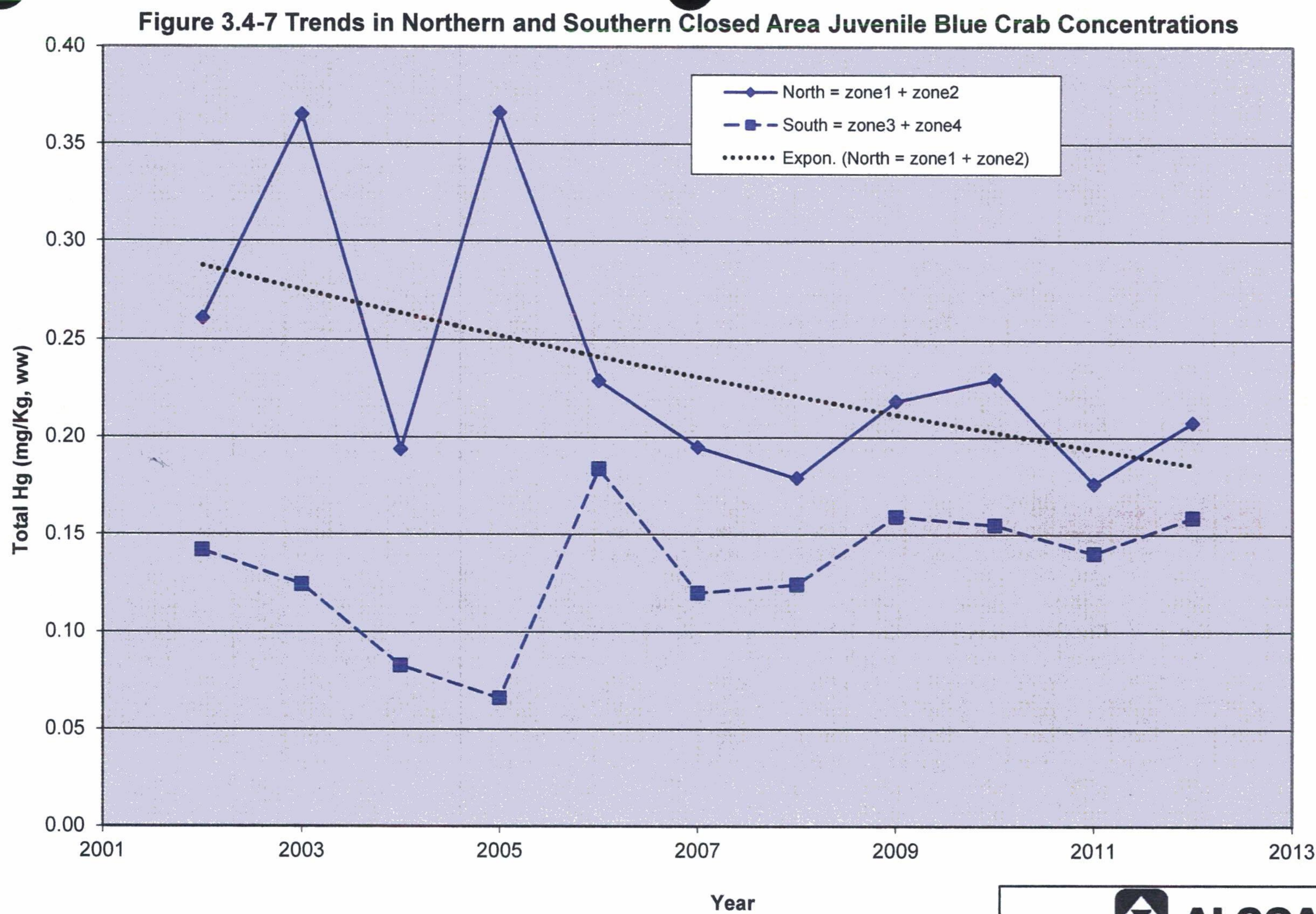
FIGURE 3.4-7

CUMULATIVE PROBABILITY GRAPH OF 2007, 2010 AND 2012 JUVENILE BLUE CRAB MERCURY CONCENTRATIONS

PROJECT:	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

Point Comfort Operations



ALCOA

FIGURE 3.4-9

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

PROJECT:	DATE: FEB 2013	
REV: 0	BY: RHM	CHECKED: BLM

ALCOA

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ALCOA

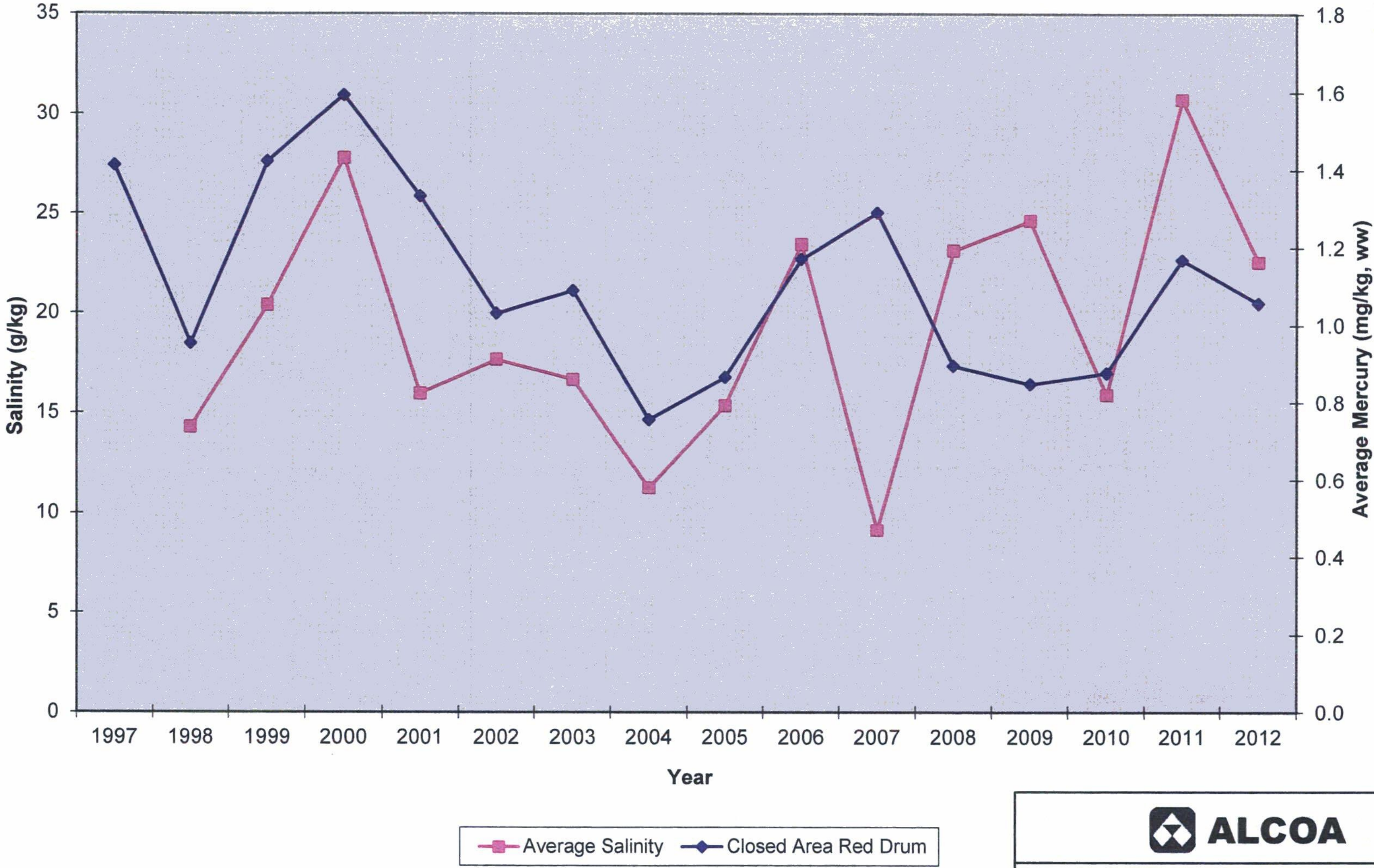
FIGURE 3.4-10

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

PROJECT:	DATE: FEB 2013	
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: FEB 2012	
REV: 0	BY: RHM	CHECKED: BLM

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APPENDIX A

LAVACA BAY ANNUAL SEDIMENT MONITORING REPORT 2012

LAVACA BAY ANNUAL SEDIMENT MONITORING STUDY FALL 2012

Alcoa Point Comfort Operations
Lavaca Bay Superfund Site

February 2013

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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 be monitored 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, and the RAO for marsh sediments has not been met in Marshes 5, 6, 7, 14, and 15. Pursuant to the Consent Decree, annual monitoring of sediments in Marsh 11 was discontinued in 2007. Alcoa 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. Marsh 14 was not sampled in 2012 because the marsh is scheduled to be removed by dredge in 2013.

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 monitoring the northern half of the open water sediment sampling grid every other year (even years only) 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

Marshes 1, 2, 3, 5, 6, 7, 15, and 19 were sampled during the 2012 monitoring event. Marsh 14 was not sampled because the area is scheduled to be dredged down to -3 ft. MLT in 2013. The OMMP requires that marsh sediment samples be analyzed for Total Mercury, at a minimum. In 2012, 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 2012 consisted of two sets of surface sediment samples collected from each of the 58 stations shown in Figure 1. The top 2 cm of sediment was collected and analyzed for Total Hg, MeHg, and TOC and the top 5 cm of sediment was analyzed for Total Hg.

This document presents a summary of sampling and analytical methods and the results of the 2012 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 stràtegy for the open water sediment samples and marsh sediment samples within the closed area are documented in the OMMP.

N

0 800 1,600 Feet

Legend

- Open Water Sample Station Locations
- ### Open Water Sample Station IDs
- ### Open Water Total Hg Results (0-2 cm mg/kg- dry weight)
- ### Open Water Total Hg Results (0-5 cm mg/kg- dry weight)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

Open Water Sample Stations and Total Hg Results

Alcoa Point Comfort Operations

Project: 98003-068

Date: 01/11/2013

Figure 1a

M:\\98003\068\arc\Open_water\ow_tothg_2012_Draft.mxd

N

0 800 1,600
Feet

Legend

- Open Water Sample Station Locations
- ### Open Water Sample Station IDs
- ### Open Water MeHg Results (0-2 cm mg/kg- dry weight)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

Open Water Sample Stations and MeHg Results

Alcoa Point Comfort Operations

Project: 98003-068

Date: 01/11/2013

Figure 1b

M:\\98003\068\arc\Open_water\ow_mehg_2012_Draft.mxd

N

0 800 1,600
Feet

Legend

- Open Water Sample Station Locations
- ### Open Water Sample Station IDs
- ### Open Water TOC Results (wt%)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

Open Water Sample Stations and TOC Results

Alcoa Point Comfort Operations

Project: 98003-068

Date: 01/11/2013

Figure 1c

M:\\98003\068\arc\Open_water\ow_TOC_2012_Draft.mxd

2.0 METHODS

Sediment samples for the 2012 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 MeHg were analyzed by Battelle Marine Sciences Laboratory (Battelle) in Sequim, Washington. Two sets of open water samples were processed and analyzed in 2012. The top 2 cm of sediment was collected and analyzed for Total Hg, MeHg, and TOC, and the top 5 cm of sediment was analyzed for Total Hg. Marsh samples consisted of the top 2 cm of sediment. 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 27 September 2012 and 3 October 2012, and Open Water Samples were collected on 28 September 2012, 4 and 24 October 2012, and 7 November 2012. 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. Open water sediment sample station locations are shown in Figure 1a, 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, the top two centimeters of sediment were removed using a clean disposable plastic spoon from one side of the grab sampler and placed in a pre-cleaned 16 ounce sample jar. The disposable plastic spoon was used to homogenize the sediment and then used to split the homogenized sediment in the 16 ounce jar 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.

A second sample was collected from the undisturbed portion of the Ekman using a modified 60 cc syringe. The lower end of the syringe barrel (needle lock) was cut off to transform the syringe barrel into an open cylinder. The open end of the syringe barrel was placed on the surface of the sediment, and while holding the syringe piston stationary, the barrel was pushed 5 cm into the sample. The syringe was pulled from the sediment, and the sub-sample contained within the syringe barrel was extruded into a pre-cleaned sample jar provided by the analytical laboratory. To provide a sufficient sample volume, the process was repeated at least twice. Sediment in the sample jar was mixed using a clean plastic spoon. New (clean) syringes and spoons were used to collect and process each sample. The 0-5 cm depth sediment sample was analyzed for Total Hg by ALS Laboratory.

Marsh sediment samples were collected from the sediment surface using pre-cleaned polycarbonate core tubes 6 inches in length and 3 inches in diameter. The core tubes were inserted approximately 10 cm into the sediment. Sediment on one side of the tube was excavated down to the bottom of the tube, to create a hole in the sediment outside of the tube to the bottom of the tube. A gloved hand reached down into the hole beside the core tube and fingers were placed over the bottom of the tube, to prevent loss of sample from the bottom of the tube as it was removed from the sediment. The core tube, containing the intact sediment sample was placed over a polycarbonate piston. The core tube was pushed down over the polycarbonate piston and the sample was slowly extruded from the tube. The top 2 cm of sediment were extruded and placed in a pre-cleaned 16 ounce jar provided by the analytical laboratory. To provide a sufficient sample volume, the process was repeated at least once. Sediment in the sample jar was mixed using a clean plastic spoon and 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 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 ice 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 over-night shipping to the Battelle Marine Sciences Laboratory.

Sample station coordinates, sample IDs, and sample collection dates for the open water stations are listed in Table 1. Sample station IDs, sample IDs, and sample collection dates for the marsh stations are listed in Table 2. A Chain of Custody form was completed for all samples collected.

Table 1 - 2012 Open Water Sediment Stations, Sample IDs, Field Data, and Results

Station ID	Easting[1]	Northing[1]	Sample ID	Date	Time	Water Depth[2] (ft)	Sample Depth (cm)	Total Hg			Methyl Hg			TOC	
								mg/kg dry wt	% M	Flags	ng/g dry wt	% M	Flags	Percent wt[3]	Flags
LVB0907	2747373.08	13430967.93	B12b-SE-16434	9/28/2012	9:30	3.1	5.0	0.509	63.8		NA	NA		0.866	
LVB0907	2747373.08	13430967.93	B12b-SE-16435	9/28/2012	9:30	3.1	2.0	0.521	65.1		0.378	31.3		0.899	
LVB0908	2747571.36	13430783.65	B12b-SE-16437	9/28/2012	9:55	2.1	2.0	0.444	41.2		0.412	37.4		0.573	
LVB0908	2747571.36	13430783.65	B12b-SE-16438	9/28/2012	9:55	2.1	5.0	0.373	29.2		NA	NA		0.446	
SUP0053	2747606.41	13430464.58	B12b-SE-16439	9/28/2012	10:05	3.1	2.0	0.468	65.8		0.822	58.4		0.796	
SUP0053	2747606.41	13430464.58	B12b-SE-16440	9/28/2012	10:05	3.1	5.0	0.468	63.9		NA	NA		0.878	
SUP0043	2748376.43	13430134.10	B12b-SE-16441	9/28/2012	10:30	2.4	2.0	0.448	42.5		1.36	37.4		1.05	
SUP0043	2748376.43	13430134.10	B12b-SE-16442	9/28/2012	10:30	2.4	5.0	0.442	39.9		NA	NA		0.713	
SUP0122	2748167.32	13430582.44	B12b-SE-16443	9/28/2012	10:45	3.0	2.0	0.435	52.4		1.01	47.0		1.28	
SUP0122	2748167.32	13430582.44	B12b-SE-16444	9/28/2012	10:45	3.0	5.0	0.425	49.0		NA	NA		2.40	
STO0218	2747782.73	13431340.30	B12b-SE-16445	9/28/2012	11:50	3.3	2.0	0.317	52.4		0.723	51.6		1.70	
STO0218	2747782.73	13431340.30	B12b-SE-16446	9/28/2012	11:50	3.3	5.0	0.301	56.6		NA	NA		2.66	
SUP0129	2748650.13	13430031.90	B12b-SE-16447	9/28/2012	12:05	4.4	2.0	0.440	52.2		1.07	46.3		0.708	
SUP0129	2748650.13	13430031.90	B12b-SE-16448	9/28/2012	12:05	4.4	5.0	0.395	55.4		NA	NA		0.729	
LVB0904	2748644.98	13432759.92	B12b-SE-16450	10/4/2012	9:50	4.6	2.0	0.131	30.9		0.867	30.0		1.37	
LVB0904	2748644.98	13432759.92	B12b-SE-16451	10/4/2012	9:50	4.6	5.0	0.0614	30.5		NA	NA		NA	
SMP0017	2748624.18	13431855.53	B12b-SE-16452	10/4/2012	10:15	8.5	2.0	0.469	74.4		1.96	64.9		1.30	
SMP0017	2748624.18	13431855.53	B12b-SE-16453	10/4/2012	10:15	8.5	5.0	0.403	73.0		NA	NA		NA	
SMP0016	2747745.46	13432098.04	B12b-SE-16454	10/4/2012	11:00	4.9	2.0	0.410	66.0		1.81	57.1		1.13	
SMP0016	2747745.46	13432098.04	B12b-SE-16455	10/4/2012	11:00	4.9	5.0	0.453	67.5		NA	NA		NA	
SUP0119	2748167.83	13431077.30	B12b-SE-16457	10/4/2012	11:20	6.1	2.0	0.354	65.1		0.790	56.7		1.01	
SUP0119	2748167.83	13431077.30	B12b-SE-16458	10/4/2012	11:20	6.1	5.0	0.331	64.2		NA	NA		NA	

Table 1 - 2012 Open Water Sediment Stations, Sample IDs, Field Data, and Results

Station ID	Easting[1]	Northing[1]	Sample ID	Date	Time	Water Depth[2] (ft)	Sample Depth (cm)	Total Hg			Methyl Hg			TOC	
								mg/kg dry wt	% M	Flags	ng/g dry wt	% M	Flags	Percent wt[3]	Flags
SUP0020	2748999.40	13430776.18	B12b-SE-16459	10/4/2012	11:30	3.7	2.0	0.383	50.4		0.677	49.3		0.832	
SUP0020	2748999.40	13430776.18	B12b-SE-16460	10/4/2012	11:30	3.7	5.0	0.325	38.2		NA	NA		NA	
SUP0021	2749447.91	13430567.07	B12b-SE-16461	10/4/2012	11:50	2.7	2.0	0.690	62.2		3.23	56.6		1.08	
SUP0021	2749447.91	13430567.07	B12b-SE-16462	10/4/2012	11:50	2.7	5.0	0.595	55.6		NA	NA		NA	
STO0223	2748586.74	13430542.19	B12b-SE-16463	10/4/2012	12:00	8.9	2.0	0.383	67.0		1.33	59.2		1.08	
STO0223	2748586.74	13430542.19	B12b-SE-16464	10/4/2012	12:00	8.9	5.0	0.332	65.1		NA	NA		NA	
LVB0917	2749212.64	13430040.30	B12b-SE-16465	10/4/2012	12:22	1.7	2.0	0.189	32.4		0.393	29.2		0.511	
LVB0917	2749212.64	13430040.30	B12b-SE-16466	10/4/2012	12:22	1.7	5.0	0.251	36.8		NA	NA		NA	
SMP0041	2749522.77	13429806.07	B12b-SE-16467	10/4/2012	14:00	2.7	2.0	0.112	33.6		0.414	30.0		1.71	
SMP0041	2749522.77	13429806.07	B12b-SE-16468	10/4/2012	14:00	2.7	5.0	0.0922	32.5		NA	NA		NA	
SMP0049	2750162.57	13428628.24	B12b-SE-16469	10/4/2012	14:20	3.1	2.0	0.244	30.1		0.594	28.2		1.48	
SMP0049	2750162.57	13428628.24	B12b-SE-16470	10/4/2012	14:20	3.1	5.0	0.315	30.8		NA	NA		NA	
SMP0048	2749334.93	13429027.48	B12b-SE-16471	10/4/2012	14:40	6.6	2.0	0.500	40.7		0.818	39.6		2.24	
SMP0048	2749334.93	13429027.48	B12b-SE-16472	10/4/2012	14:40	6.6	5.0	0.605	41.4		NA	NA		NA	
SMP0047	2748802.82	13428982.13	B12b-SE-16473	10/4/2012	14:55	3.8	2.0	0.252	53.8		0.771	52.7		0.961	
SMP0047	2748802.82	13428982.13	B12b-SE-16474	10/4/2012	14:55	3.8	5.0	0.247	54.7		NA	NA		NA	
SMP0040	2748604.31	13429622.73	B12b-SE-16476	10/4/2012	15:05	1.9	2.0	0.366	36.1		0.522	31.1		0.778	
SMP0040	2748604.31	13429622.73	B12b-SE-16477	10/4/2012	15:05	1.9	5.0	0.344	31.3		NA	NA		NA	
SUP0132	2748904.22	13429533.87	B12b-SE-16478	10/4/2012	15:15	4.4	2.0	0.411	54.1		0.934	51.6		2.57	
SUP0132	2748904.22	13429533.87	B12b-SE-16479	10/4/2012	15:15	4.4	5.0	0.388	49.2		NA	NA		NA	
STO0201	2746955.22	13433792.58	B12b-SE-16512	10/24/2012	8:45	3.8	2.0	0.238	33.5		0.667	35.8		0.373	
STO0201	2746955.22	13433792.58	B12b-SE-16513	10/24/2012	8:45	3.8	5.0	0.227	33.1		NA	NA		NA	

Table 1 - 2012 Open Water Sediment Stations, Sample IDs, Field Data, and Results

Station ID	Easting[1]	Northing[1]	Sample ID	Date	Time	Water Depth[2] (ft)	Sample Depth (cm)	Total Hg			Methyl Hg			TOC	
								mg/kg dry wt	% M	Flags	ng/g dry wt	% M	Flags	Percent wt[3]	Flags
SMP0004	2746180.74	13433682.98	B12b-SE-16514	10/24/2012	9:03	4.6	2.0	0.225	36.6		0.983	40.4		1.34	
SMP0004	2746180.74	13433682.98	B12b-SE-16515	10/24/2012	9:03	4.6	5.0	0.174	32.7		NA	NA		NA	
LVB0902	2745300.60	13433647.27	B12b-SE-16516	10/24/2012	9:12	3.8	2.0	0.120	27.8		0.451	27.4		0.257	
LVB0902	2745300.60	13433647.27	B12b-SE-16517	10/24/2012	9:12	3.8	5.0	0.119	25.1		NA	NA		NA	
LVB0901	2744482.67	13432734.78	B12b-SE-16518	10/24/2012	9:35	5.1	2.0	0.146	27.3		0.517	29.4		0.320	
LVB0901	2744482.67	13432734.78	B12b-SE-16519	10/24/2012	9:35	5.1	5.0	0.118	25.2		NA	NA		NA	
SMP0007	2745326.52	13432885.37	B12b-SE-16520	10/24/2012	9:50	4.9	2.0	0.195	31.4		0.432	33.3		0.282	
SMP0007	2745326.52	13432885.37	B12b-SE-16521	10/24/2012	9:50	4.9	5.0	0.192	30.4		NA	NA		NA	
STO0193	2746147.20	13432976.52	B12b-SE-16522	10/24/2012	10:05	4.7	2.0	0.425	52.4		1.10	48.1		0.738	
STO0193	2746147.20	13432976.52	B12b-SE-16523	10/24/2012	10:05	4.7	5.0	0.365	42.5		NA	NA		NA	
SMP0009	2746955.45	13432895.79	B12b-SE-16525	10/24/2012	10:25	4.6	2.0	0.634	57.7		1.37	52.0		0.916	
SMP0009	2746955.45	13432895.79	B1b2-SE-16526	10/24/2012	10:25	4.6	5.0	0.659	58.3		NA	NA		NA	
SUP0016	2747376.87	13432661.06	B12b-SE-16527	10/24/2012	10:45	3.8	2.0	0.351	45.3		0.852	45.4		1.08	
SUP0016	2747376.87	13432661.06	B12b-SE-16528	10/24/2012	10:45	3.8	5.0	0.323	39.7		NA	NA		NA	
STO0203	2746953.59	13432158.05	B12b-SE-16529	10/24/2012	10:55	4.7	2.0	0.312	60.7		0.871	58.6		1.21	
STO0203	2746953.59	13432158.05	B12b-SE-16530	10/24/2012	10:55	4.7	5.0	0.370	61.4		NA	NA		NA	
SMP0014	2746139.32	13432085.58	B12b-SE-16531	10/24/2012	11:25	5.3	2.0	0.462	61.6		0.523	56.4		0.861	
SMP0014	2746139.32	13432085.58	B12b-SE-16532	10/24/2012	11:25	5.3	5.0	0.467	61.7		NA	NA		NA	
STO0160	2745334.26	13432175.21	B12b-SE-16533	10/24/2012	11:40	5.0	2.0	0.267	36.6		0.682	40.0		0.651	
STO0160	2745334.26	13432175.21	B12b-SE-16534	10/24/2012	11:40	5.0	5.0	0.254	40.4		NA	NA		NA	
SMP0012	2744504.49	13432073.50	B12b-SE-16535	10/24/2012	11:55	5.1	2.0	0.178	32.8		0.577	34.5		0.323	
SMP0012	2744504.49	13432073.50	B12b-SE-16536	10/24/2012	11:55	5.1	5.0	0.157	30.7		NA	NA		NA	
SMP0018	2743678.08	13431282.62	B12b-SE-16537	10/24/2012	12:10	5.1	2.0	0.132	30.6		0.289	29.9		0.261	

Table 1 - 2012 Open Water Sediment Stations, Sample IDs, Field Data, and Results

Station ID	Easting[1]	Northing[1]	Sample ID	Date	Time	Water Depth[2] (ft)	Sample Depth (cm)	Total Hg			Methyl Hg			TOC	
								mg/kg dry wt	% M	Flags	ng/g dry wt	% M	Flags	Percent wt[3]	Flags
SMP0018	2743678.08	13431282.62	B12b-SE-16538	10/24/2012	12:10	5.1	5.0	0.123	28.6		NA	NA		NA	
STO0153	2744505.55	13431342.70	B12b-SE-16539	10/24/2012	12:25	5.5	2.0	0.358	53.4		0.787	50.6		0.730	
STO0153	2744505.55	13431342.70	B12b-SE-16540	10/24/2012	12:25	5.5	5.0	0.324	44.7		NA	NA		NA	
SMP0020	2745314.98	13431265.61	B12b-SE-16542	10/24/2012	12:45	5.3	2.0	0.657	41.2		0.713	43.9		0.645	
SMP0020	2745314.98	13431265.61	B12b-SE-16543	10/24/2012	12:45	5.3	5.0	0.590	39.9		NA	NA		NA	
SMP0042	2742842.01	13428777.88	B12b-SE-16544	11/7/2012	9:40	4.9	2.0	0.129	58.6		0.638	56.0		0.80	
SMP0042	2742842.01	13428777.88	B12b-SE-16545	11/7/2012	9:40	4.9	5.0	0.106	47.1		NA	NA		NA	
STO0130	2743664.82	13428877.40	B12b-SE-16546	11/7/2012	9:55	5.2	2.0	0.128	50.0		0.467	52.2		1.3	
STO0130	2743664.82	13428877.40	B12b-SE-16547	11/7/2012	9:55	5.2	5.0	0.0989	39.4		NA	NA		NA	
SMP0044	2744492.83	13428808.16	B12b-SE-16548	11/7/2012	10:10	4.9	2.0	0.117	39.4		0.337	38.2		0.93	
SMP0044	2744492.83	13428808.16	B12b-SE-16549	11/7/2012	10:10	4.9	5.0	0.120	40.3		NA	NA		NA	
STO0164	2745306.51	13428869.06	B12b-SE-16550	11/7/2012	10:25	4.2	2.0	0.0970	33.2		0.234	31.9		0.76	
STO0164	2745306.51	13428869.06	B12b-SE-16551	11/7/2012	10:25	4.2	5.0	0.115	34.2		NA	NA		NA	
SUP0075	2746041.11	13428848.63	B12b-SE-16552	11/7/2012	10:35	2.4	2.0	0.167	36.3		0.333	34.7		1.3	
SUP0075	2746041.11	13428848.63	B12b-SE-16553	11/7/2012	10:35	2.4	5.0	0.181	34.4		NA	NA		NA	
LVB0911	2746252.04	13429014.04	B12b-SE-16554	11/7/2012	10:50	1.3	2.0	0.334	45.2		0.424	41.5		2.2	
LVB0911	2746252.04	13429014.04	B12b-SE-16555	11/7/2012	10:50	1.3	5.0	0.482	48.1		NA	NA		NA	
SUP0073	2746131.67	13429157.24	B12b-SE-16556	11/7/2012	11:05	2.2	2.0	0.416	48.4		0.425	47.4		1.5	
SUP0073	2746131.67	13429157.24	B12b-SE-16557	11/7/2012	11:05	2.2	5.0	0.434	48.5		NA	NA		NA	
STO0189	2746123.59	13429700.34	B12b-SE-16558	11/7/2012	11:20	2.5	2.0	0.284	27.6		0.268	28.1		0.25	
STO0189	2746123.59	13429700.34	B12b-SE-16559	11/7/2012	11:20	2.5	5.0	0.245	26.4		NA	NA		NA	
SMP0038	2745313.63	13429634.59	B12b-SE-16560	11/7/2012	11:25	4.3	2.0	0.219	50.4		0.496	51.4		1.8	
SMP0038	2745313.63	13429634.59	B12b-SE-16561	11/7/2012	11:25	4.3	5.0	0.212	49.8		NA	NA		NA	

Table 1 - 2012 Open Water Sediment Stations, Sample IDs, Field Data, and Results

Station ID	Easting[1]	Northing[1]	Sample ID	Date	Time	Water Depth[2] (ft)	Sample Depth (cm)	Total Hg			Methyl Hg			TOC	
								mg/kg dry wt	% M	Flags	ng/g dry wt	% M	Flags	Percent wt[3]	Flags
STO0151	2744488.88	13429700.23	B12b-SE-16562	11/7/2012	11:30	4.6	2.0	0.144	48.1		0.395	48.9		1.2	
STO0151	2744488.88	13429700.23	B12b-SE-16563	11/7/2012	11:30	4.6	5.0	0.142	51.7		NA	NA		NA	
SMP0036	2743585.19	13429864.60	B12b-SE-16564	11/7/2012	11:40	4.7	2.0	0.0914	40.0		0.360	38.9		2.3	
SMP0036	2743585.19	13429864.60	B12b-SE-16565	11/7/2012	11:40	4.7	5.0	0.0826	37.6		NA	NA		NA	
STO0113	2742843.29	13429688.73	B12b-SE-16567	11/7/2012	12:00	4.8	2.0	0.103	49.9		0.415	44.9		1.52	H
STO0113	2742843.29	13429688.73	B12b-SE-16568	11/7/2012	12:00	4.8	5.0	0.0698	41.5		NA	NA		NA	
SMP0026	2743063.67	13430441.87	B12b-SE-16569	11/7/2012	12:20	4.4	2.0	0.0954	44.1		0.393	42.7		1.34	H
SMP0026	2743063.67	13430441.87	B12b-SE-16570	11/7/2012	12:20	4.4	5.0	0.0744	36.4		NA	NA		NA	
STO0128	2743662.49	13430521.51	B12b-SE-16571	11/7/2012	12:35	4.9	2.0	0.123	48.8		0.369	47.6		1.56	H
STO0128	2743662.49	13430521.51	B12b-SE-16572	11/7/2012	12:35	4.9	5.0	0.108	44.6		NA	NA		NA	
SMP0028	2744523.01	13430481.10	B12b-SE-16573	11/7/2012	12:40	4.8	2.0	0.198	62.6		0.642	55.6		2.09	H
SMP0028	2744523.01	13430481.10	B12b-SE-16574	11/7/2012	12:40	4.8	5.0	0.173	61.2		NA	NA		NA	
STO0162	2745311.21	13430538.38	B12b-SE-16575	11/7/2012	12:50	4.5	2.0	0.423	53.5		0.553	48.7		1.5	
STO0162	2745311.21	13430538.38	B12b-SE-16576	11/7/2012	12:50	4.5	5.0	0.342	53.8		NA	NA		NA	
LVB0909	2746309.40	13430370.27	B12b-SE-16577	11/7/2012	13:00	2.0	2.0	0.124	28.0		0.147	24.2		0.41	
LVB0909	2746309.40	13430370.27	B12b-SE-16578	11/7/2012	13:00	2.0	5.0	0.154	25.5		NA	NA		NA	
SUP0107	2746508.33	13430920.95	B12b-SE-16579	11/7/2012	13:15	1.9	2.0	0.219	37.0		0.331	40.2		1.4	
SUP0107	2746508.33	13430920.95	B12b-SE-16580	11/7/2012	13:15	1.9	5.0	0.293	49.4		NA	NA		NA	
SMP0031	2746761.71	13430793.81	B12b-SE-16581	11/7/2012	13:20	1.0	2.0	0.371	52.3		0.442	50.1		1.8	
SMP0031	2746761.71	13430793.81	B12b-SE-16582	11/7/2012	13:20	1.0	5.0	0.425	50.0		NA	NA		NA	
SUP0106	2746515.10	13431124.66	B12b-SE-16583	11/7/2012	13:30	2.2	2.0	0.238	34.3		0.551	35.8		3.7	
SUP0106	2746515.10	13431124.66	B12b-SE-16584	11/7/2012	13:30	2.2	5.0	0.341	32.3		NA	NA		NA	
STO0191	2746119.22	13431352.09	B12b-SE-16586	11/7/2012	13:45	4.7	2.0	0.211	49.7		0.379	45.0		2.6	

Table 1 - 2012 Open Water Sediment Stations, Sample IDs, Field Data, and Results

Station ID	Easting[1]	Northing[1]	Sample ID	Date	Time	Water Depth[2] (ft)	Sample Depth (cm)	Total Hg			Methyl Hg			TOC	
								mg/kg dry wt	% M	Flags	ng/g dry wt	% M	Flags	Percent wt[3]	Flags
STO0191	2746119.22	13431352.09	B12b-SE-16587	11/7/2012	13:45	4.7	5.0	0.182	48.1		NA	NA		NA	
SUP0110	2747147.95	13431366.63	B12b-SE-16588	11/7/2012	14:00	2.8	2.0	0.342	46.6		0.702	46.8		1.3	
SUP0110	2747147.95	13431366.63	B12b-SE-16589	11/7/2012	14:00	2.8	5.0	0.398	59.6		NA	NA		NA	

[1]Coordinates reported in NAD 1983 State Plane, Texas South Central, Feet
[2]Water Depths are not calibrated to tidal level
[3]Results reported as dry weight
M - Moisture
NA - Not Analyzed
H - Analyzed out of hold time

Table 2 - 2012 Marsh Sediment Stations, Sample IDs, and Results

Habitat	Station ID	Sample ID	Date	Total Hg				Methyl Hg			TOC		
				% M	(mg/kg) dry wt	SQL (mg/kg)	Total Hg Flags	% M	(ng/g) dry wt	MeHg Flags	% M	TOC (wt%)[1]	TOC Flags
Marsh 1	Marsh-1-1R	B12b-SE-16480	10/23/2012	27.70	0.129	0.00486		27.0	0.767		27.7	0.219	
	Marsh-1-2R	B12b-SE-16481	10/23/2012	27.20	0.0861	0.00463		28.2	0.519		27.2	0.183	
	Marsh-1-3R	B12b-SE-16482	10/23/2012	29.00	0.105	0.00493		27.2	0.687		29.0	0.220	
	Marsh-1-4R	B12b-SE-16483	10/23/2012	26.80	0.0938	0.00463		26.6	0.514		26.8	0.221	
	Marsh-1-5R	B12b-SE-16484	10/23/2012	28.50	0.0907	0.00469		27.7	0.490		28.5	0.186	
	Marsh-1-6R	B12b-SE-16486	10/23/2012	28.40	0.0762	0.00470		29.5	0.433		28.4	0.235	
	Marsh-1-7R	B12b-SE-16487	10/23/2012	29.70	0.0774	0.00498		28.3	0.528		29.7	0.274	
	Marsh-1-8R	B12b-SE-16488	10/23/2012	29.10	0.0786	0.00499		28.5	0.506		29.1	0.224	
	Marsh-1-9R	B12b-SE-16489	10/23/2012	29.60	0.0889	0.00489		30.0	0.488		29.6	0.375	
	Marsh-1-10R	B12b-SE-16490	10/23/2012	28.40	0.0969	0.00494		27.3	0.454		28.4	0.300	
	Marsh-1-11R	B12b-SE-16491	10/23/2012	26.30	0.0614	0.00469		28.7	0.510		26.3	0.224	
	Marsh-1-12R	B12b-SE-16492	10/23/2012	22.50	0.140	0.00463		27.2	0.791		22.5	0.352	
					0.0937				**0.557**			**0.251**	
Marsh 2	Marsh-2-1R	B12b-SE-16493	10/23/2012	30.30	0.0422	0.00485		32.7	0.428		30.3	0.600	
	Marsh-2-2R	B12b-SE-16494	10/23/2012	32.70	0.0688	0.00501		33.4	0.988		32.7	0.844	
	Marsh-2-3R	B12b-SE-16495	10/23/2012	28.90	0.0707	0.00475		28.3	0.436		28.9	0.328	
	Marsh-2-4R	B12b-SE-16496	10/23/2012	31.50	0.0705	0.00511		32.1	0.784		31.5	0.630	
	Marsh-2-5R	B12b-SE-16497	10/23/2012	30.80	0.0732	0.00522		32.5	0.538		30.8	0.376	
	Marsh-2-6R	B12b-SE-16498	10/23/2012	28.60	0.0476	0.00470		29.5	0.351		28.6	1.38	
					0.0622				**0.588**			**0.693**	
Marsh 3	Marsh-3-1R	B12b-SE-16499	10/23/2012	21.60	0.0472	0.00451		22.9	0.325		21.6	1.68	
	Marsh-3-2R	B12b-SE-16500	10/23/2012	31.70	0.150	0.00500		36.5	0.760		31.7	0.882	
	Marsh-3-3R	B12b-SE-16501	10/23/2012	35.30	0.102	0.00517		34.8	0.518		35.3	1.04	
	Marsh-3-4R	B12b-SE-16502	10/23/2012	29.80	0.0606	0.00510		33.9	0.353		29.8	0.848	
	Marsh-3-5R	B12b-SE-16545	10/23/2012	35.60	0.262	0.00517		35.1	0.656		35.6	1.50	
	Marsh-3-6R	B12b-SE-16546	10/23/2012	22.60	0.172	0.00459		25.4	0.321		22.6	3.56	
					0.1323				**0.489**			**1.585**	

Table 2 - 2012 Marsh Sediment Stations, Sample IDs, and Results

Habitat	Station ID	Sample ID	Date	Total Hg				Methyl Hg			TOC		
				% M	(mg/kg) dry wt	SQL (mg/kg)	Total Hg Flags	% M	(ng/g) dry wt	MeHg Flags	% M	TOC (wt%)[1]	TOC Flags
Marsh 5	Marsh-5-1R	B12b-SE-16412	9/27/2012	31.30	0.267	0.00525		30.3	0.757		31.3	4.32	
	Marsh-5-2R	B12b-SE-16413	9/27/2012	33.30	0.258	0.00537		30.1	0.865		33.3	0.765	
	Marsh-5-3R	B12b-SE-16414	9/27/2012	31.30	0.255	0.00522		32.7	0.953		31.3	U	
	Marsh-5-4R	B12b-SE-16415	9/27/2012	32.80	0.154	0.00522		31.7	0.511		32.8	0.382	
	Marsh-5-5R	B12b-SE-16416	9/27/2012	33.70	0.195	0.00538		32.8	0.212		33.7	1.16	
	Marsh-5-6R	B12b-SE-16417	9/27/2012	26.40	0.0724	0.00481		27.5	0.545		26.4	U	
					0.2002				**0.641**			**1.657**	
Marsh 6	Marsh-6-1R	B12b-SE-16418	9/27/2012	30.10	0.0531	0.00517		31.2	0.498		30.1	U	
	Marsh-6-2R	B12b-SE-16419	9/27/2012	36.30	0.360	0.00545		37.0	1.38		36.3	2.08	
	Marsh-6-3R	B12b-SE-16420	9/27/2012	54.20	0.346	0.00764		52.8	1.07		54.2	1.69	
	Marsh-6-4R	B12b-SE-16421	9/27/2012	49.70	0.149	0.00676		44.8	1.25		49.7	1.47	
	Marsh-6-5R	B12b-SE-16422	9/27/2012	45.90	0.406	0.00665		46.0	0.967		45.9	1.73	
	Marsh-6-6R	B12b-SE-16423	9/27/2012	37.00	0.177	0.00553		37.7	0.667		37.0	0.585	
	Marsh-6-7R	B12b-SE-16424	9/27/2012	50.60	0.263	0.00714		46.9	1.38		50.6	1.34	
	Marsh-6-8R	B12b-SE-16425	9/27/2012	26.90	0.153	0.00469		25.5	0.520		26.9	3.82	
	Marsh-6-9R	B12b-SE-16426	9/27/2012	37.20	2.01	0.0275		35.8	2.07		37.2	2.28	
	Marsh-6-10R	B12b-SE-16427	9/27/2012	32.60	0.0624	0.00531		31.3	0.253		32.6	1.45	
					0.3980				**1.006**			**1.827**	
Marsh 7	Marsh-7-1R	B12b-SE-16428	9/27/2012	32.30	0.0541	0.00533		32.1	0.272		32.3	1.37	
	Marsh-7-2R	B12b-SE-16429	9/27/2012	33.50	0.338	0.00508		31.3	0.627		33.5	3.91	
	Marsh-7-3R	B12b-SE-16430	9/27/2012	22.80	0.151	0.00457		20.2	0.193		22.8	6.43	
	Marsh-7-4R	B12b-SE-16431	9/27/2012	31.10	0.178	0.00523		34.8	0.449		31.1	4.81	
	Marsh-7-5R	B12b-SE-16432	9/27/2012	32.20	0.472	0.00503		28.5	0.565		32.2	7.25	
	Marsh-7-6R	B12b-SE-16433	9/27/2012	22.00	0.652	0.00455		20.5	0.107		22.0	3.42	
					0.3075				**0.369**			**4.532**	

Table 2 - 2012 Marsh Sediment Stations, Sample IDs, and Results

Habitat	Station ID	Sample ID	Date	Total Hg				Methyl Hg			TOC		
				% M	(mg/kg) dry wt	SQL (mg/kg)	Total Hg Flags	% M	(ng/g) dry wt	MeHg Flags	% M	TOC (wt%)[1]	TOC Flags
Marsh 15	Marsh-15-1R	B12b-SE-16401	9/27/2012	34.40	1.45	0.0267		34.7	0.907		34.4	0.976	
	Marsh-15-2R	B12b-SE-16402	9/27/2012	44.90	0.542	0.00627		45.9	0.701		44.9	0.924	
	Marsh-15-3R	B12b-SE-16403	9/27/2012	39.10	0.247	0.00557		38.9	0.740		39.1	2.84	
	Marsh-15-4R	B12b-SE-16404	9/27/2012	35.20	0.263	0.00534		34.5	0.610		35.2	4.51	
	Marsh-15-5R	B12b-SE-16406	9/27/2012	49.80	0.209	0.00700		49.6	0.723		49.8	1.58	
	Marsh-15-6R	B12b-SE-16407	9/27/2012	53.60	0.293	0.00769		50.2	1.21		53.6	0.786	
	Marsh-15-7R	B12b-SE-16408	9/27/2012	32.90	0.429	0.00513		33.2	0.382		32.9	1.08	
	Marsh-15-8R	B12b-SE-16409	9/27/2012	26.60	0.415	0.00468		27.5	0.616		26.6	0.427	
	Marsh-15-9R	B12b-SE-16410	9/27/2012	28.80	0.0553	0.00484		26.7	0.294		28.8	1.06	
	Marsh-15-10R	B12b-SE-16411	9/27/2012	34.90	0.130	0.00535		33.8	0.413		34.9	3.81	
					0.4033				**0.660**			**1.799**	
Marsh 19	Marsh-19-1R	B12b-SE-16503	10/23/2012	27.50	0.103	0.00475		26.0	0.162		27.5	1.52	
	Marsh-19-2R	B12b-SE-16504	10/23/2012	28.10	0.00187	0.00491	J	24.5	0.0297	J	28.1	0.0795	
	Marsh-19-3R	B12b-SE-16505	10/23/2012	39.70	9.34	0.0580		38.9	1.18		39.7	0.629	
	Marsh-19-4R	B12b-SE-16506	10/23/2012	23.90	0.124	0.00443		24.8	0.203		23.9	0.912	
	Marsh-19-5R	B12b-SE-16507	10/23/2012	25.70	0.159	0.00458		26.6	0.265		25.7	1.02	
	Marsh-19-6R	B12b-SE-16508	10/23/2012	27.60	0.171	0.00500		30.1	0.261		27.6	0.568	
	Marsh-19-7R	B12b-SE-16510	10/23/2012	31.30	1.50	0.0102		30.7	0.539		31.3	0.251	
	Marsh-19-8R	B12b-SE-16511	10/23/2012	40.00	5.04	0.0297		53.1	0.996		40.0	3.11	
					2.0549				**0.454**			**1.011**	

[1] Analytical results presented in dry weight

M - Moisture

U - TOC was not detected in this sample, the result is shown as ½ the report limit and used to calculate the average TOC

J - Sample concentration was <5 times the method blank concentration

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)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

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

Alcoa Point Comfort Operations

Project: 98003-068

Date: 11/12/2012

Figure 2a

M:\98003\068\arc\Hg\marsh_12_stations123_Hg.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)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

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

Alcoa Point Comfort Operations

Project: 98003-068

Date: 11/12/2012

Figure 2b

M:\98003\068\arc\Hg\marsh_12_stations567_Hg.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)

Notes

2009 DOQQ

Lavaca Bay Annual
Sediment Monitoring Study
Fall 2012

Marsh Sample Stations 15 and 19
and Total Hg Results

Alcoa Point
Comfort Operations

Project: 98003-068
Date: 11/12/2012

Figure 2c

M:\98003\068\arc\Hg\marsh_12_stations1519_Hg.mxd

3.0 ANALYTICAL RESULTS

Marsh and open water top 2 cm and top 5 cm sediment samples were analyzed for Total Hg (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. The top two centimeters of open water sediment and marsh sediment samples were also analyzed for TOC (SW 9060) by ALS in Houston, Texas, and MeHg (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 28 November 2012. Data validation and evaluation was completed by Environmental Chemistry Services on 19 December 2012. Methyl mercury results were reported in ng/g as dry weight. Benchmark received the final data packet from Battelle Marine Sciences Laboratory on 30 November 2012. Data validation and evaluation was completed by Environmental Chemistry Services on 19 December 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. Open water and marsh sediment analytical results are shown in the Figures as listed in Table 3.

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 Open Water and Marsh Sediment Results

Study Area	Analyte	Figure ID
Open Water Stations	Total Hg	Figure 1a
Open Water Stations	Methyl Hg	Figure 1b
Open Water Stations	TOC	Figure 1c
Marshes 1, 2, and 3	Total Hg	Figure 2a
Marshes 5, 6, and 7	Total Hg	Figure 2b
Marshes15 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 15 and 19	Methyl Hg	Figure 3c
Marshes 1, 2, and 3	TOC	Figure 4a
Marshes 5, 6, and 7	TOC	Figure 4b
Marshes 15 and 19	TOC	Figure 4c

Legend

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

(0-2 cm Depth Interval)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

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

Alcoa Point Comfort Operations

Project: 98003-068

Date: 12/05/2012

Figure 3a

M:\98003\068\arc\MeHg\marsh_12_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)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

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

Alcoa Point Comfort Operations

Project: 98003-068

Date: 12/05/2012

Figure 3b

M:\98003\068\arc\MeHg\marsh_12_stations567_MeHg.mxd

Legend

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

(0-2 cm Depth Interval)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

Marsh Sample Stations 15 and 19 and Methyl Hg Results

Alcoa Point Comfort Operations

Project: 98003-068

Date: 11/12/2012

Figure 3c

M:\98003\068\arc\MeHg\marsh_12_stations1519_MeHg.mxd

N

0 100 200 400 Feet

Legend

Marsh Sample Station

Marsh Sample Station ID

Marsh TOC Result (wt%)

(0-2 cm Depth Interval)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

Marsh Sample Stations 1, 2 and 3 and TOC Results

Alcoa Point Comfort Operations

Project: 98003-068

Date: 11/12/2012

Figure 4a

M:\98003\068\arc\TOC\marsh_12_stations123_TOC.mxd

Legend

- Marsh Sample Station
- ## Marsh Sample Station ID
- ## Marsh TOC Result (wt%)

(0-2 cm Depth Interval)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

Marsh Sample Stations 5, 6 and 7 and TOC Results

Alcoa Point Comfort Operations

Project: 98003-068
Date: 11/12/2012

Figure 4b

M:\98003\068\arc\TOC\marsh_12_stations567_TOC.mxd

N

0 100 200 400 Feet

Legend

Marsh Sample Station

Marsh Sample Station ID

Marsh TOC Result (wt%)

(0-2 cm Depth Interval)

Notes

2009 DOQQ

Lavaca Bay Annual Sediment Monitoring Study Fall 2012

Marsh Sample Stations 15 and 19 and TOC Results

Alcoa Point Comfort Operations

Project: 98003-068

Date: 11/12/2012

Figure 4c

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APPENDIX B

LAVACA BAY FINFISH AND SHELLFISH MONITORING REPORT 2012

LAVACA BAY FINFISH AND SHELLFISH MONITORING REPORT 2012

Alcoa Point Comfort Operations
Lavaca Bay Superfund Site

February 2013

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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 2012 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 2012 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 19 September 2012 and 2 November 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 12 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 30 juvenile blue crab composite samples were collected from 10 stations inside the Closed Area (Figure 3). Thirty composite samples were collected from 10 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 2012 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.

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

Zone	Red Drum Samples	Juvenile Blue Crab Samples
Zone 1	6	3
Zone 2	15	15
Zone 3	1	3
Zone 4	8	9

The distribution of red drum samples ranged from 1 sample in Zone 3 to 15 samples in Zone 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.

N

0 1,500 3,000 Feet

Legend

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

Notes

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

Lavaca Bay Finfish and Shellfish Monitoring Report 2012

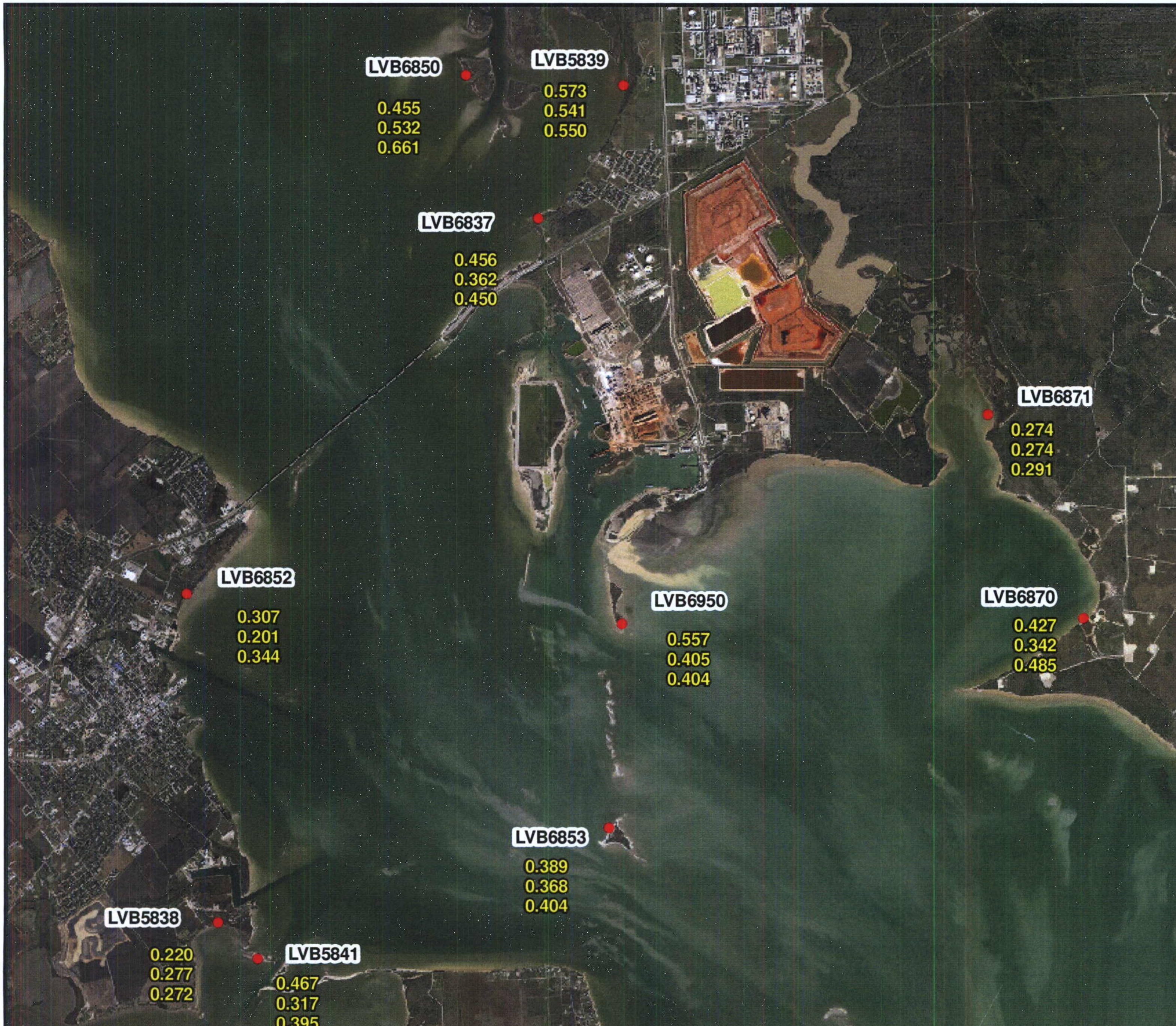
Closed Area Red Drum Sample Stations and Analytical Results

ALCOA PCO

Project: 98003-067
Date: 11/7/12

Figure 1

M:\\98003\067\arc\12_RedDrum\results\cls_rd_12.mxd



N

0 0.75 1.5 Miles

Legend

Red Drum Stations

Total Hg (ug/g)

Notes

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

Lavaca Bay Finfish and Shellfish Monitoring Report 2012

Adjacent Area Red Drum Sample Stations and Analytical Results

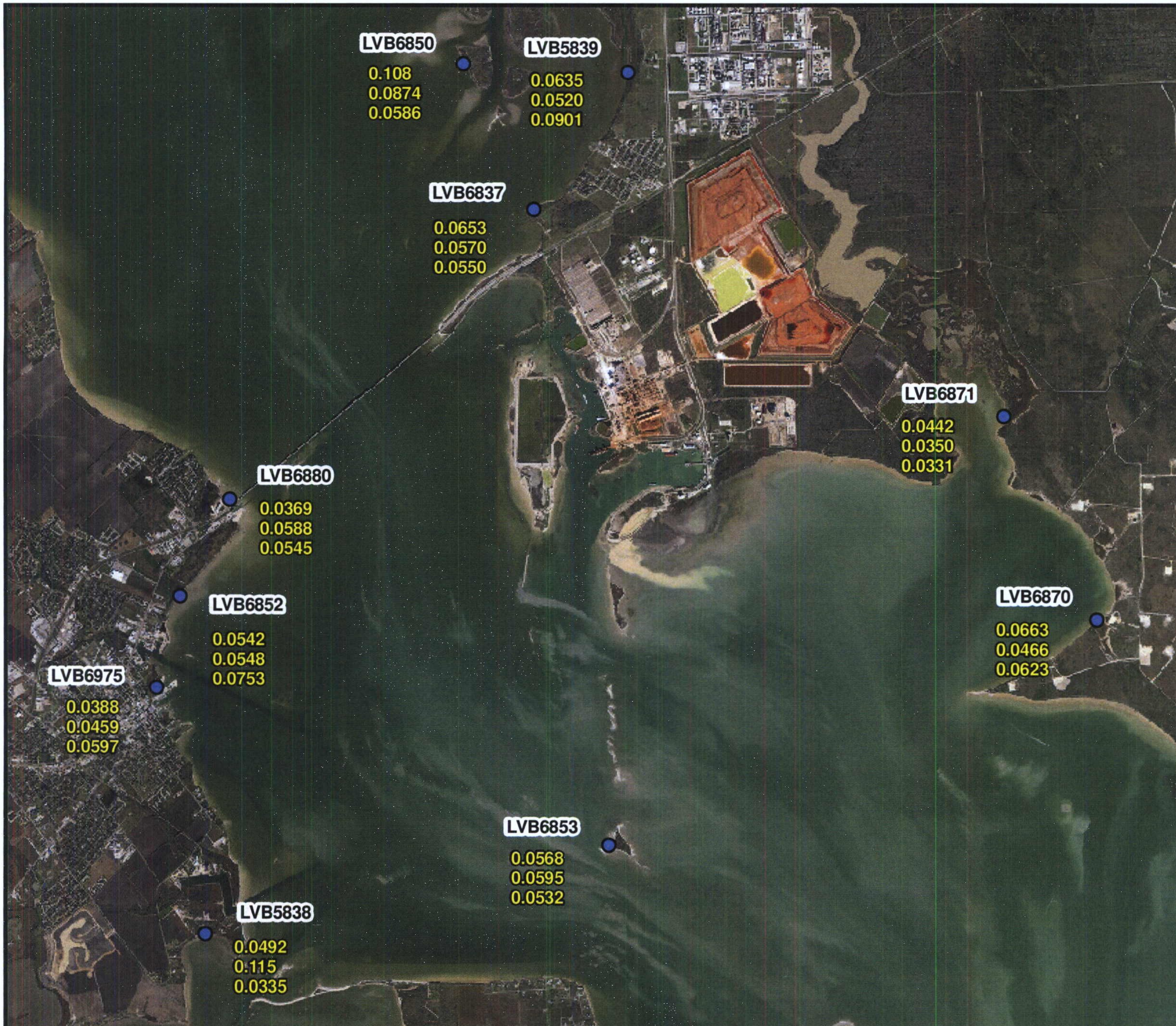
ALCOA PCO

Project: 98003-067
Date: 12/19/12

Figure 2

M:\\98003\067\arc\12_RedDrum\results\adj_rd_12.mxd

M:\\98003\067\arc\12_crab\results\cls_blcrab_12.mxd



N

0 0.5 1 Miles

Legend

Juvenile Blue Crab Stations

Total Hg (ug/g)

Notes

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

Lavaca Bay Finfish and Shellfish Monitoring Report 2012

Adjacent Area Juvenile Blue Crab Sample Stations and Analytical Results

ALCOA PCO

Project: 98003-067

Date: 11/7/12

Figure 4

M:\\98003\067\arc\12_crab\results\adj_blcrab_12.mxd

2.2 SAMPLE COLLECTION

2.2.1 Red Drum

Red drum were collected from the Closed Area and Adjacent Areas between 19 September 2012 and 2 November 2012. In the Closed Area, 30 red drum tissue samples were collected from the 12 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 two additional stations (LVB5508 and LVB5518), 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 19 September 2012 and 29 October 2012. In the Closed Area, 30 blue crab tissue samples were collected from 10 historical monitoring stations (Figure 3). In the Adjacent Area, 30 blue crab tissue samples were collected from 10 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 resealable 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 resealable 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 all 60 Red Drum samples collected. 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. Sample containers were labeled with the station ID, sample ID, collection date, and time and were placed in two resealable plastic bags 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 30 November 2012, and Analytical QA/QC was completed by Environmental Chemistry Services on 29 January 2013. 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, and results for juvenile blue crabs from the Adjacent Areas are presented in Table 5.

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	Flag	Total Length (mm)	Standard Length (mm)	Total Weight (g)	Tissue Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (μg/g)
LVB5513	B12b-TF-15180	9/19/2012	10:25		540	435	1510	174.3	87.1	78.6%	1.14
CLO5900	B12b-TF-15181	9/19/2012	10:50		607	496	2140	217.9	76.0	78.9%	1.41
CLO5900	B12b-TF-15182	9/19/2012	10:50		639	535	2280	243.2	88.3	79.4%	1.80
CLO5900	B12b-TF-15183	9/19/2012	10:50		615	520	2320	250.2	92.2	79.1%	1.80
CLO5818	B12b-TF-15184	9/20/2012	10:47		655	556	2850	312.2	87.5	78.9%	0.743
CLO5817	B12b-TF-15185	9/20/2012	17:15		577	504	1970	209.9	87.5	79.0%	1.22
LVB5513	B12b-TF-15186	9/24/2012	13:01		551	460	1430	187.0	86.5	79.0%	1.11
CLO5803	B12b-TF-15187	9/26/2012	8:32		554	467	1580	188.7	83.3	78.7%	0.809
CLO5803	B12b-TF-15188	9/26/2012	8:32		671	570	2860	342.6	93.6	80.0%	0.635
CLO5802	B12b-TF-15189	9/26/2012	8:46		510	438	1120	132.6	77.3	79.5%	0.801
LVB5513	B12b-TF-15190	9/26/2012	9:45		662	575	2620	250.1	85.3	79.4%	0.998
LVB5504	B12b-TF-15191	9/26/2012	9:30		592	506	1960	201.2	82.7	77.8%	1.59
CLO5806	B12b-TF-15192	9/26/2012	9:11		627	545	2250	241.5	88.2	79.5%	1.25
CLO5802	B12b-TF-15193	9/27/2012	8:10		545	465	1570	157.7	80.2	79.2%	1.70
CLO5803	B12b-TF-15194	9/27/2012	8:27		624	535	2330	288.1	86.2	75.5%	0.337
CLO5806	B12b-TF-15195	9/27/2012	8:43		547	460	1350	138.8	82.8	81.0%	1.51
LVB5504	B12b-TF-15196	9/27/2012	9:05		584	490	2030	204.2	87.4	79.9%	1.90
CLO5814	B12b-TF-15197	10/3/2012	10:07		598	505	1890	205.1	83.2	78.3%	0.769
CLO5815	B12b-TF-15201	10/10/2012	9:17		664	560	3120	385.6	92.0	77.1%	0.378
CLO1414	B12b-TF-15202	10/9/2012	15:47		648	545	2430	309.4	96.7	79.0%	0.734
CLO1414	B12b-TF-15203	10/9/2012	15:47		510	415	1270	155.4	81.4	79.3%	1.04
CLO1414	B12b-TF-15204	10/10/2012	9:36		528	435	1330	164.6	83.5	81.3%	1.03
CLO5818	B12b-TF-15211	10/15/2012	16:45		655	560	2740	267.1	81.1	78.7%	0.423
CLO5814	B12b-TF-15219	10/19/2012	9:53		570	485	1700	164.5	85.1	79.9%	0.682
CLO5806	B12b-TF-15220	10/23/2012	9:48		533	450	1320	135.6	84.7	80.9%	1.77
CLO5802	B12b-TF-15221	10/23/2012	10:00		523	445	1360	182.1	87.6	79.0%	1.08
LVB5504	B12b-TF-15225	10/30/2012	8:51	J	520	426	1340	176.5	79.5	79.7%	1.25
CLO5814	B12b-TF-15226	10/30/2012	9:20	J	610	508	2020	230.9	89.0	79.0%	0.856
CLO6802	B12b-TF-15227	10/30/2012	9:38	J	686	573	3280	397.3	86.8	79.5%	0.520
CLO6802	B12b-TF-15228	10/30/2012	9:38	J	709	595	3730	422.7	91.4	78.0%	0.434
Average Values					**595**	**502**	**2057**	**231.2**	**85.8**	**79.1%**	**1.057**

J - LCS Recovery Below Lower Control Limit

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

Station ID	Sample ID	Date	Time	Flag	Total Length (mm)	Standard Length (mm)	Total Weight (g)	Tissue Weight (g)	Sample Weight (g)	Percent Moisture	Total Hg wet weight (µg/g)
LVB6871	B12b-TF-15198	10/4/2012	9:23		679	600	3360	376.8	87.9	79.2%	0.274
LVB6871	B12b-TF-15199	10/4/2012	9:23		675	555	2650	284.1	84.1	79.3%	0.274
LVB6871	B12b-TF-15200	10/4/2012	9:23		546	465	1820	213.8	78.0	78.6%	0.291
LVB6837	B12b-TF-15205	10/10/2012	10:17		626	530	2160	264.2	85.4	79.2%	0.456
LVB6837	B12b-TF-15206	10/10/2012	10:17		705	590	3350	350.3	94.0	76.7%	0.362
LVB5839	B12b-TF-15207	10/11/2012	9:25		709	600	3600	414.4	89.6	79.1%	0.573
LVB5839	B12b-TF-15208	10/11/2012	9:25		658	555	2730	331.8	93.0	79.7%	0.541
LVB5839	B12b-TF-15209	10/11/2012	9:25		570	475	1610	204.6	91.9	79.0%	0.550
LVB6837	B12b-TF-15210	10/11/2012	9:02		670	565	2950	343.1	93.2	79.6%	0.450
LVB6853	B12b-TF-15212	10/16/2012	10:32		510	420	1050	123.3	72.2	80.1%	0.389
LVB5838	B12b-TF-15213	10/18/2012	8:50		525	450	1390	170.0	83.1	80.3%	0.220
LVB6852	B12b-TF-15214	10/18/2012	8:30		564	480	1670	155.7	89.1	78.7%	0.307
LVB6852	B12b-TF-15215	10/19/2012	8:28		552	465	1640	186.5	86.0	78.9%	0.201
LVB6852	B12b-TF-15216	10/19/2012	8:28		568	480	1800	219.6	85.3	78.1%	0.344
LVB5838	B12b-TF-15217	10/19/2012	9:00		545	470	1470	160.1	85.3	79.0%	0.277
LVB6950	B12b-TF-15218	10/19/2012	9:34		520	445	1360	166.2	82.8	78.7%	0.557
LVB6870	B12b-TF-15222	10/23/2012	15:50		512	430	1200	152.7	88.8	79.5%	0.427
LVB6870	B12b-TF-15223	10/24/2012	9:54	J	515	435	1300	130.5	78.5	77.7%	0.342
LVB6870	B12b-TF-15224	10/24/2012	9:54	J	709	615	3260	341.1	91.3	79.2%	0.485
LVB6950	B12b-TF-15229	10/30/2012	10:05	J	606	496	2540	335.7	85.4	77.8%	0.405
LVB6950	B12b-TF-15230	10/30/2012	10:05	J	665	558	2740	308.9	85.1	78.9%	0.404
LVB6853	B12b-TF-15231	10/30/2012	10:34	J	542	444	1500	166.4	82.2	79.8%	0.368
LVB6853	B12b-TF-15232	10/30/2012	10:34	J	554	453	1570	153.8	83.2	80.1%	0.404
LVB5838	B12b-TF-15233	10/31/2012	11:30	J	509	415	1200	148.6	78.1	80.3%	0.272
LVB5841	B12b-TF-15234	10/30/2012	18:00	J	550	455	1780	224.6	86.2	79.7%	0.467
LVB5841	B12b-TF-15235	10/30/2012	18:00	J	510	409	1370	168.1	69.5	79.5%	0.317
LVB5841	B12b-TF-15236	10/31/2012	18:00	J	515	426	1370	182.6	83.8	79.0%	0.395
LVB6850	B12b-TF-15237	11/2/2012	9:40		540	438	1530	162.6	82.2	79.8%	0.455
LVB6850	B12b-TF-15238	11/2/2012	9:40		544	445	1560	178.8	80.9	79.0%	0.532
LVB6850	B12b-TF-15239	11/2/2012	9:40		520	421	1300	169.7	87.0	80.1%	0.661
Average Values					**580**	**486**	**1961**	**226.3**	**84.8**	**79.2%**	**0.400**

J - LCS Recovery Below Lower Control Limit

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)
CLO5803	B12b-TS-15703	9/19/2012	10:49		36.0	2.8	24.1	70.9%	0.0830
					64.4	12.9			
					44.0	4.7			
					28.0	1.6			
					32.0	2.1			
CLO5802	B12b-TS-15704	9/19/2012	11:03		51.3	9.3	19.0	67.7%	0.218
					34.2	3.2			
					26.1	1.6			
					34.0	3.2			
					25.9	1.7			
CLO5802	B12b-TS-15705	9/19/2012	11:03		25.0	1.3	8.7	64.5%	0.188
					33.1	3.1			
					26.9	1.4			
					25.8	1.5			
					25.4	1.4			
CLO5900	B12b-TS-15706	9/19/2012	9:58		63.8	19.8	28.5	66.3%	0.156
					29.8	2.5			
					36.4	3.6			
					26.3	1.1			
					25.4	1.5			
LVB5504	B12b-TS-15707	9/19/2012	9:35		51.7	7.9	34.6	66.0%	0.264
					33.3	2.7			
					63.8	20.2			
					29.0	2.2			
					27.4	1.6			
LVB5504	B12b-TS-15708	9/19/2012	9:35		68.9	27.0	41.8	66.8%	0.283
					45.0	7.2			
					26.7	2.2			
					37.2	4.4			
					25.2	1.0			
LVB5504	B12b-TS-15709	9/19/2012	9:35		57.2	12.2	24.7	66.8%	0.183
					40.4	4.8			
					33.3	3.4			
					30.6	2.7			
					27.4	1.6			
LVB5508	B12b-TS-15710	9/19/2012	9:05		25.2	1.5	9.8	67.0%	0.195
					27.5	1.4			
					28.9	2.4			
					28.2	2.2			
					27.7	2.3			
CLO5900	B12b-TS-15711	9/19/2012	9:58		65.6	19.5	28.6	74.5%	0.0804
					32.3	2.8			
					25.6	1.1			
					25.5	0.9			
					39.2	4.3			

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)
CLO5803	B12b-TS-15712	9/21/2012	8:20		68.4	23.1	54.1	65.7%	0.166
					54.7	9.6			
					60.9	12.5			
					47.9	7.1			
					31.0	1.8			
CLO5802	B12b-TS-15713	9/21/2012	8:08		73.6	32.3	47.2	64.1%	0.337
					37.6	4.6			
					39.2	5.5			
					31.0	3.1			
					25.7	1.7			
LVB5508	B12b-TS-15714	9/20/2012	9:36		26.6	1.8	9.8	68.2%	0.149
					31.2	2.7			
					32.8	2.4			
					25.4	1.6			
					26.4	1.3			
LVB5513	B12b-TS-15715	9/21/2012	9:28		54.4	11.6	45.5	66.7%	0.133
					36.4	3.8			
					68.8	21.4			
					35.8	3.7			
					38.0	5.0			
LVB5513	B12b-TS-15716	9/21/2012	9:28		71.0	23.9	54.7	67.2%	0.0992
					59.3	15.9			
					45.0	6.7			
					40.5	4.3			
					38.8	3.9			
CLO5803	B12b-TS-15717	9/24/2012	12:00		70.3	19.5	28.4	64.8%	0.105
					33.4	3.3			
					29.8	2.3			
					30.6	1.9			
					27.9	1.4			
CLO5900	B12b-TS-15718	9/24/2012	12:30		71.5	23.9	50.5	67.8%	0.109
					63.0	16.5			
					41.4	5.2			
					32.2	3.0			
					29.4	1.9			
LVB5513	B12b-TS-15719	9/24/2012	13:07		70.0	23.0	55.5	65.6%	0.140
					57.9	17.8			
					43.7	6.8			
					36.9	4.3			
					34.7	3.6			
CLO5814	B12b-TS-15720	9/24/2012	13:22		61.9	23.5	42.3	64.2%	0.101
					55.2	14.5			
					31.5	2.9			
					25.0	1.3			
					31.2	2.1			

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)
LVB5517	B12b-TS-15721	9/24/2012	13:45		60.6	11.4	90.5	67.2%	0.142
					68.5	20.6			
					31.6	2.5			
					72.7	26.1			
					75.0	29.9			
CLO6802	B12b-TS-15722	9/24/2012	13:35		73.5	19.3	42.9	66.7%	0.0668
					60.5	14.0			
					33.9	2.7			
					41.0	5.6			
					27.2	1.3			
CLO6802	B12b-TS-15723	9/24/2012	13:35		63.0	14.7	27.4	65.5%	0.0847
					35.7	4.1			
					34.4	3.6			
					30.1	2.4			
					28.4	2.6			
LVB5508	B12b-TS-15724	9/24/2012	12:13		29.7	2.7	14.6	65.4%	0.192
					30.6	2.9			
					34.6	4.2			
					27.5	2.3			
					28.4	2.5			
CLO6802	B12b-TS-15725	9/26/2012	10:05		64.7	17.0	36.6	71.2%	0.0549
					57.2	9.4			
					39.3	5.8			
					33.8	2.6			
					27.5	1.8			
CLO5814	B12b-TS-15726	9/24/2012	13:22		66.5	27.3	60.1	67.9%	0.117
					33.3	3.3			
					28.6	2.2			
					68.8	21.2			
					44.0	6.1			
CLO5815	B12b-TS-15727	9/24/2012	13:55		34.3	3.0	9.7	61.9%	0.0817
					25.1	1.2			
					33.2	2.4			
					27.4	1.1			
					30.3	2.0			
CLO5814	B12b-TS-15728	9/26/2012	9:52		74.9	28.3	56.7	65.5%	0.0835
					58.0	14.2			
					39.5	5.5			
					26.8	1.6			
					43.9	7.1			
LVB5517	B12b-TS-15729	9/26/2012	10:16		72.5	25.8	55.0	65.1%	0.0633
					60.3	14.4			
					28.3	1.4			
					55.4	11.5			
					27.0	1.9			

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)
LVB5517	B12b-TS-15730	9/27/2012	10:07		75.0	28.9	79.9	66.4%	0.129
					74.9	29.1			
					67.7	19.5			
					27.5	1.5			
					26.2	0.9			
CLO5815	B12b-TS-15745	9/28/2012	9:01		72.8	23.8	64.5	64.4%	0.178
					62.1	16.0			
					28.3	1.7			
					27.3	1.7			
					73.2	21.3			
CLO5815	B12b-TS-15753	10/8/2012	11:43		44.5	4.8	16.1	65.2%	0.0769
					34.9	3.0			
					37.4	3.5			
					33.6	2.4			
					30.7	2.4			
Average Values					**42.0**	**7.8**	**38.7**	**66.6%**	**0.142**

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)
LVB6880	B12b-TS-15731	9/28/2012	7:48		40.4	5.0	19.9	73.2%	0.0369
					38.9	3.9			
					32.0	2.8			
					41.4	4.8			
					37.6	3.4			
LVB6870	B12b-TS-15732	9/28/2012	9:44		34.7	4.9	57.0	68.5%	0.0663
					68.2	18.8			
					67.6	25.3			
					33.6	3.5			
					35.9	4.5			
LVB6871	B12b-TS-15733	9/28/2012	9:29		48.9	7.6	23.7	64.7%	0.0442
					43.3	5.5			
					33.9	4.5			
					29.5	3.0			
					29.9	3.1			
LVB6871	B12b-TS-15734	9/28/2012	9:29		31.0	2.7	10.1	65.9%	0.0350
					29.5	2.3			
					28.8	2.5			
					26.8	1.5			
					25.1	1.1			
LVB6837	B12b-TS-15735	9/28/2012	8:37		63.6	19.0	35.0	64.9%	0.0653
					42.2	7.6			
					30.6	2.7			
					32.6	2.4			
					36.8	3.3			
LVB6837	B12b-TS-15736	9/28/2012	8:37		34.3	4.2	15.3	65.6%	0.0570
					36.1	4.8			
					31.1	2.3			
					30.5	2.4			
					28.5	1.6			
LVB6975	B12b-TS-15737	9/28/2012	10:21		75.0	23.6	42.6	68.9%	0.0388
					42.6	4.6			
					43.9	6.6			
					36.7	4.3			
					34.1	3.5			
LVB6975	B12b-TS-15738	9/28/2012	10:21		69.5	25.5	50.8	67.9%	0.0459
					28.6	1.8			
					50.6	8.8			
					59.2	13.7			
					25.2	1.0			
LVB6853	B12b-TS-15739	10/1/2012	13:16		37.4	5.6	25.7	67.8%	0.0568
					31.6	3.3			
					53.4	13.1			
					34.4	2.3			
					25.1	1.4			

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-15740	10/1/2012	13:16		41.9	7.3	27.4	68.6%	0.0595
					32.1	2.4			
					41.3	5.8			
					48.3	9.4			
					26.2	2.5			
LVB6853	B12b-TS-15741	10/1/2012	13:16		47.3	7.8	29.5	72.1%	0.0532
					40.7	6.1			
					41.9	5.6			
					38.8	5.9			
					35.0	4.1			
LVB6870	B12b-TS-15742	10/1/2012	13:38		28.2	1.9	19.5	70.1%	0.0466
					31.0	3.1			
					28.1	2.7			
					32.5	3.9			
					44.6	7.9			
LVB6837	B12b-TS-15743	9/28/2012	8:37		26.2	1.6	44.8	65.3%	0.0550
					26.3	1.6			
					29.9	2.5			
					57.7	13.4			
					64.7	25.7			
LVB6871	B12b-TS-15744	10/1/2012	13:57		43.4	7.3	20.3	69.5%	0.0331
					32.6	3.5			
					30.9	3.3			
					36.2	3.1			
					29.4	3.1			
LVB5838	B12b-TS-15746	10/1/2012	12:49		74.0	31.8	57.6	70.7%	0.0492
					43.8	7.4			
					34.1	2.8			
					41.6	5.9			
					52.0	9.7			
LVB5838	B12b-TS-15747	10/3/2012	8:23		26.2	1.8	96.6	66.4%	0.115
					28.0	2.6			
					66.2	31.7			
					74.2	27.2			
					67.3	33.3			
LVB6880	B12b-TS-15748	10/3/2012	11:00		62.8	21.3	62.2	72.1%	0.0588
					59.4	19.4			
					65.9	16.9			
					34.4	2.8			
					28.1	1.8			
LVB6975	B12b-TS-15749	10/1/2012	10:24		59.8	17.3	49.7	63.8%	0.0597
					68.7	20.0			
					47.7	8.5			
					29.5	1.5			
					28.7	2.4			
LVB6870	B12b-TS-15750	10/4/2012	8:57		71.5	35.3	45.8	70.5%	0.0623
					30.8	3.0			
					31.7	3.2			
					27.3	1.9			
					27.2	2.4			

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)
LVB6880	B12b-TS-15751	10/5/2012	10:32		39.2	5.8	20.9	69.3%	0.0545
					38.5	4.0			
					53.4	6.7			
					35.5	2.9			
					26.8	1.5			
LVB5839	B12b-TS-15752	10/3/2012	10:26		52.5	15.6	35.4	68.9%	0.0635
					33.7	2.9			
					25.7	1.4			
					34.8	3.0			
					49.7	12.5			
LVB6850	B12b-TS-15754	10/5/2012	10:12		58.6	19.6	54.7	67.8%	0.108
					71.1	27.3			
					32.3	4.0			
					30.7	2.6			
					25.4	1.2			
LVB6850	B12b-TS-15755	10/8/2012	13:04		66.7	20.5	46.5	69.8%	0.0874
					46.2	8.8			
					44.9	7.3			
					39.1	4.2			
					41.0	5.7			
LVB6850	B12b-TS-15756	10/8/2012	13:04		26.3	1.9	26.2	69.1%	0.0586
					28.7	2.2			
					27.3	2.5			
					59.9	18.0			
					25.3	1.6			
LVB5839	B12b-TS-15757	10/15/2012	14:33		60.8	22.5	32.4	67.8%	0.0520
					37.3	5.9			
					25.7	1.3			
					26.9	1.5			
					25.0	1.2			
LVB5838	B12b-TS-15758	10/15/2012	13:22		66.2	18.9	46.1	66.7%	0.0335
					25.3	1.5			
					25.2	1.2			
					72.1	21.4			
					36.9	3.1			
LVB5839	B12b-TS-15759	10/26/2012	8:45	J	64.1	25.6	76.6	66.3%	0.0901
					47.5	9.6			
					43.3	7.4			
					64.9	29.7			
					33.1	4.3			
LVB6852	B12b-TS-15760	10/23/2012	8:18	J	25.1	1.3	47.4	65.9%	0.0542
					27.3	1.6			
					45.4	6.2			
					70.2	22.5			
					52.1	15.8			

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-15761	10/26/2012	9:37	J	26.2	1.5	14.6	64.6%	0.0548
					31.2	1.9			
					28.4	1.5			
					29.3	2.2			
					46.1	7.5			
LVB6852	B12b-TS-15762	10/29/2012	13:59	J	31.8	2.4	11.0	64.8%	0.0753
					30.4	3.0			
					28.1	2.2			
					26.3	1.5			
					27.9	1.9			
Average Values					**40.5**	**7.6**	**38.2**	**67.9%**	**0.0590**

J - LCS Recovery Below Lower Control Limit

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 conducted during the Fall 2012 Red Drum Tissue Monitoring Study, and samples were collected from 19 September 2012 to 2 November 2012. Alcoa conducted the Gut Survey on all 60 Red Drum processed during the study (30 Red Drum from the Closed Area and 30 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 stone crab (38.4 % of gut contents by weight), and the prey item that was most abundant in the guts of the Adjacent Area red drum was Juvenile Blue Crab (42.9% of gut contents by weight). Example gut content photographs are included, and a complete set of photographs are saved on the enclosed CD.

Table 1 - Closed Area Red Drum Gut Contents

Station ID	Sample ID	Gut Content			
		Species	Percent	Gut Content Weight (g)	Total Weight (g)
LVB5513	B12b-TF-15180	No Gut Content	NA[1]	NA	NA
CLO5900	B12b-TF-15181	Stone Crab	100%	30.4	30.4
CLO5900	B12b-TF-15182	No Gut Content	NA	NA	NA
CLO5900	B12b-TF-15183	Stone Crab	69%	27.0	39.3
		Non digestible	31%	12.3	
CLO5818	B12b-TF-15184	No Gut Content	NA	NA	NA
CLO5817	B12b-TF-15185	No Gut Content	NA	NA	NA
LVB5513	B12b-TF-15186	No Gut Content	NA	NA	NA
CLO5803	B12b-TF-15187	Blue Crab	100%	8.2	8.2
CLO5803	B12b-TF-15188	No Gut Content	NA	NA	NA
CLO5802	B12b-TF-15189	No Gut Content	NA	NA	NA
LVB5513	B12b-TF-15190	No Gut Content	NA	NA	NA
LVB5504	B12b-TF-15191	No Gut Content	NA	NA	NA
CLO5806	B12b-TF-15192	No Gut Content	NA	NA	NA
CLO5802	B12b-TF-15193	No Gut Content	NA	NA	NA
CLO5803	B12b-TF-15194	No Gut Content	NA	NA	NA
CLO5806	B12b-TF-15195	No Gut Content	NA	NA	NA
LVB5504	B12b-TF-15196	No Gut Content	NA	NA	NA
CLO5814	B12b-TF-15197	No Gut Content	NA	NA	NA
CLO5815	B12b-TF-15201	No Gut Content	NA	NA	NA
CLO1414	B12b-TF-15202	No Gut Content	NA	NA	NA
CLO1414	B12b-TF-15203	No Gut Content	NA	NA	NA
CLO1414	B12b-TF-15204	Stone Crab	100%	19.8	19.8
CLO5818	B12b-TF-15211	No Gut Content	NA	NA	NA
CLO5814	B12b-TF-15219	No Gut Content	NA	NA	NA
CLO5806	B12b-TF-15220	No Gut Content	NA	NA	NA
CLO5802	B12b-TF-15221	No Gut Content	NA	NA	NA
LVB5504	B12b-TF-15225	Blue Crab	100%	9.2	9.2
CLO5814	B12b-TF-15226	No Gut Content	NA	NA	NA
CLO6802	B12b-TF-15227	Unidentified Digested Fish	100%	16.1	16.1
CLO6802	B12b-TF-15228	Unidentified Digested Fish	100%	13.8	13.8

[1]NA - Gut cavity was empty

Table 2 - Adjacent Area Red Drum Gut Contents

Station ID	Sample ID	Gut Content			
		Species	Percent	Gut Content Weight (g)	Total Weight (g)
LVB6871	B12b-TF-15198	Blue Crab	100%	9.3	9.3
LVB6871	B12b-TF-15199	No Gut Content	NA[1]	NA	NA
LVB6871	B12b-TF-15200	Unidentified Digested Fish	100%	8.9	8.9
LVB6837	B12b-TF-15205	No Gut Content	NA	NA	NA
LVB6837	B12b-TF-15206	No Gut Content	NA	NA	NA
LVB5839	B12b-TF-15207	No Gut Content	NA	NA	NA
LVB5839	B12b-TF-15208	No Gut Content	NA	NA	NA
LVB5839	B12b-TF-15209	No Gut Content	NA	NA	NA
LVB6837	B12b-TF-15210	No Gut Content	NA	NA	NA
LVB6853	B12b-TF-15212	Blue Crab	100%	2.8	2.8
LVB5838	B12b-TF-15213	No Gut Content	NA	NA	NA
LVB6852	B12b-TF-15214	No Gut Content	NA	NA	NA
LVB6852	B12b-TF-15215	No Gut Content	NA	NA	NA
LVB6852	B12b-TF-15216	No Gut Content	NA	NA	NA
LVB5838	B12b-TF-15217	No Gut Content	NA	NA	NA
LVB6950	B12b-TF-15218	Blue Crab	100%	22.7	22.7
LVB6870	B12b-TF-15222	No Gut Content	NA	NA	NA
LVB6870	B12b-TF-15223	No Gut Content	NA	NA	NA
LVB6870	B12b-TF-15224	Blue Crab	100%	30.8	30.8
LVB6950	B12b-TF-15229	Striped Mullet	100%	48.9	48.9
LVB6950	B12b-TF-15230	Non digestible	100%	14.8	14.8
LVB6853	B12b-TF-15231	No Gut Content	NA	NA	NA
LVB6853	B12b-TF-15232	Hermit Crab	34%	3.8	11.0
		Unidentified Digested Fish	66%	7.2	
LVB5838	B12b-TF-15233	White Shrimp	100%	0.1	0.1
LVB5841	B12b-TF-15234	Stone Crab	100%	33.1	33.1
LVB5841	B12b-TF-15235	Stone Crab	100%	18.3	18.3
LVB5841	B12b-TF-15236	Striped Mullet	94.0%	34.5	36.9
		Stone Crab	6.0%	2.4	
LVB6850	B12b-TF-15237	Blue Crab	100%	6.8	6.8
LVB6850	B12b-TF-15238	No Gut Content	NA	NA	NA
LVB6850	B12b-TF-15239	Blue Crab	100%	4.0	4.0

[1]NA - Gut cavity was empty

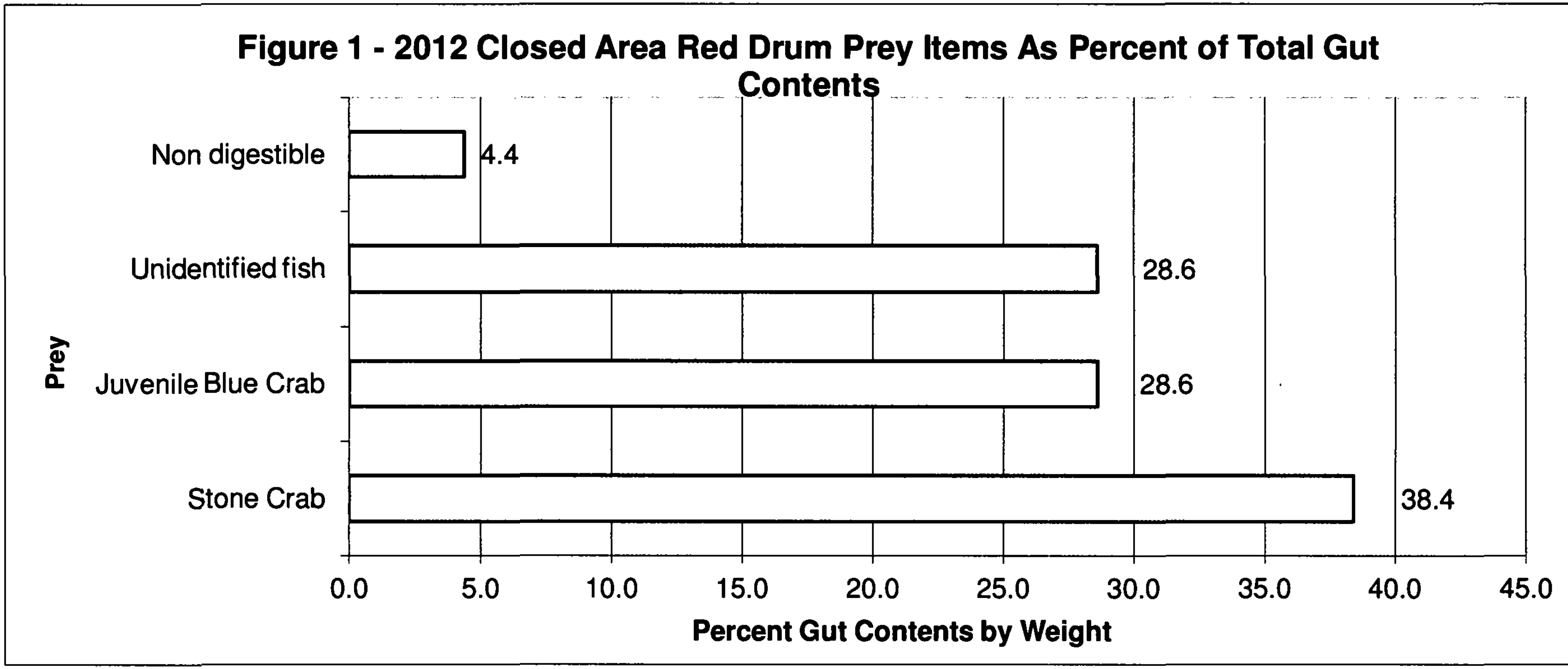
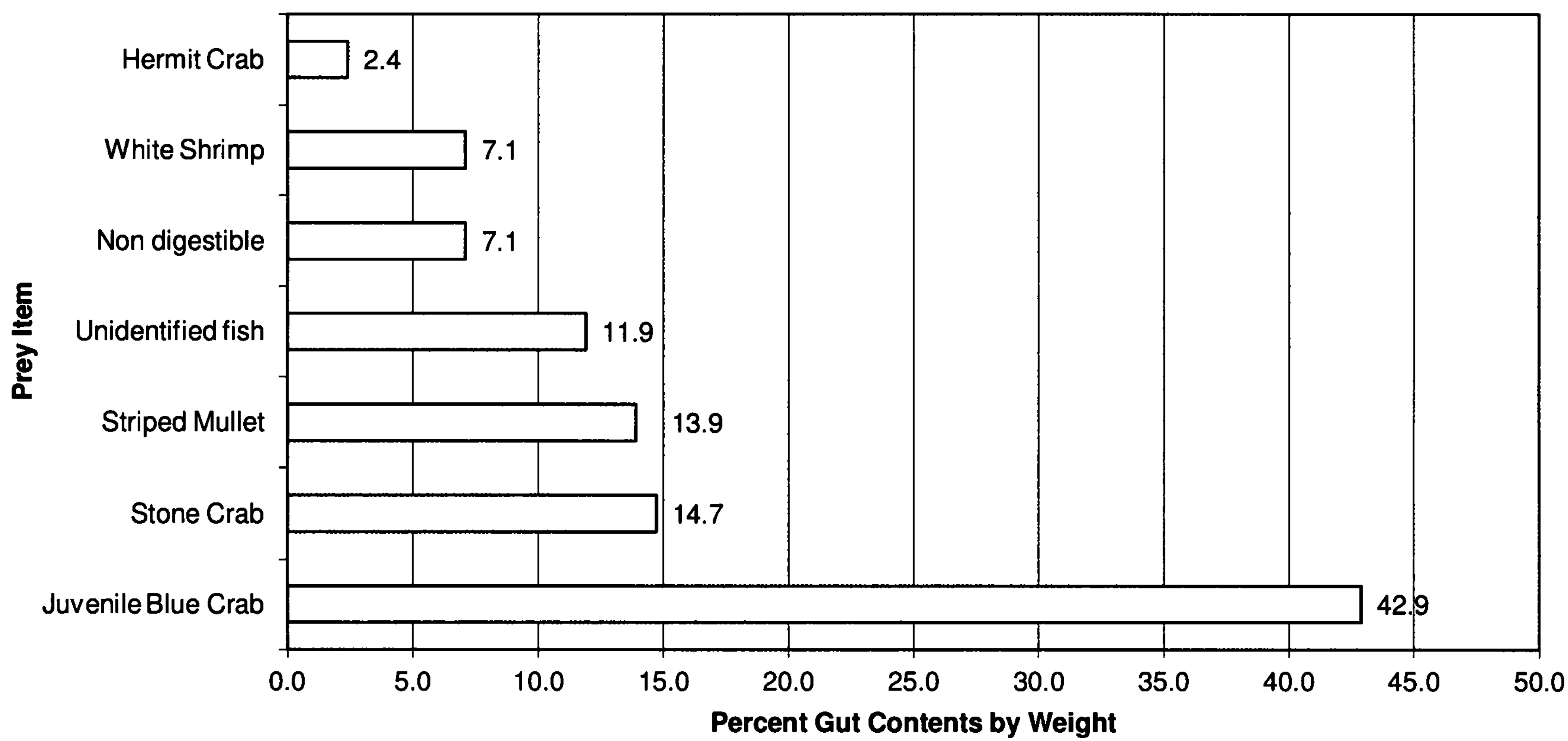


Figure 1 - 2012 Closed Area Red Drum Prey Items As Percent of Total Gut Contents
Non digestible
4.4
Unidentified fish
28.6
Juvenile Blue Crab
28.6
Stone Crab
38.4
Prey
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
Percent Gut Contents by Weight

Figure 2 - 2012 Adjacent Area Red Drum Prey Items as Percent of Total Gut Contents



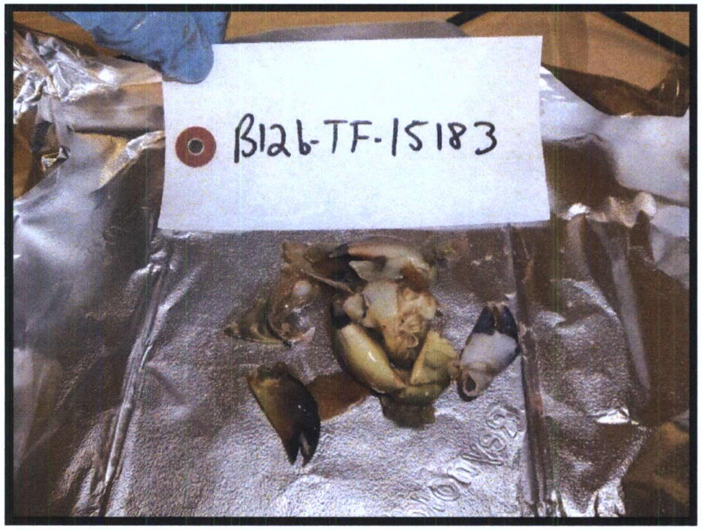


Photo ID 215 (CLO5900) Stone Crab

Photo ID 217 (CLO5803) Blue Crab

Photo ID 218 (LVB6871) Blue Crab

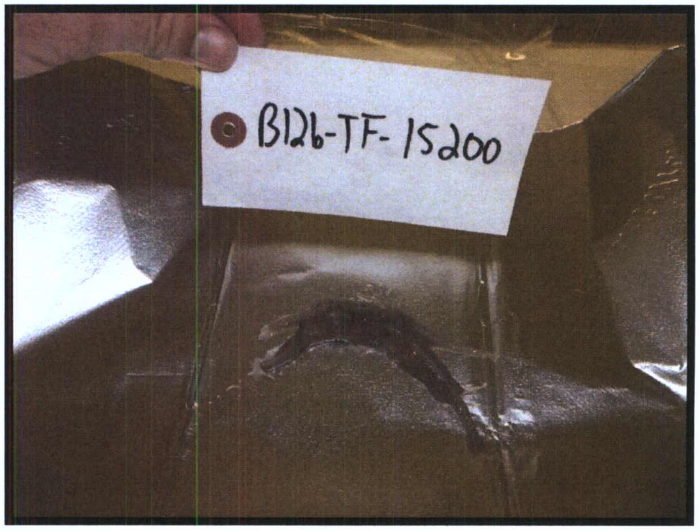


Photo ID 219 (LVB6871) Unidentified Digested Fish

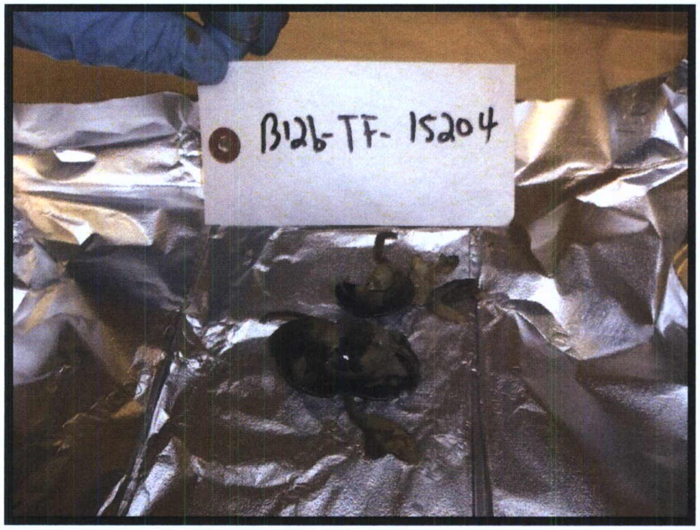


Photo ID 220 (CLO1414) Stone Crab

Photo ID 222 (LVB6950) Blue Crab

Photo ID 223 (LVB6870) Blue Crab

Photo ID 227 (LVB6950) Striped Mullet

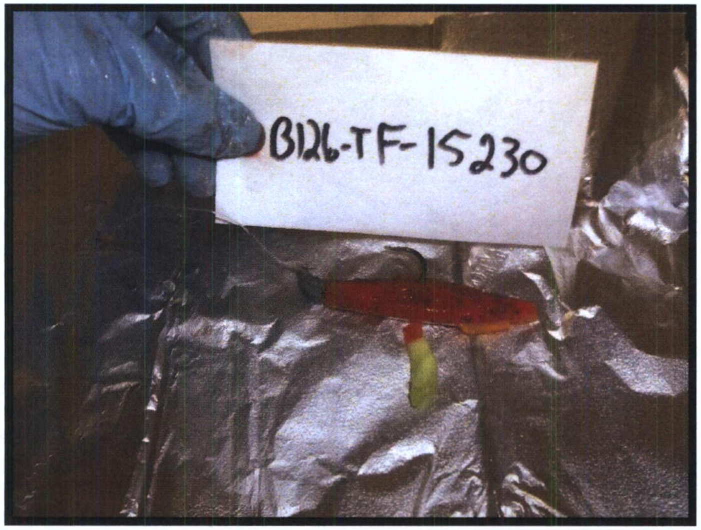


Photo ID 228 (LVB6950) Non Digestible

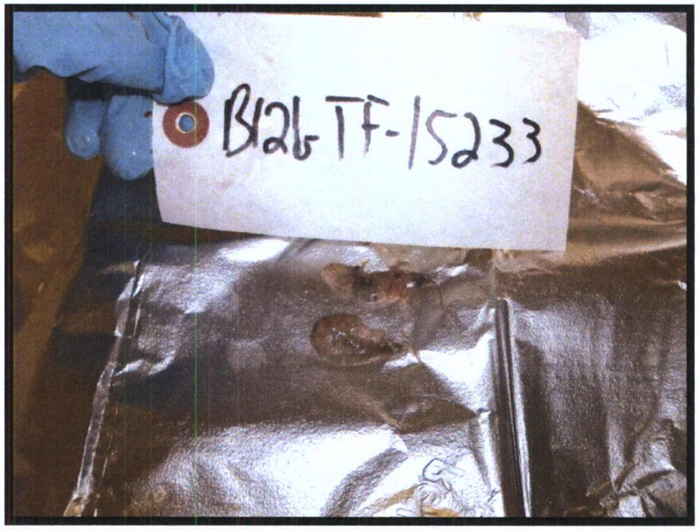


Photo ID 231 (LVB5838) White Shrimp

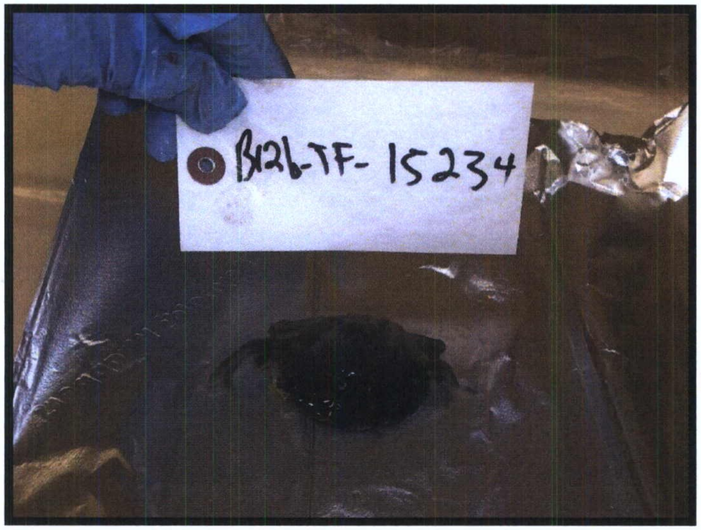


Photo ID 232 (LVB5841) Stone Crab

Photo ID 279 (LVB5841) Striped Mullet

Attachment B

APPENDIX C

DREDGE ISLAND INSPECTION RECORDS 2012

DREDGE ISLAND INSPECTION RECORD

Inspector's Name: Kevin Dworsky	**Date:** 3/21/2012 (1Q12)
Weather: Mostly Clear, Breezy (W)	**Time Begin:** 0900
Temperature: 59° F	**Time End:** 1030
KBD accompanied by Brett Soutar of Benchmark Ecological Services Inc. during inspection.	**Inspector's Signature:**

SPECIFIC ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS OBSERVED NORMAL	CONDITIONS OBSERVED ABNORMAL	COMMENTS OR CORRECTIVE ACTION(S) IMPLEMENTED AND DATES
General Dredge Island	Erosion Deterioration Settling/Ponding Uplift Washouts Rodent Holes Vegetation	X X X X X X ☐	☐ ☐ ☐ ☐ ☐ ☐ X	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	North interior CDF dike and access ramp have been repaired and appear to be in generally good condition. Minor erosion on all other interior dikes in several locations. The water level has increased 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. 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. Was unable to view exterior for seepage due to large amounts of vegetation and low tidal conditions. There was none noted from the dike.
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. Due to safety concerns associated with walking on the armor stone, this inspection was conducted

DREDGE ISLAND INSPECTION RECORD

				without traversing the stone on the exterior dike slopes. The exterior dike locations were observed via the dike crest or by waterside inspection from the boat.
Gravel Erosion Protection	Erosion Fabric Exposure Deterioration Damage	□ □ □ □	X X X X	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 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. Some localized concrete deterioration observed.
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 □ □ □ □	As of January 2012, the North Structure will be placed under restricted access until a thorough structural and safety inspection of this structure can be performed by a qualified structural engineer. All inspections will be completed visually from the dike. This recommendation was made due to the severe corrosion of the structural I-beam sections. North Structure: Coated surfaces on structure exhibiting moderate rusting and pitting on handrails. Channel iron also exhibits moderate to severe corrosion. WL outside the structure is 6.85' below the base plate. WL in structure is 25.30' 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. South Structure: Minor rust observed on handrails. The area around the structure is dry (7.65' 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 17.71' below base plate. The total depth of the decant structure is 18.08'. 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 Ramp, viewing south

2 – North Ramp, viewing vegetation

3 – North Ramp, viewing washout

4 – North Dike, viewing repairs to interior

5 – North Dike, viewing repaired road sign

6 – Northeast Corner Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 – Northeast Corner Inner Dike, viewing west

8 – Northeast Corner Inner Dike, viewing south

9 – Northeast Corner Outer Dike, viewing south

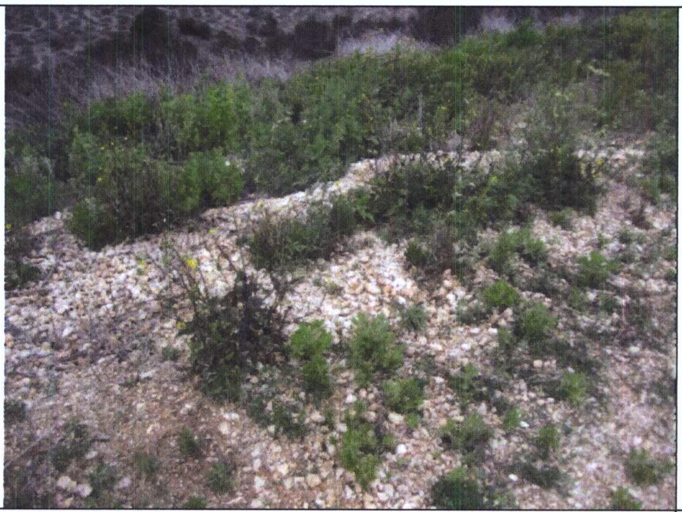
10 – North Outfall

11 – North Decant Structure

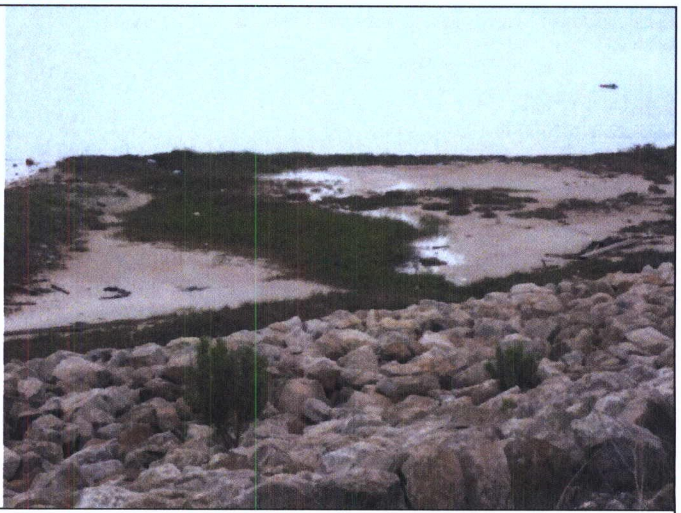
12 –Intrusive Trees in Storm Protection

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas



13 – Intrusive vegetation in Gravel Protection



14 – Southeast Seepage Area

15 – Southeast Corner Outer Dike, viewing north

16 – Southeast Corner Inner Dike, viewing north

17 – Southeast Corner Inner Dike, viewing west

18 – Southeast Corner Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

19 – South Dike, viewing exposed geofabric

20 – Southwest Corner Inner Dike, viewing north

21 – Southwest Corner Outer Dike, viewing north

22 – South Outfall

23 – South Decant Structure

24 – South Decant Structure, viewing inside structure

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

25 – West Outer Dike, viewing north

26 – West Inner Dike, viewing north

27 – Emergency Spillway, viewing minor washout

28 – Northwest Corner Outer Dike, viewing east

29 – Northwest Corner Inner Dike, viewing east

30 – North Ramp, viewing slope

DREDGE ISLAND INSPECTION RECORD

Inspector's Name: Kevin Dworsky	**Date:** 6/12/2012 (2Q12)
Weather: Mostly Clear, Slight Breeze (SE)	**Time Begin:** 1000
Temperature: 82° F	**Time End:** 1130
KBD accompanied by Stephen Grahmann of PBW and Brett Soutar of Benchmark Ecological Services Inc. during inspection.	**Inspector's Signature:**

SPECIFIC ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS OBSERVED NORMAL	CONDITIONS OBSERVED ABNORMAL	COMMENTS OR CORRECTIVE ACTION(S) IMPLEMENTED AND DATES
General Dredge Island	Erosion Deterioration Settling/Ponding Uplift Washouts Rodent Holes Vegetation	X X X X X X □	□ □ □ □ □ □ X	All original vehicular signs and some of the reflectors on Island are damaged. New signs have been placed in a few locations during 2011maintenance event on the island. Thick vegetation on and along roads, interior dikes, Outer Dikes, and on toes of the exterior dikes. Hard to inspect the some areas of 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 1Q12 report. 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	North interior CDF dike and access ramp appear to be in generally good condition. Some areas were the ramp had been seeded during the 2011 maintenance event is showing severe signs of stress. Minor erosion on all other interior dikes in several locations. The water level has decrease to the point of no visible water on the structures surface . 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. 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. Was unable to view exterior for seepage due to large amounts of vegetation and low tidal conditions. There was none noted from the dike.
Stone Storm Protection	Erosion Settlement	X X	□ □	No damage observed. Significant vegetation present. Vegetation has remained the same since March. The amount of trees/bushes that are

DREDGE ISLAND INSPECTION RECORD

	Stone Deterioration Stone Movement Fabric Exposure Damage	X X X X	□ □ □ □	pushing through the armor has remained the same. Action to remove the vegetation will be necessary. Due to safety concerns associated with walking on the armor stone, this inspection was conducted without traversing the stone on the exterior dike slopes. The exterior dike locations were observed via the dike crest or by waterside inspection from the boat.
Gravel Erosion Protection	Erosion Fabric Exposure Deterioration Damage	□ □ □ □	X X X X	The inside slope of the north and northwest dikes were repaired in 2011 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 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. Some localized concrete deterioration observed.
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 □ □ □ □	As of January 2012, the North Structure will be placed under restricted access until a thorough structural and safety inspection of this structure can be performed by a qualified structural engineer. All inspections will be completed visually from the dike. This recommendation was made due to the severe corrosion of the structural I-beam sections. North Structure: Coated surfaces on structure exhibiting moderate rusting and pitting on handrails. Channel iron also exhibits moderate to severe corrosion. Plastic around the top of structure is in good condition. Area around the structure is dry. South Structure: Minor rust observed on handrails. The plastic around the top of the structure is in good condition. The area around the structure is dry (7.66' 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 17.70' below base plate. The total depth of the decant structure is 18.08'. 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. Action will need to be taken to remove the vegetation from the roadways in the near future.
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 Ramp, viewing south

2 – North Ramp, viewing vegetation

3 – North Ramp, viewing washout

4 – North Inner Dike, viewing recent repairs

5 – North Dike, viewing repaired road sign

6 – Northeast Corner Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 – Northeast Corner Inner Dike, viewing west

8 – Northeast Corner Inner Dike, viewing south

9 – Northeast Corner Outer Dike, viewing south

10 – North Outfall

11 – North Decant Structure

12 –Intrusive Trees in Storm Protection

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas


13 – Intrusive vegetation in Gravel Protection


14 – Southeast Seepage Area


15 – Southeast Corner Outer Dike, viewing north

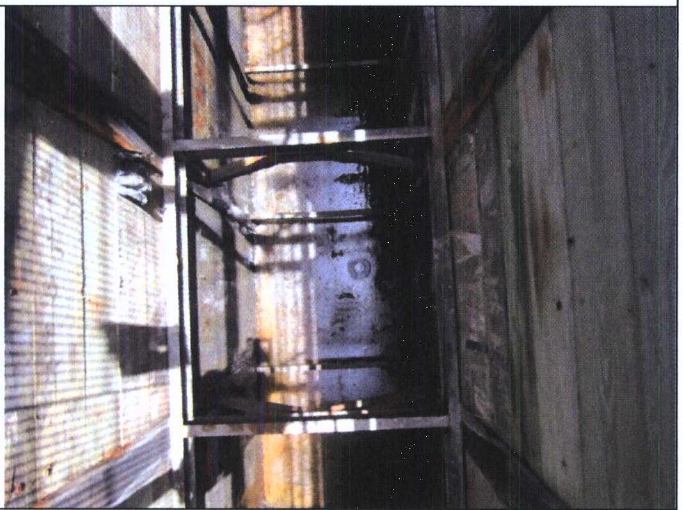

16 – Southeast Corner Inner Dike, viewing north


17 – Southeast Corner Inner Dike, viewing west


18 – Southeast Corner Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

	
19 – South Dike, viewing exposed geofabric	20 – Southwest Corner Inner Dike, viewing north
	
21 – Southwest Corner Outer Dike, viewing north	22 – South Outfall
	
23 – South Decant Structure	24 – South Decant Structure, viewing inside structure

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

25 – West Outer Dike, viewing north

26 – West Inner Dike, viewing north

27 – Emergency Spillway, viewing minor washout

28 – Northwest Corner Outer Dike, viewing east

29 – Northwest Corner Inner Dike, viewing east

30 – Northwest Corner, viewing amount of water in structure

DREDGE ISLAND INSPECTION RECORD

Inspector's Name: Kevin Dworsky	**Date:** 9/25/2012 (3Q12)
Weather: Clear, Slight Breeze (SSE)	**Time Begin:** 0800
Temperature: 72° F	**Time End:** 0930
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	All original vehicular signs and some of the reflectors on Island are damaged. New signs have been placed in a few locations during 2011maintenance event on the island. Thick vegetation on and along roads, interior dikes, outer dikes, and on toes of the exterior dikes. Hard to inspect some areas of the dikes and ramps thoroughly due to the heavy 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 2Q12 report. 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	North interior CDF dike and access ramp appear to be in generally good condition. Some areas where the ramp had been seeded during the 2011 maintenance event is showing severe signs of stress. Minor erosion has been noted on the interior dikes in several locations. The water level has increase inside the dikes due to recent heavy rains 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 the interior dike on all sides of the dike. Action in the near future is necessary. 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. Was unable to view exterior for seepage due to large amounts of vegetation and low tidal conditions. There was none noted from the dike.
Stone Storm Protection	Erosion Settlement Stone Deterioration	X X X	☐ ☐ ☐	No damage observed. Significant vegetation present. Vegetation has increase since March. The amount of trees/bushes that are pushing through the armor has remained the same. Action

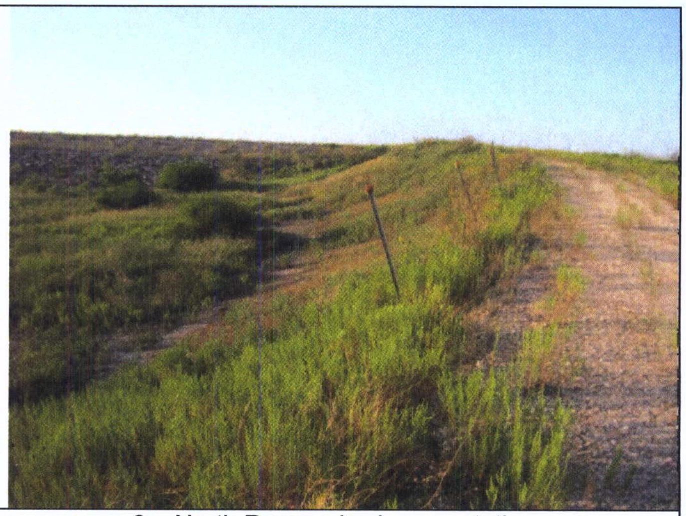
DREDGE ISLAND INSPECTION RECORD

	Stone Movement Fabric Exposure Damage	X X X	□ □ □	to remove the vegetation will be necessary. Due to safety concerns associated with walking on the armor stone, this inspection was conducted without traversing the stone on the exterior dike slopes. The exterior dike locations were observed via the dike crest or by waterside inspection from the boat.
Gravel Erosion Protection	Erosion Fabric Exposure Deterioration Damage	□ □ □ □	X X X X	The inside slope of the north and northwest dikes were repaired in 2011 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 of the dikes' inside slope exhibit minor to moderate 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. Some localized concrete deterioration observed.
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 □ □ □ □	As of January 2012, the North Structure will be placed under restricted access until a thorough structural and safety inspection of this structure can be performed by a qualified structural engineer. All inspections will be completed visually from the dike. This recommendation was made due to the severe corrosion of the structural I-beam sections. North Structure: Coated surfaces on structure exhibiting moderate to severe rusting and pitting on handrails. Channel iron also exhibits moderate to severe corrosion. Plastic around the top of structure is in good condition. Water has risen to the edge of the structure South Structure: Minor rust observed on handrails. The plastic around the top of the structure is in good condition. The area around the structure is dry (7.67' 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 17.68' below base plate. The total depth of the decant structure is 18.08'. 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. Action will need to be taken to remove the vegetation from the roadways in the near future.
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 Ramp, viewing south

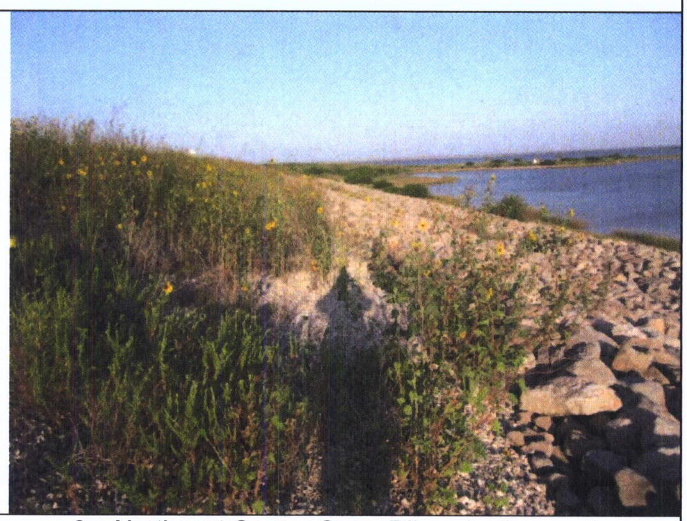


2 – North Ramp, viewing vegetation

3 – North Ramp, viewing washout

4 – North Ramp, viewing snake

5 – North Dike, viewing damaged sign



6 – Northeast Corner Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 – Northeast Corner Inner Dike, viewing west

8 – Northeast Corner Inner Dike, viewing south

9 – Northeast Corner Outer Dike, viewing south

10 – North Outfall

11 – North Decant Structure

12 –Intrusive Trees and Vegetation in Gravel Protection

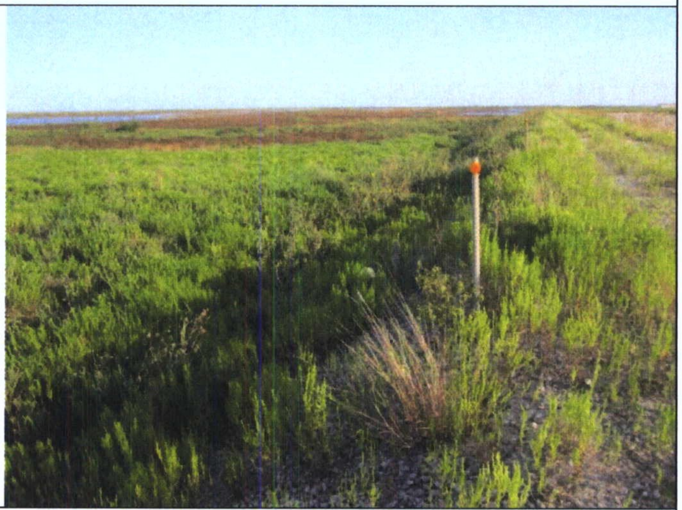
DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

13 – Damaged survey marker

14 – Historic Southeast Seepage Area

15 – Southeast Corner Outer Dike, viewing north



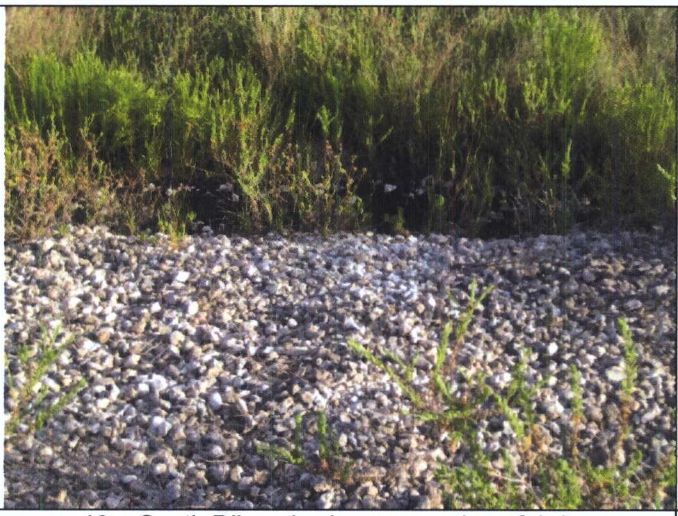
16 – Southeast Corner Inner Dike, viewing north

17 – Southeast Corner Inner Dike, viewing west

18 – Southeast Corner Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

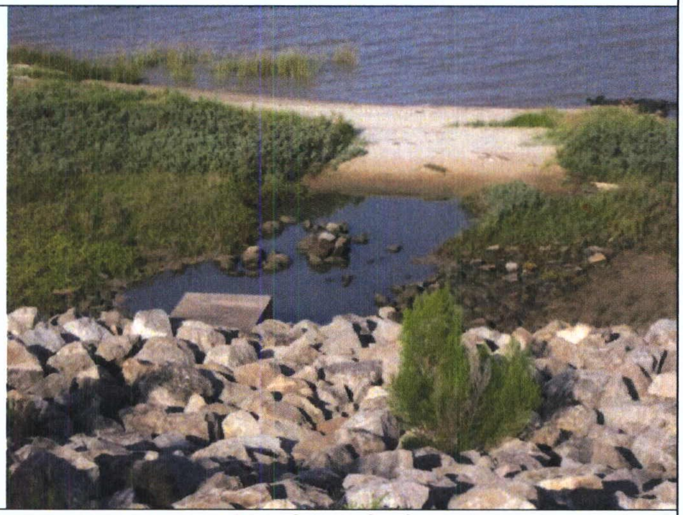
ALCOA PCO – Point Comfort, Texas



19 – South Dike, viewing exposed geofabric

20 – Southwest Corner Inner Dike, viewing north

21 – Southwest Corner Outer Dike, viewing north



22 – South Outfall

23 – South Decant Structure

24 – South Decant Structure, viewing inside structure

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

25 – Northwest Corner Outer Dike, viewing south

26 – Northwest Corner Inner Dike, viewing south

27 – Emergency Spillway, viewing minor washout

28 – Northwest Corner Outer Dike, viewing east

29 – Northwest Corner Inner Dike, viewing east

30 – Northwest Corner, viewing amount of water in structure

SITE INSPECTION LOG

Inspector's Name: Dan Bullock, P.E. (BBA, LLC)
Weather: Cloudy, Overcast
Temperature: Approx. 66 F

Daniel B. Bullock
2-12-13

STATE OF TEXAS
DANIEL B. BULLOCK
82596
REGISTERED
PROFESSIONAL ENGINEER

Inspector's Signature: Daniel B. Bullock

Inspection Date: 12-11-12
Time Begin: Approx. 10:30 a.m.
Time End: Approx. 1:00 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. Detailed inspection of bridge not performed as part of this site visit. Bridge abutments severely eroded.
CDF Dike	Erosion Deterioration Damage Vegetation	☒ ☒ ☒ ☒	☐ ☐ ☐ ☐	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 slopes of north dike, and north section of west and east dikes, have been repaired a couple of times since CDF construction (due to erosion issues) but geotextile fabric and overlying gravel erosion protection originally constructed on the interior slopes were not replaced as part of the repair 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. Lack of geotextile and overlying gravel erosion protection on slope interiors does not appear to be problematic as long as water levels are kept low to prevent interior erosion.
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. Based on site observations (see attached photos) it is recommended that personnel access to this structure, and use of the structure for operational purposes, be restricted until a thorough structural and safety inspection of this structure can be performed by a qualified structural engineer. Handrails and channel iron slots containing the stoplogs on the structure exhibit severe corrosion, per attached photos. CDF surface was dry during inspection, with no on-going discharge. Approximately 4 inches of water observed standing in the bottom of the structure. South Structure: Minor to moderate rust observed on south decant structure hand rails and channel iron slots containing the stoplogs. One section of angle iron used to guide stoplogs in the slots, shown in photo, has a broken weld, and may make adjustment of stoplogs difficult. Outside decant structure was dry. Inside decant structure contained approximately 4 inches of standing water in the bottom. 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 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

URS

12-11-2012 DI Inspection

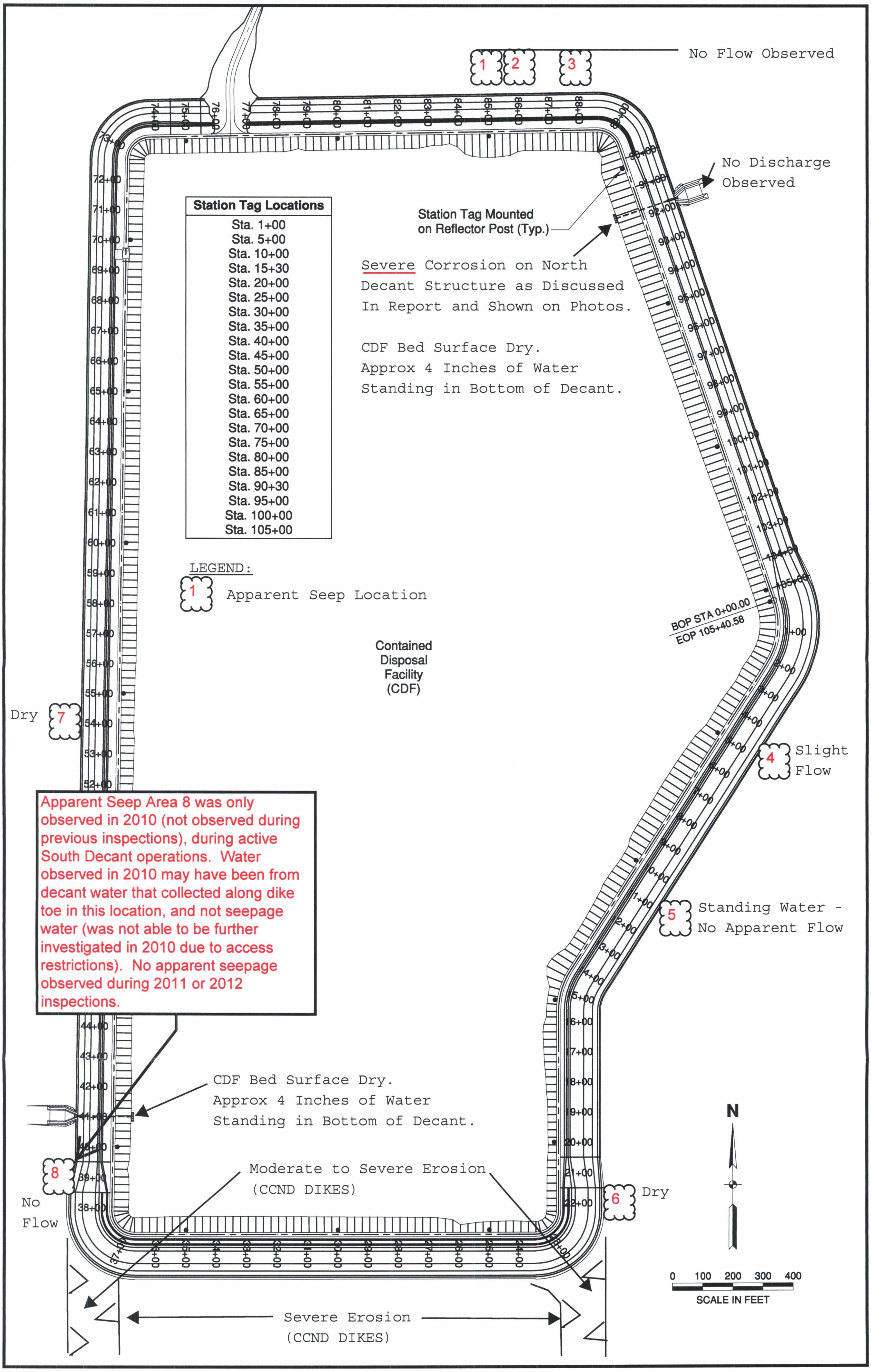


FIGURE 4-2
STATION NUMBER LOCATIONS

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/11/2012

North Entry Ramp

North Entry Ramp

CDF – NW Corner/North Interior Slope

CDF – NE Corner

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/11/2012

North Decant Structure

North Decant Structure

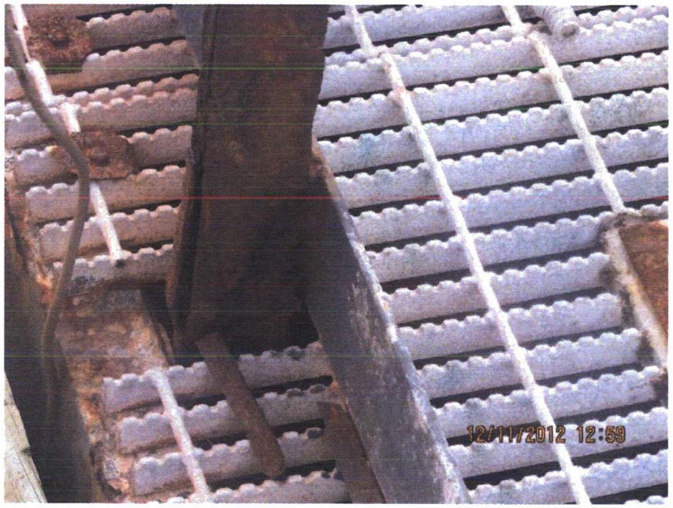
North Decant Structure

North Decant Structure Corrosion

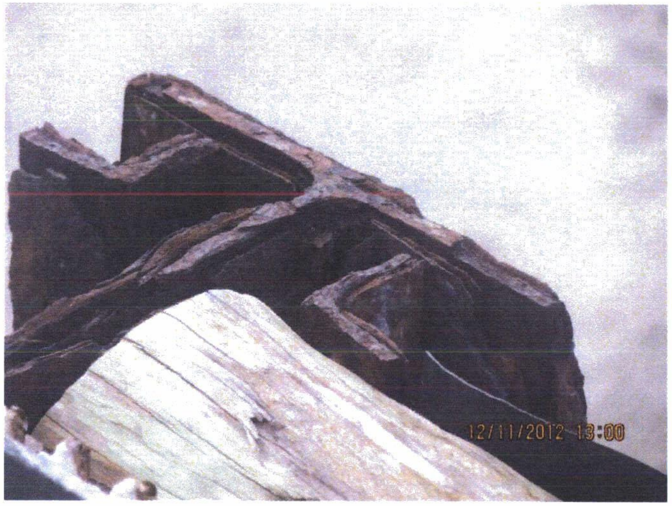
DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/11/2012

North Decant Structure

North Decant Structure Corrosion



North Decant Structure Corrosion



North Decant Structure Corrosion

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/11/2012

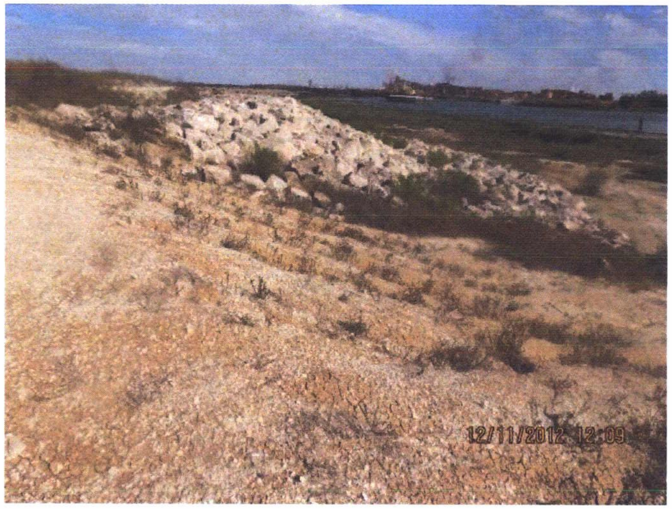
North Decant Structure Corrosion

North Decant Structure Outfall

Historic Apparent Seep No. 4

Dike Exterior Slope, East Side

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/11/2012



Southeast Corner, Exterior Slope

CCND Severe Erosion – Exposed FML

South Dike Crest, CCND to Left

South Decant Structure

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/11/2012

South Dike Crest, South Decant Structure

South Decant Structure Outfall

South Decant Structure

South Decant Structure

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/11/2012

South Decant Structure

South Decant Structure

West Side of NW Corner Slope Repair - Interior

Emergency Spillway/Overflow Structure

DREDGE ISLAND SITE INSPECTION PHOTOGRAPHS
12/11/2012

Historic DI Bridge Damage

Historic DI Bridge Damage

DREDGE ISLAND INSPECTION RECORD

Inspector's Name: Kevin Dworsky
Weather: Mostly Clear, Breezy (W)
Temperature: 59° F
KBD accompanied by Brett Soutar of Benchmark Ecological Services Inc. during inspection.

Date: 3/21/2012 (1Q12)
Time Begin: 0900
Time End: 1030
Inspector's Signature:

SPECIFIC ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS OBSERVED NORMAL	CONDITIONS OBSERVED ABNORMAL	COMMENTS OR CORRECTIVE ACTION(S) IMPLEMENTED AND DATES
General Dredge Island	Erosion Deterioration Settling/Ponding Uplift Washouts Rodent Holes Vegetation	X X X X X X □	□ □ □ □ □ □ X	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	North interior CDF dike and access ramp have been repaired and appear to be in generally good condition. Minor erosion on all other interior dikes in several locations. The water level has increased 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. 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. Was unable to view exterior for seepage due to large amounts of vegetation and low tidal conditions. There was none noted from the dike.
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. Due to safety concerns associated with walking on the armor stone, this inspection was conducted

DREDGE ISLAND INSPECTION RECORD

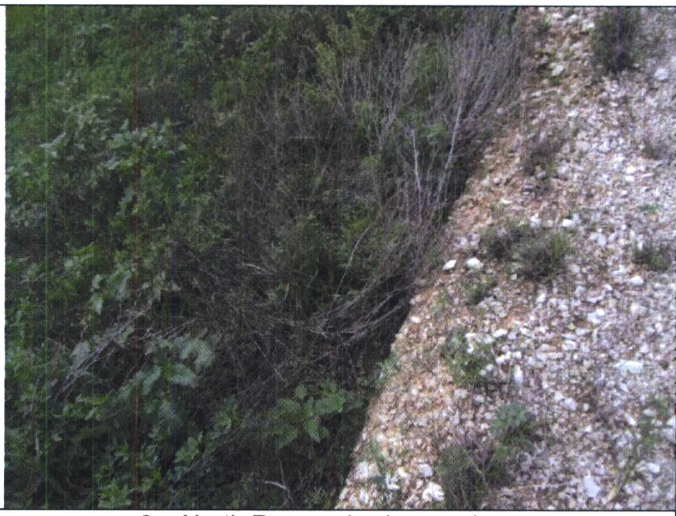
				without traversing the stone on the exterior dike slopes. The exterior dike locations were observed via the dike crest or by waterside inspection from the boat.
Gravel Erosion Protection	Erosion Fabric Exposure Deterioration Damage	□ □ □ □	X X X X	The inside slope of dikes at the locations discussed 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 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. Some localized concrete deterioration observed.
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 □ □ □ □	As of January 2012, the North Structure will be placed under restricted access until a thorough structural and safety inspection of this structure can be performed by a qualified structural engineer. All inspections will be completed visually from the dike. This recommendation was made due to the severe corrosion of the structural I-beam sections. North Structure: Coated surfaces on structure exhibiting moderate rusting and pitting on handrails. Channel iron also exhibits moderate to severe corrosion. WL outside the structure is 6.85' below the base plate. WL in structure is 25.30' 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. South Structure: Minor rust observed on handrails. The area around the structure is dry (7.65' 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 17.71' below base plate. The total depth of the decant structure is 18.08'. 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 Ramp, viewing south

2 – North Ramp, viewing vegetation



3 – North Ramp, viewing washout

4 – North Dike, viewing repairs to interior

5 – North Dike, viewing repaired road sign

6 – Northeast Corner Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 – Northeast Corner Inner Dike, viewing west

8 – Northeast Corner Inner Dike, viewing south

9 – Northeast Corner Outer Dike, viewing south

10 – North Outfall

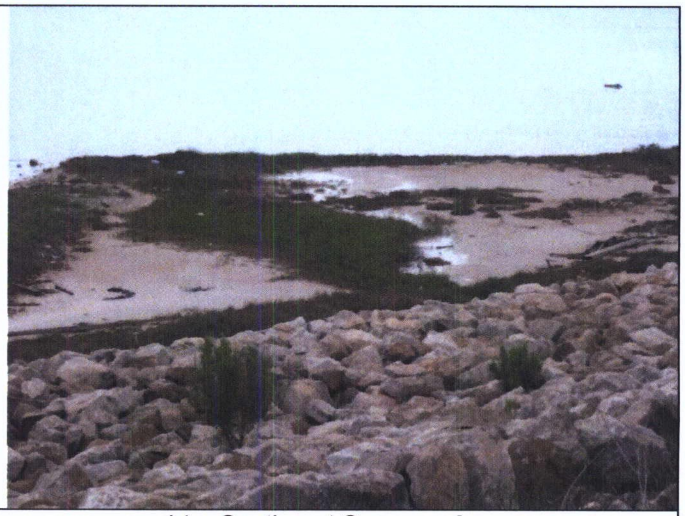
11 – North Decant Structure

12 –Intrusive Trees in Storm Protection

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

13 – Intrusive vegetation in Gravel Protection



14 – Southeast Seepage Area

15 – Southeast Corner Outer Dike, viewing north

16 – Southeast Corner Inner Dike, viewing north

17 – Southeast Corner Inner Dike, viewing west

18 – Southeast Corner Outer Dike, viewing west

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas


19 – South Dike, viewing exposed geofabric


20 – Southwest Corner Inner Dike, viewing north


21 – Southwest Corner Outer Dike, viewing north


22 – South Outfall


23 – South Decant Structure

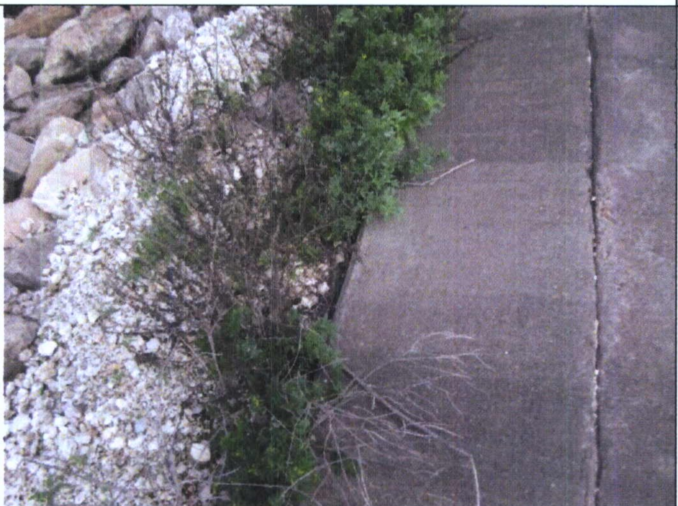

24 – South Decant Structure, viewing inside structure

DREDGE ISLAND INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

25 – West Outer Dike, viewing north

26 – West Inner Dike, viewing north



27 – Emergency Spillway, viewing minor washout

28 – Northwest Corner Outer Dike, viewing east

29 – Northwest Corner Inner Dike, viewing east

30 – North Ramp, viewing slope

APPENDIX D

CAPA SOIL CAP INSPECTION RECORDS 2012

CAPA CAP INSPECTION RECORD

Date: 03/21/2012 **Time Started:** 12:30 **Time Ended:** 13:00

Weather Conditions: 61° 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	√		Southwest corner is showing signs of erosion during heavy rain storms
	Settling	√		None observed
	Ponding	√		Some minor ponding in various locations
	Washouts	√		None observed
	Holes	√		None observed
	Vehicle Ruts	√		There are a few ruts from previous herbicide treatment. The northwest corner has been compacted due to traffic over it.
	Intrusive Vegetation	√		Moderate vegetation on cap - herbicide treatment has been scheduled.
Signage	In Place	√		
	Legible	√		
Storm Drains	Grates	√		Some intrusive vegetation on grates
	Debris	√		Little to 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. Compaction in northwest corner is believed to be outside the cap boundaries.

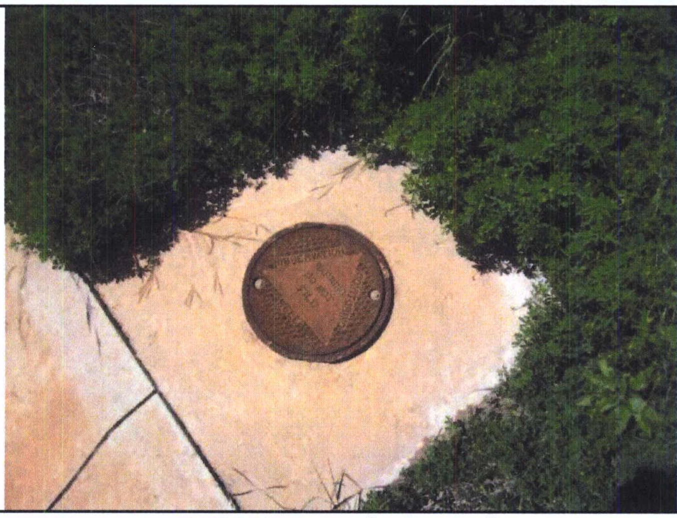
Inspector:
Kevin Dworsky

Inspectors Signature: [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

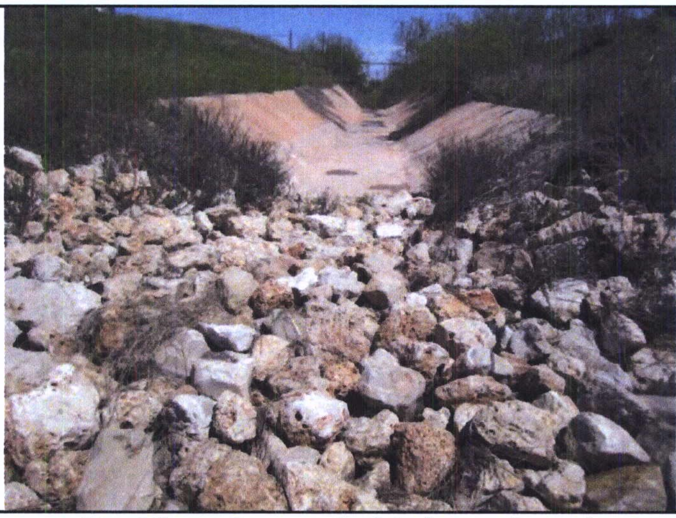


7 - DNAPL monitoring well

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 intrusive tree along slope

CAPA CAP INSPECTION RECORD

Date: 06/12/2012 **Time Started:** 11:45 **Time Ended:** 12:00

Weather Conditions: 90° F, Clear Sky

Observations/Comments:

ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Cap	Erosion	√		Southwest corner is showing signs of erosion during heavy rain storms
	Settling	√		None observed
	Ponding	√		Some minor ponding in various locations
	Washouts	√		None observed
	Holes	√		None observed
	Vehicle Ruts	√		There are a few ruts from past herbicide treatments. The northwest corner has been compacted due to traffic driving over it in the past. Area has been roped off to prevent vehicles from crossing the corner of the cap.
	Intrusive Vegetation	√		Little to none observed
Signage	In Place	√		
	Legible	√		
Storm Drains	Grates	√		Slight vegetation on a few grates
	Debris	√		Little to 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.

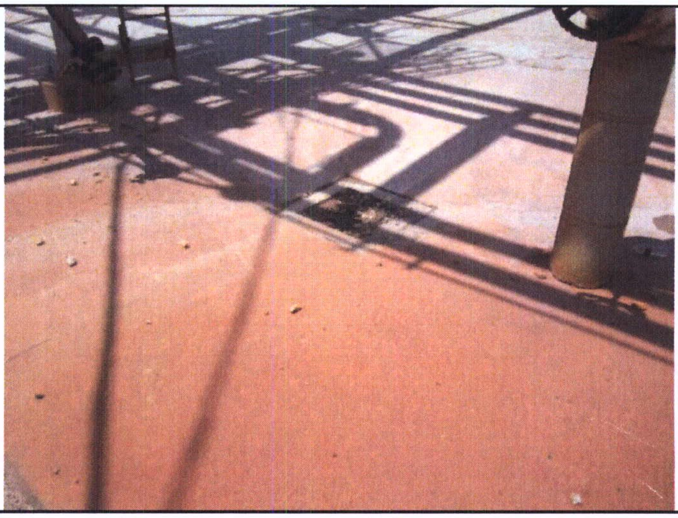
Inspector:
Kevin Dworsky

Inspectors Signature: [signature]

PASTOR, BEHLING & WHEELER, LLC
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, Northeastcorner

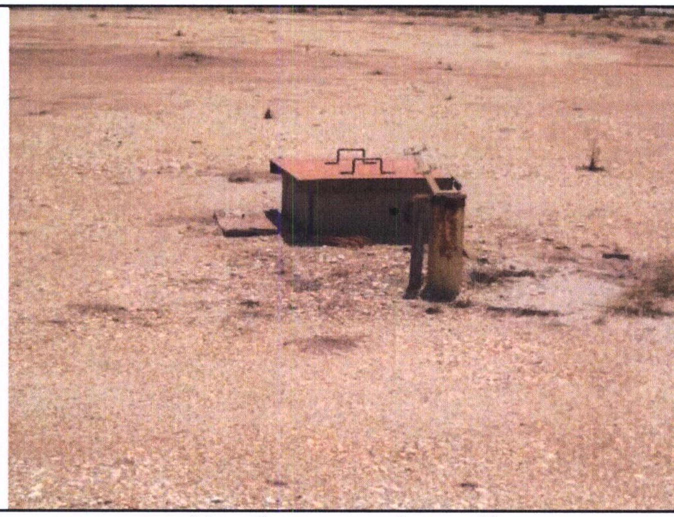
CAPA CAP INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

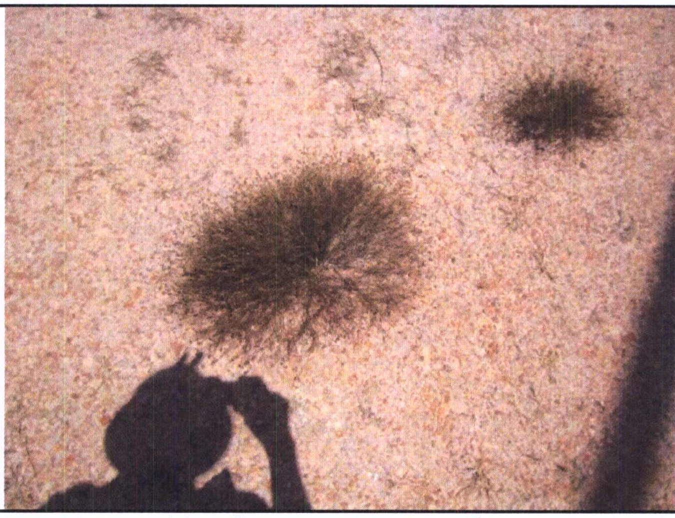
7 – Cap, view Southeast from Northwest corner

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 herbicides

CAPA CAP INSPECTION RECORD

Date: 09/28/2012 **Time Started:** 14:20 **Time Ended:** 14:35

Weather Conditions: 83° F, Cloudy Sky

Observations/Comments:

ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Cap	Erosion	√		Southwest corner is showing signs of erosion during heavy rain storms
	Settling	√		None observed
	Ponding	√		Some minor ponding in various locations
	Washouts	√		None observed
	Holes	√		None observed
	Vehicle Ruts	√		Some ruts still visible from herbicide application
	Intrusive Vegetation	√		Little to none observed
Signage	In Place	√		Good condition
	Legible	√		Good condition
Storm Drains	Grates	√		Intrusive vegetation on grates
	Debris	√		Some 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:

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

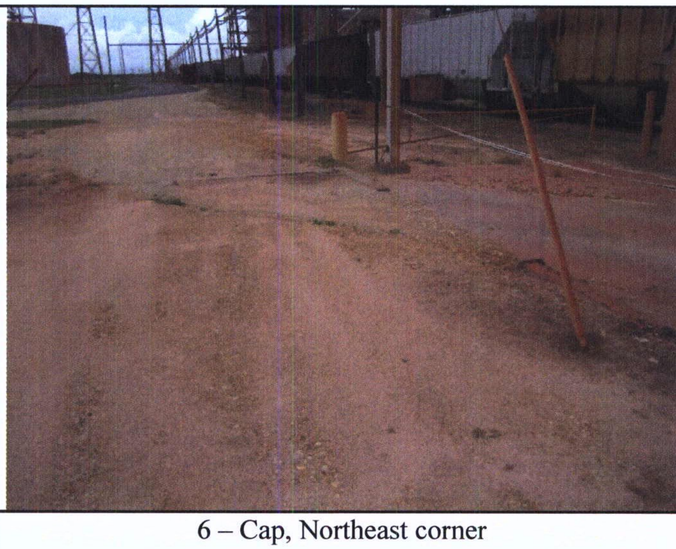
1 - Cap, view Northeast from Southwest corner

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 corner

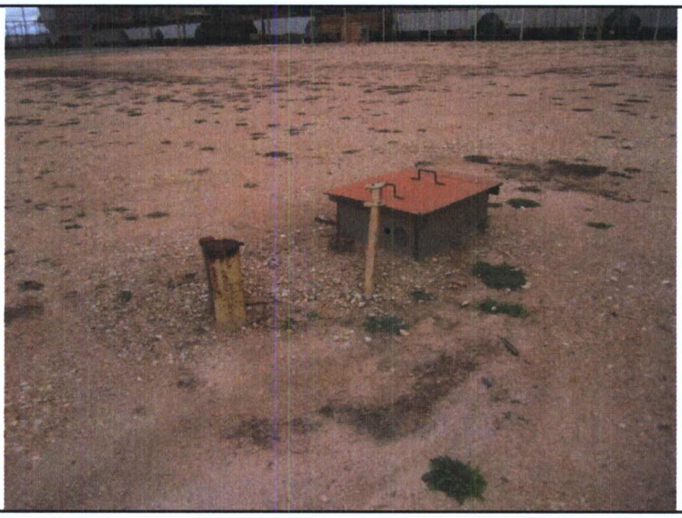
CAPA CAP INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

7 – Cap, view Southeast from Northwest corner

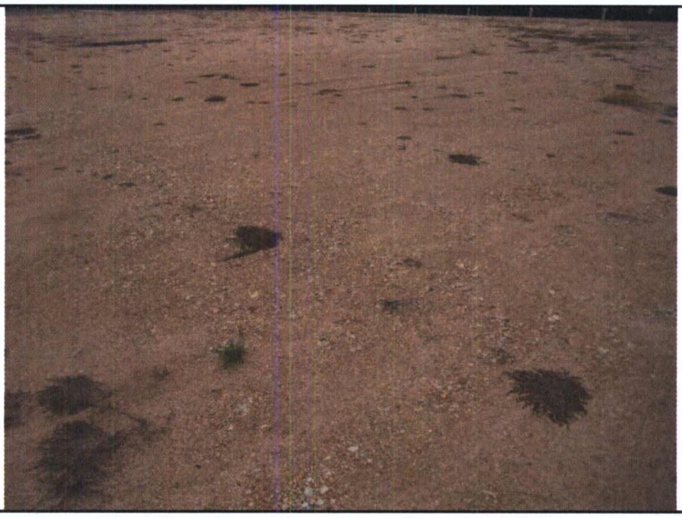
8 – Cap, view Southwest from Northeast corner

9 – Cap, view Northwest from Southeast corner



10 – Cap, extraction well

11 – Cap, current vegetation



12 – Cap, Ruts from previous herbicides

CAPA CAP INSPECTION RECORD

Date: 12/18/2012 **Time Started:** 13:48 **Time Ended:** 13:58

Weather Conditions: 75° F, Cloudy Sky

Observations/Comments:

ITEM TO INSPECT	TYPICAL PROBLEMS ENCOUNTERED	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Cap	Erosion	√		Southwest corner is showing signs of erosion during heavy rain storms
	Settling	√		None observed
	Ponding	√		Some minor ponding in various locations
	Washouts	√		None observed
	Holes	√		None observed
	Vehicle Ruts	√		Some ruts still visible from mowing ditches
	Intrusive Vegetation	√		Some observed, needs herbicide application
Signage	In Place	√		Good condition
	Legible	√		Good condition
Storm Drains	Grates	√		Intrusive vegetation on grates
	Debris	√		Some 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
620 E. Airline
Victoria, Texas 77901
Phone: 361-573-6443 Fax: 361-573-6449

CAPA CAP INSPECTION PHOTO LOG

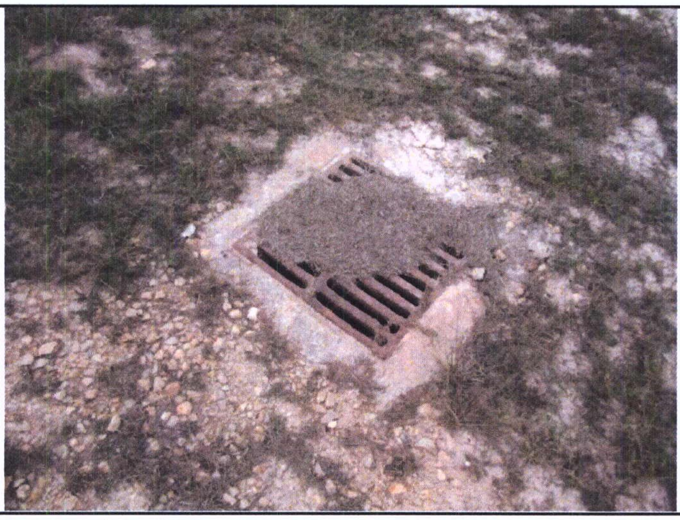
ALCOA PCO – Point Comfort, Texas

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, North 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 mowing of ditches

APPENDIX E

WITCO AREA INSPECTION RECORDS 2011

WITCO AREA INSPECTION RECORD

Date: 03/21/2012 Time Started: 13:45 Time Ended: 14:20

Weather Conditions: 62° 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, no new ones
	Obstructions	√		None observed
	Erosion	√		Slight erosion on east lip of concrete drainage channel
	Deterioration	√		None observed
	Washouts	√		None observed
	Rip Rap	√		Some vegetation, slight movement
Soil Cap (Tank Farm)	Erosion	√		Few areas of ponding on cap
	Settlement	√		None observed
	Vegetation	√		Healthy
	Intrusive Trees	√		None observed
	Drainage/Rip Rap	√		Slight vegetation
	Animal Damage	√		None observed
	Vehicle Ruts	√		None observed
	Damage	√		None observed
Soil Cap (O/W Separator)	Erosion	√		None observed
	Settlement	√		None observed
	Vegetation	√		Healthy
	Damage	√		None observed
Slope from Cap to Channel	Erosion	√		Geofabric is exposed and stretched in a few locations, overall in good condition
	Slumping	√		None observed
	Vegetation	√		Healthy
Signage	Damage	√		Good condition
	Illegible	√		Good condition
DNAPL Collection Sump	Damage	√		WL in sump = 3.84' BMP, no DNAPL, 12.70' 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

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

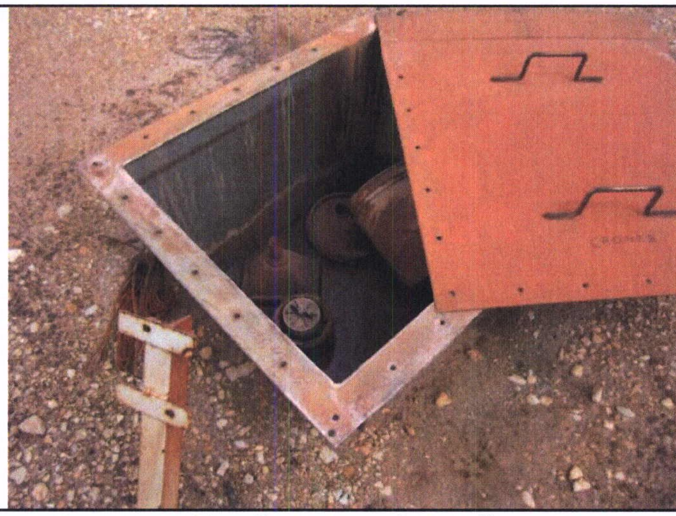
CAPA CAP INSPECTION PHOTO LOG

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

WITCO AREA INSPECTION RECORD

Date: 06/12/2012 Time Started: 11:30 Time Ended: 11:45

Weather Conditions: 90° 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, no new ones
	Obstructions	√		None observed
	Erosion	√		Slight erosion on east lip of concrete drainage channel
	Deterioration	√		None observed
	Washouts	√		None observed
	Rip Rap	√		Some vegetation, slight movement
Soil Cap (Tank Farm)	Erosion	√		Difficult to inspect due to vegetation
	Settlement	√		Difficult to inspect due to vegetation
	Vegetation	√		Healthy, needs vegetative control
	Intrusive Trees	√		None observed
	Drainage/Rip Rap	√		Moderate vegetation
	Animal Damage	√		Difficult to inspect due to vegetation
	Vehicle Ruts	√		Difficult to inspect due to vegetation
	Damage	√		Difficult to inspect due to vegetation
Soil Cap (O/W Separator)	Erosion	√		None observed
	Settlement	√		None observed
	Vegetation	√		Healthy, needs vegetative control
	Damage	√		None observed
Slope from Cap to Channel	Erosion	√		Geofabric is exposed and stretched in a few locations, overall in good condition
	Slumping	√		None observed
	Vegetation	√		Healthy, needs vegetative control
Signage	Damage	√		Good condition
	Illegible	√		Good condition
DNAPL Collection Sump	Damage	√		WL in sump = 4.32' BMP, no DNAPL, 12.76' TD
	Other			

Additional Comments or Observations: Area in good condition. A vegetation control plan has been discussed with Turner.

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

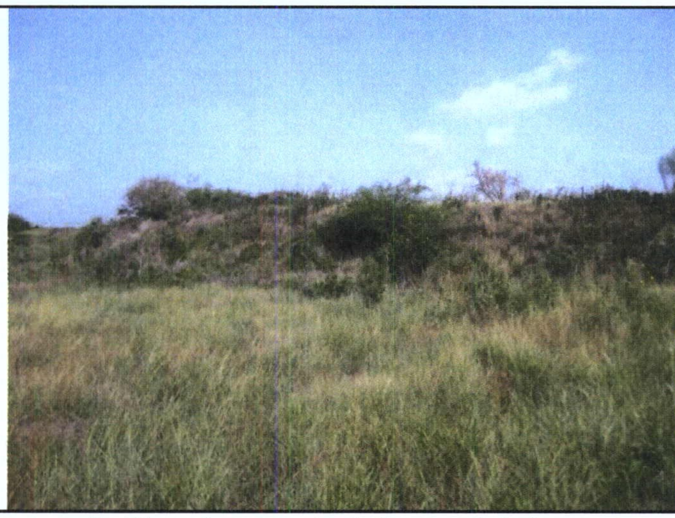
1 - Northeast corner, viewing Southwest

2 - Northwest corner, viewing Southeast

3 - Southwest corner, viewing Northeast

4 - Southeast corner of cap, viewing 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 – Southwest Witch Cap, viewing Northeast

8 - Northeast Witco Cap, viewing South

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

10 - View of west end of drainage channel, viewing west

11 - View of east end of drainage channel, viewing east

12 - View of drainage rip rap from tank farm cap

WITCO INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

13 - View of drainage rip rap from drainage channel

14 - View of erosion at lip of drainage channel

15 - View of large cracking in the slope

15 - View of monitoring wells

WITCO AREA INSPECTION RECORD

Date: 09/28/2012 **Time Started: 13:50** **Time Ended: 14:10**

Weather Conditions: 83° F, 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, no new ones
	Obstructions	√		None observed
	Erosion	√		Slight erosion
	Deterioration	√		Marks on concrete, as shown in photos
	Washouts	√		None observed
	Rip Rap	√		Slight movement
Soil Cap (Tank Farm)	Erosion	√		Difficult to inspect due to vegetation
	Settlement	√		Difficult to inspect due to vegetation
	Vegetation	√		Healthy, needs vegetative control
	Intrusive Trees	√		None observed
	Drainage/Rip Rap	√		Slight vegetation
	Animal Damage	√		Difficult to inspect due to vegetation
	Vehicle Ruts	√		Difficult to inspect due to vegetation
	Damage	√		Difficult to inspect due to vegetation
Soil Cap (O/W Separator)	Erosion	√		None observed
	Settlement	√		None observed
	Vegetation	√		Healthy, needs vegetative control
	Damage	√		None observed
Slope from Cap to Channel	Erosion	√		Geofabric is torn in areas which could lead to erosion
	Slumping	√		None observed
	Vegetation	√		Killed prior to inspection
Signage	Damage	√		Good condition
	Illegible	√		Good condition
DNAPL Collection Sump	Damage	√		WL in sump = 4.05' BMP, no DNAPL, 12.65' TD
	Other			

Additional Comments or Observations: Area in good condition. A vegetation control plan has been discussed with Turner.

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, viewing Southwest

2 - Northwest corner, viewing Southeast

3 - Southwest corner, viewing Northeast

4 - Southeast corner of cap, viewing 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 – Deterioration (marks) on the concrete within the drainage channel

8 - Northeast Witco Cap, viewing South

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

10 - View of West end of drainage channel, viewing West

11 - View of East end of drainage channel, viewing East

12 - View of drainage rip rap from tank farm cap

WITCO INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

	
13 - View of drainage rip rap from drainage channel	14 - View of erosion at lip of drainage channel
	
15 - View of torn geofabric along slope between tank farm and drainage channel	16 - View of monitoring wells

WITCO AREA INSPECTION RECORD

Date: 12/18/2012 **Time Started:** 14:00 **Time Ended:** 14:30

Weather Conditions: 75° F, Cloudy sky

Observations/Comments:

AREA	ITEM	CONDITIONS Normal	CONDITIONS Abnormal	COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
Drainage Channel	Cracks in Concrete	√		Few old cracks, no new ones
	Obstructions	√		None observed
	Erosion	√		Slight erosion
	Deterioration	√		Marks on concrete, noted in 3Q12 Inspection
	Washouts	√		None observed
	Rip Rap	√		Slight movement
Soil Cap (Tank Farm)	Erosion	√		None observed
	Settlement	√		None observed
	Vegetation	√		Healthy, continue with shreading of cap
	Intrusive Trees	√		None observed
	Drainage/Rip Rap	√		Moderate vegetation
	Animal Damage	√		None observed
	Vehicle Ruts	√		None observed
	Damage	√		None observed
Soil Cap (O/W Separator)	Erosion	√		None observed
	Settlement	√		None observed
	Vegetation	√		Healthy, continue with shreading of cap
	Damage	√		None observed
Slope from Cap to Channel	Erosion	√		Geofabric is torn in areas, slight erosion in areas
	Slumping	√		None observed
	Vegetation	√		Some vegetation
Signage	Damage	√		Good condition
	Illegible	√		Good condition
DNAPL Collection Sump	Damage	√		WL in sump = 4.23' BMP, no DNAPL, 12.65' TD
	Other			

Additional Comments or Observations: Area in good condition. Continue shreading Witco Area. Remove vegetation form rip rap.

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, viewing Southwest


2 - Northwest corner, viewing Southeast


3 – DNAPL Recover Well


4 - Southeast corner of cap, viewing 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 – Silt fence between the tank farm slope and drainage channel

8 - Northeast Witco Cap, viewing South

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

10 - View of West end of drainage channel, viewing West

11 - View of East end of drainage channel, viewing East

12 - View of drainage rip rap from tank farm cap

WITCO INSPECTION PHOTO LOG

ALCOA PCO – Point Comfort, Texas

	
13 - View of drainage rip rap from drainage channel	14 - View of erosion at lip of drainage channel
	
15 - View of torn geofabric and slight erosion along slope between tank farm and drainage channel	16 - View of monitoring wells